



CITY OF BOARDMAN

DRAFT

Source Water Protection Plan

June 2026



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This plan was funded by a Drinking Water Source Protection Fund grant from the Oregon Health Authority Drinking Water Services administered by Business Oregon/Infrastructure Finance Authority.

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Appendix A City of Boardman Water Rights

Appendix B Public Outreach Examples

Abbreviations and Acronyms

cfs	cubic feet per second
CSZ	Cascadia Subduction Zone
DEQ	Department of Environmental Quality
DOGAMI	Department of Geology and Mineral Industries
DWSA	drinking water source area
Emergency Plan	City of Boardman Water System Emergency Response and Notification Plan
EPA	Environmental Protection Agency
gpm	gallons per minute
GWUDI	groundwater under the direct influence of surface water
I&I	infiltration and inflow
IPM	integrated pest management
LUBGWMA	Lower Umatilla Basin Groundwater Management Area
MPA	microscopic particulate analysis
NHMP	Natural Hazard Mitigation Plan
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
ODA	Oregon Department of Agriculture
ODOT	Oregon Department of Transportation
OHA	Oregon Health Authority
OWEB	Oregon Watershed Enhancement Board
OWRD	Oregon Water Resources Department
PFAS	per- and polyfluoroalkyl substances
SCADA	Supervisory Control and Data Acquisition
SPCC	Spill Prevention, Control, and Countermeasure
SWA	Source Water Assessment
SWPP	Source Water Protection Plan
USFS	United States Forest Service
WMCP	Water Management and Conservation Plan
WPCF	Water Pollution Control Facilities

SECTION 1: Introduction

This Source Water Protection Plan (SWPP) was developed by GSI Water Solutions, Inc (GSI) on behalf of the City of Boardman (City) with guidance from a team of technical advisors, local organization representatives, and community members, along with public input. This SWPP provides a framework for the City to address risks to groundwater and has been structured to meet the requirements for state certification of a SWPP.

1.1 Background and Goals

The 1996 amendments to the federal Safe Drinking Water Act established new requirements for public water systems and allocated resources to the Oregon Department of Environmental Quality (DEQ) and Oregon Health Authority (OHA) to assist communities with drinking water source protection. Protecting water at the source helps safeguard public health while minimizing the need for complex treatment systems to address water quality issues. Public water systems in Oregon are encouraged to voluntarily develop SWPPs to ensure that their communities continue to have access to clean, safe drinking water. DEQ and OHA both review SWPPs, with DEQ administering the approval process for systems with surface water sources and OHA administering the certification process for systems with groundwater sources.

The primary objective of this SWPP is to protect the City's drinking water source by identifying existing and potential risks to groundwater in the source area and implementing strategies to mitigate or eliminate those risks. The SWPP also includes a phased implementation plan for the proposed strategies, a contingency plan describing actions to be taken if an incident affects the water source, and a consideration of the City's future water supply needs.

1.2 Boardman Drinking Water Source Area

The City of Boardman is situated along the Columbia River and Interstate 84 in Morrow County, Oregon. Boardman was relocated twice after it was originally built. In 1952, it was moved approximately one-half mile to accommodate construction of US Highway 30 (now concurrent with Interstate 84). The city was moved again about one-quarter mile in the late 1960s when construction of the John Day Dam on the Columbia River created Lake Umatilla. The old townsite now lies beneath the river. Boardman has a relatively dry climate, with average precipitation under 9 inches per year. The City's estimated population was 5,820 in 2025¹, and it is among the fastest growing cities in Oregon. Major employment sectors in the region include agriculture and food processing, manufacturing, information technology, and utilities.

The City operates municipal water system PWS 4100130 serving lands within the City's urban growth boundary. Drinking water is supplied by three collector wells located near the Columbia River. Laterals extending out horizontally from the collector wells primarily obtain groundwater from the alluvial aquifer. A portion of the laterals in the wells are in hydraulic connection with the Columbia River. The water entering these laterals passes through the riverbed sediments and underlying alluvial deposits. These alluvial deposits act as natural filtration of the surface water, effectively removing surface water pathogens, which is evaluated using the microscopic particulate analysis (MPA) test. The City has completed multiple MPA tests to determine the degree to which water from the collector wells is classified as groundwater by OHA rules. These analyses concluded that if the collector wells are pumped at a rate below approximately 6,000 gallons per minute (gpm), their classification remains as groundwater. Therefore, the City operates the collector wells at a rate no greater than 6,000 gpm, maintaining their classification as groundwater rather than "groundwater under the direct influence of surface water" (GWUDI). Water pumped from the wells is

¹ Source: Portland State University Population Research Center, 2025 Certified Population Estimates
<https://www.pdx.edu/population-research/population-estimate-reports>

chlorinated for disinfection, and no additional treatment is required. Because of the classification of the City's water source as groundwater, this SWPP is largely focused on protection of the City's groundwater source. Consideration of potential contaminant risks from surface water is noted in Section 2.8 and 5.3.

For public water systems with groundwater sources, it is critical to understand the groundwater "capture zones" that contain the portion of the aquifer that is supplying water to the water system. Groundwater in the capture zones flows toward the wells as they are pumped. The abundance and movement of groundwater is affected by characteristics like the aquifer's permeability, thickness, and extent, along with external features, such as other nearby wells pumping groundwater. Variation in these factors means that groundwater may travel slowly in some areas and more rapidly in others. Using a computer model, hydrogeologists use information about the aquifer to delineate the drinking water source area (DWSA), which can be further broken down to show the 1-, 2-, 5-, and 10-year capture zones. These zones are also sometimes referred to as "time of travel" zones, because groundwater in these zones would be expected to reach the City's wells within the designated timeframe of the zone (e.g., groundwater in the 5-year time of travel zone or capture zone would be expected to reach the City's wells within 5 years). If a contaminant is present on the land surface above the capture zones, infiltrating water may carry it downward to the aquifer, and it may reach the City's wells through the natural movement of groundwater over time.

In 1992, the City completed a delineation of its DWSA and associated capture zones using a groundwater model. At that time, the City had constructed one of its collector wells. Modeling was based on the authorized locations of the existing and proposed collector wells under the City's water rights. OHA and DEQ used this delineation when the agencies prepared the first Source Water Assessment (SWA) for the City in 2005 and when they updated the SWA in 2023. In 2024, the City began using its third collector well. The City typically uses two of the three wells at a time, rotating which pair of wells produces water on a daily basis. As part of the development of this SWPP, the City contracted with GSI to update the groundwater modeling analysis and the delineation of the DWSA and capture zones. Changes in the mapping of the capture zones may be attributed to updated groundwater pumping scenarios, the use of modern software for the groundwater flow model and particle-tracking simulations that were used to understand the time of travel in the aquifer, and the addition of non-City production wells to the model. Based on results of the SWA analyses, Boardman is considered highly susceptible to moderate- and high-risk potential contaminant sources inside its 2-year, 5-year, and 10-year capture zones.

Exhibit 1-1 shows the land surface above the groundwater capture zones in the City's DWSA based on the updated modeling conducted in 2025–2026. Land uses, facilities, and activities occurring in these areas have the potential to impact the City's drinking water source if contaminants are released in a manner that allows them to reach the aquifer. Exhibit 1-2 shows land uses in the capture zones.

The City is located within the boundaries of the Lower Umatilla Basin Groundwater Management Area (LUBGWMA). In 1990, DEQ designated it as a groundwater management area due to high levels of nitrate contamination in groundwater in the region. While the City of Boardman's groundwater has tested within allowable limits since the first test in 1987, the City monitors for nitrate and reports the results in its annual Consumer Confidence Reports. In addition, the City now reviews proposed land use or planning documents and proposed projects to ensure wellhead protection measures are included, and the City prohibits septic systems within city limits to prevent nitrate pollution from the source. The City extended its wastewater system to new developments to prevent installation of septic tanks within 300 feet of its groundwater collection system (Section 2.2, Boardman Water Management and Conservation Plan [WMCP] 2017).

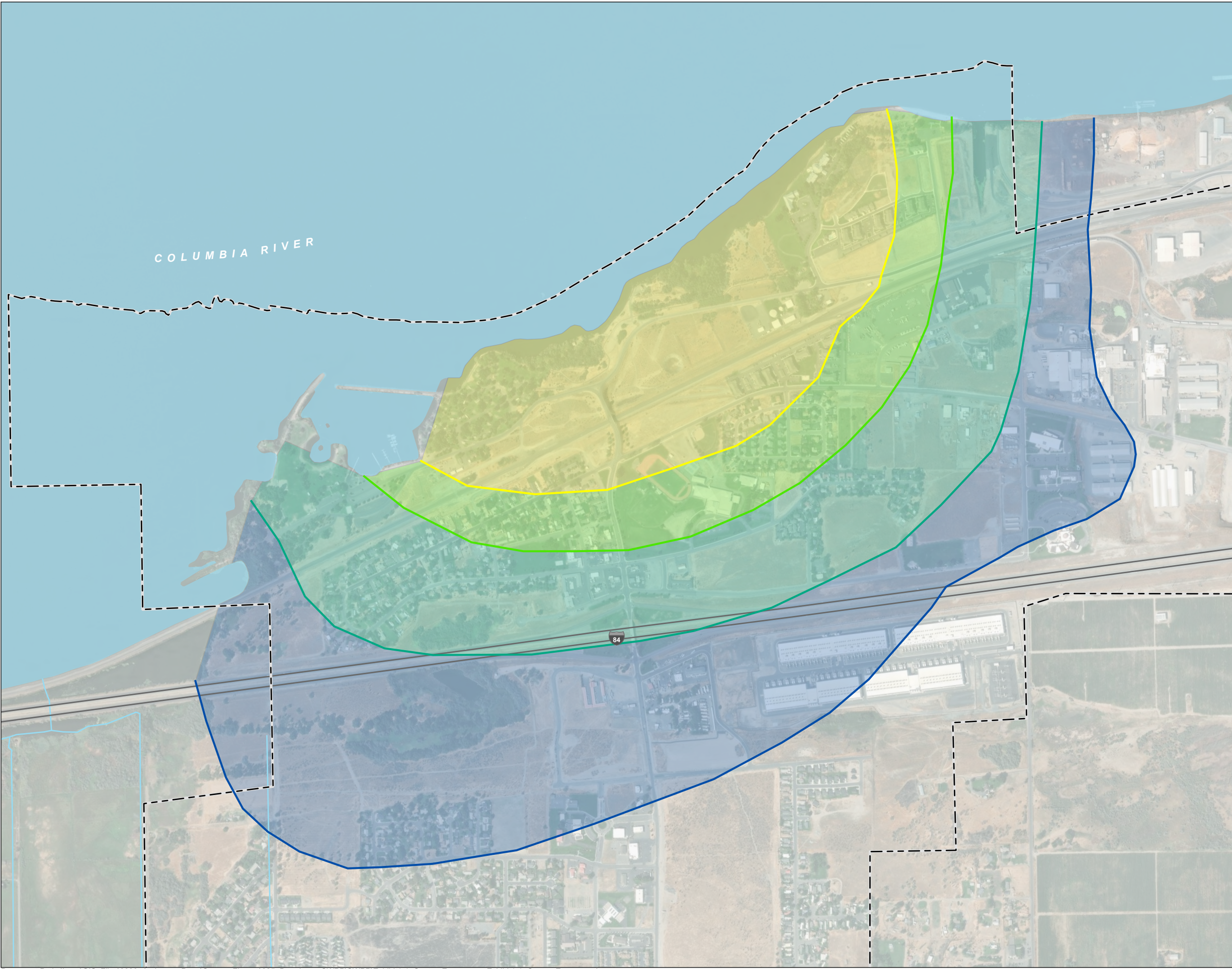


EXHIBIT 1-1
Map of Capture Zones
in the Drinking Water Source Area
City of Boardman
Source Water Protection Plan

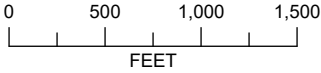
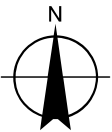
LEGEND

Capture Zone

- 1-Year Time-of-Travel
- 2-Year Time-of-Travel
- 5-Year Time-of-Travel
- 10-Year Time-of-Travel

All Other Features

- City of Boardman
- Major Road
- Watercourse
- Waterbody



Date: April 30, 2026
Data Sources: BLM, ESRI, ODOT, USGS,
Imagery (2025)



EXHIBIT 1-2

Land Use Within Groundwater Capture Zones

City of Boardman Source Water Protection Plan

LEGEND

Capture Zone

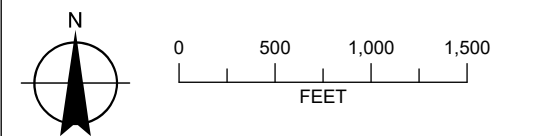
- 1-Year Time-of-Travel
- 2-Year Time-of-Travel
- 5-Year Time-of-Travel
- 10-Year Time-of-Travel

Zoning

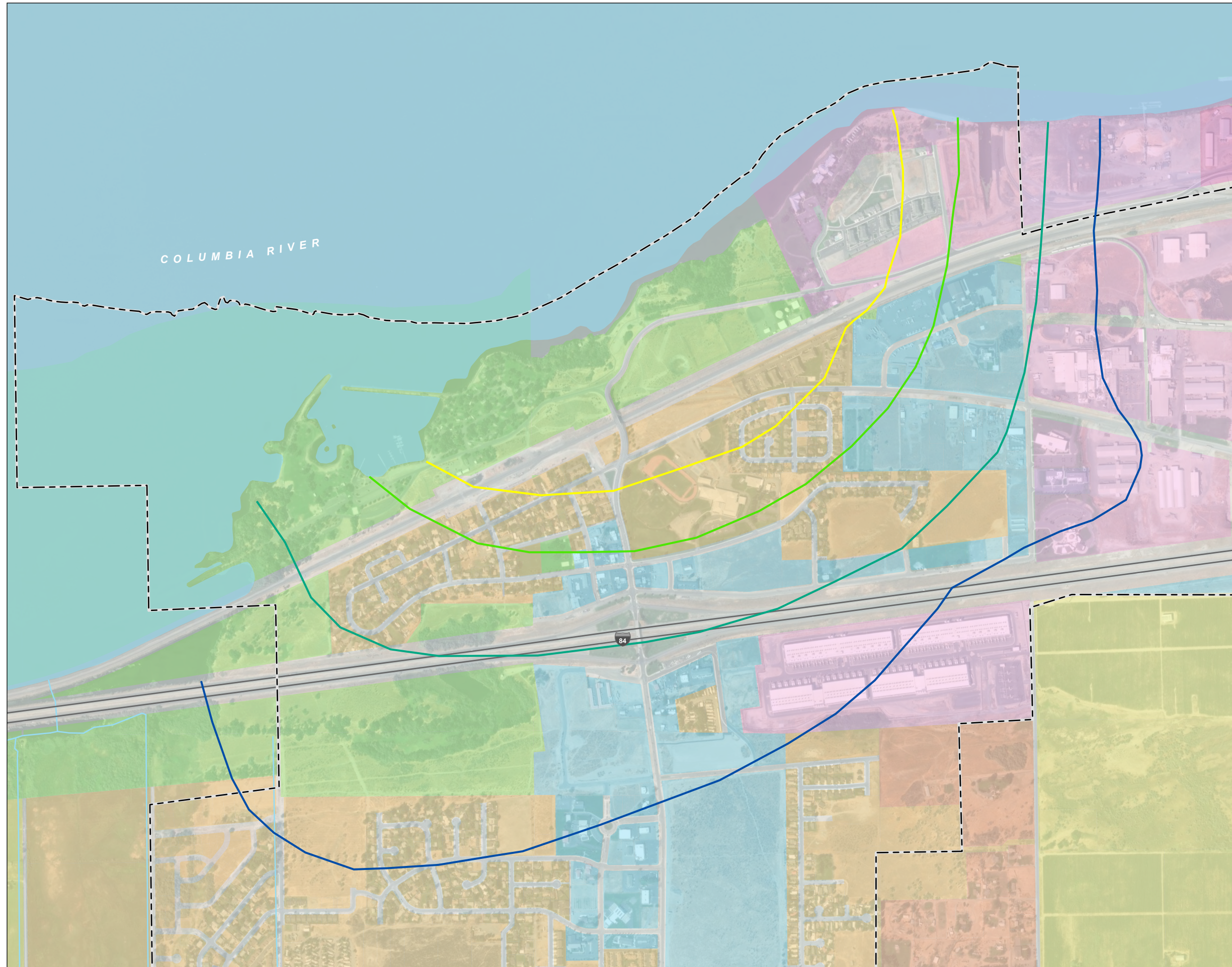
- Commercial
- Industrial
- General Industrial
- Port Industrial
- Exclusive Farm Use
- Residential
- Suburban Residential
- Rural Residential
- Public Space

All Other Features

- City of Boardman
- Major Road
- Watercourse
- Waterbody



Date: April 30, 2026
Data Sources: BLM, ESRI, ODOT, USGS,
Imagery (2025)



1.3 Water Rights

Water supply from the City's collector wells is authorized by Permit S-40336 and Certificates 91399 and 93697. The Oregon Water Resources Department (OWRD) issued water use Permit S-40336 to the City in 1976 to construct and use up to three collector wells, authorizing the use of up to 36 cubic feet per second (cfs) collectively from the three wells, which is equivalent to about 16,158 gallons per minute (gpm). Oregon water law allows municipal water suppliers to "partially perfect" their water use permits, meaning that they may secure permanent water right certificates for increments of at least 25 percent of a permit. The City has partially perfected two increments of Permit S-40336. Certificate 91399 authorizes the use of up to 12.6 cfs from Collector Well 1, and Certificate 93697 authorizes the use of up to 2.11 cfs from Collector Well 1 and up to 9.14 cfs from Collector Well 2 for a total of 11.25 cfs. The remaining portion to be perfected under Permit S-40336 is 12.15 cfs.

Certificate 34275 authorizes the use of up to 1.50 cfs (about 673 gpm) from the City's deeper basalt well for municipal use. The City does not currently use this older well for non-emergency water supply, and it is valved off from the water system. The City also holds non-municipal water rights authorizing the storage of treated wastewater effluent (Certificate 62515) and the use of the stored treated wastewater effluent for irrigation (Certificate 62516). The irrigated lands are not located in the DWSA. Appendix A provides additional details about the City's water rights.

1.4 Source Water Protection Plan Development

1.4.1 Source Water Assessments

As noted in Section 1.2, OHA and DEQ prepared the first SWA for the City in 2005. The agencies prepare SWAs to fulfill one of the requirements of the amended Safe Drinking Water Act. The SWA includes the delineation of the DWSA based on the 1992 groundwater modeling exercise, a discussion of the construction of the collector wells, a description of the nature and characteristics of the aquifer, a sensitivity analysis identifying areas within the DWSA where the aquifer is most sensitive to contamination, and an inventory of known potential contaminant sources in the DWSA. By comparing the locations of the potential contaminant sources with the aquifer sensitivity analysis, the SWA shows the relative susceptibility of the water system to contamination. OHA and DEQ developed an updated SWA for Boardman in 2023 with additional maps of regional water systems, the City's DWSA, and land ownership/use. The 2023 SWA includes an updated map and list of potential contaminant sources in the DWSA, along with a list of recommended pollutant reduction strategies for those that OHA and DEQ consider of most concern to the water system.

In 2025 the City updated the DWSA delineation using current groundwater modeling tools, updated hydrogeological information, and information about the installation of the third collector well, as described in Section 1.2. The City then developed an updated SWA using the revised delineation and an updated list of potential contaminant sources in the area. Potential sources were identified using aerial photography, state and federal regulatory agency databases, verification of previous potential contaminant source inventories conducted by OHA, land use maps, and consultation with the City and SWPP Team. The updated SWA was finalized in winter 2026 and was used as a starting point for the risk assessment described further in Section 2.

1.4.2 Plan Development Process

In 2024, OHA awarded the City of Boardman a Drinking Water Source Protection Fund grant to develop a SWPP to guide water quality protection and enhancement activities in its DWSA, accounting for the addition

of the City's third collector well. The City convened a team of community members, technical experts from state agencies, and local interests, facilitated by the City's selected consultant, GSI Water Solutions, Inc. Exhibit 1-3 lists the SWPP Team members and their affiliations. Plan development began with a kickoff meeting for the SWPP Team in October 2025 and included multiple opportunities for public engagement, as described further in Section 1.4.3. Boardman City Council reviewed the Final Draft SWPP and in June 2026 approved submitting it to OHA and DEQ for certification.

Exhibit 1-3. Drinking Water Protection Plan Team Members

Name	Affiliation
Roy Drago, Jr.	City of Boardman Public Works Director
Karen Pettigrew	Boardman City Council
Mike Lees	Anderson Perry (City's Engineer of Record)
Alyssa Leidel	Oregon Department of Environmental Quality
Atrayu Corpus	Agriculture
Karen Lewotsky	Oregon Environmental Council
Kevin Payne	Morrow Soil and Water Conservation District
Miff Devin	Port of Morrow
Nick Sirovatka	Oregon Department of Agriculture
Russ Kazmierczak	Oregon Health Authority
Tamra Mabbott	Morrow County Planning Department

1.4.3 Public Outreach and Engagement

Members of the public had opportunities to learn about the SWPP development, to review the draft SWPP, and to provide input about local conditions, potential contaminant sources, and risk reduction strategies and approaches to implementation. The City held a public meeting on January 21, 2026, to provide an overview of plan development and to discuss the potential contaminant sources and risk assessment for the DWSA. The City held a second public meeting on May 21, 2026, to discuss the draft SWPP. Both meetings had in-person and virtual attendance options to gather community feedback, and meeting recordings were posted online. The City made information about the planning process and draft documents available for public review at the meetings and on its website. The City promoted the meeting through the City's website, social media, press releases, and through SWPP Team communication with their organizations and constituents. Appendix B provides examples of public outreach materials.

1.5 Organization of the Plan

The remainder of this plan is organized into the following sections:

- **Section 2:** Risk Assessment
- **Section 3:** Strategies to Address Risks
- **Section 4:** Implementation Plan
- **Section 5:** Contingency Plan
- **Section 6:** Future Water Sources

SECTION 2: Risk Assessment

2.1 Introduction to Risk Assessment

As described in Section 1.4.1, OHA and DEQ updated the City’s SWA in 2023, particularly focusing on updating the list of potential contaminant sources and providing ideas for pollutant reduction and outreach strategies in the source area. GSI conducted refined modeling of the capture zones in 2025-2026 to account for use of the City’s third collector well, which the City brought online in 2024. GSI used the refined delineation of the capture zones to update the potential contaminant source inventory in the DWSA and to develop an updated 2026 SWA for the City.

The 2026 SWA provided the foundation for the risk assessment conducted for this SWPP. The Boardman SWPP Team used their technical expertise and local knowledge to update and modify the list of potential contaminant source types and land uses identified in the SWA, which generally focused on anthropogenic sources of pollution. The Team’s risk assessment also included a broader consideration of the risks posed by natural hazards, such as earthquakes.

After identifying a range of potential risks to the aquifer in the City’s DWSA, the SWPP Team conducted a prioritization process by assigning each risk a rating for likelihood of occurrence and severity of impact. The Team used a guidance document from DEQ on typical risk levels for each identified risk along with their own expertise and knowledge of local conditions to refine the evaluation. The approach used for scoring risks defined “likelihood” as the likelihood of the identified risk impacting the water source and causing impacts and defined “impact” as the severity of the impact of those risks if they were to affect the water source (water quality or quantity) or infrastructure. Scores were assigned on a scale of 1 to 5, with 1 being the lowest and 5 being the highest. Based on the scores, risks were classified as high, medium, or low using the matrix shown in Exhibit 2-1. After the Team developed preliminary scores, the City held a public meeting with in-person and virtual attendance options on January 21, 2026, to share information about the SWPP process, present the risk assessment, and gather community feedback.

Exhibit 2-1. Risk Prioritization Matrix

Likelihood	Impact				
	Insignificant (1)	Minor (2)	Moderate (3)	Severe (4)	Catastrophic (5)
Rare/very unlikely (1)	Low	Low	Low	Low	Medium
Unlikely (2)	Low	Low	Medium	Medium	Medium
Possible (3)	Low	Medium	Medium	Medium	High
Likely (4)	Low	Medium	Medium	High	High
Almost certain (5)	Medium	Medium	High	High	High

The final risk assessment incorporating SWPP Team expertise and public feedback is presented in the following sections. Risks are divided into the following categories and subcategories:

- Natural Hazards
 - Earthquakes
 - Severe storms
 - Wildfire
 - Volcanic activity
- Residential
 - High density housing and landscaping
 - Domestic wells
- Municipal
 - Stormwater management
 - Schools
 - Water treatment/booster pump station
 - Unused municipal well
 - Wastewater treatment and sewer system
 - Vandalism and sabotage
 - Cybersecurity
- Commercial and Industrial
 - Industrial food processing
 - Wood processing
 - Utility stations
 - Waste management
 - Cemetery
 - Telecommunications infrastructure
 - Known contaminated sites
 - Chemical processing and storage
 - Nitrates
- Transportation
 - Transportation corridors
 - Auto repair shops
 - RV storage
 - Gas stations
 - Car washes
 - Truck or bus terminals
- Recreation
 - Parks and campgrounds
 - Boating access

Sections 2.2 through 2.7 present the results of the risk assessment, including descriptions of the identified risks and their associated ranking (high, medium, or low). Section 2.8 describes potential risks from surface water contamination. Section 2.9 describes the process for identifying and addressing new risks that may occur within the DWSA as a result of new activities or changes in intensity or spatial patterns of land uses.

2.2 Natural Hazards

2.2.1 Earthquakes

Likelihood	Impact	Overall Risk
2	4	Medium

The level of potential damage from an earthquake depends on its magnitude, timing, and location, as well as local soil characteristics. While the location and size of future earthquakes cannot be predicted with certainty, analyzing soil characteristics allows scientists to understand the likely behavior of soil during an earthquake. This is important because substantial damage during earthquakes can be caused by the behavior of the soil. Information available from the Oregon Department of Geology and Mineral Industries (DOGAMI) shows that the soils in the Boardman area generally have moderate liquefaction potential (i.e., soils that lose their strength in response to ground shaking). Liquefaction during an earthquake can cause building foundations to shift, sink, or tilt, and can damage underground infrastructure, such as pipelines and underground storage tanks. Earthquakes that damage electricity distribution infrastructure can cause power outages.

The 2016 Morrow County Natural Hazard Mitigation Plan (NHMP) notes that the region is susceptible to earthquakes caused by Cascadia Subduction Zone (CSZ) events, other intra-plate or shallow crustal events, or earthquakes associated with volcanic activity. DOGAMI mapping suggests that a CSZ earthquake could affect the region with moderate shaking, while an earthquake with a closer epicenter could cause very strong shaking with higher potential for structural damage. The Morrow County NHMP described the probability of a major earthquake occurring in the area as low but considered the potential impacts under a worst-case scenario to be relatively high. The City's Water System Emergency Response and Notification Plan (Emergency Plan) describes the potential for earthquake damage to water system components, including the collector wells, transmission and distribution pipelines, pump stations, onsite sodium hypochlorite generation system, utility buildings, and storage tanks. Roads and bridges could also be damaged, hindering staff access to water infrastructure, while damage to gates and fences could allow unauthorized access to infrastructure.

2.2.2 Severe Storms

Likelihood	Impact	Overall Risk
2	2	Low

Although storms typically have little immediate impact on groundwater, ice storms and windstorms can damage powerlines, resulting in loss of electricity. The City's Emergency Plan notes that a power outage could affect pumping, treatment, and system monitoring, while extreme cold could damage distribution pipelines. The City has diesel-powered generators at the booster pump station and Collector Well 3, and there is a portable generator that can be used for Collector Well 2. Intense rain, hail, and snow could create hazardous conditions for personnel to access water system infrastructure. Flooding is historically unlikely to occur in Boardman, but could potentially damage the collector wells or booster pump station if it did occur.

2.2.3 Wildfire

Likelihood	Impact	Overall Risk
2	2	Low

The Morrow County NHMP observes that the wildfire risk in the northern one-third of the county, where Boardman is located, is lower than in the rest of the county due to the presence of irrigated agriculture, which provides less fuel compared to forested areas and dryland farms, along with the presence of fire

protection districts that can respond quickly to fires. The Boardman Fire Rescue District serves Boardman and surrounding areas.

Fires could pose a safety risk for personnel and could damage fences and gates, the collector wells, the booster pump station, or the storage tanks. Intense wildfire can reduce soil permeability, leading to decreased infiltration and groundwater recharge. The effects of changes to soil properties on groundwater quality and contaminant transport are not yet well-studied. Post-fire stormwater runoff may contain fine sediment, ash, heavy metals, nutrients, and fire suppression chemicals. If developed areas are burned, stormwater may also include toxic substances released from buildings, vehicles, stored hazardous materials, and plastics. Precipitation following a wildfire could allow these substances to percolate down into the aquifer.

2.2.4 Volcanic Activity

Likelihood	Impact	Overall Risk
1	1	Low

While Boardman is outside the likely zone of direct impacts, eruption of a volcano (e.g., Mount Hood or others in the Cascade Range) could cause widespread airborne ash that could affect water quality of stormwater that will infiltrate into the aquifer, in addition to causing public health impacts, such as respiratory problems. According to the Morrow County NHMP, the probability of one centimeter or more of ash accumulation in Morrow County from a volcanic eruption in the Cascade Range is less than one in one thousand in any given year. Depending on the location of the volcanic activity, there may be impacts to regional transportation infrastructure that affect supply chains and City personnel.

2.3 Residential

2.3.1 High Density Housing and Landscaping

Likelihood	Impact	Overall Risk
4	2	Medium

Overuse or improper disposal of household chemicals and landscaping chemicals may lead to infiltration of stormwater runoff carrying contaminants to the aquifer. This may include household cleaning products, bleach, varnishes and stains, paint thinner, automotive products, lawn and garden care chemicals, and pet waste. Construction of new housing can alter groundwater infiltration patterns by increasing impermeable surfaces and through compaction of soil by heavy equipment during construction. Leaks from machinery during construction or spills of fertilizers used in establishing new landscaping could also reach the aquifer. There is more developable land in the 10-year capture zone and less in the 1-year capture zone, reducing the likelihood of new construction in close proximity to the collector wells, but there is already significant residential development in the DWSA.

2.3.2 Domestic Wells

Likelihood	Impact	Overall Risk
2	2	Low

Improperly constructed, poorly maintained, or abandoned wells can create vertical pathways for contaminants to reach groundwater. Wells that are not equipped with anti-backflow devices may allow contaminants to enter groundwater. No new wells are expected to be installed inside city limits, but there are some existing domestic and irrigation wells.

2.4 Municipal

2.4.1 Stormwater Management

Likelihood	Impact	Overall Risk
3	3	Medium

Stormwater runoff may contain gasoline, antifreeze, and a variety of other contaminants from residential, commercial, and industrial uses. Contaminants in stormwater flowing over permeable surfaces may infiltrate into the aquifer, although some pollutants may be filtered out in the soil before reaching groundwater. Shallow injection wells are used to manage surface water runoff from rainwater or snowmelt by directing it underground to prevent flooding and erosion. Stormwater drywells are a common type of injection well that capture surface water runoff on streets, parking lots, and other impermeable surfaces and slowly distribute the water underground through perforations in the sides of the drywell casing. Some drywell systems are designed to guide stormwater through a sedimentation chamber before entering the drywell, allowing sediment and contaminants to settle out before reaching groundwater. Stormwater injection wells may be managed by the City or commercial landowners and require water quality permits from DEQ. The 2026 SWA identified seven permitted stormwater discharge or stormwater management sites in the DWSA, including two that have been closed or have a formal closure under review. Two of these sites are managed by the City, and the remaining sites are for stormwater management on commercial properties. Available information indicates that the active sites meet state and federal permitting requirements.

2.4.2 Schools

Likelihood	Impact	Overall Risk
1	1	Low

Over-application or spills of cleaning products, pesticides, or fertilizers used on school grounds and landscaping may infiltrate into the aquifer. Vehicle parking and maintenance may also be a source of contaminants.

2.4.3 Water Treatment/Booster Pump Station

Likelihood	Impact	Overall Risk
1	1	Low

Water pumped from the collector wells is injected with sodium hypochlorite for disinfection before it enters the storage tanks from which it is pumped to the municipal water distribution system. The City uses an on-site sodium hypochlorite generation system located inside the booster pump station. Spills of treatment chemicals and equipment maintenance materials could impact the water source, but this risk is considered low because the system is located indoors (i.e., a spill would not be likely to reach bare ground outside to infiltrate into the aquifer).

2.4.4 Unused Municipal Well

Likelihood	Impact	Overall Risk
1*	1*	Medium*

*Risk is considered medium rather than low until the well is decommissioned in 2026.

In addition to the three collector wells that supply water to the municipal water system, the City has an additional groundwater supply well located near City Hall that is reserved for use under emergency conditions. The well can supply water to the municipal system but is not a preferred water source because it has a high hydrogen sulfide content. Constructed during the 1960s, this well is 585 feet deep and obtains

water from the Columbia River Basalt aquifer. (In contrast, the City's collector wells are only about 50 feet deep and obtain water through laterals extending out into the shallow alluvial sedimentary aquifer.)

Because improperly maintained or damaged wells can provide a direct conduit for contamination of groundwater, DEQ guidance documents indicate that production wells can pose a medium to high risk to groundwater systems. The City and SWPP Team initially scored the risk level of the unused municipal well as low (likelihood = 1 and impact = 1, as noted in the table above) because it is constructed in a different aquifer than the source for the City's collector wells, limiting the risk of cross-contamination, and the City plans to decommission the well in 2026. However, in the absence of information confirming the condition of the well casing and seal, the potential for commingling or movement of contaminants remains. In consultation with OHA and DEQ, the City and SWPP Team determined that the appropriate risk level for this well should be medium rather than low until the well is decommissioned.

2.4.5 Wastewater Treatment and Sewer System

Likelihood	Impact	Overall Risk
3	2	Medium

Municipal sewer lines and three lift stations are present in the DWSA. DEQ guidance indicates that improperly designed or maintained wastewater treatment facilities and sewer lines can lead to discharges of contaminants to groundwater that can impact drinking water, especially within the 1-year and 2-year capture zones. Releases from damaged sewer lines may include municipal wastewater and associated treatment chemicals, bacteria and other pathogens, organic matter, inorganic salts, and heavy metals. Some accidental releases from these facilities could be filtered out in transit before reaching the collector wells, but releases could also contain industrial or unknown contaminants that could impact groundwater.

2.4.6 Vandalism and Sabotage

Likelihood	Impact	Overall Risk
1	1	Low

Deliberate damage to water infrastructure could impact the ability to pump, treat, and deliver water. The City's Emergency Plan describes actions taken to protect the water system, such as installing gates and fences to protect infrastructure, securing chemical storage areas, using valves to isolate areas of the distribution system to prevent the spread of contamination, and instituting emergency procedures to respond to potential incidents.

2.4.7 Cybersecurity

Likelihood	Impact	Overall Risk
1	2	Low

Cyberattacks could disrupt water system operations and communications technology. Insufficient firewall protections or phishing attacks may lead to loss of monitoring control, false data reporting, or exposure of customer and water system information. The City's Supervisory Control and Data Acquisition (SCADA) system does not allow remote access, and the City follows cybersecurity best practices for water systems to reduce the likelihood of damage. The City also recently completed a cybersecurity plan approved by the US Environmental Protection Agency (EPA).

2.5 Commercial and Industrial

2.5.1 Industrial Food Processing

Likelihood	Impact	Overall Risk
3	3	Medium

Food processing is a major economic sector in the Boardman region, including processing of potatoes, onions, and dairy products for export. Spills or leaks of chemicals used in food processing or improper handling of industrial wastewater have the potential to impact groundwater quality. Food processing wastewater may contain nitrates, salts, phosphorus, chlorine, ammonia, and ethylene glycol, depending on the processes used.

2.5.2 Wood Processing

Likelihood	Impact	Overall Risk
2	3	Medium

Wood processing in the area includes production of wood chips and related products. In general, wood processing wastewater may contain metals, acids, solvents, sulfides, organic sludges, and other hazardous and nonhazardous chemicals. The chemical composition will vary depending on the treatment processes used. In addition, heavy equipment and storage tanks containing petroleum products and other substances may be present at these facilities. The presence of large quantities of woody materials may increase the risk of fire.

2.5.3 Utility Stations

Likelihood	Impact	Overall Risk
2	4	Medium

Electric utility substations and maintenance and transformer storage facilities are located in the DWSA. Spills or leaks of chemicals and other materials at these facilities could reach the aquifer and impact water quality. Potential contaminants include PCBs from transformers and capacitors, oils and solvents, and acid solution or metal plating solutions. Within utility rights-of-way and distribution powerline corridors, vegetation management activities may include the use of herbicide.

2.5.4 Waste Management

Likelihood	Impact	Overall Risk
1	1	Low

If water comes into contact with solid waste residues and percolates into groundwater, water quality could be affected by any contaminants or nutrients present in the wastes. Commercial waste management facilities in the DWSA include a barge unloading waste transfer facility, a recycling facility, and a composting facility. The waste transfer barge facility only handles sealed containerized waste. The potential risks posed by these facilities is considered relatively low based on the types of waste handled and compliance with permit conditions.

2.5.5 Cemetery

Likelihood	Impact	Overall Risk
1	1	Low

Cemeteries developed prior to 1945 can be sources of contaminants, including embalming fluids and decomposition by-products. One cemetery identified in the DWSA was established in the 1920s and is still in

operation. Excessive irrigation or pesticide and fertilizer use in highly maintained landscaped areas may cause transport of contaminants to groundwater.

2.5.6 Telecommunications Infrastructure

Likelihood	Impact	Overall Risk
2	2	Low

Spills or leaks of chemicals and other materials stored and used in maintenance or backup power supplies may impact groundwater quality. In the DWSA, there is one cell tower located in the 2-year capture zone and one cell tower in the 10-year capture zone. Information from the SWPP Team indicates that maintenance activities are more frequently observed at the cell tower in the 10-year capture zone. In addition to the cell towers, herbicides may be used for vegetation management in telecommunication utility rights-of-way.

2.5.7 Known Contaminated Sites

Rather than one overarching risk level for this category, individual sites were assigned risk levels based on information available from regulatory databases during development of the updated 2026 SWA. Exhibit 2-2 presents a list of known contaminated sites identified in the 2026 SWA based on capture zone location and risk level. Numbers in parentheses after the site indicate multiple sites of the same type in the capture zone.

Exhibit 2-2. Known Contaminated Sites

Site	Capture Zone	Risk Level
Decommissioned underground storage tanks (2)	1-year	Low
Underground storage tank – cleanup completed	1-year	Low
Underground storage tank – No Further Action	1-year	Low
Decommissioned underground storage tanks (2)	2-year	Low
Underground storage tank – Active (4)	5-year	Low
Decommissioned underground storage tanks (3)	5-year	Low
Underground storage tank – cleanup completed	5-year	Low
Underground storage tank – No Further Action	5-year	Low
Contaminated site in DEQ Cleanup Program	5-year	High
Underground storage related to sewer system	10-year	High
Underground storage tank – Active (2)	10-year	Low
Decommissioned underground storage tanks (3)	10-year	Low
Underground storage tank – No Further Action (4)	10-year	Low
Underground storage tank – cleanup completed (2)	10-year	Low
Contaminated site in DEQ Cleanup Program	10-year	High
Suspect site requiring further investigation	10-year	High

Known contaminated sites and leaking underground storage tanks may allow contaminants, such as petroleum products, to enter groundwater. DEQ's Cleanup and Leaking Underground Storage Tank programs designate a site as requiring "No Further Action" when cleanup activities have been completed and site investigations or DEQ review indicate that no additional remediation is needed to protect human health or the environment. Although the risk is considered low, some contaminants may still be present.

2.5.8 Chemical Processing and Storage

Similar to the known contaminated sites described above, individual chemical processing and storage sites identified in the 2026 SWA were assigned risk rankings rather than scoring one overall risk level for this

category. Products being processed and stored may include vector control pesticides, petroleum products, and other chemicals. Individual risk rankings were assigned based on information in regulatory databases. Exhibit 2-3 presents information about the chemical storage and processing sites identified, their locations in the DWSA, and their relative risk levels. Numbers in parentheses after the site indicate multiple sites of the same type in the capture zone with the same risk level.

Exhibit 2-3. Chemical Storage and Processing Sites

Site	Capture Zone	Risk Level
Chemical/petroleum processing or storage	1-year	Low
Aboveground storage tanks (2)	1-year	Medium
Vector control – chemical processing/storage	1-year	High
Vector control – pesticide storage/handling/mixing area (2)	1-year	High
Chemical/petroleum processing or storage	2-year	Low
Aboveground storage tanks	2-year	Medium
Chemical/petroleum processing or storage (3)	5-year	High
Aboveground storage tanks (2)	5-year	Medium
Chemical/petroleum processing or storage	10-year	Medium
Chemical/petroleum processing or storage (7)	10-year	High

Spills, leaks, or improper handling of chemicals and petroleum products during processing, storage, transportation, or disposal could impact water quality if contaminants reach the aquifer.

2.5.9 Nitrates

Likelihood	Impact	Overall Risk
2	3-4	Medium

The City's DWSA falls within the North Morrow area-wide groundwater contamination zone for nitrates as noted in the 2026 SWA. DEQ designated a large area in Morrow and Umatilla Counties as the LUBGWMA in 1990 because of high concentrations of nitrate in groundwater. Consumption of high levels of nitrate is harmful to human health, particularly for infants and during pregnancy. The federal EPA has set a maximum contaminant level (MCL) of nitrate at 10 milligrams per liter (mg/L). The Oregon Nitrate Reduction Plan for the LUBGWMA was adopted in 2024 and supersedes the first and second LUBGWMA Action Plans. The plan describes sources of nitrate in the area and outlines a series of nitrate reduction strategies to protect public health. The plan notes that the City holds a Water Pollution Control Facilities (WPCF) permit for wastewater operations, including its seasonal land application program, and that it will continue to comply with and renew its wastewater permits to ensure that all operations are conducted in a manner that is protective of groundwater. The City expects to renew its WPCF in January 2030.

The City samples its water supply for nitrate annually. The average concentration of nitrate in the samples since 2003 was 2.89 mg/L, with the highest recorded concentration during this timeframe being 7.5 mg/L in 2003. Since 2020, the average concentration was 4.17 mg/L. No clear trend is evident in the City's dataset, and the nitrate levels in the municipal water supply have never exceeded the MCL of 10 mg/L. The City will continue monitoring nitrate levels and reevaluate risk levels regularly as discussed in Section 2.9. Some dilution of nitrate in the raw water source may occur due to the hydraulic connection to surface water. While high nitrate concentrations in the City's water source are considered unlikely to occur, the impacts could be moderate to severe if nitrate levels above the MCL were detected. The City could potentially modify collector well operations if nitrate levels were higher in one area, although this has not yet been tested.

2.6 Transportation

2.6.1 Transportation Corridors

Likelihood	Impact	Overall Risk
3	3	Medium

Vehicle usage presents the risk of spills or leaks of petroleum products or hazardous materials being transported, along with road salt and its additives used during icy conditions. Automotive products and potential contaminants may include gasoline, antifreeze, motor oil, hydraulic brake fluid, degreasers, and tire wear chemicals, such as polycyclic aromatic hydrocarbons (PAHs), heavy metals, and 6PPD-quinone. Major transportation corridors include Interstate 84 and the Union Pacific Railroad. Herbicides may be used as part of right-of-way vegetation management, presenting an additional risk of potential contamination.

2.6.2 Auto Repair Shops

Likelihood	Impact	Overall Risk
2	4	Medium

Three automotive repair shops are located in the DWSA. Spills and leaks of automotive fluids, solvents, oils, paints, and repair materials may impact groundwater quality. Facilities may also include small underground storage tanks, vehicle lifts, and dry wells.

2.6.3 RV Storage

Likelihood	Impact	Overall Risk
1	3	Low

Two RV storage facilities are located in the 10-year groundwater capture zone. Gasoline and diesel fuel, along with other automotive wastes, may reach the aquifer if vehicles or items in storage are leaking.

2.6.4 Gas Stations

Likelihood	Impact	Overall Risk
4	4	High

Spills, leaks, and dripping gasoline, diesel fuel, and other automotive products may affect groundwater quality. Improper handling of fuels during transportation, transfer, and storage may lead to contamination.

2.6.5 Car Washes

Likelihood	Impact	Overall Risk
2	3	Medium

Improper management of vehicle wash water may result in soaps, oils, waxes, greases, detergents, and metals reaching the aquifer. Hand washing of vehicles is associated with lower risk.

2.6.6 Truck or Bus Terminals

Likelihood	Impact	Overall Risk
2	3	Medium

Spills or leaks of fuels, grease, waste oil, solvents, and other materials may present a risk of contamination in vehicle service, fueling, and parking areas. A school bus terminal is located at the Riverside Junior/Senior High School adjacent to an unpaved area where contaminants in stormwater could percolate down into the

aquifer. One truck terminal initially identified in the 2026 SWA has been relocated and new construction has occurred on the property. Legacy contaminants may be present in redeveloped areas.

2.7 Recreation

2.7.1 Parks and Campgrounds

Likelihood	Impact	Overall Risk
3	3	Medium

Recreational visits to parks and campgrounds present opportunities for contamination through leaks from vehicles and RVs. Improperly managed wastewater disposal from RVs may impact groundwater quality. The Boardman Marina RV Campground is connected to the City sewer system. Over-application of chemicals or excessive irrigation of landscaped areas may allow pesticides and fertilizers to enter the aquifer through runoff.

2.7.2 Boating Access

Likelihood	Impact	Overall Risk
2	3	Medium

Spills or leaks of boating-related contaminants at the marina could migrate through riverbed sediments and impact groundwater, although they are more likely to affect surface water. Potential contaminants include vessel sewage, fuels, solvents, varnishes, paints, antifreeze, and oil. Marina facilities currently include a launching area and a transient dock for emptying waste tanks. No boat maintenance or fueling facilities are present at the marina.

2.8 Potential Contaminants in Surface Water

As described in Section 1.2, the City's collector wells are in hydraulic connection with the Columbia River but primarily obtain groundwater from the alluvial aquifer, and therefore this SWPP primarily focuses on protection of the groundwater source while noting the potential for contamination of adjacent surface water. Although the wells are operated in a manner that maintains the classification of the source as groundwater, there is still a potential risk from contaminants in hydraulically connected surface water. Potential contaminants common in surface water but not groundwater include the parasites *Giardia* and *Cryptosporidium*. Other potential contaminant sources immediately upstream of Boardman include commercial and industrial properties that discharge to the Columbia River under a National Pollutant Discharge Elimination System (NPDES) permit but may unintentionally release contaminants above the allowable level specified in the NPDES permit, commercial and industrial facilities that do not hold NPDES permits but are located adjacent to the river where a spill could cause contamination, river-based recreational activities, and spills or leaks of substances associated with shipping, including fuel and substances being transported. The level of risk posed by each of these contaminant sources will vary based on the specific substance entering surface water, the volume released, and the distance from the City's collector wells. While the collector wells' laterals are located belowground and surface water contaminants would need to pass through riverbed sediments to reach the collector wells, the potential remains for certain soluble contaminants from surface water to migrate through the aquifer and reach the collector wells. For example, petroleum products (e.g., oil spills or leaking fuel from recreational boats) tend to float on the surface of the water, but the potential exists that some soluble fuel components could reach the collector wells.

2.9 Identifying and Addressing New Risks

The City will review the risks identified in the SWPP at least annually to determine whether to implement new strategies or seek new information about potential contaminant risks. DEQ reviews SWPPs approximately every 5 years for progress toward source water protection and considers renewing approval or certification of the plan at that time (the renewal type depends on whether the plan is for a surface water or groundwater source, respectively). When updating the SWPP, the City will consider whether any potential emerging risks to drinking water may be occurring in the DWSA and whether any changes to mitigation strategies are needed. Any updates to the SWA will also be incorporated into future plan updates and implementation.

SECTION 3: Strategies to Address Risks

3.1 Introduction to Strategies

The SWPP Team developed strategies to reduce or mitigate each of the risks identified in Section 2. Resources used to develop strategies include local knowledge and technical expertise from the SWPP Team, drinking water protection strategies developed and implemented successfully by other water providers, and guidance documents from state agencies, such as DEQ and OHA. Each risk may be addressed by multiple strategies, and each strategy may mitigate a variety of risks. The strategies are grouped into several categories:

- Municipal Activities
- Monitoring
- Community Engagement
- Pollution Prevention Programs
- Emergency Planning and Response

Exhibit 3-1 shows how each of the identified strategies addresses one or more risks in the DWSA. The remainder of Section 3 describes the strategies.

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Exhibit 3-1. Overview of Risks Addressed by Strategy

Risk Category	Specific Risks	Risk Level	Municipal Activities	Monitoring	Community Engagement	Pollution Prevention Programs	Emergency Planning and Response
Natural Hazards	Earthquakes	Medium		•			•
	Severe storms	Low		•			•
	Wildfire	Low	•	•	•		•
	Volcanic activity	Low		•			•
Residential	High density housing and landscaping	Medium	•		•		
	Domestic wells	Low			•		
Municipal	Stormwater management	Medium	•			•	
	Schools	Low				•	
	Water treatment/booster pump station	Low	•				
	Unused municipal well	Medium	•				
	Wastewater treatment and sewer system	Medium	•				
	Vandalism and sabotage	Low	•				•
	Cybersecurity	Low					•
Commercial and Industrial	Industrial food processing	Medium		•		•	
	Wood processing	Medium		•		•	
	Utility stations	Medium		•		•	
	Waste management	Low				•	
	Cemetery	Low				•	
	Telecommunications infrastructure	Low				•	
	Known contaminated sites	Low-High				•	
	Chemical processing and storage	Low-High				•	
	Nitrates	Medium		•		•	
Transportation	Transportation corridors	Medium				•	•
	Auto repair shops	Medium				•	
	RV storage	Low				•	
	Gas stations	High	•			•	
	Car washes	Medium				•	
	Truck or bus terminals	Medium				•	
Recreation	Parks and campgrounds	Medium		•	•		
	Boating access	Medium		•	•		

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3.2 Municipal Activities

3.2.1 Policies

The City can use internal and external policies to guide source water protection efforts. Throughout the implementation process, the City will set recurring quarterly meetings for staff to review the implementation plan and determine which activities or projects can be started next. City staff will also periodically review internal policies related to the water system, such as cybersecurity measures and procedures.

The City's Public Works Standards, including technical specifications and standard drawings, were revised in September 2025. The revised standards include methods to protect water quality and prevent stormwater pollution during construction, such as requiring the use of filters to prevent sediment from entering stormwater catch basins. Title 13 of the City's Code of Ordinances prohibits dumping of any pollutants into public sewers, and Title 8 prohibits dumping of trash and other substances on public or private property. Maintaining and enforcing these requirements will help prevent pollutants from entering the aquifer through stormwater.

The siting and design of facilities that pose a greater risk of contamination, such as those that use and store chemicals and hazardous substances, must be carefully considered to protect groundwater. When regulatory agencies are reviewing permits or programs that affect the siting, design, and construction of such facilities, the City will seek opportunities to communicate with the agencies and provide comments if proposals appear likely to impact the City's water source. The City may consider adopting zoning restrictions, special permitting and siting requirements, and/or performance standards for facility types or land uses with a particularly high risk to groundwater quality, such as gas stations and certain chemical processing or storage operations. Such restrictions would be especially important in the 1-year and 2-year capture zones. This could include prohibiting the development of new sites, limiting storage of toxic or hazardous materials, or requiring secondary containment measures for storage tanks.

Where applicable, the City intends to collaborate on regional projects and efforts related to addressing nitrate contamination of drinking water supplies in the LUBGWMA. For example, the City participates in the Morrow County Clean Water Consortium, which aims to increase access to safe drinking water in unincorporated portions of Morrow County. Through this collaboration, the City may explore options like extending its water distribution system to nearby areas where domestic well testing shows unsafe levels of nitrates for residents.

3.2.2 Infrastructure Management

In 2026, the City is undertaking updates of its 2016 Water Master Plan and its 2021 Wastewater Master Plan. During this process, the City will assess water and wastewater system infrastructure condition, needs for maintenance and repairs, and projects to include in its capital planning processes. This could include repairs, maintenance, and upgrades related to the collector wells, water treatment system, booster pump station, and water transmission and distribution pipelines. The City is planning to decommission and properly abandon its unused deep basalt well in 2026 and will conduct a well video survey to assess the condition of the well and confirm that it does not pose a risk of contamination to the aquifer accessed by the collector wells.

As part of the condition assessment of the wastewater system in 2026, the City is seeking to identify any portions of the sewer system experiencing infiltration and inflow (I&I). I&I occurs when groundwater enters the sewer through cracked sewer lines or damaged pipe joints, or when water enters from improper connections like cellar drains or sump pumps. Damaged infrastructure may also allow sewage to enter

groundwater. Areas to be repaired or needing preventive maintenance will be identified, and additional upgrades may be recommended.

The City will continue to assess potential threats from vandalism and will maintain security systems to protect critical infrastructure, such as fencing and security cameras. The updated Water Master Plan may also include recommendations related to disaster preparedness for the water system. Examples could include seismic retrofits and preparedness for wildfire, such as implementing recommendations from the Willamette Partnership's Oregon Wildfire Recovery Toolkit, which provides information about rebuilding water infrastructure following a wildfire.

The City will also continue its stormwater infrastructure planning, maintenance, and repairs to decrease the risks from polluted stormwater reaching the groundwater system. Street sweeping is generally conducted monthly, and the City will install messaging on storm drains to discourage dumping.

3.3 Monitoring

3.3.1 Water Quality Monitoring

Water quality monitoring activities help the City track current conditions and trends so that any potential degradation of groundwater can be detected and addressed promptly. Long-term water quality datasets will also help inform future updates of this SWPP and other water-related plans, including providing data related to regional efforts in the LUBGWMA. The City will continue to conduct routine water quality monitoring to comply with all state and federal requirements, including sampling for nitrates and emerging contaminants like per- and polyfluoroalkyl substances (PFAS). While nitrate samples to date have not exceeded regulatory limits, the City will proactively develop procedures outlining steps to be taken if high levels of nitrates are detected in the City's water source. The City's wastewater lagoons have a leak detection system that is tested annually, and groundwater monitoring wells are tested quarterly to ensure that wastewater treatment, storage, and disposal is not impacting groundwater. Groundwater monitoring wells are also tested quarterly at the recycled water land application site, which is outside the DWSA.

PFAS are a group of chemicals that do not break down in the environment and can cause adverse health effects in humans. The EPA required certain public water systems to test for six PFAS compounds between 2013 and 2015. The City tested for these contaminants in 2013 and did not report any detections. OHA conducted a water quality monitoring project for PFAS between 2021 and 2023 for public water systems considered at higher risk based on the locations of known contaminated sites. Boardman was not selected for this project and is not considered at high risk. As a result of new regulations, the EPA required sampling for 29 PFAS compounds between 2023 and 2025. Once again, the City conducted testing in 2025 and did not detect any of these contaminants in its water supply. The City will continue to track and comply with new regulations related to monitoring for PFAS.

In addition to its own water quality monitoring activities, the City can use regulatory databases to track compliance with wastewater and stormwater management permits for industrial food processors, wood processors, and utility stations in the DWSA. Having this data readily available will allow the City to assess whether any reported violations or compliance issues may have impacts on groundwater that need to be addressed. The City will explore approaches for monitoring recreation impacts at parks, campgrounds, and boating access areas that could affect water quality. The City will also develop plans to conduct post-disaster water quality monitoring if needed following an earthquake, severe storm, wildfire, or volcanic activity in the region.

3.4 Community Engagement

3.4.1 Household and Recreation

To promote awareness of the City's water source, DWSA, and source water protection activities, the City will engage the community through public education and outreach. Education will focus on practical ways to protect water quality, such as fire-wise landscaping or household chemical management methods to prevent contamination of groundwater, along with outreach at parks and campgrounds about best practices for recreation in the DWSA to protect water quality. Outreach may include a combination of City-specific materials about the SWPP and promotion of existing materials, such as those developed by the Oregon Environmental Council or agencies participating in the LUBGWMA nitrate reduction efforts.

Proper disposal of household hazardous waste protects water quality by preventing dumping of chemicals, paint, pesticides, and other hazardous materials. Outreach materials may include information about local disposal facilities for hazardous waste from households and recreational visitors, including tire recycling and disposal of products related to boating. The City will promote Morrow County's annual hazardous waste collection events.

Although no new domestic wells are expected be installed within city limits, OWRD's online well database shows that some older domestic or irrigation wells may still exist in the DWSA. Many of these records are poorly mapped, and wells may or may not still be present or have been properly abandoned to prevent contamination of groundwater. As a first step, the City will conduct a survey to locate any domestic wells within city limits, focusing primarily on the DWSA. If wells are located, the City will verify that cross-connection prevention measures are in place and will share information about the City's backflow prevention device program and OWRD's technical assistance resources on backflow prevention. The City will also promote existing materials on domestic well education and technical assistance for well testing. To reduce risks related to domestic wells, the City will encourage residents to properly abandon unused wells and will share information about funding sources to support this.

3.5 Pollution Prevention Programs

3.5.1 Vehicle Contamination Prevention

Pollutants related to vehicle usage, fueling, and maintenance are a significant concern for groundwater quality. The City will support pollution prevention related to vehicles through outreach to auto repair shops, RV storage facilities, gas stations, car washes, and bus terminal operators. Outreach will use existing materials on best management practices for handling and disposal of automotive waste products, hazardous materials, and car wash wastewater, along with information about spill containment and cleanup requirements and stormwater management best practices. The City will promote hazardous waste collection events geared toward businesses as well as DEQ's EcoBiz certification and free technical assistance available to auto body shops and other businesses that employ pollution prevention practices. DEQ previously maintained the Leaking Underground Storage Tank database, which was migrated into the "Your DEQ Online" database in 2024. Through Your DEQ Online, the City can periodically check for additions of any local gas stations or other storage tank operator to the list and take action as needed. The City will also seek to track compliance with other permitting requirements, such as leak detection inspections or automatic shutoffs on gasoline pumps permitted by Oregon Weights and Measures. When communicating with entities maintaining transportation rights-of-way (e.g., Morrow County, the Oregon Department of Transportation (ODOT), or Union Pacific Railroad), the City will encourage alternatives to the use of herbicide for vegetation management within the DWSA. The City will also conduct spill response planning and coordination with

partners (e.g., Morrow County, ODOT, Union Pacific Railway, and local first responders) and pursue funding to support spill response planning efforts.

3.5.2 Commercial and Industrial Contamination Prevention

Pollution prevention activities related to commercial and industrial operations in the DWSA will promote safe usage and disposal of chemicals to avoid contamination of groundwater. Similar to vehicle contamination prevention, these activities will use existing outreach materials to encourage best practices for handling, use, storage, and disposal of chemicals; regular maintenance of facilities to prevent contamination; and spill and leak prevention, containment, and cleanup. Sectors targeted will include food processing, wood processing, utility stations, telecommunications, waste management, vector control, and holders of permits for aboveground and underground storage tanks. Where possible, the City will share information about training programs and other resources for compliance. The City will maintain communications with DEQ Regional Office, Environmental Cleanup, and Tanks Program staff to understand local conditions and request notice of pending actions related to known contaminated sites, underground and aboveground storage tanks, and chemical processing and storage facilities. Where commercial or industrial sites have been abandoned but still present a risk of contamination, the City will prioritize sites to be cleaned up and will support these activities through advocacy or letters of support for funding applications by entities qualified to remediate the sites.

Herbicides, fertilizers, and other landscaping chemicals used around commercial and industrial sites can also present a risk to water quality if they are over-applied or spilled during usage or transport. The City will communicate with property owners that are more likely to use landscaping chemicals over large areas, such as the cemetery and telecommunications companies that maintain large rights-of-way. Communications may encourage reductions in chemical use or implementation of alternative weed control methods where possible, while promoting safe use of chemicals in compliance with applicable regulations if the land manager chooses to use landscaping chemicals.

3.5.3 Other Pollution Prevention

Landscaping and other chemical usage outside of commercial and industrial settings may also affect groundwater quality. Over-application or spills of chemicals, such as pesticides, can allow contaminants to reach groundwater. School districts in Oregon are required to adopt Integrated Pest Management (IPM) plans that protect health and safety while giving preference to non-chemical pest control measures. The City will coordinate with local school IPM programs to make them aware of their location in the DWSA and to promote implementation of IPM in the management of athletic fields. Information will also be shared with janitorial staff at schools to encourage the use of less toxic or non-toxic alternatives where possible.

The Boardman Marina, managed by the Boardman Park and Recreation District, includes a boat launch, dock access, and a fish cleaning station. There are currently no maintenance or fueling facilities, limiting the risk of contamination. The City will maintain communications with the Boardman Marina manager to understand potential future plans that could affect the City's water source.

3.6 Emergency Planning and Response

3.6.1 Emergency Planning and Response Activities

Emergency planning and response strategies integrate source water protection into City and regional plans and help improve the City water system's resilience to natural hazards and human-related emergency events. Emergency planning includes securing water system infrastructure, maintaining access during emergencies, periodically reviewing cybersecurity measures, and identifying backup power sources to

ensure the continued smooth operation of the water system during emergencies. The City completed its Emergency Plan in 2024. The Emergency Plan forms the basis for the City's response to emergency conditions and is further described in Section 5 of this SWPP, which outlines a contingency plan for the City in the event that water supply is disrupted. In addition to the Emergency Plan, the amended Safe Drinking Water Act requires Risk and Resilience Assessments for water systems to be certified by the US Environmental Protection Agency (EPA) and updated every 5 years, with the system's next deadline on December 31, 2026.

Tabletop and field exercises are a valuable way to test emergency response plans and complement training for personnel. The City will explore options for conducting emergency scenario drills, such as a high hazard railway spill or a spill that contaminates the Columbia River. To build relationships and make spill response scenario drills more realistic, the City may plan joint exercises with Morrow County, ODOT, Union Pacific Railway, and/or local first responders. The City will update emergency plans with lessons learned after drills or actual emergencies occur.

The Morrow County NHMP was completed in 2016, and the City will coordinate with Morrow County on future updates to ensure that they adequately address risks in the DWSA. As needed, the City will support post-disaster source water protection projects following an earthquake, wildfire, or volcanic activity.

The City will pursue funding to support ongoing emergency planning and preparedness.

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SECTION 4: Implementation Plan

Section 4 of this SWPP describes the activities to be implemented as part of each of the strategies outlined in Section 3 to reduce, eliminate, or mitigate the risks identified in Section 2. This implementation plan was developed with guidance from the City and the SWPP Team along with public input, and the City plans to continue engaging the SWPP Team and building partnerships during implementation. Implementation of the strategies will depend on the availability of funding and City resources, and Section 4.5 provides a non-exhaustive list of potential funding sources related to source water protection. The City will review the implementation plan annually to track progress and determine if new actions are needed to address any changes in risk levels or conditions in the DWSA.

4.1 Overview of Timeline and Partnerships

The implementation plan is organized into three phases based on the priority of risks addressed and needs for additional funding or resources. Activities included in Phase 1 address high-priority risks and/or can be implemented relatively quickly, such as data collection and integration with existing regional plans and activities. Phase 1 activities are anticipated to take place within Years 1-2 following approval of the SWPP. Phase 2 includes activities that will likely require additional preparation, such as developing partnerships and securing funding. These activities are expected to occur during Years 2-4 after plan approval, depending on resources available. Activities requiring longer planning timeframes or funding, and actions addressing lower-priority risks, are included in Phase 3 and are expected to take place during Year 5 onward. Actions that would be triggered by a specific event rather than a planned timeframe, such as monitoring activities after a natural hazard event, are listed in Phase 3 but will occur as needed.

The City is the responsible management authority for implementation of the SWPP, but partnerships will be important for implementing many of the strategies in the plan. To track implementation progress and plan next steps, the City will input activities from the implementation plan into its work order assessment computer program. Staff will use the program to document accomplishments and schedule activities.

Exhibit 4-1 presents an overview of the implementation plan by phase, and potential partner organizations are noted in the table. The following sections describe each activity in more detail.

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Exhibit 4-1. Implementation Plan Overview

Strategy Category	Phase 1	Phase 2	Phase 3	Potential Partners (lead/supporting)
Municipal Activities				
Policies	- Set a quarterly reminder and meetings to check the implementation plan and determine which activities can be implemented next - Continue requiring compliance with Public Works standard for stormwater to protect water quality during new construction - Explore a zoning restriction for the 1- and 2-year capture zones for gas stations and other potentially hazardous land uses	- Review structure and enforcement of anti-dumping codes - Consider special permitting and siting requirements or performance standards for petroleum or chemical storage	Collaborate on projects related to LUBGWMA efforts	
Infrastructure Management	- Continue implementation of drinking water system infrastructure maintenance, repair, and implementation of the Capital Improvement Plan associated with the City's Water Master Plan - Decommission the City's unused municipal well; video the well to confirm the condition - Continue implementation of wastewater treatment and sewer system planning, maintenance, and repairs; review the Wastewater System Master Plan and associated Capital Improvement Plan to identify maintenance or upgrades of sewer lines within the 1-year and 2-year capture zones; identify infrastructure that has areas with inflow and infiltration - Continue implementation of stormwater infrastructure annual maintenance and repairs - Conduct regular street sweeping - Continue to maintain existing security systems that protect critical infrastructure - Continue to periodically review cybersecurity measures and update as needed	Continue implementing drinking water system and stormwater system upgrades as funding becomes available	- Install messaging to discourage dumping into the stormwater system - Install new security systems to protect critical infrastructure as needed	OHA, OAWU, OSU

Strategy Category	Phase 1	Phase 2	Phase 3	Potential Partners (lead/supporting)
Monitoring				
Water Quality Monitoring	- Continue routine water quality monitoring currently conducted by the City, including PFAS sampling - Continue monitoring nitrate levels, and develop procedures for an event when nitrate limit levels are exceeded - Develop plans to conduct post-event monitoring after wildfire, storms, earthquakes, and volcanic activity	- Monitor industrial food processing, wood processing, and utility station compliance with wastewater and stormwater management requirements - Develop and implement an approach for monitoring recreation impacts	- Maintain long-term water quality datasets to inform future SWPP and other plan updates, and for regional information related to LUBGWMA efforts - As needed, implement post-disaster water quality monitoring	DEQ, OHA
Community Engagement				
Household and Recreation	- Conduct outreach about the City’s source water area and source water protection measures, including household and landscaping chemical management and practices - Share information about local disposal facilities, annual county hazardous waste collection events, and tire recycling at the landfill - Conduct outreach at parks and campgrounds about source water protection practices - Conduct outreach at boating access locations about boating recreation best practices, local disposal facilities for unused chemicals and chemical containers, and about the City’s source water area - Conduct a survey to locate domestic wells in City limits or to confirm there are none, and verify cross connection prevention	- Conduct outreach about domestic well management and technical assistance, particularly well testing and proper well abandonment - Encourage abandoning unused wells and explore associated funding opportunities - Provide information on the City’s backflow device program and OWRD’s technical assistance resources for backflow prevention - Promote fire-wise landscaping and other practices	Promote OEC resources about urban household practices to protect water quality and prevent pollution, when available	Morrow County, DEQ, OHA, and OSU Extension, Parks and Rec Department, OEC, waste facility (hazardous material collection)
Pollution Prevention Programs				
Vehicle Contamination Prevention	- Conduct outreach to gas stations about best management practices for hazardous waste and resources, adequate spill containment and cleanup procedures, and regulatory compliance - Conduct outreach to auto repair shops and carwashes about best management practices for wastes and resources, including EcoBiz certification and resources	- Regularly review DEQ’s Leaking Underground Storage Tank database in Your DEQ Online to check for additions of any local gas stations - Confirm compliance with other permitting requirements, such as automatic shutoff of pumps and leak detection inspections	Conduct outreach to RV storage facilities about best management practices for wastes	Morrow County, DEQ, OHA, ODOT, ODA Weights & Measures, OR State Fire Marshall (aboveground storage tanks)

Strategy Category	Phase 1	Phase 2	Phase 3	Potential Partners (lead/supporting)
	- Conduct outreach to truck or bus terminal operators about stormwater best management practices - Conduct outreach about herbicide use and right-of-way maintenance in transportation corridors			
Commercial and Industrial Contamination Prevention	- Conduct outreach about regular maintenance and wastewater management requirements to industrial food processors, wood processors, and utility stations - Conduct outreach to chemical processing and storage facilities (including those for vector control) about proper installation, storage, handling, use, maintenance, inventory control, and disposal, as well as spill prevention and containment - Conduct outreach to companies with aboveground storage tanks about proper installation, maintenance, leak testing, inventory control; permit compliance; leak backup containment; and removal of abandoned tanks and filling with inert material - Request notification from the Oregon State Fire Marshal about spills or other actions related to aboveground storage tanks - Communicate with the DEQ Regional Office, Environmental Cleanup, and Tanks Program staff about known contaminated sites (including USTs) and chemical/petroleum processing and storage (including above ground storage tanks), and request notice of pending actions and other relevant information - Identify and prioritize abandoned commercial and industrial sites to clean up - Collaborate on regional projects related to LUBGWMA efforts and Morrow County Clean Water Consortium	Support cleanup of abandoned commercial and industrial sites	- Conduct outreach to managers of lower-risk commercial and industrial sites, including known contaminated sites and chemical processing and storage sites assessed as low risk - Conduct outreach to waste managers about proper design, installation, and maintenance of transfer facilities; adequate spill containment and cleanup procedures; regulatory compliance; and training programs - Conduct outreach to the cemetery owner about source water protection measures related to landscaping and other onsite activities - Conduct outreach to companies managing cell towers and telecommunication infrastructure about infrastructure maintenance and herbicide management	DEQ, State Fire Marshal, OHA
Other Pollution Prevention	Coordinate with School Integrated Pest Management programs in the source area, including providing OSU materials on implementing IPM in management of athletic fields	Continue to communicate with school IPM coordinators	Communicate with the Boardman Marina about the potential for a fueling station	

Strategy Category	Phase 1	Phase 2	Phase 3	Potential Partners (lead/supporting)
		Communicate with janitorial and landscaping staff about chemical usage		
Emergency Planning and Response				
Emergency Planning and Response Activities	- Coordinate with partners about emergency response planning - Identify and pursue funding opportunities for emergency planning/preparedness - Conduct spill response planning and coordination with partners and pursue associated funding opportunities	Conduct tabletop or field exercises for emergency scenarios	- Maintain ongoing training and update emergency plans after emergencies as needed - Update the City’s emergency response plan and RRA for identified risks as appropriate, including consideration of infrastructure access and backup power sources - Participate in the next Morrow County Natural Hazards Mitigation Plan update - Support post-emergency event source water protection projects as needed	Morrow County Emergency Management, ODOT, DEQ, OEM (GIS tools and coordination of state agency response), Union Pacific Railway, local first responders, Coast Guard, Oregon Health Authority Drinking Water Services, NOAA

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4.2 Phase 1

4.2.1 Municipal Activities

4.2.1.1 Policies

Beginning in Phase 1 and continuing throughout the implementation period, the City will set reminders to hold quarterly meetings with staff to review the status of implementation activities and determine which activities to prioritize during the next quarter.

The City will continue to require compliance with all Public Works standards, including stormwater management requirements to protect water quality during construction and prevent pollutants from entering groundwater.

During Phase 1, the City will explore adopting a zoning restriction in the 1-year and 2-year capture zones that would prohibit new construction of gas stations and other potentially hazardous land uses. The restriction would not affect existing facilities but would prevent additional future development that would pose a particularly high risk to groundwater.

4.2.1.2 Infrastructure Management

Infrastructure management activities will focus on continued implementation of the City's routine maintenance, scheduled repairs, and capital improvement plans related to its water, wastewater, and stormwater infrastructure. The City is currently updating its Water Master Plan and its Wastewater Master Plan, and it will begin implementing prioritized projects when plans are finalized. Prior to decommissioning the unused municipal well in 2026, the City will conduct a well video survey to evaluate the well's condition and confirm that there is no risk of contamination of the drinking water source aquifer.

Maintenance, repairs, and upgrades of the wastewater treatment and sewer system will prioritize sewer lines within the 1-year and 2-year capture zones to reduce the risk of pollution of groundwater with pathogens and other contaminants. For example, the 2023 SWA recommended double sleeve installation on sewer lines in the 1-year and 2-year capture zones to provide an extra barrier around the pipeline and reduce the risk of leakage.

Annual maintenance and repairs of stormwater infrastructure will continue. The City will continue to conduct street sweeping on an approximately monthly basis depending on weather conditions. This will help remove contaminants from road surfaces before they enter storm drains and potentially infiltrate into groundwater.

The City has security and cybersecurity measures in place to protect critical infrastructure and computer systems supporting the water system. These measures will be maintained and periodically reviewed and updated to ensure system security.

4.2.2 Monitoring

4.2.2.1 Water Quality Monitoring

The City conducts routine water quality monitoring, and data reported to OHA is available on OHA's Drinking Water Data Online website (<https://yourwater.oregon.gov/inventory.php?pwsno=00130>) and shared with the community through the City's annual Consumer Confidence Reports (<https://www.cityofboardman.com/public-works/page/consumer-confidence-reports-water-quality>). As part of its routine monitoring, the City tests nitrate levels annually and has not exceeded the MCL of 10 mg/L.

The City will continue to conduct annual monitoring and will develop procedures for addressing a potential nitrate exceedance. The City will also continue to track changing regulations related to monitoring for PFAS and will follow all testing requirements.

Wildfire, earthquakes, volcanic activity, and severe storms have the potential to affect groundwater by releasing contaminants or allowing them to enter the aquifer through ground movement or flooding. During Phase 1, the City will develop plans for post-disaster water quality monitoring that can be implemented when an event occurs.

4.2.3 Community Engagement

4.2.3.1 Household and Recreation

During Phase 1, the City will work to raise awareness about the DWSA and source water protection measures among community members and recreational visitors to the area. Outreach activities will build on the public engagement that the City conducted during development of the SWPP. A variety of outreach materials already exist online and in print about how residents can support source water protection through more conscientious use and disposal of household chemicals like cleaning products, as well as chemicals used to maintain lawns, gardens, and landscaping. The City will distribute materials to residents and will share information about local disposal facilities and annual hazardous waste collection events. Morrow County Solid Waste Management's North Transfer Station in Boardman accepts paint (5-gallon containers and smaller), tires, electronic waste, and bulky items like appliances and mattresses year-round.

The City will conduct outreach at parks and campgrounds to promote best practices for recreation that protect source water quality, such as properly disposing of trash and picking up after pets. At boating access locations, outreach will include messaging about best practices for boat maintenance and operation to prevent releases of solvents, paints, fuel and other petroleum products, cleaning products, and other contaminants. This may include encouraging the selection of non-toxic cleaning products, maintaining boats away from the water, and properly disposing of unused chemicals and chemical containers.

During Phase 1, the City will conduct a survey to identify any domestic wells in the DWSA and determine whether or not they are still in use. If wells are in use, the City will verify that cross-connection prevention measures are in place. If wells are no longer being used, the City will provide information about contamination prevention and well abandonment procedures.

4.2.4 Pollution Prevention Programs

4.2.4.1 Vehicle Contamination Prevention

The City will address the potential for contamination from vehicle-related businesses through outreach and education. The risk assessment for this SWPP assigned a "high" risk score to gas stations, and the City will prioritize conducting outreach to gas station operators during Phase 1. Outreach will focus on best practices for managing hazardous waste and petroleum products, ensuring adequate spill containment and cleanup procedures are in place, and regulatory compliance. Similar outreach about best practices for waste management will be conducted to auto repair shops and car washes in the DWSA. The City will encourage businesses to learn more about the EcoBiz program and apply for certification, as well as promoting existing EcoBiz resources for pollution prevention at automotive businesses

(<https://www.ecobiz.org/learning/categories/automotive>). When hazardous waste collection events geared toward businesses are scheduled, the City will share this information with businesses in the DWSA and will promote them on its website.

Contaminants from vehicles and from herbicide use in right-of-way maintenance may reach the aquifer through contaminated stormwater. The City will conduct outreach about stormwater best management practices to the operators of the school bus terminal at Riverside Junior/Senior High School and to Morrow County Public Transit, which operates a bus route that crosses the DWSA. The City will also conduct outreach about chemical use in right-of-way maintenance to Morrow County, ODOT, and Union Pacific Railway.

4.2.4.2 Commercial and Industrial Contamination Prevention

Outreach and education are essential ways to reduce the contamination risks posed by various commercial and industrial practices. During Phase 1, the City will begin conducting outreach about regular maintenance and wastewater management requirements to industrial food processors, wood processors, and utility stations in the DWSA. For chemical processing and storage facilities identified in the 2026 SWA, including those that store chemicals for vector control, the City will conduct outreach about proper installation of storage containers, handling and use of chemicals, maintenance of facilities, inventory control, disposal of unused or expired chemicals, and spill prevention and containment procedures.

Several facilities with aboveground storage tanks have been identified in the 2026 SWA. During Phase 1, the City will seek to compile information about these sites, including facility conditions, whether they dispense from above or below ground, whether secondary containment is in place, and whether Spill Prevention, Control, and Countermeasure (SPCC) plans have been approved. The City will conduct outreach to property owners with permitted aboveground storage tanks in the DWSA about proper installation and maintenance of storage containers, inventory control, permit compliance, leak testing and backup containment, and removal of abandoned tanks and filling with inert material. Spills most often occur during refilling of tanks, and the City will encourage compliance with best management practices and SPCC requirements, such as routine visual inspections of equipment and tank integrity testing for larger storage tanks. The City will request notification from the Oregon State Fire Marshal about spills or other actions related to aboveground storage tanks. The City will also communicate with DEQ Regional Office, Environmental Cleanup, and Tanks Program staff to request notice of pending actions and other relevant information related to aboveground and underground storage tanks, known contaminated sites, and chemical and petroleum processing and storage facilities.

Certain commercial and industrial sites may no longer be in operation but may still present a risk of contamination to groundwater because of previous activities or substances stored onsite. During Phase 1, the City will seek to identify and prioritize abandoned commercial and industrial sites that need to be cleaned up to protect groundwater. Where possible, the City will reach out to owners and regulatory agencies to understand cleanup plans.

The City will continue to collaborate on regional projects related to nitrate reduction efforts in the LUBGWMA, such as participating in the Morrow County Clean Water Consortium.

4.2.4.3 Other Pollution Prevention

The City will coordinate with local school IPM programs in the DWSA to learn about their policies and promote IPM in the management of athletic fields and other school facilities.

4.2.5 Emergency Planning and Response

4.2.5.1 Emergency Planning and Response Activities

During Phase 1, the City will coordinate with partners about emergency response planning and preparedness, including opportunities for joint planning and training activities. This may include seeking funding opportunities to conduct spill response planning and training with Morrow County, ODOT, Union

Pacific Railway, and local first responders. The City may also pursue funding opportunities for other emergency planning and preparedness activities recommended in its 2024 Emergency Plan.

4.3 Phase 2

4.3.1 Municipal Activities

4.3.1.1 Policies

The City's anti-dumping ordinances are codified in Titles 8 and 13 of the City Code. These regulations prohibit dumping of trash and pollutants on public and private property and into the public sewer system. During Phase 2, the City will review the structure of these regulations and the related enforcement procedures to determine if any changes are needed to better protect groundwater.

Building on the consideration of zoning restrictions for hazardous land uses described in Phase 1, during Phase 2 the City will consider adopting special permitting and siting requirements or performance standards for petroleum or chemical storage facilities in the DWSA. This may include limitations on the storage of toxic or hazardous materials, or requiring secondary containment for petroleum or chemical storage.

4.3.1.2 Infrastructure Management

During Phase 2, the City will continue implementing drinking water system and stormwater system upgrades as funding becomes available.

4.3.2 Monitoring

4.3.2.1 Water Quality Monitoring

During Phase 2, the City will periodically review regulatory databases like Your DEQ Online (<https://www.oregon.gov/deq/permits/pages/your-deq-online.aspx>) to track compliance with wastewater and stormwater management permits for industrial food processors, wood processors, and utility stations in the DWSA. If violations or other compliance issues are reported, the City will consider whether any actions need to be taken to protect water quality. The City will also develop and implement an approach for monitoring recreation impacts at parks, campgrounds, and boating access areas that could affect water quality.

4.3.3 Community Engagement

4.3.3.1 Household and Recreation

Having identified domestic wells in the DWSA during Phase 1, the City will continue to work with well owners to ensure that wells do not become conduits for contaminating the aquifer. If wells are still in use, the City will share information with the residents about its backflow device program, domestic well testing, and technical assistance resources from OWRD for domestic well maintenance and backflow prevention. The City will continue to encourage proper abandonment of unused domestic wells and will share information about funding opportunities.

During Phase 2, the City will promote fire-wise landscaping and other practices to reduce the risk of ignition and spread of wildfires in the DWSA.

4.3.4 Pollution Prevention Programs

4.3.4.1 Vehicle Contamination Prevention

The City will regularly review the Leaking Underground Storage Tank database in Your DEQ Online to check for the addition of any gas stations in the DWSA. The City will also seek to confirm compliance with other permitting requirements, such as leak detection inspections and the automatic shutoff mechanisms on gasoline pumps under the jurisdiction of the Weights and Measures program of the Oregon Department of Agriculture.

4.3.4.2 Commercial and Industrial Contamination Prevention

During Phase 2, the City will support cleanup of abandoned commercial and industrial sites identified during Phase 1. This may take the form of advocacy, communications with landowners, or providing letters of support for funding applications by entities qualified to remediate the sites.

4.3.4.3 Other Pollution Prevention

The City will continue to communicate with school IPM coordinators and will communicate with school janitorial and landscaping staff about the potential for reducing chemical usage or choosing non-toxic products for cleaning and maintenance.

4.3.5 Emergency Planning and Response

4.3.5.1 Emergency Planning and Response Activities

Having coordinated with partners and pursued funding during Phase 1, the City will seek to conduct tabletop or field exercises for emergency scenarios during Phase 2. Conducting drills for worst case scenarios helps train staff and ensure that emergency response is carried out promptly and efficiently when needed. Examples of emergency scenario drills may include high hazard rail (i.e., oil or hazardous material spilled from a train in the DWSA) or spills into the Columbia River.

4.4 Phase 3

4.4.1 Municipal Activities

4.4.1.1 Policies

During Phase 3, the City will continue to collaborate on regional projects related to the LUBGWMA nitrate reduction efforts.

4.4.1.2 Infrastructure Management

To reduce the risk of pollution entering the aquifer through stormwater, the City will install messaging around storm drains to discourage dumping into the stormwater system.

As needed following evaluation of water system security and cybersecurity, the City will install or upgrade security systems to protect critical infrastructure. Existing security systems will be maintained.

4.4.2 Monitoring

4.4.2.1 Water Quality Monitoring

As the City continues to conduct water quality monitoring, including routine sampling and special requirements for contaminants like nitrates and PFAS, the City will maintain long-term water quality datasets. This information can be used during future updates of this SWPP and other City plans, as well as providing regional information to support the LUBGWMA efforts.

As needed, the City will implement the post-disaster water quality monitoring plans developed during Phase 1.

4.4.3 Community Engagement

4.4.3.1 Household and Recreation

The Oregon Environmental Council is developing print and online resources about urban household practices to protect water quality and prevent pollution. When these materials become available, the City will review them for incorporation into its ongoing community engagement activities around source water protection.

4.4.4 Pollution Prevention Programs

4.4.4.1 Vehicle Contamination Prevention

During Phase 3, the City will expand its vehicle contamination prevention outreach about best management practices for automotive waste to RV storage facilities.

4.4.4.2 Commercial and Industrial Contamination Prevention

During Phase 3, the City will conduct outreach to lower-risk commercial and industrial sites, waste processing facilities, the cemetery, and telecommunication infrastructure managers. Lower-risk commercial and industrial sites include the known contaminated sites and chemical processing and storage sites designated “Low” risk in the tables in Sections 2.5.7 and 2.5.8 of this SWPP. Outreach to managers of waste processing facilities (i.e., barge waste transfer station, composting facility, and recycling facilities) will include information about proper design, installation, and maintenance of transfer facilities; adequate spill containment and cleanup procedures; regulatory compliance; and training programs that may be available. The City will communicate with the cemetery owner about their location in the DWSA and recommended source water protection measures related to landscaping and other onsite activities. The City will conduct outreach to companies managing cell towers and telecommunication infrastructure about facility maintenance and herbicide management in rights-of-way to protect water quality, such as following label instructions and employing certified applicators where required. The City will promote reduction of herbicide use and potential alternative methods for vegetation management where appropriate.

4.4.4.3 Other Pollution Prevention

The City will continue to communicate the Boardman Park and Recreation District to understand future plans for any changes to the Boardman Marina that could increase the potential for contaminant releases, such as installation of a fueling station for boats.

4.4.5 Emergency Planning and Response

4.4.5.1 Emergency Planning and Response Activities

The City will continue to provide emergency response training to staff and will update its plans and training procedures with lessons learned from emergencies as needed. When the City next updates its Water System Emergency Response and Notification Plan (Emergency Plan) and its Risk and Resilience Assessment, it will consider information about identified risks in the 2026 SWA and this SWPP. The Emergency Plan will be kept up to date with plans to maintain access to infrastructure during and after emergencies, as well as any new backup power sources that are planned or installed. The City will also participate in regional efforts, such as the next update of the Morrow County NHMP. As needed after natural disasters or other emergency events occur, the City will support source water protection projects to address impacts to groundwater or the water system.

4.5 Potential Funding Sources

The following is a list of potential funding sources that are aligned with the City's priorities for implementing this SWPP. The City may consider applying for specific opportunities or sharing information about these funding sources with partner organizations. Funding sources are subject to change and should be revisited regularly. DEQ hosts a webpage with information on funding for water systems:

<https://www.oregon.gov/deq/wq/programs/Pages/DWP-Funding.aspx>.

Drinking Water Source Protection Fund, Oregon Health Authority

- Provides grants of up to \$70,000; grants can be received in two consecutive years, then there must be at least one year before another grant is awarded
- Provides loans up to \$100,000 per project
- Funding must be used within two years
- Emergency grants may be available to address threats to drinking water supplies outside of the standard Letter of Interest submission timeline
- Letters of Interest can be submitted from January through March
- Example projects: land acquisition, incentive-based protection measures, community outreach, riparian restoration, waste collection, and watershed planning
- <http://www.oregon.gov/oha/ph/healthyenvironments/drinkingwater/srf/pages/spf.aspx>

Clean Water State Revolving Fund, Oregon DEQ and US EPA

- Provides below-market rate loans for planning, design, and construction projects that protect public health, restore natural areas, and promote economic development
- Applications reviewed twice a year
- Example projects: establishing monitoring programs and outreach programs, watershed restoration, loans for septic system upgrades/replacements, land purchase and conservation easements, and nonpoint source control activities
- <https://www.oregon.gov/deq/wq/cwsrf/pages/default.aspx>

Oregon 319 Nonpoint Source Implementation Grants, Oregon DEQ

- Requires a 40% non-Federal match (i.e., 40% of the total project cost must be covered by non-federal funds and/or in-kind services)
- Application period typically in spring
- Supported activities include technical assistance, financial assistance, education, training, technology transfer, demonstration projects, and monitoring
- Projects that involve collaborative stakeholder partnerships are encouraged

- Projects that protect or replace failing infrastructure on USFS roads or lands are not eligible
- <https://www.oregon.gov/deq/wq/programs/pages/nonpoint-319-grants.aspx>

Oregon Watershed Enhancement Board Grants

- Monitoring grants: Eligible monitoring projects include status and trend, project effectiveness, landscape effectiveness, and Rapid Bio-Assessment; 5 percent match required; apply in the fall
- Restoration: Priorities include altered watershed function affecting water quality, water flow, and fish production capacity; 25 percent match required; apply in the spring or fall
- Engagement: Eligible projects increase awareness and understanding in watersheds to support implementation of specific restoration, monitoring, and conservation activities; 5 percent match required; apply in spring or fall
- Technical Assistance: Technical design and planning assistance to implement restoration projects; 5 percent match required; apply in summer or winter
- Small Grants: Provides up to \$20,000 for less complex, on-the-ground restoration projects with 20 percent match; continuous open solicitation
- <https://www.oregon.gov/oeb/grants/Pages/grant-programs.aspx>

Feasibility Study Grants and Water Project Grants and Loans, Oregon Water Resources Department

- Water Project Grants and Loans: Supports projects that address instream and out-of-stream water supply needs; applications are reviewed twice per year
- Feasibility Study Grants: Reimburse up to 50 percent of the costs of studies to evaluate the feasibility of developing water conservation, reuse, and storage projects; applications are usually due in fall
- <https://www.oregon.gov/owrd/programs/FundingOpportunities/Pages/default.aspx>

Various Financial Assistance Programs, USDA Natural Resources Conservation Service (NRCS)

- Watershed Protection and Flood Prevention Operations Program: Provides financial and technical assistance for erosion and sediment control, watershed protection, flood prevention, water quality improvements, water management, fish and wildlife habitat enhancement, hydropower sources, and rural, municipal, and industrial water supply; the project must have agricultural benefits
 - <https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/wfpo/>
- Emergency Watershed Protection Program: Provides technical and financial assistance for communities following natural disasters that impair a watershed. Examples of activities that could be funded include removal of debris from stream channels and culverts, restoration of streambanks, establishing vegetative cover on critically eroding lands, repairing levees, and purchase of floodplain easements
 - <https://www.nrcs.usda.gov/programs-initiatives/ewp-emergency-watershed-protection>

Various Grants, Oregon Office of Emergency Management

- Emergency Management Performance Grant: Makes grants from the federal government available to state, local, and tribal governments to assist in preparing for all hazards
- Hazard Mitigation Assistance Grant: Provides funds from the federal government to assist in hazard mitigation planning, projects, and other activities to reduce vulnerability to hazards
- Homeland Security Grant Program: Provides funds from the federal government for planning, organizing, equipment purchasing, training, and exercises for emergencies
- State and Local Cybersecurity Grant Program: Funds projects that prevent, prepare for, protect against, and build capacity to respond to cybersecurity incidents
- <https://www.oregon.gov/oem/emresources/Grants/Pages/default.aspx>

SECTION 5: Contingency Plan

State-approved SWPPs are required to include a contingency plan for responding to the loss or substantial reduction of a drinking water source. The contingency plan must include the following elements:

1. Inventory/prioritize all threats to the drinking water supply
2. Prioritize water usage
3. Anticipate responses to potential incidents
4. Identify key personnel and develop a notification roster
5. Identify short-term and long-term replacement potable water supplies
6. Identify short-term and long-term conservation measures
7. Provide for plan testing, review, and update
8. Provide for new and ongoing training of appropriate individuals
9. Provide for education of the public
10. Identify logistical and financial resources

These elements are addressed below.

This contingency plan is consistent with the City of Boardman Water System Emergency Response and Notification Plan (2024), the City of Boardman WMCP (2017), and the Morrow County Multi-Jurisdictional Natural Hazard Mitigation Plan (2016).

5.1 Threats to the Drinking Water Supply

The City identified several risks to its drinking water source capture zones in Section 2 of this SWPP. Of the identified risks, the following could cause the potential loss or reduction of a drinking water source:

- Earthquake
- Severe storm (Flooding, windstorm, snow/ice storm)
- Wildfire
- Landslides
- Volcanic activity
- Vandalism, sabotage, and cybersecurity
- Hazardous Materials Incident (such as from residential, commercial, or industrial activities)
- Transportation accidents

5.2 Prioritization of Water Usage

If an emergency results in an insufficient water supply to meet all needs, the City may need to prioritize water use. The prioritization may be as follows:

- Fire protection
- Residential, medical clinics, commercial, and schools
- Industry
- Parks
- Irrigation

5.3 Responses to Potential Incidents

The City's Emergency Plan includes the response procedures to be followed in an emergency, additional security measures to safeguard the system, and communication protocols for notifying relevant entities and

the public about an emergency related to the water system. The Emergency Plan follows guidance developed by OHA Drinking Water Services outlined in its Emergency Response Plan Guide. The Emergency Plan was revised in 2024 and includes up-to-date information about the City's third collector well.

As outlined in the Emergency Plan, the framework for emergency response begins with identification of an emergency, which could occur through direct observation of a security breach, notification by law enforcement or other entities, observation of water quality anomalies, or customer complaints, among other methods. When an emergency situation occurs, the Public Works Director is responsible for notifying regulatory agencies (e.g., OHA) and determining the best way to notify affected water system users, including media outreach in the case of a widespread public health impact. The Emergency Plan includes contact information for reporting a system emergency, along with the contact information of large water users (e.g., Port of Morrow), utility companies, alternate water suppliers, equipment vendors and maintenance companies, the city engineers, and media contacts. Section 5 of the Emergency Plan provides procedures for identifying an emergency, isolating areas of the water system to prevent the spread of contaminants, conducting emergency disinfection, issuing a boil water advisory (including a template for public notifications), responding to loss of pressure in the system, and responding to a waterborne disease outbreak. Emergency response strategies would be effective in addressing emergencies related to the groundwater system, as well as the presence of contaminants in the adjacent surface water that could potentially enter the City's collector wells. Depending on the nature and duration of the emergency, the City would consider the need for accessing replacement water supplies and initiating water curtailment. Water curtailment triggers and stages in the Emergency Plan build on and constitute an update of the curtailment plan described in the City's 2017 WMCP.

Section 3 of the City's Emergency Plan describes how the City can prepare to respond to security issues and natural hazards, including earthquakes, winter storms, flooding, wildfire, and cyberattacks. Types of preparation include monitoring for the natural hazards, assigning roles and responsibilities, reviewing past responses, confirming that the water system is fully functional and well-prepared as appropriate for the natural hazard, checking that extra equipment or emergency supplies are available, and coordinating with partners.

5.4 Key Personnel and Notification Roster

The City's key personnel for water system emergencies include the Public Works Director, Water System Operators, and City Manager, as outlined in the Emergency Plan. In an emergency, the Public Works Director is authorized to make necessary operational changes to the water system, isolate system components, request assistance from consultants, take the reservoir out of service, or take any of the collector wells offline for repairs, as needed. The Public Works Director is also responsible for contacting the City Manager and OHA Drinking Water Services. The Public Works Director must seek approval from the City Manager before contacting federal investigating agencies related to the water system emergency and before contacting the media to notify the public of emergency conditions. Water System Operators are authorized to make general water system operational changes, isolate system components, and take collectors offline, if needed during an emergency. Water System Operators must obtain approval from the City Manager to take additional actions as described in the Emergency Plan. Authorization to activate the water rationing plan rests with City Council.

The City's Emergency Plan includes a notification roster for key contacts, including the following:

- Police, fire, and medical emergencies: 911
- City Hall: 541-481-9252
- Public Works Director, Roy Drago, Jr.: 541-481-9252
- Boardman Police Department: 541-481-6071

- Morrow County Dispatch: 541-676-5317
- OHA Drinking Water Services: 503-704-1174
- Oregon Emergency Response System: 800-452-0311
- Morrow County Emergency Management: 541-676-5317

Notification of a water system emergency should include the informant's contact information and current location, the type and location of the incident, the date and time the incident occurred, and the nature of the threat to the water system. To ensure rapid notification during an emergency, the Emergency Plan also provides contact information for large system users, including Morrow County School District, Port of Morrow, Coyote Springs Power Plant, and Amazon. Media contacts are provided for the North Morrow Times, East Oregonian, the City website, and the Boardman Chamber of Commerce Facebook page. The Emergency Plan includes additional emergency contacts to be notified if needed depending on the nature of the incident, such as Morrow County Sheriff's Department, Boardman Fire Department, and Columbia River Health. Contact information for utility companies, alternate water suppliers, and equipment/supplies vendors/equipment maintenance contractors is included, as well.

5.5 Short-term and Long-term Replacement Potable Water Supplies

5.5.1 Short-term Actions

Section 4 - Emergency Equipment and Water Supply of the Emergency Plan describes how the City's water system has a high degree of redundancy and operational flexibility to help continue providing water service to customers even if one component fails or a power outage occurs, delaying the need to obtain replacement potable water supplies. The booster pump station has multiple pumps and an electric generator. Each of the three collector wells has multiple pumps, and the City has an electric generator onsite at Collector Well No. 3 and a portable generator for Collector Well No. 2. If a very isolated contamination event occurs, the City can draw from selected laterals in the collector wells to avoid contaminated water while cleanup occurs.

The City's storage reservoirs have a combined capacity of 1.3 million gallons, which is sufficient to supply approximately 8 hours of City-only service (excluding service to the Port of Morrow) based on average day demand. In the event of a temporary or complete disruption in supply, particularly if it occurred during peak demand, the City would likely need to implement its water curtailment plan. The most up-to-date version of this plan is the water rationing plan in Section 4 of the City's 2024 Emergency Plan. The water rationing plan includes three alert levels (mild, moderate, and emergency) based on water supply and supply capacity. Each level has specific notification, curtailment, and enforcement actions. These levels of alert are described further below under Short-term and Long-term Conservation Measures. The Public Works Director will communicate with the City Manager and City Council to activate the water rationing plan and determine the level of alert.

Section 4 of the 2024 Emergency Plan describes alternative water supplies and mutual aid. If short-term replacement potable water supplies are needed even with water curtailment in place, the City has an interconnection with the Port of Morrow, and the Port may be able to provide temporary emergency water service to the City. The City and Port have a verbal mutual aid agreement to share critical resources during emergency situations, including equipment, supplies, and water. If a temporary water shortage emergency occurs affecting only the City's water supply, the City may not be able to supply water to the Port of Morrow or may need to reduce service. If a regionwide event impacts both the City's and the Port's water sources, the City may need to obtain potable water supplies through water hauling services.

5.5.2 Long-term Actions

If an ongoing water shortage or contamination of the alluvial aquifer limits the amount of water that can be supplied to the City's water system, the City would implement its water curtailment plan to help reduce demand and would work with the Port of Morrow to understand the amount of water that may be available through the interconnection on an emergency or ongoing basis. If both the City and the Port of Morrow are experiencing shortages, the City may need to engage water hauling services from another source, and the Emergency Plan provides contact information for an alternative potable water hauler, 1A Construction and Fire. Appendix C of the Emergency Plan contains the Drinking Water Hauling Guidelines published by OHA to help water suppliers ensure the safe delivery of drinking water during an emergency. In the event of a longer disruption, such as contamination of the alluvial aquifer that prevented use of all three collector wells, the City may consider use of its deep groundwater well, which draws water from the basalt aquifer. This water source would only be used during emergency conditions because of the high hydrogen sulfide content of water pumped from this well.

5.6 Short-term and Long-term Conservation Measures

The City's 2017 WMCP includes a Water Curtailment Plan with three levels of alert (Mild, Moderate, and Emergency) based on quantified reductions in water supply availability. Each stage of alert includes specific public notification, curtailment, and enforcement actions. The 2024 Emergency Plan includes a Water Rationing Plan with similar alert levels, triggers, and curtailment actions, except that the supply level triggers have been updated to account for the addition of the third collector well. The following water conservation and curtailment measures are described in the Emergency Plan.

Alert Level: Mild

A Mild alert level is warranted when one collector well is offline or up to three distribution system pumps are inoperable, limiting the water supply capacity to 12,000 gpm. At this stage, the City will request voluntary conservation related to irrigation (e.g., watering of lawns and landscaping) and commercial use. Posters in high traffic areas will be used to increase public awareness of water shortage conditions and encourage voluntary water conservation.

Alert Level: Moderate

A Moderate alert level is considered appropriate when two collector wells are offline or up to five booster pump station pumps are inoperable, limiting the water supply capacity to 6,000 gpm. At this stage, the City will prohibit irrigation and unnecessary outdoor water use (e.g., filling swimming pools) and require commercial use to be reduced by 20 percent. City staff will monitor water use and communicate with large commercial users. Outreach materials, such as flyers, will be distributed to the public to encourage additional water conservation.

Alert Level: Emergency

An Emergency alert level would be declared in the event of a complete loss of the collector wells and all distribution system pumps, or when supply capacity is reduced to the point that all residences experience a sustained complete loss of water pressure. During an Emergency alert level, water use will be limited to the amount needed for health, sanitation, and safety. City staff will monitor water use and work with City police on issuance of fines, as approved by ordinance, if communication with customers does not result in compliance with curtailment requirements. The City may initiate door-to-door communication if needed to ensure that customers are aware of the emergency conditions, including the location of water distribution stations if water hauling is implemented.

5.7 Plan Testing, Review, and Update

To maintain consistency with the City's Emergency Plan, this Contingency Plan will be reviewed and updated when the Emergency Plan is updated or following evaluation of emergency operations or exercises conducted by the City. The Emergency Plan is reviewed annually and updated at least every 5 years to ensure that information is up-to-date and reflects the water system's current condition.

5.8 Personnel Training

The City's Emergency Plan includes recommendations for training water system staff on security and cybersecurity awareness, including cross-training personnel to ensure that critical activities can still be accomplished even if the primary staff member responsible for a task is unavailable. The City is actively working on cross-training Public Works staff to obtain and retain certification in both water and wastewater operations, along with providing continual training on both systems.

5.9 Public Education

The Emergency Plan includes media and social media contact information for notifying the public about a water system emergency along with a template for issuing a boil water advisory. Each level of water curtailment in the Emergency Plan and the WMCP also includes recommendations for educating the public on any restrictions in place and any requests for voluntary water conservation. The Emergency Plan recommends that each household should store a minimum of 1 gallon per person per day for 14 days, plus adequate water for their animals, to provide an emergency supply of potable water in the event of a natural disaster or systemwide failure of the City water system. Appendix B of the Emergency Plan contains detailed information from the American Red Cross about potable water storage for households.

The City coordinates with Morrow County Public Health on its Emergency Preparedness Program, including public education about emergency preparedness. Morrow County Public Health's website includes links to additional resources, such as the Oregon Health Authority's Health Security, Preparedness, and Response webpage. The Morrow County Natural Hazard Mitigation Plan describes the City's efforts to improve public education on emergency preparedness for non-English speaking residents.

In addition to water conservation during water shortage emergencies, the City promotes wise water use year-round through its public education activities as described in its WMCP. The City hosts a water conservation webpage, <https://www.cityofboardman.com/utility/page/water-conservation>, which provides tips on indoor and outdoor conservation along with links for more information. The City also mails water conservation handouts to customers each summer when sending out the annual Consumer Confidence Report to share water quality information.

5.10 Logistical and Financial Resources

The City's Emergency Plan describes the logistical resources available in an emergency. Section 2 identifies contact information for utility companies and vendors for the on-site hypochlorite generation system; electrical system and controls; mechanical pipes, fittings, and valves; and backup generators. Section 4 of the Emergency Plan includes details on emergency power, system redundancy, alternative water supplies, and mutual aid agreements. Maps in the Emergency Plan show the location of water lines, hydrants, booster pump stations, reservoirs, and the collector wells.

The City operates a Water Reserve Fund in addition to its General Reserve Fund to facilitate the cash management and saving needs for capital improvements and emergency repairs of the water system. A mutual aid agreement is in place with the Port of Morrow, and the City would coordinate with Morrow County

during an emergency to request a state disaster declaration in order to make state resources available for disaster response and/or recovery as determined necessary. Assistance from the Federal Emergency Management Agency may also be available to the City if the resources needed exceed the state's capacity to provide.

SECTION 6: Future Water Sources

If a water provider anticipates the need to develop an additional source of water within the 20-year planning period of its SWPP, the SWPP provides an opportunity to identify risks and consider strategies that could protect the future water source. The City's 2017 WMCP described the need for construction of a third collector well to meet future peak demands and ensure water supply reliability and redundancy. The City began using a third collector well in 2024. The addition of the third collector well provides the City with sufficient capacity to avoid the need to plan for development of any additional water sources at this time. The City's efforts to promote water conservation are expected to further assist the water system in meeting projected demands during the SWPP planning period without an additional water source. Based on the anticipated sufficiency of the City's water rights and infrastructure capacity during the SWPP planning period, identifying risks and strategies related to a future water source is not considered necessary at this time.