



**FINAL DRAFT**

Corbett Water District

# **Risk Reduction Plan**

Gordon Creek Watershed

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## Abbreviations and Acronyms

ASR	aquifer storage and recovery
AWWA	American Water Works Association
BLM	Bureau of Land Management
BPA	Bonneville Power Administration
cfs	cubic feet per second
DEQ	Oregon Department of Environmental Quality
District	Corbett Water District
DOGAMI	Oregon Department of Geology and Mineral Industries
DWSA	drinking water source area
EQIP	Environmental Quality Incentives Program
ERP	Emergency Response Plan
FEMA	Federal Emergency Management Agency
FERNS	Forest Activity Electronic Reporting and Notifications System
FPA	Oregon Forest Practices Act
MSDS	Material Safety Data Sheet
NWQI	National Water Quality Initiative
OAWU	Oregon Association of Water Utilities
ODF	Oregon Department of Forestry
ODFW	Oregon Department of Fish and Wildlife
OHA	Oregon Health Authority
OWRD	Oregon Water Resources Department
RRP	Risk Reduction Plan
SWA	Source Water Assessment
USFS	United States Forest Service
USGS	United States Geological Survey
VOC	volatile organic compound

## SECTION 1: Introduction

### 1.1 Background and Goals

Water quality standards have been established to ensure that communities have access to safe and clean drinking water. Protecting the water quality of drinking water sources is important to safeguard public health and to reduce the need for complex and expensive treatment systems. The 1996 amendments to the federal Safe Drinking Water Act established new requirements and provided resources for communities seeking to protect their drinking water sources, including both groundwater and surface water. In Oregon, a public water system can choose to develop a Drinking Water Protection Plan (DWPP) and submit it to the Oregon Department of Environmental Quality (DEQ) for certification (for groundwater sources) or approval (for surface water sources). This Risk Reduction Plan (RRP) is functionally equivalent to a DWPP and provides the Corbett Water District (District) with approaches for addressing risks to its drinking water source areas while meeting DEQ's requirements for State approval.

The major goals of this RRP are to protect the District's current drinking water sources by identifying and assessing risks in the source water areas, developing effective strategies to address those risks, and providing a thorough implementation plan to carry out the selected strategies. The RRP also includes a contingency plan which details actions to be taken if a current water source becomes unavailable and considers potential future water sources. Overall, the RRP represents a significant step forward in the District's long-term planning efforts to provide a clean, safe, and reliable public water supply.

### 1.2 Corbett Water District Source Water Areas

The District was founded in 1932 and provides domestic water service to the rural area of Multnomah County, east of the Sandy River and south of Interstate 84. Not all properties in the service area are served by the District, with many residences served by private sources. The service area population was estimated at 2,954 as of 2021 according to Oregon Health Authority's Oregon Drinking Water Data Online database. The District also serves commercial properties, boutique farms, schools, three state parks, and the Springdale Job Corps Center.

The District's water supply sources are the South Fork and North Fork of Gordon Creek, located in the lower Sandy River basin, approximately 20 miles east of Portland, Oregon and about 8 miles east of the unincorporated community of Corbett. Gordon Creek drains the southwest side of Larch Mountain. There are two intakes, one on the North Fork of Gordon Creek and the other on the South Fork, which are connected to 47 miles of pipelines, as well as storage tanks and pumps. The District's drinking water source area (DWSA), which includes both the North and South Fork watersheds, encompasses approximately 6.1 square miles and is primarily forested. Exhibit 1-1 presents a regional map of the District's DWSA and adjacent water suppliers' DWSAs, and Exhibit 1-2 provides a closer view of key features of the Gordon Creek watershed and the DWSA.

About 77 percent of the DWSA is owned by the US Forest Service (USFS), 10 percent is owned by the Bureau of Land Management (BLM), and 11 percent is owned by private industrial forest companies. The District does not own land in the DWSA. The District's intakes are located on easements on property owned by Frank Timber Resources and the BLM. The entire DWSA is in Multnomah County. Exhibit 1-3 shows the land ownership categories within the DWSA.

**Exhibit 1-1. Gordon Creek Watershed Regional Map**

[placeholder for updated map]

**Exhibit 1-2. Corbett Water District Drinking Water Source Area Map**

[placeholder for updated map]

**Exhibit 1-3. Gordon Creek Watershed Land Ownership**

[placeholder for updated map]

Exhibit 1-4 provides a summary of the key features of the District's water rights. The District holds two water right certificates authorizing a combined total diversion of up to 2.0 cubic feet per second (cfs; about 898 gallons per minute) from either source. The District also holds a certificate to generate hydroelectric power using water diverted under its other two water rights, but this system is not currently in use.

**Exhibit 1-4. Water Rights Held by Corbett Water District**

Source	Application	Permit	Certificate	Priority Date	Type of Use	Authorized Rate (cfs)	Comments
North Fork Gordon Creek	S-15024	S-11882	81431	7/5/1933	Municipal Use	2.0 combined with 81430	
South Fork Gordon Creek	S-16229	S-12154	81430	5/21/1936	Municipal Use	2.0 combined with 81431	
North Fork Gordon Creek or South Fork Gordon Creek	Claim PC-894	N/A	89005	N/A	Hydroelectric Production of 41 THP	2.0 combined with 81431 and 81430	This certificate does not authorize diversion of additional water for hydroelectric generation.

cfs = cubic feet per second      THP = theoretical horsepower

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## 1.3 Risk Reduction Plan Development

### 1.3.1 Source Water Assessment

In 2001, DEQ prepared a Source Water Assessment (SWA) for the Corbett Water District to fulfill one of the new requirements of the amended Safe Drinking Water Act. The SWA includes a delineation of the source area supplying the water system, identification of areas that may be more vulnerable to pollution, and an inventory of potential contaminant sources. DEQ provided an updated SWA in 2018, which includes the map of drinking water source areas reprinted above along with maps showing soil erosion potential, areas prone to landslides, local land uses and ownership, and potential anthropogenic sources of pollution. This RRP builds on the SWA's inventory of potential contaminant sources using local knowledge, technical expertise, and public input, as described further in the risk assessment in Section 2.

### 1.3.2 Plan Development Process

The District received a grant from the Oregon Health Authority (OHA) to develop the Gordon Creek RRP, analyzing and addressing potential risks to the contiguous source watersheds. A team of local stakeholders and technical experts was convened, and the RRP development began with a kickoff meeting in June 2023. The RRP Team included representation from the District, community members, government agencies (local, state, and federal), and local forest managers. Development of the RRP was facilitated by the District's selected consultant, GSI Water Solutions, Inc., and included multiple opportunities for public engagement, as described in Section 1.3.3. The District's Board of Commissioners reviewed and approved the RRP on [placeholder date] and submitted the Final Draft RRP to DEQ and OHA for approval on [placeholder date]. Exhibit 1-3 lists the RRP Team members and their affiliations.

#### Exhibit 1-5. Gordon Creek Watershed Risk Reduction Plan Team Members

Name	Affiliation
Ana Linden	Corbett Water District
Michael Arion	Corbett Water District Board Member
Sara Grigsby	Corbett Water District Board Member
Angie Kimpo	Corbett Water District Board Member
Jim Morgan	Community member, Watershed Committee
Cloudy Sears	Community member, Watershed Committee
David Gorman	Community member
Mike Mathews	Bureau of Land Management (Northwest Oregon District)
Amanda Hoffman	Bureau of Land Management
Jeremy Baker	East Multnomah Soil and Water Conservation District
Caleb Brown	Frank Timber Resources
Alyssa Leidel	Oregon Department of Environmental Quality
Michael Hayworth	Oregon Department of Fish and Wildlife
Ben Walczak	Oregon Department of Fish and Wildlife
Amy Landvoigt	Oregon Water Resources Department, Watermaster

David Bihl	US Forest Service
Jeremy Goers	US Forest Service
Karina Hawley	US Forest Service
Todd Parker	US Forest Service (Mount Hood National Forest), hydrologist
Griffin Barab	Weyerhaeuser

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### 1.3.3 Public Outreach and Engagement

Outreach and engagement were essential to fostering public support for the planning effort and developing the RRP through an open and transparent public process. Engagement methods included in-person and virtual meetings, opportunities to provide input on risks and proposed strategies, and reviews of draft planning documents. Feedback from the RRP Team and the community was used to confirm, expand, and refine the inventory of potential risks and contaminant sources and to develop risk reduction strategies aligned with local conditions and support. The draft RRP was made available for public comment, and feedback was incorporated into the final RRP.

In addition to RRP Team meetings, hybrid in-person and virtual public meetings were held in September 2023 and January 2024. At the first public meeting, attendees discussed the potential risks identified in the SWA and by the RRP Team, provided information about contaminant risks not previously identified, and evaluated the priority rankings of the identified risks based on their probability of occurrence and severity of impact to water quality in the District's water sources. Topics at the second public meeting included the proposed strategies for source water protection, the implementation plan, and the contingency plan for the use of other water sources. Meeting recordings were made available online for individuals who were unable to attend. Comments were provided during the meetings and via phone and email. Public meetings were advertised through the District's website, messages in water bills, flyers posted around the community, and through RRP Team communication with stakeholders and constituents they represented. Appendix A contains examples of public outreach materials.

## 1.4 Organization of the Plan

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

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

## SECTION 2: Risk Assessment

### 2.1 Introduction to Risk Assessment

DEQ prepared the first SWA for the District in 2001 and provided an update to the SWA in 2018. The original SWA included a delineation of the South Fork and North Fork Gordon Creek watersheds supplying the District's water sources, an identification of sensitive areas, an inventory of potential sources of contaminants regulated under the federal Safe Drinking Water Act, and a susceptibility analysis overlaying the contaminant sources and sensitive areas to assess where potential contamination would pose the greatest threat to the water supply.

Sensitive areas identified include a 1000-foot buffer around the source streams and all of their perennial tributaries in the source watersheds, an area with high soil erosion potential in the upper reaches of the watershed, and a few isolated areas with high runoff potential where contaminants or sediments could be more easily transported to streams. The updated 2018 SWA presents additional maps showing that 100 percent of stream miles in both the North Fork and South Fork Gordon Creek watersheds are located in areas of highly erodible soils, and that landslide deposits are present in the South Fork Gordon Creek watershed. The 2018 SWA also includes an updated potential contaminant source inventory. Appendix B contains the 2018 SWA for reference.

The Gordon Creek RRP Team used the SWA as a starting point to evaluate the potential contaminant sources and land uses listed that could contribute sediment or pollutants to the water source. Using their technical expertise and knowledge of local conditions, the RRP Team identified additional potential risks and determined that some of the previously identified contaminant sources have been mitigated and no longer pose a threat to the public water supply. Next, the RRP Team conducted a prioritization process so that future implementation efforts can be focused on the most immediate and severe risks. Each potential risk was given two ratings, each on a qualitative scale of low to medium to high, describing the likelihood of occurrence within the next 20 years and the anticipated severity of the impact on water quality or water supply if it does occur. The SWA was used for guidance on water quality impacts from selected contaminant sources, and the RRP Team provided additional expertise, such as a knowledge of local forestry and land management practices. Finally, the District held a public meeting with in-person and remote attendance options in September 2023 to present the RRP Team's risk analysis and to refine the risk assessment and prioritization with community input. Exhibit 2-1 presents the prioritization matrix used to classify risks into low, medium, or high priority.

**Exhibit 2-1. Risk Prioritization Matrix**

		Severity →		
		LOW	MEDIUM	HIGH
Likelihood ↓	LOW	LOW	LOW	MEDIUM
	MEDIUM	LOW	MEDIUM	HIGH
	HIGH	MEDIUM	HIGH	HIGH

The final risk assessment is described in the remainder of Section 2 of this RRP. Risks are divided into five major categories with associated subcategories:

- Natural Disasters
  - Wildfire
  - Drought and low streamflows
  - Major earthquake
  - Severe storms
  - Landslides
  - Climate change
  - Volcanic eruption
  - Highly erodible soils
- Forestry Practices
  - Clearcut harvesting
  - Partial harvesting
  - Pesticide and herbicide application
  - Broadcast fertilizer application
  - Access roads
- Municipal
  - Vandalism
  - Municipal infrastructure issues
  - High-use transportation corridors
  - Management understanding and continuity
  - Construction accidents
- Industrial
  - Transmission lines and rights-of-way
  - Gravel mines and pits
  - Contaminated sites (plumes and chemical spills)

- Other Activities
  - Random dumpsites
  - Parks and river recreation

Sections 2.2 through 2.6 describe the risks identified and how they could potentially impact the District’s water sources. Each risk is presented with its ranked risk level (low, medium, or high) along with the likelihood and severity ratings (1 = low, 2 = medium, 3 = high). Section 2.7 discusses the process for identifying and managing new risks that may arise in the source watersheds in the future. Exhibit 2-2 presents the prioritization matrix with the risk rankings depicted.

**Exhibit 2-2. Risk Prioritization Matrix with Risk Rankings**

		Severity →		
		LOW	MEDIUM	HIGH
Likelihood ↓	LOW	Access roads Gravel mines      Recreation LOW Construction accident	Random dumpsites LOW	Earthquake Volcano MEDIUM Highly erodible soils
	MEDIUM	Landslides LOW	Vandalism MEDIUM	HIGH
	HIGH	Fertilizer application MEDIUM Transmission line maintenance Partial timber harvest	Drought      Climate change HIGH	Wildfire      Severe storms Pesticide application HIGH Infrastructure issues Clearcut harvesting Management and continuity

## 2.2 Natural Disasters

Water quality can be impacted by a wide range of biological and geological processes. Although natural disasters generally cannot be prevented, assessing their potential occurrence and effects within the DWSA will help the District identify actions to make the drinking water system more resilient.

### 2.2.1 Wildfire (high: 3, 3)

Gordon Creek watershed and the area around Corbett are designated as “Wildfire Communities at Risk” by the Oregon Department of Forestry. The North Fork watershed is closer to the site of recent major fires, such as the 2017 Eagle Creek Fire that burned over 48,000 acres along the Columbia River Gorge, while a significant wildfire occurred in the Bull Run watershed (adjacent to the South Fork watershed) in 2022. The frequent occurrence of high east winds in the Columbia River Gorge, combined with greater public access, may increase the risk of ignition in the North Fork watershed. In addition, the impact of a wildfire in the North

Fork watershed on the District's water supply would be greater because it is the primary water source used during the summer. The Oregon Wildfire Risk Explorer shows that both North Fork and South Fork watersheds have a low probability of a significant wildfire (>250 acres) occurring in any given year, although portions of the South Fork watershed have a higher risk of high-intensity fire due to fuel conditions and local topography. Mobilization of firefighters and equipment throughout the upper watersheds of the DWSA is likely if a wildfire occurs in the adjacent remote public forest lands.

Wildfires in the forested watersheds of the DWSA would remove vegetation and could damage soils. Loss of riparian vegetation can alter in-channel processes and raise stream temperatures, while loss of upland vegetation can contribute to erosion, increased runoff, and higher peak streamflows. The greatest impacts would be likely to occur during the first winter after a fire, when heavy precipitation on burned areas would cause the most erosion. Post-fire erosion can also release nutrients such as phosphorus and nitrate. Water repellent soils caused by moderate to high severity fires lead to decreased water infiltration and soil moisture retention, further increasing runoff, decreasing late summer low flows, and elevating the risk of landslides and debris flows. Some soil types are more resilient to the effects of fire and recover more rapidly, as was seen in areas burned in the 2020 Santiam Canyon Fire. In contrast, substantial areas within the perimeter of the 2017 Eagle Creek Fire experienced moderate-to-high burn severity and may have developed water repellent soils, and landslides occurred in the area.

Overall, increased erosion and runoff would be likely to put a strain on the District's water treatment plant, which is not designed to treat high turbidity. Water quality, including turbidity, is measured through water sampling at the treatment plant intake vault. When turbidity is higher than the treatable level, a flow control valve automatically shuts and a bypass valve opens, allowing the water to continue flowing through the creek until water quality improves. This system is effective in protecting the District's supply of clean water in its aboveground storage tanks and preventing damage to the infrastructure during short-term spikes in turbidity; however, longer-term increases in average turbidity due to fire-induced erosion could present more difficulty or require changes to the treatment system.

Fire may also threaten infrastructure directly, including the treatment plant, distribution system, and storage tanks. Depressurization of the water system could occur if components are damaged, allowing contaminants to enter the system. Sufficient defensible space can help reduce these risks. Downed trees and rockfall may block roads, limiting access to infrastructure, and stream crossings may be at risk of damage from higher peak streamflows. Additional contamination could occur from firefighting chemicals, such as fire retardants containing PFAS (a "forever chemical" of emerging concern for water quality), volatile organic compound (VOC) contamination from melting plastic parts, and post-fire chemical treatments to prevent the establishment of invasive species. Any of these impacts could affect drinking water quality as well as instream water quality for fish and wildlife. Critical habitat for Chinook salmon, coho salmon, and steelhead has been designated in the lower reaches of Gordon Creek, and these species rely on a supply of clean water from upstream catchments, such as the District's DWSA.

### 2.2.2 Drought and low flows (high: 3, 2)

The RRP Team identified the likelihood of significant low flows as medium and their potential impact as high. During the summer, low streamflows and high customer demand may combine to stress the drinking water supply. Although the District does not generally approach the maximum rate of diversion under its water rights, high summer demands in the past have led to lower than optimal levels of stored water in reservoir tanks to meet peak demands and provide reserves for firefighting. In addition to limiting the quantity of water available, low flows exacerbate the risks associated with high stream temperatures, concentration of pollutants, low dissolved oxygen, algae, and bacteria counts. Downstream of the District's intakes on the North Fork and South Fork tributaries, the mainstem of Gordon Creek is listed under the Clean Water Act

303(d) list as water quality impaired for high temperatures during the salmon and steelhead spawning season, including portions of the stream designated as critical salmonid habitat near the confluence with the Sandy River.

Under the prior appropriation water rights system, “junior” (newer) water rights may be curtailed or regulated off when required to meet the needs of “senior” (older) water right holders. The Oregon Water Resources Department (OWRD) holds an instream water right on Gordon Creek from its confluence at Thompson Creek to the Sandy River to support fish habitat with a priority date of 1991, which is junior to the District’s rights. To date, OWRD has not identified a need for regulation in the Gordon Creek watershed for any senior water rights, but OWRD’s Surface Water Availability Analysis shows that water is not considered available for new water rights in the area at any time of year. While there are no stream gages installed on Gordon Creek, the local Watermaster takes periodic measurements on the west side of Gordon Creek Road, just upstream of the confluence with Trout Creek. This limited dataset does not yet provide a long-term record of streamflow trends but will be expanded with future measurements. Exhibit 2-3 presents recent measurements provided by the Watermaster.

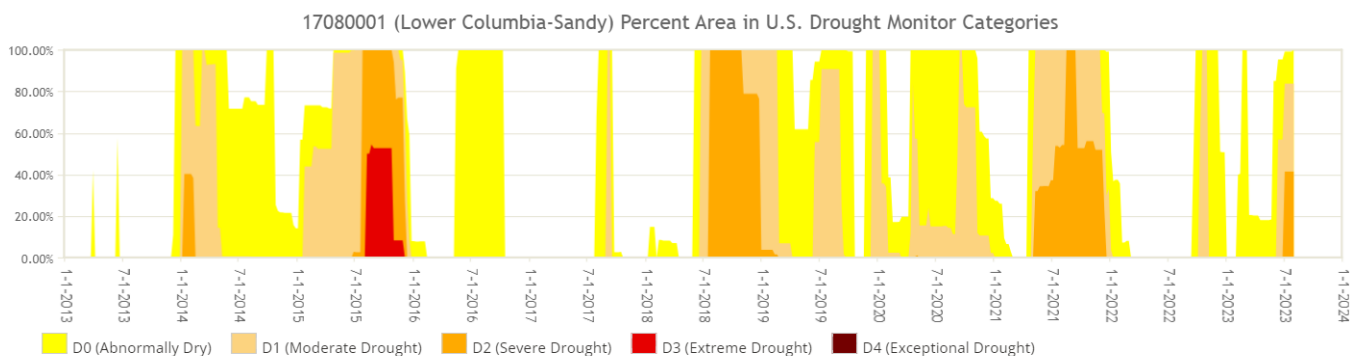
**Exhibit 2-3. Gordon Creek Flow Measurements**

Date	Flow (cfs)
July 17, 2014	26.4
September 9, 2014	11.4
August 15, 2016	14.0
August 9, 2018	9.03
August 28, 2019	7.63

cfs = cubic feet per second

Lower streamflows are expected in the summer, but droughts can intensify water quality and quantity impacts and prolong these issues throughout the year. As shown in Exhibit 2-4 below, the Sandy River basin containing the Gordon Creek watershed has experienced moderate to severe drought conditions multiple times in the past decade, with over 50 percent of the basin experiencing extreme drought during the second half of 2015.

**Exhibit 2-4. Sandy River Basin Drought Conditions 2013-2023**



Climate change projections in the Pacific Northwest show the potential for reduced summer precipitation and increased climatic extremes, including longer and more severe droughts.

### 2.2.3 Earthquake (medium: 1, 3)

Although the risk of a large earthquake in any given year is low, the potential for impacts to the water system are high, making earthquakes a medium-level risk for planning purposes. The location, timing, and magnitude of an earthquake would all affect the level of damage to water system infrastructure and the amount of disturbance in the source watersheds. The District's Water Master Plan, updated in April 2023, includes a seismic risk assessment showing the damage potential from a magnitude 9 earthquake along the Cascadia subduction zone. Critical facilities such as the intakes, water treatment plant, and water storage facilities are located in areas mapped at lower risk of damage. There are water mains in high-risk areas that would impact the distribution system if they were compromised during an earthquake. A large earthquake could also trigger landslides and fallen trees or rocks blocking access to facilities or increasing water turbidity depending on the proximity of a landslide to waterways. Power outages could also occur in the area, affecting electronically controlled valves, pumps, and treatment processes.

### 2.2.4 Severe storms (high: 3, 3)

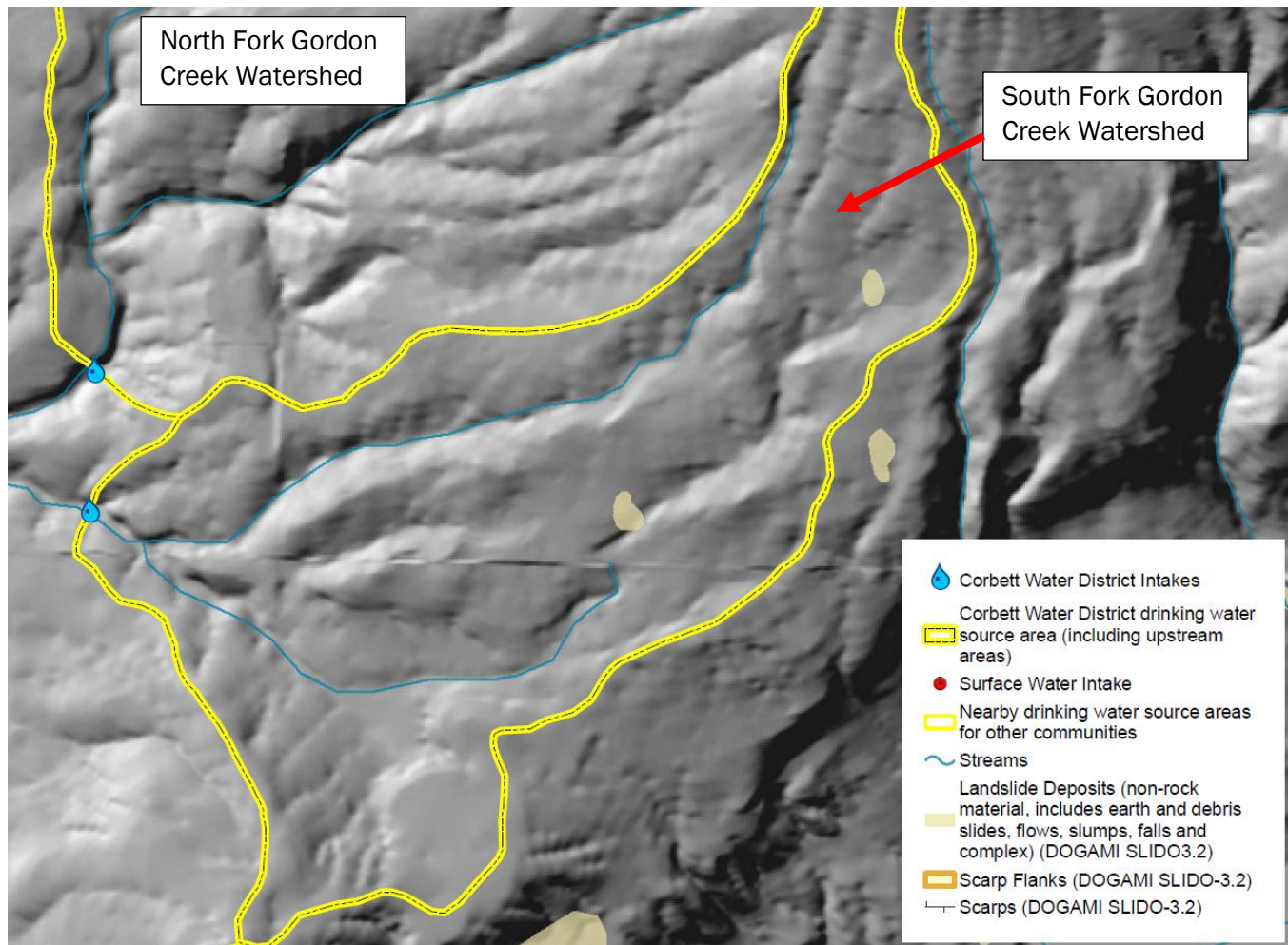
Heavy precipitation events can result in rapid runoff or flooding that can cause erosion and increased stream turbidity, including temporary spikes in turbidity that may exceed the capability of the treatment plant. In the Sandy River basin, flood events are most common from November through January, due to rain-on-snow events caused by snow accumulation at lower elevations followed by a rapid rise in temperature and heavy rainfall. Atmospheric rivers are increasingly common in the region.

This risk can be affected by land use practices, including forestry activities, and landscape characteristics such as burned areas. Ice storms and windstorms can cause loss of trees and riparian vegetation or damage water infrastructure. Windthrow events can cause widespread loss of trees, blocking roads used to access infrastructure. The South Fork watershed already contains many fallen trees, and the District secured FEMA funding for recovery after a previous windthrow event.

### 2.2.5 Landslides (low: 2, 1)

Small landslides have occurred in the DWSA, but the likelihood of a large landslide seriously disrupting the District's water supply or impacting water quality is considered low. Although there is a low frequency of mass wasting events in most of the source watersheds, there is a higher potential risk of landslides in two small areas in the South Fork Gordon Creek watershed with previous landslide deposits identified in the SWA. Exhibit 2-5 reprints a segment of the map from the SWA showing the location of these landslide-prone areas. Severe storms, particularly following a wildfire, can increase the risk of landslides. Earthquakes could also trigger landslides. Potential impacts from landslides include erosion, increased stream turbidity, and blocked access to water infrastructure if landslides occur along roadways or bridges.

## Exhibit 2-5. South Fork Gordon Creek Watershed Landslide Hazard Areas



### 2.2.6 Climate change (high: 3, 2)

The RRP Team identified the likelihood of climate change impacting the water system as high, with anticipated medium-severity impacts. Climate change is projected to affect a variety of hazards in the region, including drought, wildfire, flooding, and landslides. Regional projections point to warmer, drier summers, during which lower streamflows could exacerbate water quality and quantity issues discussed previously in Section 2.2.2. Customer demand may also increase during hot summer weather, particularly among agricultural customers and the three state parks within the District's service area, making water shortages and the need for curtailment a potential concern. During the winter, projections include increased risk of severe storms (including atmospheric rivers) and potentially more precipitation falling as rain instead of snow. These conditions increase the possibility of flooding and decrease snowpack, reducing natural storage that would contribute baseflow to streams later in the year.

### 2.2.7 Volcanoes (medium: 1,3)

The likelihood of a volcanic eruption in any given year is low, but the potential impacts could be catastrophic. Mount Hood is the closest active volcano to the DWSA, and there are several other volcanoes in the Cascade Mountain Range that could pose a potential threat. The Oregon Department of Geology and Mineral Industries (DOGAMI) has developed an interactive hazard viewer for Mount Hood showing the areas at greatest risk of impacts such as lava flows, lahars (mudflows), landslides, and earthquakes (shaking

impacts). While the DWSA and the District's service area are outside of the likely zones of direct impacts, ashfall could occur over a wide area and cause high turbidity, water quality issues, clogging of filters, power outages, and increased maintenance requirements at the water treatment plant, in addition to public health impacts such as respiratory problems. Impacts to regional transportation infrastructure could be severe, affecting District personnel and supply chains.

### 2.2.8 Highly erodible soils (medium: 1, 3)

Soils around small tributaries near the District's water intakes are sensitive to erosion, although a low frequency of mass wasting has been observed in the DWSA. Precipitation and wind can transport sediment and nutrients into the streams, increasing turbidity and the potential for downstream algal blooms. About 75 percent of the soil in the source watersheds is Zygore gravelly loam, which has a higher risk of erosion than other soil types. This includes 100 percent of the areas within 300 feet of stream channels in the DWSA. Under the recently revised Oregon Forest Practices Act rules enacted through the Private Forest Accord, there will be a minimum 110-foot no-harvest zone along the South Fork Gordon Creek at the District's intake. This buffer will help reduce soil disturbance and soil movement.

## 2.3 Forestry Activities

About 77 percent of the DWSA is owned by the United States Forest Service (USFS) as part of the Mount Hood National Forest, and an additional 10 percent is owned by the federal Bureau of Land Management (BLM) and is primarily forestland. Around 11 percent of the DWSA is privately owned and managed forestland. Oregon's Forest Practices Act sets standards for commercial forestry operations, including harvest, reforestation, access roads, chemical applications, and water protections, among other issues. Under the Private Forest Accord, forestry and conservation groups agreed to recommend changes to the Forest Practices Act. Changes have been phased in, with certain sets of rules taking effect in November 2022, July 2023, and January 2024. Among the intentions of the new rules are increasing protection for streams, improving forest road design standards, retaining more trees on steep slopes, protecting fish and amphibian habitat, and funding mitigation projects to help aquatic species. Complying with the updated rules is expected to reduce the potential for drinking water quality impacts, and the Oregon Department of Forestry (ODF) is investing in compliance monitoring and reporting.

### 2.3.1 Clearcut harvesting (high: 3, 3)

Clearcut timber harvesting practices may increase the potential for erosion and sedimentation, resulting in increased runoff and stream turbidity. The risk of rapid runoff from rain-on-snow events is greater in forest stands less than 35 years old. While the SWA identified clearcut harvesting with a rotation of under 35 years as a potential risk in the DWSA, RRP Team members clarified that the rotation between clearcuts in this area is typically 40-60 years depending on land ownership and management practices. The last clearcut harvest in the watershed occurred around 2018. Clearcut harvests are more common in the South Fork Gordon Creek watershed, which is not the District's primary source of supply. Clearcuts are not currently conducted on USFS or BLM lands. Privately owned forest land managed for timber harvest is present in both North and South Fork Gordon Creek watersheds. Clearcut timber harvesting may also reduce water quantity due to decreased water infiltration into the soil and increased evaporation as a result of less shade.

#### 2.3.1.1 Clearcut harvesting near water intakes

Clearcut harvesting near the drinking water intakes is more likely to have an impact on water quality due to the risk of increased turbidity. Under the revised Forest Practices Act, no-harvest buffer zones along riparian corridors will range from 75-100 feet, and additional regulations will apply to harvest operations along fish-bearing and domestic water supply streams.

### 2.3.1.2 Clearcut harvesting higher in the watershed

Clearcut harvesting higher in the watershed, away from the drinking water intakes, was identified as being more likely to have an impact on water availability than on water quality. More rapid snowmelt in clearcut areas may reduce infiltration if the ground is still frozen, potentially lowering summer streamflows by decreasing baseflow contributions from groundwater. Small trees in regenerating clearcut areas produce less shade, allowing for greater evaporation and lower soil moisture.

### 2.3.2 Partial harvesting (medium: 3, 1)

Partial harvesting practices, such as thinning and selective logging, also have the potential to increase erosion due to soil disturbance, although to a lesser extent than clearcut harvesting. Additional factors such as slope, soil characteristics, and equipment selection affect the likelihood of water quality impacts. The same riparian buffer zones and other regulations described above apply to partial harvesting activities. A potential harvest is planned for 2026-2027 on BLM lands in the watershed, and there are no current harvest plans on USFS lands. Private landowners in the watershed typically conduct partial harvest activities on a 30–40-year rotation.

### 2.3.3 Pesticide and herbicide applications (high: 3, 3)

Pesticides and herbicides may be applied during reforestation. BLM and USFS conduct spot spraying to treat noxious weeds, and private forestry companies conduct both spot treatment and aerial spraying. The potential for water quality impacts would be increased by factors such as applying chemicals before rain events, during colder months when breakdown by soil microorganisms is slower, on steep slopes, and on areas with limited vegetation. ODF regulates the timing of applications in forest plans, which is usually July through September. Regulations are also in place requiring spray notifications and record-keeping of application information, such as timing, wind speed and direction, weather conditions, and application rates. New regulations are set to take effect in 2024, including larger setbacks for aerial and ground applications of chemicals. Aerial application of herbicides and pesticides will be prohibited within 75 feet of fish-bearing and domestic water supply streams, 50 feet of non-fish-bearing streams, 300 feet of domestic water intakes and inhabited dwellings, and 300 feet of a school campus. The RRP Team determined that the potential water quality impact from pesticides and herbicides entering the water source would be high, but that this risk could be mitigated through compliance with forestry regulations.

### 2.3.4 Broadcast fertilized areas (medium: 3, 1)

The SWA identified broadcast fertilized areas as a potential risk in the DWSA where forest stands are regenerating following timber harvest. Fertilizer reaching streams following aerial application or indirectly through seepage could contaminate waterways with nutrients, such as nitrogen and phosphorus, which can increase algal growth. The District conducts water quality testing for nitrates, although they can occur naturally so it can be difficult to trace the origin. USFS and BLM do not use fertilizer during reforestation. Similar to pesticides and herbicides, fertilizer application is regulated, and it is not applied directly to streams. Notifications are sent out when fertilizer is applied. Oregon Forest Practices Act rules prohibit the direct application of fertilizer within 100 feet of fish-bearing and domestic water supply streams.

### 2.3.5 Forest access roads (low: 1, 1)

Road building, maintenance, and usage (e.g., wet weather haul by loaded logging trucks) may increase erosion and stream turbidity, and landslides along roads can limit access to water system infrastructure. Vehicle usage within the watershed increases the risk of leaks or spills of petroleum products or other hazardous materials, particularly where roads are constructed adjacent to waterways or at stream crossings.

Pesticide and herbicide applications to manage roadside vegetation must be carefully managed to prevent contamination of waterways. Oregon Forest Practices Act rules and best management practices are designed to limit erosion and stream turbidity due to forest roads. Rocking road systems and providing good drainage of ditch water are a few of the best management practices to help prevent sediment from roads entering streams.

Access roads for forestry operations are already in place for private forestlands, reducing the risks related to new road construction. The access roads used by the District to reach water system infrastructure are leased from the USFS and BLM, along with a historical easement with Frank Lumber for access, including a bridge that is currently unusable. Access roads in the Gordon Creek watershed are also used for entry to the adjacent Bull Run watershed and were used for equipment access during the Eagle Creek Fire. The RRP Team determined that the risks from the existing road system (including access and maintenance) are generally low, but the Team noted that the risks could increase with heavy use, such as temporary increases in use during wildfire response activities.

## 2.4 Property management

Property management practices can impact water sources and the delivery of water to communities.

### 2.4.1 Vandalism (medium: 2, 2)

Deliberate damage to water infrastructure may impact water quality and the ability to divert, store, and distribute water. Cybersecurity is a growing concern in many communities.

### 2.4.2 Municipal infrastructure issues (high: 3, 3)

Issues with infrastructure, such as system leakage in unknown locations and infrastructure failures, may unnecessarily increase the demand for water or impact the ability to provide water supply. The District is currently experiencing high system leakage. The treatment plant is not designed to handle high turbidity and sediment in the raw water supply. Storage may be needed for emergencies.

### 2.4.3 Transportation corridors (low: 1, 1)

Vehicles may deposit contaminants, such as metals, oils, and grease, which may then enter nearby waterways via stormwater runoff. Larch Mountain Road is identified in the SWA as a high-use transportation corridor; however, only a short portion of the road passes through the DWSA. Within a substantial portion of the Gordon Creek watershed in the Mount Hood National Forest, the USFS prohibits the use of motor vehicles, except on Larch Mountain Road. The prohibition does not apply to employees of the District or other state and federal agencies while performing official duties, including fire suppression activities. Despite the restrictions limiting access to most of the watershed, heavy use of Larch Mountain Road may still pose a risk to water quality, including the potential for random dumpsites where debris and contaminants may enter waterbodies. The limited road network in most of the DWSA poses an additional risk because it is vulnerable to access interruptions (e.g., natural disasters, downed trees, landslides, etc.) that could prevent access to infrastructure and pose a safety risk to individuals working in the DWSA.

Transportation corridors may also create barriers to anadromous fish passage into the upper watershed, particularly if culverts are undersized, perched (i.e., significantly higher on one side of the road than the other, creating a high outfall that cannot be accessed by fish), or become blocked by debris. A waterfall downstream of the District's DWSA created by a 12-foot-high bedrock rise in the stream channel is considered a potential fish passage barrier, but salmonid fry have been reported upstream, so it may not be a complete barrier to upstream migration.

#### 2.4.4 Management continuity (high: 3, 3)

Knowledge maintenance and transfer, as well as training, are critical to source water protection. When institutional knowledge is lost due to staff turnover or retirement, the ability to identify and respond to risks may be impacted.

#### 2.4.5 Management understanding (high: 3, 3)

Assistance may be needed for navigating changing legal requirements, from new forest practices to projected impacts of climate change to PFAS testing in drinking water. Lack of available data and methods for managing data may prevent a thorough assessment of some risks.

#### 2.4.6 Construction accidents (low: 1, 1)

Construction poses the risk of injury to people, property, and the environment, such that the District's ability to supply water could be impacted.

#### 2.4.7 Parks and river recreation (low: 1, 1)

The SWA identifies use of Larch Mountain Park as a potential risk in the DWSA. Heavy use of recreational areas can contribute to erosion, and inadequate disposal of trash and human waste may contribute nutrients and bacteria in the watershed. Larch Mountain Picnic and Recreation Area is a day use area managed by the USFS and BLM and is located in the uppermost reaches of the watershed. Trails from the day use area lead northwest, away from the Gordon Creek watershed.

### 2.5 Industrial

#### 2.5.1 Transmission line right-of-way maintenance (medium: 3, 1)

Vegetation management in the rights-of-way surrounding transmission lines operated by Bonneville Power Administration (BPA) involves the use of herbicides in the Larch Mountain Corridor, except for the Bull Run Watershed Management Unit. Within the District's drainage boundary, BPA and the USFS have recently agreed to restrictions in herbicide use and notification to the District prior to application. Overapplication or improper handling of herbicides could contaminate waterways. Project design criteria to protect water quality can decrease this risk. Notifications are required to be sent out prior to application, but RRP Team members observed that it has not always been easy to track this in the past. Better communication may be needed regarding planned pesticide and herbicide use in sensitive areas.

#### 2.5.2 Gravel mines (low: 1, 1)

The three gravel mining sites and quarries identified in the SWA are closed, but erosion can result in contamination and increased stream turbidity. Small gravel pits have been used to obtain materials for forest access roads. Sites include the north side of Upper Camp A Loop Road and washed-out regions of North Fork Gordon Creek. Some historic gravel pits overlap with known dumpsite and landslide area risks. Site B and Borrow Pit in Mount Hood National Forest, located on Forest Road 1509, are identified in the SWA. These sites have been remediated and are no longer considered a threat to water quality.

## SECTION 3: Risk Reduction Strategies

### 3.1 Introduction to Strategies

The RRP Team developed strategies to address each of the risks identified in Section 2 using technical expertise, local knowledge from the District and RRP Team members, examples of effective drinking water source protection efforts elsewhere in Oregon, and guidance documents developed by DEQ and other agencies. Strategies may address multiple risks, as shown in Exhibit 3-1. The major categories and subcategories of strategies developed are:

- Forest landowner coordination
  - General coordination
  - Timber harvest practices
  - Maintenance
  - Watershed enhancement
- Emergency planning
- Public outreach
- Pollution prevention
- District management
  - Infrastructure management
  - Staff development
- Monitoring

The remainder of Section 3 describes these strategies.

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**Exhibit 3-1. Overview of Risks Addressed by Each Strategy**

Category	Risk Addressed	Risk Level <sup>1</sup>	Forest Landowner Coordination	Emergency Planning	Public Outreach	Pollution Prevention	District Management	Monitoring
Natural Disasters	Wildfire	High (3, 3)		•	•			
	Drought and low stream flows	High (3, 2)		•	•			•
	Earthquake (large)	Medium (1, 3)		•	•			
	Severe storms	High (3, 3)	•	•	•			
	Landslides	Low (2, 1)	•	•	•			
	Climate change	High (3, 2)		•	•		•	•
	Volcanoes	Medium (3, 1)		•	•			
	Highly erodible soils	Medium (1, 3)	•	•				
Forestry Activities	Clearcut harvesting (near water intakes)	High (3, 3)	•					
	Clearcut harvesting (higher in watershed)	High (3, 3)	•					
	Partial harvesting	Medium (3, 1)	•					
	Pesticide and herbicide applications	High (3, 3)	•		•	•		•
	Broadcast fertilized areas	Medium (3, 1)	•		•	•		•
	Forest access roads	Low (1, 1)	•					
Property Management	Vandalism	Medium (2, 2)					•	
	Municipal infrastructure issues	High (3, 3)		•			•	

<sup>1</sup> Numbers in parentheses refer to the likelihood and impact of each risk.

Category	Risk Addressed	Risk Level <sup>1</sup>	Forest Landowner Coordination	Emergency Planning	Public Outreach	Pollution Prevention	District Management	Monitoring
	Transportation corridors	Low (1, 1)	•	•			•	
	Management continuity	High (3, 3)		•			•	
	Management understanding	High (3, 3)		•			•	
	Construction accidents	Low (1, 1)					•	
	Parks and river (creek) recreation	Low (1, 1)			•			
Industrial	Transmission line right-of-way maintenance	Medium (3, 1)				•		
	Gravel mines	Low (1, 1)	•					•

## 3.2 Forest Landowner Coordination

About 77 percent of the land in the DWSA is owned by the USFS, and small portions are owned by BLM (10 percent) and private landowners (11 percent). The South Fork Gordon Creek intake is on Frank Timber Resources land with an easement and the North Fork Gordon Creek intake is on BLM land. As discussed in Section 2.3, forestry activities pose various risks to the quality and quantity of water at the intakes, which is why coordination between the District and forest landowners is an important strategy to protect drinking water sources.

### 3.2.1 General Coordination

Consistent communication and coordination with landowners in the source area is a primary strategy to address forestry-related risks to drinking water sources, particularly because the District does not own land within the DWSA. General coordination includes notification of forestry activities, such as pesticide or herbicide applications or harvesting. Notifications are already required under the Oregon Forest Practices Act (FPA) rules; however, closer coordination could enable arrangements to be made for the District to receive early announcement of harvest projects from federal agencies and private timber companies. Landowners could work together to mitigate potential impacts of these activities before they occur. Collaborative watershed management could potentially be developed among stakeholders that would prioritize sustainable yield practices and protecting water sources. Examples of this management strategy are seen in the cities of Corvallis, McMinnville, and Toledo. The District may benefit from learning more about methods and outcomes to investigate the feasibility of implementing a similar arrangement, and then may contact these municipalities to understand lessons learned and best practices.

For areas in the watershed that the District has identified as particularly important for supporting water supply and water quality goals, the District will explore land acquisition and conservation easement opportunities with willing landowners. Acquiring land or development rights would allow the District to have more authority over the activities in the critical areas of the watershed, such as timber harvesting. This strategy could require partnering with a conservation organization or land trust. The District would first need to identify suitable areas where this strategy could be implemented, based on where the risks are highest (i.e., critical areas) and where landowners are willing to participate.

Where landowners may be interested in retaining ownership and also implementing conservation practices to protect water quality, the East Multnomah SWCD has a conservation cost-share program for private landowners that may be able to support these practices.

The District will maintain, and when appropriate, revise or renew, its easements and MOUs with the USFS, BLM, and private landowners for road access and other activities throughout the DWSA.

### 3.2.2 Timber Harvest Practices

The District will reach out to landowners to develop a shared understanding of the new FPA rules and how changes may affect local watershed conditions, which were described in Section 2.3. As previously discussed, the rules establish a 110-foot no harvest zone along the South Fork of Gordon Creek at the District's intake. Complying with this rule will help to minimize soil disturbance around the intake. However, the District and landowners could coordinate and negotiate an agreement to increase this buffer to the extent feasible to reduce the risk of sedimentation in the stream. Similar negotiations may be explored for the North Fork and other tributaries in the watershed.

The District will also communicate with landowners to advocate for practices in the watershed that would benefit the drinking water supply and water quality. These practices could include reductions in clearcutting,

more selective or partial harvesting, and minimizing pesticide and herbicide use. The District will review existing mapping of steep slopes by ODF and utilize the SWA maps of areas in the watershed with highly erodible soils, and coordinate with landowners about a possible agreement to avoid timber harvest (or at least clearcuts) in these critical areas. The District will advocate for precautions to be taken in these areas to prevent soil disturbance that could allow sediment to reach waterways.

### 3.2.3 Maintenance

The District will coordinate with public and private landowners about maintenance needs for access roads, bridges, and culverts. Although the District does not own the roads in the source water area, its staff needs to use them to access the intake and infrastructure. The road system within the Mount Hood National Forest that falls within the Gordon Creek watershed is closed to public access using motor vehicles, and only specifically permitted entities (such as USFS personnel, District employees performing official duties, and entities performing firefighting or search and rescue operations) are allowed to use motor vehicles on any road or trail except for Larch Mountain Road. The District will coordinate with the USFS and Multnomah County on the management and maintenance of Larch Mountain Road, which is near the intake on the North Fork of Gordon Creek. Access road infrastructure is in place in the South Fork watershed and will require periodic maintenance; access roads are much more limited in the North Fork watershed other than Larch Mountain Road.

The District recognizes that it would be valuable for public and private roads in the Gordon Creek Watershed to be mapped in detail for maintenance access as well as for emergency entrance and exit. As part of the changes to the FPA going into effect in 2024, large forestland owners will be required to conduct inventories of their road networks and will identify and correct road-related issues (e.g., undersized culverts or drainage issues). To avoid duplication of efforts, the District will track this process through coordination with private landowners and ODF rather than undertaking additional road surveys if possible. However, if urgent safety concerns or maintenance needs are identified, limited mapping may need to be performed in advance of the required forest road inventories. In addition, the FPA does not apply to federal lands, so the District will need to communicate with the USFS to obtain up-to-date maps of the forest road network. The watershed road map should be available electronically, by GPS coordinates, and on paper, and available to all authorized users of the watershed. The map should be added to the CWD Emergency Response Plan and made available to personnel in all CWD vehicles. The roads, both privately and publicly owned, should be visibly labeled and marked at intersections, from both directions.

Discussions with private and public landowners may also include the potential for decommissioning roads that are no longer needed, which could reduce the risk of sediment entering waterways. The District and landowners will coordinate on any erosion control needs, maintaining good drainage of ditch water, and how to best maintain culverts. Culverts should be functional and maintained, and adequate fish passage should be ensured where applicable.

### 3.2.4 Watershed Enhancement

Developing relationships and maintaining communication with the forest landowners will help the District protect its drinking water sources, as well as allow for collaborative watershed management focused on sustainability. Watershed enhancement includes such activities as increasing plant diversity and deep-rooted plant species to reduce soil erosion and landslides on steep slopes (particularly focusing on slopes greater than 25 percent), and protecting habitat for rare, threatened, and endangered species. The District will coordinate with agencies to learn more about habitat needs for listed species (e.g., northern spotted owl in the watershed; Chinook, coho, and steelhead downstream) and look for opportunities to support any planned watershed enhancement projects that would benefit drinking water as well as fish and wildlife habitat. In addition, the District can look for ways to support restoration activities after storms that address

erosion, downed trees, and blocked roads. Where gravel pits are no longer in use, the District will advocate for appropriate reclamation activities to reduce the risk of erosion.

### 3.3 Emergency Planning

The District will integrate source water protection into its existing Emergency Response Plan for disasters such as wildfire and earthquakes. This could include adding information about the potential effects of disasters on drinking water sources and outlining response measures to take in these events. More of the risks to drinking water identified in this Plan could be addressed in general emergency planning efforts. Additional copies of the Emergency Response Plan will be kept in District vehicles for ease of access during emergencies. As discussed further in Section 3.4, the District will provide outreach on disaster preparedness to its customers, specifically related to drinking water source protection. The District will compile Material Safety Data Sheets (MSDS) related to firefighting chemicals to understand potential impacts of their use on water quality. The District will coordinate with private and public landowners to compile updated maps of access roads throughout the watershed for emergency use, as described above in Section 3.2.3.

Emergency preparedness also includes making the water system more resilient to natural hazards. The District will make seismic retrofits of infrastructure as needed, implement fire-wise measures like defensible space, and take steps to protect infrastructure. The District may pursue landowner access agreements that describe actions to take during an emergency as well as post-disaster cleanup or restoration activities. For example, in the event of an earthquake or volcanic eruption, the District would coordinate with any entities that may be monitoring the historic steam vent on Deverell Road in case it opens again and poses a threat to health and safety. The District will reach out to other regional water providers, Oregon Department of Emergency Management, and Multnomah County to coordinate response planning and develop potential partnerships or MOUs to be implemented during emergencies.

As part of emergency planning, the District will evaluate options for an emergency backup to the existing water supply. The District will consider storage, temporarily importing bottled water, and other water sources. Supply planning will allow the District to continue meeting demands and be prepared for future growth and climate change.

### 3.4 Public Outreach

This strategy encompasses promoting water conservation to reduce the demand on the District's water sources and address climate change and drought, education on emergency preparedness and the impacts of natural disasters, the importance of a healthy watershed, and ways to protect source water quality. The District will provide public education related to the projected impacts of climate change on water resources and individual actions to conserve water. The District will provide outreach through postings on its website, distributing materials to customers and youth, and at events. Where possible, the District will use existing outreach materials and resources, such as those created by DEQ or Oregon State University Extension, or materials developed in partnership with other regional water providers. The District will also try to partner with local organizations to disseminate information, such as the Corbett School District, Columbia Grange 267, and Northeast Multnomah County Community Association.

Public outreach will also focus on assisting the public with preparing for wildfires, earthquakes, severe storms, and other natural hazards, especially in the event that drinking water sources are impacted. This includes information on boil water orders, emergency personal water storage, and backup water sources if the District's water system is impacted by a disaster.

The District will also conduct outreach related to the health effects of chemicals applied in the watershed when applicable, and education on water quality protection. This could include information about low-impact

recreation practices (e.g., stay on trails to prevent erosion, pack out your trash) and signage in the watershed alerting people that they are in a drinking water source area and discouraging dumping of trash and debris.

### 3.5 Pollution Prevention

Pollution prevention strategies focus on avoiding contamination of drinking water source areas by managing chemical applications for forestry activities, developing knowledge and understanding about risks to drinking water quality, and response planning.

The District will keep a current subscription to ODF's Forest Activity Electronic Reporting and Notification System (FERNS) to stay informed about planned pesticide and herbicide applications in the watershed and will keep copies of MSDS for commonly applied chemicals. The District currently receives notifications from Bonneville Power Administration (BPA) about planned herbicide applications for transmission line maintenance. If forested land in the drinking water source area is scheduled for chemical application, the District will communicate with public and private forestry landowners to discuss any potential impacts. Agreements could be made to identify and avoid critical areas or increase stream buffer zones for pesticide or herbicide application. The District will communicate with landowners to understand which specific chemicals are applied in the watershed, to advocate for Integrated Pest Management where appropriate, and to aim to come to an agreement on which ones are approved and/or preferred by both parties.

Water intakes may be affected by spills or leaks of gasoline, oil, or other hazardous chemicals from access roads. Although this risk is low, the District will incorporate spill response planning into its existing Emergency Response Plan in case a spill occurs on a road near a stream crossing. The District will identify the correct cleanup procedures for different chemical spills, as well as who to notify in case water sources are contaminated.

### 3.6 District Management

This strategy focuses on internal activities rather than external coordination with landowners or outreach to customers.

#### 3.6.1 Infrastructure Management

The District identified infrastructure issues as a high risk to drinking water supply, in particular excessive water loss that may lead to higher than necessary diversion rates from the water source. To address this risk, the District will implement systemwide leak detection and repair efforts, and maintain and upgrade infrastructure as recommended in its 2023 Water Master Plan. Some recommendations from the Water Master Plan include upgrading pipes in the distribution system, additional pressure reducing valve stations, storage tank upgrades, and replacing the media in the slow sand filters at the water treatment plant. The District will also focus on developing alternative water sources, potentially including aquifer storage and recovery (ASR). The risk of vandalism will be addressed by upgrading security systems, such as fencing, cameras, and cybersecurity measures. The risk of construction accidents will be addressed by identifying and supporting implementation of best management practices related to construction work.

#### 3.6.2 Staff Development

The District will address management continuity in order to ensure measures taken to reduce risks to drinking water are maintained. To retain institutional knowledge following retirement or departure of experienced staff, the District will ensure there is a robust training program covering District policies and procedures and historical information about infrastructure. The District will identify a central location to store information about the watershed, water quality, and anything else pertinent to management. The District will also consider training needed for emerging concerns such as the projected impacts of climate change on

water supply reliability and timing, changing legal requirements such as Forest Practices Act as new practices may affect District water sources, new contaminants of concern such as PFAS, and how these may impact the watershed.

### 3.7 Monitoring

Water quality monitoring will allow the District to detect and address any potential degradation of water quality in the drinking water sources, while streamflow monitoring will enable the District to track drought and low flows over time.

The District conducts water quality monitoring required by the Safe Drinking Water Act, but will consider additional monitoring for specific conditions, such as following storms or during periods of high turbidity. The water treatment plant is not designed to treat very high turbidity because it had not been an issue previously, but that could change if there is significant erosion or impacts due to clearcut harvesting or landslides. The District will also consider water quality monitoring after chemical applications to assess whether drift has occurred. Ongoing temperature monitoring and fish monitoring by the USFS, BLM, and Portland Water Bureau may provide additional useful information about water quality conditions, and the District will communicate with these entities regarding potential data sharing agreements.

Streamflow monitoring will help the District understand impacts of climate change, timber harvesting, and potential disasters on streamflow. The District may coordinate with agencies like the United States Geological Survey (USGS) and the Oregon Department of Fish and Wildlife (ODFW) to establish a long-term streamflow monitoring system. The District will need to identify if and where stream gages are needed. The local OWRD Watermaster typically takes low flow measurements on Gordon Creek about once a year. The District will review existing streamflow data as well as long-term weather and climate data to understand trends that may affect water supply.

## SECTION 4: Implementation Plan

This implementation plan describes the activities that the District intends to undertake under each of the strategies described in Section 3 to eliminate, reduce, or mitigate risks identified in the Gordon Creek watershed as resources allow. The implementation plan focuses on activities to be conducted within the next 5 years, although some activities may require longer planning timeframes or may be ongoing. Implementation of many actions will be dependent on funding and staff availability, so the implementation plan also includes potential funding sources related to the activities. A key element of implementation will involve building and maintaining partnerships with the landowners within the DWSA. The implementation plan will be reviewed periodically to track progress and adjust activities as needed based on any changes in watershed conditions.

The implementation plan is divided into three phases based on the readiness of activities to proceed and anticipated needs to secure funding. Activities listed in Phase 1 can generally be implemented within the first one to two years and address high-priority risks. Timing of implementation will be dependent on the availability of resources and staff. Phase 2 includes actions that may require additional preparation, such as developing partnerships and obtaining funding, which could possibly occur the second through fourth year of implementation. Activities needing more substantial preparation and those addressing lower-priority risks are included in Phase 3, and these could possibly occur in the fourth or fifth year of implementation or later. Exhibit 4-1 presents an overview of the implementation plan activities, and the following sections describe each activity in more detail.

Exhibit 4-1. Implementation Plan Overview

Strategy Category	Phase 1	Phase 2	Phase 3	Deliverables	Potential Partners
Forest Landowner Coordination	<p><u>General coordination:</u></p> <p>Communicate with landowners about their planned activities and any concerns related to impacts on water supply or quality</p> <p>Identify critical areas that may need additional protection or management</p>	<p>Maintain records of landowner activities that are reducing risks</p> <p>Discuss potential for critical area protection or protective management with landowners</p>	<p>Maintain communications and notifications</p> <p>Consider collaborative watershed management systems</p> <p>If a willing landowner is identified, take steps to protect critical areas (e.g., stewardship agreements, land acquisition, conservation easements, etc.)</p>	<p>Communication schedule</p> <p>Identification of critical areas</p> <p>Documentation of communication with landowners and any additional steps in critical area protection</p>	Landowners, ODFW, land trusts
	<p><u>Timber harvest practices:</u></p> <p>Sign up for notifications of timber harvest plans</p> <p>Understand Forest Practices Act changes</p> <p>Develop GIS overlay of steep slopes and highly erodible soils to prioritize areas for protection</p> <p>Map buffers around streams and intakes</p>	<p>Develop MOUs for advance notification of harvest plans</p> <p>Advocate for avoidance of clearcut harvest on steep slopes and erodible soils</p> <p>Discuss enhanced stream and intake buffers with landowners</p>	<p>Maintain communications about harvest plans and continue to advocate for practices that limit soil erosion</p>	<p>Subscription to notifications</p> <p>GIS layers for designating critical areas</p> <p>MOUs and easements with landowners</p> <p>Compilation of Forest Practices Act information</p>	Landowners, ODF
	<p><u>Maintenance:</u></p> <p>Map access roads and assess maintenance needs of roads, bridges, and culverts</p>	<p>Coordinate with landowners on maintenance projects as needed</p> <p>Install road signage where needed for safety</p>	<p>Develop MOUs for maintenance</p>	<p>Maintenance needs assessment</p> <p>MOUs for maintenance</p>	Landowners, Multnomah County
	<p><u>Watershed enhancement:</u></p> <p>Review existing studies and communicate with relevant agencies about watershed restoration and enhancement needs and critical habitat area protection</p> <p>Conduct watershed tours with landowners and potential restoration project partners</p>	<p>Develop a list of projects and potential funding sources, in coordination with landowners and the partners; begin to pursue funding</p> <p>Develop an approach for how to assess and address restoration needs following storms, in coordination with landowners and other partners</p>	<p>Begin project implementation</p> <p>Assess the need for gravel pit restoration projects</p>	<p>Watershed tours conducted</p> <p>List of watershed enhancement projects to implement</p>	Landowners, East Multnomah SWCD, land trusts, ODFW

Strategy Category	Phase 1	Phase 2	Phase 3	Deliverables	Potential Partners
Emergency Planning	<p><u>General:</u></p> <p>Develop or customize emergency preparedness outreach materials</p> <p>Begin assessing potential emergency backup water sources</p> <p>Compile existing road data within the watershed, including locations of any gates or access needs, and contact information for access</p>	<p>Distribute outreach materials to customers</p> <p>Maintain updated maps and contact information in District vehicles</p> <p>Develop agreements for temporary water supplies (e.g., trucking in water)</p> <p>Identify actions needed to protect source water quality during emergencies</p> <p>Prioritize list of seismic retrofits needed</p>	<p>Develop agreements and/or infrastructure for longer-term replacement water supplies</p> <p>Work with the County and other agencies to integrate source water protection into plan updates</p> <p>Install valves, restrained flexible joints, and automation as needed for earthquake safety</p>	<p>Outreach materials</p> <p>Access road maps for District employees and vehicles</p> <p>Agreements for temporary and long-term water supplies</p>	<p>Multnomah County, Corbett Fire District, Gresham Hazmat Fire Unit, Portland Water Bureau</p>
	<p><u>Wildfire:</u></p> <p>Assess District buildings and infrastructure for fire safety needs (e.g., defensible space)</p> <p>Develop or update landowner access agreements in case of fire</p> <p>Obtain MSDS data sheets on fire retardants to understand potential impacts on health and water quality</p>	<p>Implement defensible space and other measures</p> <p>Work with landowners and emergency agencies on list of preferred chemicals and buffer areas</p> <p>Develop agreements for post-fire restoration activities</p> <p>Discuss fire pre-attack planning, fire detection, communication, and suppression activities with USFS</p>	<p>Maintain defensible space</p> <p>Maintain agreements with landowners for access and restoration</p>	<p>Projects implemented</p> <p>Agreements with landowners</p>	<p>Multnomah County, Corbett Fire District, US Forest Service</p>
Public Outreach	<p>Develop or customize water conservation outreach materials to be distributed to customers during drought</p> <p>Communicate with Portland Water Bureau about shared issues and lessons learned</p> <p>Develop educational materials for youth about drinking water protection</p>	<p>Develop an approach for outreach related to recreation and random dumpsites, and coordinate with landowners and other partners</p> <p>Develop outreach materials on the projected impacts of climate change on the District’s water supply</p> <p>Distribute educational materials for youth about drinking water protection</p>	<p>Continue outreach to customers</p> <p>Consider installing signage in the watershed discouraging dumping</p> <p>Continue outreach to youth</p>	<p>Outreach materials to customers</p> <p>Signage</p> <p>Outreach materials to youth</p>	<p>Portland Water Bureau, Multnomah County, Corbett School District, Columbia Grange 267, Northeast Multnomah County Community Association</p>

Strategy Category	Phase 1	Phase 2	Phase 3	Deliverables	Potential Partners
Pollution Prevention	<p>Obtain MSDS data sheets for chemicals commonly applied in the watershed</p> <p>Sign up for notifications of planned chemical applications</p> <p>Maintain open communication with BPA about planned herbicide use for transmission line maintenance</p>	<p>Develop MOUs with landowners related to preferred chemicals and buffers around critical areas (e.g., intakes)</p> <p>Continue coordination with the USFS on incorporating pesticide precaution measures into BPA's Pesticide Use Permit issued by the USFS</p>	<p>Advocate for Integrated Pest Management approaches</p>	<p>MSDS</p> <p>Subscriptions to notifications</p> <p>MOUs with landowners</p>	<p>Landowners, BPA, USFS</p>
District Management	<p><u>Infrastructure management:</u></p> <p>Prioritize infrastructure needs identified in the 2023 Water Master Plan and begin to pursue funding</p> <p>Continue efforts to reduce system water loss through replacement of leaking pipes, focusing first on the oldest pipes</p> <p>Determine any additional security or cybersecurity needs</p>	<p>Begin implementing infrastructure projects and security or cybersecurity projects (if needed) as funding allows</p>	<p>Continue implementation of infrastructure projects and any needed security or cybersecurity projects</p> <p>Continue to explore ASR and alternative water sources</p>	<p>Leak detection surveys</p> <p>Infrastructure projects</p> <p>Security or cybersecurity projects (if needed)</p>	
	<p><u>Staff development:</u></p> <p>Develop a central location for system information, policies and procedures, and watershed information</p> <p>Identify trainings that would be beneficial for staff and register for those trainings/conferences, and begin attending if possible</p>	<p>Develop a plan for ongoing trainings</p>	<p>Continue implementing training plan</p>	<p>Training plan</p> <p>Trainings and conferences attended</p>	<p>American Water Works Association, Oregon Association of Water Utilities (OAWU)</p>
Monitoring	<p>Develop GIS capabilities and data management approach</p> <p>Compile existing local and regional climate data and projections to identify climate trends that could affect water supply</p> <p>Inspect water sources during storms and high turbidity events</p> <p>Coordinate with OWRD Watermaster to receive results of low flow measurements</p>	<p>Determine additional water quality monitoring needs</p> <p>Test water samples following timber harvest, chemical applications, or natural disasters as needed</p> <p>Discuss needs and potential for new stream gages with USGS and ODFW</p> <p>Develop partnerships for tracking occurrences of rare, threatened, or endangered species in the DWSA</p>	<p>Implement water quality monitoring plan</p> <p>Establish long-term streamflow monitoring system</p>	<p>GIS layers</p> <p>Water quality monitoring plan and water quality monitoring annual reports</p> <p>Long-term streamflow data</p> <p>Monitoring records for species of interest</p>	<p>OWRD, USGS, ODFW, USFS, Portland Water Bureau</p>

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## 4.1 Phase 1

### 4.1.1 Forest Landowner Coordination

#### 4.1.1.1 General Coordination

The District relies on sound management practices in the Gordon Creek watershed to ensure a reliable source of high-quality drinking water. Therefore, communication with landowners in the watershed is critical to anticipating potential impacts and protecting water quality. During Phase 1, the District will continue to build on the relationships developed during the creation of the RRP to maintain open communication with landowners and discuss any concerns about their current or proposed activities that may impact the water source.

During Phase 1, the District will identify critical areas within the drinking water source watershed that may need additional protection or changes in management strategies to enhance protection of the District's water sources. Examples could include areas close to water intakes where timber harvest and other intensive land uses are not considered compatible with the District's water quality needs. As a starting point, the District will use GIS data to create an overlay of steep slopes, highly erodible soils, areas prone to landslides, and buffers around streams and water intakes. This map can then be used to prioritize critical areas for protection.

#### 4.1.1.2 Timber Harvest Practices

The District will sign up for notifications of timber harvest plans, chemical applications, and other silvicultural activities through ODF's Forest Activity Electronic Reporting and Notification System (FERNS). Electronic notification subscriptions expire on December 31 of each year, so the designated District staff member will need to set a reminder to renew the subscription annually.

Changes to Oregon's Forest Practices Act will affect management activities of the forested Gordon Creek watershed, and the new rules will be fully in effect beginning January 1, 2024. The District will review the changes to the rules to better understand how its source watershed will be affected, including topics such as stream buffer widths, timber harvest on steep slopes, and access road maintenance to prevent sediment from reaching waterways.

#### 4.1.1.3 Maintenance

The District intends to develop an up-to-date map of access roads within the watershed for safety purposes, as described further in Section 4.2 below. As part of the ground-truthing for this access road mapping project, the District will note any maintenance needs observed for roads, bridges, and culverts.

#### 4.1.1.4 Watershed Enhancement

Using information on critical areas described above, the District will review existing studies and communicate with agencies, such as ODFW, about watershed restoration and enhancement needs to determine whether there are opportunities to implement projects that would jointly benefit drinking water quality and fish and wildlife. For example, enhancing riparian vegetation could reduce sediment inputs while lowering stream temperatures, thus reducing turbidity to be treated at the water treatment plant and improving temperature conditions downstream in the designated critical habitat for Chinook, coho, and steelhead. During Phase 1, the District will look for opportunities to conduct watershed tours with landowners and potential restoration project partners.

## 4.1.2 Emergency Planning

### 4.1.2.1 General

The Gordon Creek watershed has the potential to be affected by natural hazards ranging from wildfire and earthquakes to volcanic activity and ice storms. To improve community preparedness and safety, the District will develop or customize emergency preparedness outreach materials to distribute to customers. Materials will focus on aspects of the water system that customers should be aware of in an emergency, such as how to find information on a boil water notice or how much water customers should store in their home emergency kits.

District employees may enter the watershed for various duties, such as infrastructure maintenance or inspecting waterways during a high turbidity event. In the event of a landslide, wildfire, or other emergency, it is important for employees to have rapid access to information about all potential ingress and egress routes. During Phase 1, the District will compile existing road data, including maps and locations of access roads and gates, along with any contact information needed for access. This data will then be verified in the field and maps will be updated accordingly. This information will be made available to employees electronically and in printed form in all District vehicles.

### 4.1.2.2 Wildfire

Wildfire is of particular concern in the area, as was highlighted during the nearby Eagle Creek Fire in 2017 and the Camp Creek Fire in 2023. During Phase 1, District buildings and infrastructure will be assessed for fire safety needs such as defensible space and fuel reduction projects. Recommendations from the Multnomah County Community Wildfire Protection Plan will be used to guide the assessment. The District will also create or ensure renewal of existing landowner access agreements in case of wildfire in the watershed.

The District's Emergency Response Plan includes descriptions of procedures for fires and other emergencies, and also states that Material Safety Data Sheets (MSDS) should be kept on file for chemical spills. In addition to the MSDS already on file related to potential chemical spills, the District will add MSDS for fire retardants and other firefighting chemicals that could be applied to the forested landscape during a wildfire. District staff will review these to understand the potential impacts on human health and water quality if the chemicals reach the water source.

## 4.1.3 Public Outreach

Drought and low streamflows are considered a high risk to the drinking water system and to the surrounding ecosystems that depend on Gordon Creek. To minimize impacts, the District will develop or customize water conservation outreach materials to be distributed to customers during drought. Outreach may be in the form of billing messages, mailers, website content, or other methods deemed effective and appropriate for reducing water consumption. The District will also communicate with Portland Water Bureau about regional drought issues and apply lessons learned within its service area. As part of customer outreach about risks to the drinking water system, the District will develop outreach materials about drinking water protection for youth and in the process seek input and partnerships from such potential educational partners as Corbett School District, Columbia Grange 267, and the Northeast Multnomah County Community Association.

## 4.1.4 Pollution Prevention

Consistent with the District's Emergency Response Plan, staff will ensure that MSDS for chemicals commonly applied in the watershed (e.g., pesticides and herbicides) are kept on hand and procedures are in place for addressing chemical spills. The District will sign up for notifications of chemical applications

through ODF's FERNS website and will keep a current subscription each year. The District will also maintain communication directly with the Bonneville Power Administration (BPA) about planned herbicide use for transmission line maintenance.

## 4.1.5 District Management

### 4.1.5.1 Infrastructure Management

As described in the District's 2023 Water Master Plan, addressing excessive water loss within the system is a high priority. During Phase 1, the District will prioritize the infrastructure needs identified in the Water Master Plan and begin to pursue funding, as well as continue its leak detection and repair efforts. The District will assess whether there are any unmet security or cybersecurity needs, such as fencing, closed-circuit television, or software upgrades.

### 4.1.5.2 Staff Development

Management continuity and training have been identified as high priorities for the District. During Phase 1, the District will develop a central location for storing water system information, policies and procedures, and watershed information, and will ensure that all new staff receive adequate training and know where to find more information. While much of this information may already be included in current staff training plans, examples of additional information that could be stored include records of turbidity measurements during or following storms, photos of key locations for water quality sampling, regional climate change projections, post-fire assessments of nearby watersheds, and plans to seek funding for District activities (whether successfully funded or not).

The District will identify trainings that would be beneficial for staff on a variety of topics such as the new Forest Practices Act rules, emerging contaminants like PFAS, or cybersecurity issues. The American Water Works Association (AWWA) offers seminars, workshops, and online training as well as resources for small water systems (<http://www.awwa.org/Events-Education>). The Oregon Water Utility Council is a committee of the Pacific Northwest Section of AWWA that monitors legislation and regulations that affect water utilities in Oregon. Members receive discounted training, industry publications, and opportunities to network and learn from shared experiences with other water providers (<http://www.pnws-awwa.org/member-groups/committees/oregon-water-utility-council/>). The US Environmental Protection Agency also offers training for water utility resilience and cybersecurity (<https://www.epa.gov/waterresilience>).

## 4.1.6 Monitoring

With a growing number of water-related datasets and GIS layers becoming publicly available, the District will seek to develop GIS capabilities and a data management approach suitable for its capacity and resources. During Phase 1, the District will determine and prioritize the types of data and GIS information that would be most beneficial to District operations and watershed health. This will likely include information on water quality and quantity as well as climate data and projections that may affect the District's water supply in the future.

The District is fortunate to have a drinking water source area that is generally undeveloped and provides high quality raw water. Nonetheless, water quality and quantity should be monitored to meet regulatory requirements and to ensure that watershed conditions remain satisfactory. During Phase 1, the District will inspect water sources during storms and other high turbidity events and will coordinate with the local Watermaster to receive results of low flow measurements.

## 4.2 Phase 2

### 4.2.1 Forest Landowner Coordination

#### 4.2.1.1 General Coordination

The District will maintain and build on relationships with landowners in the watershed, ensuring open communication about plans and activities. Records will be kept of landowner activities designed to reduce risks to drinking water, such as choosing timber harvest methods that reduce erosion and sediment production that could impact streams. Once the District has assessed critical areas that may need additional protection, the District will discuss management needs or potential protection with landowners to understand current management practices in sensitive areas and opportunities for collaboration.

#### 4.2.1.2 Timber Harvest Practices

FERNS notifications are provided approximately 2 weeks prior to timber harvest activities; however, forest landowners begin developing harvest plans far in advance and typically have a solid understanding of the planned harvest rotation for their properties. The District will seek to develop MOUs for advance notification of timber harvest plans in order to understand and plan for any potential impacts to the watershed. Having assessed critical areas, such as steep slopes and areas of highly erodible soils, the District will advocate for avoidance of practices likely to increase erosion substantially (e.g., clearcut harvest) and will discuss the possibility of enhanced stream and water system intake buffers with landowners.

#### 4.2.1.3 Maintenance

The District will coordinate with landowners on maintenance projects for access roads, bridges, culverts, and similar infrastructure, including seeking funding as needed. Road signage will be installed where needed for safety of personnel working in the watershed.

#### 4.2.1.4 Watershed Enhancement

Once restoration and enhancement priorities have been identified, the District will work with partners to develop a list of projects and potential funding sources and will begin to pursue funding or provide letters of support for partners' funding requests. The District will work with landowners to develop an approach for assessing restoration needs following large storms, including windstorms and ice storms.

### 4.2.2 Emergency Planning

#### 4.2.2.1 General

During Phase 2, the District will continue to distribute emergency preparedness outreach materials to customers and will maintain updated maps and access contact information in District vehicles. As described in the Emergency Operations Plan, the District will develop agreements for temporary water supplies if needed during emergencies and will identify additional actions that may be needed to protect source water quality. The District will also prioritize the list of seismic retrofits recommended in the Water Master Plan.

#### 4.2.2.2 Wildfire

The District will ensure that sufficient defensible space is maintained around infrastructure and facilities, such as the water treatment plant and intakes. Following a review of commonly used firefighting chemicals, the District will work with landowners and emergency agencies on a list of preferred chemicals and buffer zones. Building on emergency access agreements, the District will seek to develop agreements in advance

for potential post-fire restoration activities that may be needed. The District will also coordinate with the USFS on fire pre-attack planning, fire detection, communication, and suppression activities.

### 4.2.3 Public Outreach

Phase 2 outreach material distribution will focus on medium-priority risks, such as recreation, random dumpsites within the watershed, and projected impacts of climate change on the District's water supply that may support water conservation efforts for customers. The District will distribute youth outreach materials in coordination with any partners.

### 4.2.4 Pollution Prevention

The District will continue to maintain open communication with landowners about planned chemical applications and will seek to develop MOUs with landowners related to preferred chemicals and expanding buffer zones around sensitive areas, such as water intakes.

### 4.2.5 District Management

#### 4.2.5.1 Infrastructure Management

During Phase 2, the District will continue to focus on reducing water loss by replacing leaking pipes, particularly the oldest pipes in the system that may have exceeded their expected design life. The District will also implement other identified high-priority infrastructure projects as funding allows and will continue seeking additional funding for needed improvements. The District will implement any needed security or cybersecurity projects as funding allows.

#### 4.2.5.2 Staff Development

The District will continue to update its plan for ongoing staff development trainings to keep current on issues affecting municipal water providers.

### 4.2.6 Monitoring

During Phase 2, the District will assess whether it has additional water quality monitoring needs beyond those required under the Safe Drinking Water Act or identified needs for turbidity monitoring. Additional water sampling may be needed following timber harvest, chemical applications, or natural disasters that may occur in the watershed. If concerns about low flows have arisen through the Watermaster's measurements or the District's observations, the District will discuss the potential for installation of stream gages with USGS and ODFW. The District may also consider the need for tracking occurrences of rare, threatened, or endangered species within the DWSA through partnerships, citizen science programs, or selecting a central location for staff to report observations (e.g., fish sightings in the creek or tributaries). Examples of species that may be interest are Larch Mountain salamander, northern spotted owl, coho and Chinook salmon, and steelhead. Data may be used to inform recommendations for watershed restoration and enhancement projects.

## 4.3 Phase 3

### 4.3.1 Forest Landowner Coordination

In general, the District will continue coordination activities with landowners on an ongoing basis to support practices that will reduce sediment and chemical inputs to the Gordon Creek watershed. During Phase 3, the City will review examples of collaborative watershed management systems with forestry practitioners and

consider opportunities to work together with landowners on projects that support both forestry activities and preservation of water quality. For locations identified as critical to the drinking water supply, the District will work with willing landowners on protective actions such as stewardship agreements, conservation easements, or land acquisition. Stewardship agreements are voluntary land management agreements under the Forest Practices Act under which landowners agree to exceed regulatory requirements to protect water quality and fish and wildlife habitat. If conservation easements or land acquisition are being considered, the District will conduct an assessment to determine the ideal management structure and whether land trusts or other entities are interested in collaborative management agreements. As needed during Phase 3, the District will develop MOUs for maintenance of roads and other infrastructure and will support implementation of any watershed restoration and enhancement projects identified in earlier phases. The District will also assess the need for restoration or remediation of gravel pits that may have been used in the watershed but are no longer active and may be contributing to sediment loading.

### 4.3.2 Emergency Planning

During Phase 3, the District will continue developing agreements (and infrastructure, if identified) for longer-term replacement water supplies in the event that the existing sources are unavailable in an emergency. The District will coordinate with the County and other agencies to integrate source water protection into updates of plans such as the Multnomah County Community Wildfire Protection Plan and the Multnomah County Natural Hazards Mitigation Plan. Recommendations from the Water Master Plan related to earthquake safety will be implemented as funding allows, including installation of valves, restrained flexible joints for pipelines, and automation of shutoffs or bypass valves for areas of the water system that may be depressurized or otherwise compromised in the event of an earthquake. The District will continue to maintain defensible space around infrastructure and buildings.

### 4.3.3 Public Outreach

The District will continue outreach to customers and youth about drinking water protection, including water conservation, best practices for protecting water quality, low-impact recreation, and avoidance of dumping in the source area. During Phase 3, the District will consider the need for installation of signage in the watershed identifying it as a drinking water source area and discouraging dumping.

### 4.3.4 Pollution Prevention

During Phase 3, the District will continue to coordinate with landowners about usage of chemicals such as pesticides and herbicides and will advocate for integrated pest management approaches that limit the use of chemicals that could potentially contaminate waterways.

### 4.3.5 District Management

The District will continue implementing infrastructure projects and any security or cybersecurity projects as funding allows and will implement the training plan for all new staff and as new issues arise. The District's previous explorations of aquifer storage and recovery (ASR) will be expanded as funding allows to develop potential alternative water sources.

### 4.3.6 Monitoring

The water quality plan developed during Phase 2 will be implemented to monitor for any water quality parameters of concern and to establish a long-term streamflow monitoring system in collaboration with the USGS or other partners.

## 4.4 Funding Sources

Multiple funding opportunities are available to support implementation of the RRP as described in this section. The District's SWA also includes a list of potential funding sources (see Appendix B), as does DEQ's webpage on funding for water systems: <https://www.oregon.gov/deq/wq/programs/Pages/DWP-Funding.aspx>

The funding opportunities below are well-aligned with the District's priorities for RRP implementation.

### Drinking Water Source Protection Fund, Oregon Health Authority

- Provides grants of up to \$50,000; 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 are available to address threats to drinking water supplies outside of the standard Letter of Interest submission timeline
- Letters of Interest due from January through March
- Example projects: land acquisition, incentive-based protection measures, community outreach, riparian restoration, waste collection, and watershed planning
- [www.oregon.gov/oha/ph/healthyenvironments/drinkingwater/srf/pages/spf.aspx](http://www.oregon.gov/oha/ph/healthyenvironments/drinkingwater/srf/pages/spf.aspx)

### Drinking Water Provider Partnership Grants

- Provides grants up to \$50,000
- Project must be in a drinking water source area with a Federal nexus (e.g., USFS and BLM)
- Funding must be used within 18 months
- Proposals due in January
- Supports projects that restore and protect watersheds that provide drinking water while also benefiting aquatic and riparian ecosystems, including the native fish that inhabit them
- Example projects: develop native riparian reserves, road sediment analysis and road redesign, riparian planting, weed control, floodplain reconnection
- <https://geosinstitute.org/initiatives/dwpp/>

### 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 three times 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

- Provides grants up to \$50,000 and 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 or BLM roads or lands are not eligible
- <https://www.oregon.gov/deq/wq/programs/pages/nonpoint-319-grants.aspx>

### Oregon Watershed Enhancement Board

- Monitoring grants: eligible monitoring projects include status and trend, project effectiveness, landscape effectiveness, and Rapid Bio-Assessment; apply in the fall
- Restoration: Priorities include altered watershed function affecting water quality, water flow, and fish production capacity; apply in the spring or fall
- Stakeholder Engagement: Eligible projects increase awareness and understanding in watersheds to support implementation of specific restoration, monitoring, and conservation activities; apply in spring or fall
- Technical Assistance: apply in spring or fall
- Land Acquisition Grants: Eligible projects involve purchase of interests in land from willing sellers for maintenance and restoration of watersheds and fish and wildlife habitat; apply in the fall
- Water Acquisition Grants: Eligible projects involve purchase of an interest in water from a willing seller to increase in streamflow for habitat and species conservation benefits and to improve water quality; apply in fall
- Small Grants: Provides up to \$15,000 for less complex, on-the-ground restoration projects
- <https://www.oregon.gov/oweb/grants/pages/grant-programs.aspx>

### Feasibility Study Grants and Water Project Grants and Loans, OWRD

- Water Project Grants and Loans
  - Applications are due in April
  - Supports projects that address instream and out-of-stream water supply needs now and into the future
  - Example projects include: irrigation efficiency projects
- Feasibility Study Grants
  - Reimburse up to 50% of the costs of studies to evaluate the feasibility of developing water conservation, reuse, and storage projects
  - Applications are due in fall
- <https://www.oregon.gov/owrd/programs/FundingOpportunities/Pages/default.aspx>

### Various Financial Assistance Programs, USDA Natural Resources Conservation Service

- Environmental Quality Incentives Program (EQIP): Financial and technical assistance to agricultural and forestry producers to address natural resources concerns and provide environmental benefits, such as water quality improvements, reduce soil erosion and sedimentation, and improved wildlife habitat
  - <https://www.nrcs.usda.gov/programs-initiatives/eqip-environmental-quality-incentives>
- National Water Quality Initiative (NWQI): Provides funding for a detailed watershed assessment and an outreach strategy to address agricultural-related impacts, and following completion, funding to implement projects becomes available through EQIP
  - <https://www.nrcs.usda.gov/programs-initiatives/national-water-quality-initiative>
- Watershed 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>

#### Environmental Education Grants Program, US EPA

- Supports projects that promote environmental awareness and stewardship and help provide people with skills to protect the environment
- Applicants must represent at least one of the following types of organizations: local education agency, state education or environmental agency, college or university, non-profit organization, tribal education agency, noncommercial educational broadcasting entity
- Grant competition closes in January
- <https://www.epa.gov/education/grants>

#### 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
- <https://www.oregon.gov/oem/emresources/Grants/Pages/default.aspx>

#### Community Wildfire Defense Grant Program, USFS

- Funds projects to implement projects described in a Community Wildfire Protection Plan, including projects to create fire adapted communities, improve wildfire response, and restore and maintain landscapes
- Applications are due in the fall
- Requires a 25% non-federal match (cost share waiver may be available)
- Would likely require a partnership with Multnomah County as the applicant
- <https://www.fs.usda.gov/managing-land/fire/grants>

#### Private Forest Accord Grant Program

- Supports projects that benefit fish and aquatic wildlife species and habitats anticipated to be covered by the pending ODF Habitat Conservation Plan
- Examples of supported project types include (but are not limited to) fish passage, riparian restoration, conservation easements or land acquisition, and invasive species removal
- Applications are anticipated to be due in the fall or winter
- Administered by ODFW
- Most projects are expected to request at least \$50,000 (no minimum or maximum set)
- [https://www.dfw.state.or.us/habitat/PFA/grant\\_program.html#GrantProgram](https://www.dfw.state.or.us/habitat/PFA/grant_program.html#GrantProgram)

## SECTION 5: Contingency Plan

A contingency plan for responding to the loss or substantial reduction of a drinking water source is a required element of a state-approved DWPP or RRP. Oregon Administrative Rule OAR 333-061-0057(5) specifies that a 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

This contingency plan has been developed in coordination with the Corbett Water District Emergency Response Plan (ERP), developed in February 2022.

### 5.1 Threats to the Drinking Water Supply

The District identified several threats to its drinking water supply in Section 4 of its ERP and in Section 2 of this RRP. Of the identified threats, the following could cause the potential loss or reduction of a drinking water source:

- Wildfire
- Drought and low streamflows
- Earthquake
- Severe storms (e.g., heavy rains producing flooding, high winds, ice storms)
- Landslides
- Volcanic eruption
- Clear-cut and partial harvesting
- Contamination from forestry pesticide and fertilizer applications
- Transportation corridors and stream crossings
- Vandalism
- Water system infrastructure issues, such as leaks or failures
- Contamination from transmission line maintenance
- Random dumpsites (chemical spills)

### 5.2 Prioritization of Water Usage

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

- Residential (indoor domestic)
- Fire protection
- Schools and commercial
- Parks
- Irrigation (by residential or commercial water customers)

## 5.3 Responses to Potential Incidents

The District's ERP is an all-hazard plan that describes how the District will organize and respond to emergencies and disasters in the community.

The ERP includes descriptions of responsibilities for each person in the chain of command and contact information for current personnel in Section 3. It organizes types of emergency events by the probability that they will occur in Section 4, and it describes emergency situations on a severity scale from 1 to 4 in Section 5. The ERP contains an emergency notification plan in Section 6 to initiate notification procedures that the District should take in the event of an emergency. Section 6 outlines the appropriate District personnel that will coordinate and communicate the emergency to customers, including methods of distributing water shortage notifications (e.g., District website, signage, social media, etc.).

Section 10 of the ERP, Response Actions for Specific Events, describes actions to take in specific emergencies. The general steps to take in any emergency are outlined in the beginning of Section 10, and include analyzing the severity of the event, taking immediate action to save lives, and then working on system repairs and returning to normal operation. The ERP identifies specific events, and describes the assessment, immediate actions, notifications, and follow-up actions for each one. For example, in the event of a drought, the District will: 1) assess the severity; 2) take immediate action to implement water conservation; 3) provide public notice and education through the Corbett School District and the Consumer Confidence Report; and 4) follow up by monitoring and enforcing conservation.

Other examples of specific events in Section 10 of the ERP include power outages, chlorine treatment plant equipment failure, and chemical contamination. Examples of immediate actions include repairing line breaks or equipment, containing and cleaning up contamination, and isolating hazardous materials. Other follow-up actions include training and preventative maintenance, repairing infrastructure, and monitoring equipment after repairs. See Section 10 of the ERP for the full list of events and associated responses.

The threats listed in Section 5.1 of this Plan could result in a range of outcomes, including many of the emergency situations described in Section 10 of the ERP. For example, severe storms could damage the power supply or facilities, and the District would respond to each situation with the actions outlined in the ERP. Some risks to the drinking water system, such as volcanic eruptions and forestry activities (e.g., clearcuts and pesticide contamination), are not specifically identified in the ERP, but the responses would be similar to other events, and would depend on the severity of the situation.

The District has a Level 1 water treatment facility that requires a certified operator. The treatment process is slow sand filtration using three sand ponds. The treatment plant also consists of a clear well and a one-million-gallon reservoir. The District is required to have a water treatment plant operations and maintenance manual by the OHA, which is kept at the water treatment plant. This manual is intended for use by individuals with training in operating water treatment plants, and it describes protocols for operations and maintenance of the facility.

Information about the District's water treatment system and drinking water sampling is available by searching for "Corbett Water District" through OHA's Drinking Water Data Online database using the following link: [yourwater.oregon.gov/wssearch.php](http://yourwater.oregon.gov/wssearch.php)

## 5.4 Key Personnel and Notification Roster

### 5.4.1 Key Personnel

This Contingency Plan identifies key personnel who have a role in addressing emergencies, based on the District's ERP (Section 3: Chain of Command and Lines of Authority, Section 6: Emergency Notification, Section 8: Effective Communication and Section 13: Returning to Normal Operation).

The District Manager is responsible for overall system management and decision-making. As described in Sections 3, 6, and 13 of the ERP, the District Manager is tasked with leading emergency response operations and communications. The District Manager will notify regulatory agencies, the public, and news media of the emergency and any water-use restrictions, and will organize staff and approve decisions. Additionally, the District Manager decides when the water system is ready to resume normal operations, based on factors such as water quality sampling results and coordination with State organizations. District utility workers will investigate problems and make repairs to damaged infrastructure as necessary. Administrative staff will provide support communicating with customers. Utility workers and the District Manager will continuously communicate about updates to the water shortage or emergency. A staff list is located at the Corbett Water District Office.

### 5.4.2 Notification Roster

#### Emergency Response Agencies

Appendix A of the ERP includes a list of Corbett's emergency response contacts including those listed below, as well as local certified labs, Pacific General Electric, utility companies, repair contractors, and public notification contacts.

- **Multnomah County Sheriff's Department (911 Dispatch)**
  - Corbett does not have a police department, so it would contact Multnomah County Sheriff's Office in the event of an emergency.
  - Non-emergency number: 503-823-3333
- **Corbett Fire District: 503-809-4372**
- **Columbia Dispatch: 360-891-5140**
  - Columbia Cascade Interagency Communications Center provides incident dispatch services for emergencies occurring on the Mount Hood National Forest
- **Multnomah County Emergency Response: 503-988-4649 (Director's phone number)**
- **Oregon Emergency Response System**
  - 800-452-0311, or 503-378-6377 in Salem
  - The Oregon Emergency Response System coordinates and manages state resources in response to natural and technological emergencies such as wildfire, floods, earthquakes, and Search and Rescue missions.
- **OHA – Drinking Water Services**
  - Drinking Water Services: 971-673-0405 or 503-704-1174 for after hours emergencies
- **DEQ – Drinking Water Program**
  - Water Quality Program: 503-229-5664
- **Other Organizations**
  - Other organizations such as the Multnomah County Road Department, the Oregon Department of Transportation, the Oregon State Police, local ambulance service, and local hospitals may assist the District with emergency responses.

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

### 5.5.1 Short-term Actions

As described in Section 1 of this RRP, the District relies on water supply from the North and South forks of Gordon Creek. There are currently no other sources of water (e.g., groundwater) available to the District, and storage is limited. In addition, there are no other water systems to tie into in the immediate area.

Short-term alternative water supplies, which are described in Section 11 of the ERP, include bottled water from local stores, water from numerous local streams, and water from tanker trucks provided by Fire District 14. Residents would need to use personal treatment devices to consume water from local streams or Fire District 14.

### 5.5.2 Long-term Actions

Depending on the water supply emergency, the District may need to construct new infrastructure for its surface water system to supply drinking water once again. The District may also need to construct new infrastructure for an alternative water source for at least emergency and potentially continuous water supply, such as groundwater or aquifer storage and recovery (See Section 6–Future Water Sources). The District will use its Water System Master Plan to guide infrastructure development and the pursuit of long-term water supply options. Short-term potable water supply replacement actions would need to continue until long-term actions restore the District’s drinking water supply.

## 5.6 Short-term and Long-term Conservation Measures

Information on conservation measures can be found in Section 12: Curtailing Water Usage of the District’s ERP. When the District decides it is necessary to limit water use, it may ask customers to restrict outside water usage (e.g., watering lawns and washing cars) and inside usage. Corbett may use billing software (CUSI IVR) system to contact customers about water shortages and conservation measures. Other methods of notifying customers of a water curtailment measure include putting information on the District’s website, posting information on door hangers, and contacting local radio news. The type of outreach would depend on the type and severity of the situation. In the event of a water shortage, the District will continually monitor system usage and spot-check meter usage if time is available and continue to message customers as long as necessary.

## 5.7 Plan Testing, Review, and Update

To stay coordinated with the District’s ERP, this Contingency Plan will be reviewed and updated when changes to staff, contact information, or emergency procedures occur, such as following evaluation of lessons learned from exercises or events. This plan will be reviewed at a minimum of every five years to comply with State requirements.

## 5.8 Personnel Training

Personnel training is outlined in Section 14 of the District’s ERP. This section identifies training needs and expectations for each position and describes emergency rehearsals.

The Water District Manager is expected to be trained in emergency response communications, emergency response planning, issuing health advisories, chemical spills or leaks, and fire extinguishers use. The utility workers require training in emergency response communications, suspicious activity, chemical spills and

leaks, and fire extinguishers use. Administrative support receives training in emergency response communications and planning, and fire extinguisher use.

The District plans to schedule times for emergency rehearsals, which include drills, tabletop exercises, and other ways to practice emergency response. These trainings will be done by a professional trainer or organization and will include drills on communications, water line breaks, and more.

## 5.9 Public Education

The District provides emergency response education in both its newsletter and a pamphlet it distributes to customers.

In addition, the District provides information about water issues and water conservation on its website, [corbettwater.com](http://corbettwater.com). Water issues discussed on the website can include boil water notices, planning efforts, projects, and if needed, water curtailment notices. Water conservation information includes details about its toilet rebate program where customers can receive a \$100 rebate for replacing an older toilet with a new high efficiency toilet, a guide to detecting and fixing leaks, and tips to reduce water consumption. The District also promotes water conservation in its annual Water Quality Report, which provides a web link to the District's Source Water Assessment and includes both water conservation tips and source water quality protection tips.

## 5.10 Logistical and Financial Resources

Funding and maintaining this Contingency Plan along with an ERP are priorities for the District. The District will continue working with community stakeholders to:

- Identify funding sources for emergency management programs and planning, personnel, and equipment.
- Partner with local, regional, and State organizations to maximize use of limited resources.

The Board can provide funding in emergencies, and the District can also work with Multnomah County to secure financial resources. Assistance from the State and Federal Emergency Management Agency (FEMA) may be available to the District. The governor can request that FEMA provides resources, planning, coordination, funding, and training to State and local jurisdictions.

If an incident in the District requires major changes in allocation of District funding, the Board has the authority to adjust budgets and funding priorities. The Board could also explore water rate adjustments, property tax increases, and/or issuance of bonds.

## SECTION 6: Future Water Sources

Drinking water protection plans, including watershed risk reduction plans such as this one, provide an opportunity for water providers to consider risks and strategies that could help protect new, future water sources. The District's water rights for use of water from South Fork and North Fork of Gordon Creek (Certificates 81430 and 81431) and streamflows from those sources are anticipated to be sufficient to meet demand over the 20-year planning period of this RRP. Implementation of strategies identified in this RRP, such as water conservation through addressing water loss in the system and customer outreach, will also help reduce water demand, thereby supporting use of the District's current sources further into the future.

While the District's current water supply sources are anticipated to be sufficient over the planning period, the District considers securing a backup water supply a priority to meet District needs in the event of an issue with its current water sources or related infrastructure, such as an issue resulting from a natural disaster. The District is planning for a backup water supply by focusing on characterizing the feasibility and location of the groundwater well or aquifer storage and recovery (ASR) as a backup source due to the District's geographic isolation precluding the use of other substantial surface water sources. ASR is the collection and underground storage of surface water during the rainy season for use in the summer when surface water supplies are diminished and water demand is higher. The District needs to conduct feasibility studies to determine if and where groundwater or ASR are viable options. An initial test well was drilled for an ASR feasibility study, but results were inconclusive. A second opinion of the test well suggested it could be a feasible water source, but a new well location will need to be found as the test well filled portions of the borehole with bentonite and cement grout. The District is currently considering a variety of potential well locations and developing a well at any of the locations would require a new test well to assess feasibility and well productivity. If groundwater or ASR is feasible, the District would need to negotiate with landowners to provide a sale or easement of the land for a well, to secure water right if the District pursues groundwater, and to secure funding to develop the infrastructure, among other considerations. Given these many current uncertainties, assessing risks and developing risk-reduction strategies for a backup water supply in this plan is premature and not feasible at this time. A future groundwater or ASR source is not expected to affect the protection issues associated with the District's surface water sources on the South Fork and North Fork of Gordon Creek.