Section 1: Mapleton Water District

MAPLETON WATER DISTRICT

Version 1.0 (October 2023 - October 2028)

Developed as an annex to the Lane County Multi-Jurisdictional
Natural Hazard Mitigation Plan

Section 1.1: Mapleton Water District Jurisdictional Profile

Mapleton Water District (MWD) provides drinking water to residents and businesses in the unincorporated community of Mapleton, in Lane County. This annex provides information about the mitigation efforts of the utility, their participation in this planning process, as well as background about the utility's formation, operating structure, and critical assets.

Introduction

The Mapleton Water District was established in 1951 to provide safe, reliable, and convenient drinking water to the growing community on the banks of the Siuslaw River, 14 miles upstream from Florence. Most of early funding, expertise, and workforce were provided by Davidson Industries Sawmill, the largest employer in the area. Once an intake system located on Berkshire Creek and the initial distribution lines were laid, the MWD started pumping water at a cost to most customers of $3.50 per month. By 1958 a modern pump and filtration plant were completed and most of the current 11 miles of distribution line were laid.[1]

Figure 1: Mapleton School

The original intake and treatment plant was destroyed in a landslide along Berkshire Creek in 1974, leading to the passage of the MWD's first bond measure to rebuild the system. In the 70 years since its establishment, the community-owned water system has faced many challenges to its integrity, including many more episodes of landslides, fires, and floods.

MWD is governed by a five-member Board of Commissioners, which meets once per month in a regularly scheduled open public session. The board is supported by five standing committees comprised of board members and other community volunteers, including a Grant Committee, Emergency Committee, Finance Committee, Operations Committee, and Administration Committee. MWD currently has one full-time and one part-time staff.

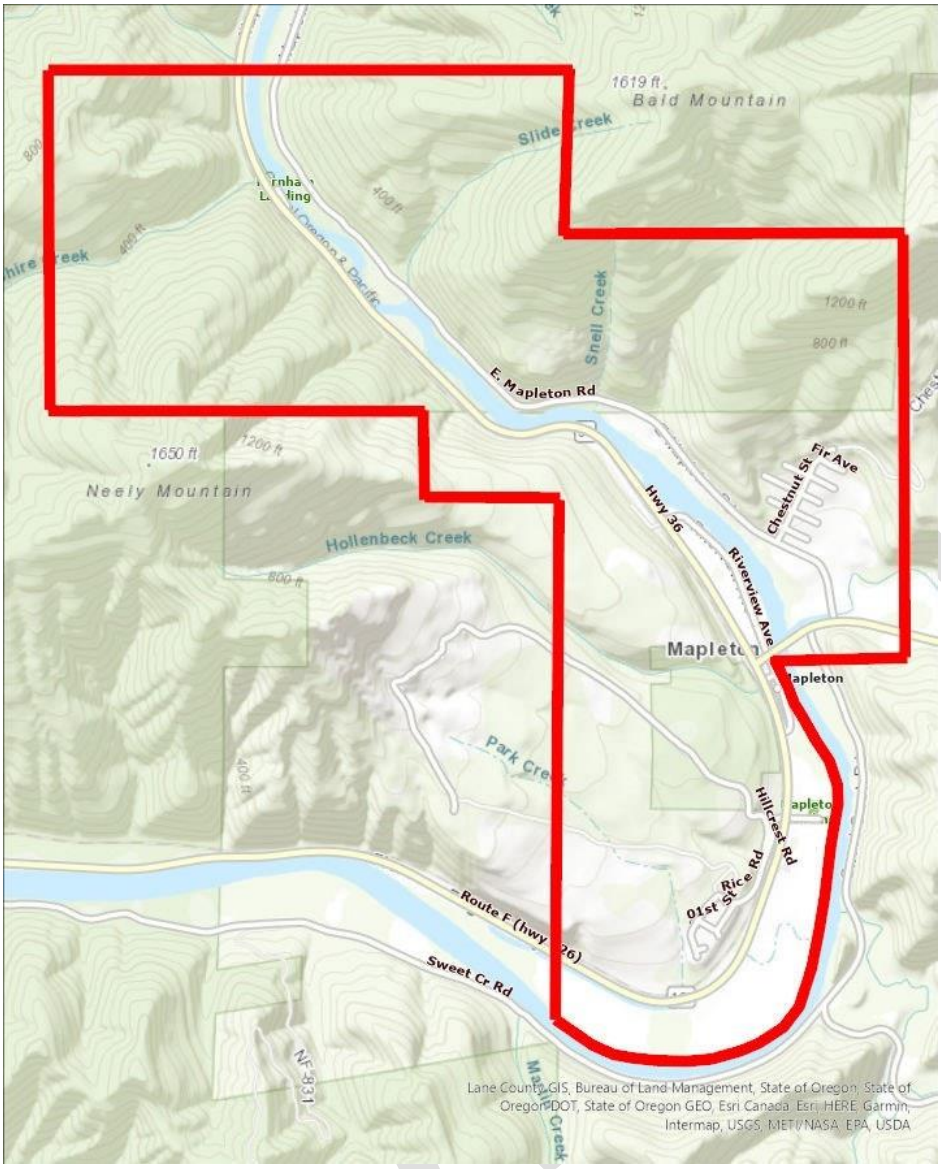
This annex notes MWD's specific variances from the Lane County MNHMP base plan (Volume I). Variances arise due to differing risks faced by MWD. The different risks are due to utility specific regulations, infrastructure, and locations. Unless explicitly expressed by this annex, MWD complies with the 2023 MNHMP.

Water System

The water system supplies service to 264 residential, commercial, and industrial customers within Lane County. The MWD's physical plant is comprised of utility infrastructure and a building on Berkshire Creek, two 300,000 gallon treated water storage tanks, and 11 miles of distribution lines.

[1] Mapleton Water District website, Our History, accessed April 11, 2024.

Figure 2: Mapleton Water District Service Area



Source: Mapleton Water District

MWD relies upon a water treatment system and distribution system that suffers from inadequate maintenance and lack of investment. MWD has been forced to issue repeated Boil Water Notices over the last 5 years due to the system's aging infrastructure. From August to December 2020 Mapleton was put on a system-wide boil water notice due to a power surge putting the water treatment system out of commission. Boil water notices due to system-wide loss of pressure or system-wide power outages were also sent in November 2021, December 2022, March 2023, May 2023, August 2023, January 2024, March 2024.

The existing treatment skid, located at 11419 Hwy 36, on Berkshire Creek, failed in 2020, and has been temporarily replaced with a $10,000 per month, rented portable West Tech membrane-filtration treatment unit. WMD is working with West Yost Engineering to design and construct an updated

treatment plant, scheduled for completion in 2024-2025. This work includes expansion to the existing building, a new drinking water treatment skid and new pre-filtration equipment. With the assistance of an USDA Emergency Community Water Assistance Grant, MWD will also replace approximately one-half mile of piping that brings raw water into the plant from the Berkshire Creek intake. The raw water line runs along an easement granted to the MWD from the United States Forest Service, who owns the Berkshire Creek watershed. Additionally, the ECWAG funds will provide upgrades to the intake access road and mitigation to the plant and intake infrastructure.

Figure 3: Replacement Water Treatment skid, May 2024

Treated water is transferred to two existing storage tanks on a hilltop on Hillcrest Road, approximately four-miles from the treatment plant. Distribution lines run from these tanks to properties throughout the unincorporated community of Mapleton. Customer connections are along both sides of the Siuslaw River. The largest users of this water include the Mapleton School campus and Mapleton Sewer District.

The existing distribution system, installed in the early 1950s, uses concrete asbestos pipes that had a life expectancy of 50 to 70 years. The pipes are roughly 5 to 25 years past this expectancy and require frequent patching to maintain system integrity. MWD estimates that approximately 67% of the utility's produced drinking water is lost annually through leaks. Current estimates for system-wide pipe replacement are around $15 million.

Figure 4: Easement leading to Raw Water Intake

Section 1.2: Applicable Regulations & Plans

Mapleton Water District has a very specific function in providing drinking water to a defined geographic area, so the opportunity to cross-integrate plans, studies, reports, etc. is limited. The MWD has only limited authority and opportunity to integrate its actions and procedures into other county or regional plans and processes.

However, there are many obvious overlaps with both State and County mitigation plans, particularly regarding the types of hazards that affect the region, as well as the general categories of mitigation actions and priorities. The County agreed to incorporate MWD in its mitigation document as part of the 2023 update in Spring, 2024. Future Lane County MNHMP updates will include MWD in the full planning process.

Pertinent Federal and State Regulators:

- Oregon Health Authority
- Oregon Water Resources Department

Plans and Agreements:

- Oregon Natural Hazards Mitigation Plan
- Lane County Emergency Response Plan
- Lane County Natural Hazard Mitigation Plan
- Mutual Aid Agreements
- MWD Master Plan (under development, 2024)

Section 1.3: Natural Hazard Mitigation Meetings and Work Sessions

This sub-section of the MWD MNHMP Annex provides a detailed account of the local hazard mitigation planning team and the individual planning sessions that contributed to the Lane County Multi-Jurisdiction Natural Hazard Mitigation Plan update. Members of the MWD NHMP Advisory Committee are displayed in Table 1.

Table 1: Mapleton Water District Advisory Committee

Name	Title	Agency
Vanessa West	Chair	MWD Board of Commissioners
Art Donnelly	Vice Chair/Grant Committee Chair	MWD Board of Commissioners
Matthew Ferkey	Water System Operator	MWD
Sue Wilson	Superintendent	Mapleton School District
Rob Woodard	Special Districts Project Manager	Lane County
Richard Cissel	Watershed Program Manager	USFS, Siuslaw National Forest
Tim Moffett	Executive Director	Siuslaw Watershed Council
Hui Rodomsky	South Coast Representative	Department of Land Conservation and Development
Tiffany Brown	Emergency Manager	Lane County
Brendan Irsfeld	Emergency Management	Lane County

Source: Mapleton Water District

Individual Utility Work Sessions

Work sessions with Mapleton Water District were conducted in the Spring/Summer of 2024. These work sessions are outlined in Table 2.

Table 2: Mapleton Water District Work Sessions

Date	Location	Meeting/Work Session
April 3, 2024	Mapleton School Campus	Mapleton Water District NHMP Advisory Committee
May 20, 2024	Mapleton School Campus	Mapleton Water District NHMP Advisory Committee

The result of this overall process was a thorough evaluation of risk factors and mitigation solutions. Certain hazards were highlighted with notable significance for MWD, others found to be less relevant in a local context. Systems and concepts considered included infrastructure resiliency, role of the transportation network, public safety, hardening of facilities, and system redundancies. A range of both general and specific mitigation ideas and projects were identified and scoped in the field.

Section 1.4: Hazard Quantification

The MWD faces high risk from landslides, flooding, and winter storms. Moderate risk exists from windstorms, wildfire, tsunami, and earthquake, whereas lower risk is associated with drought and volcano hazards. Results from the hazard quantification performed for MWD are displayed in **Table 3**.

Table 3: Mapleton Water District Hazard Quantification Results

Hazard Type / Weight Factor (WF)	History WF x 2	Probability WF x 7	Vulnerability WF x 5	Maximum Threat WF x 7	Raw Score	Weighted Score	Weighted Score Rank
Landslide	10	10	10	10	**40**	**240**	**1**
Flood	10	10	9	10	39	235	**2**
Winter Storm	10	9	10	10	**39**	**233**	**3**
Windstorm	8	10	5	10	33	211	**4**
Wildfire	5	8	7	10	**30**	**201**	**5**
Earthquake	1	3	9	10	**23**	**168**	**6**
Tsunami	1	3	8	10	22	163	**7**
Drought	3	5	5	5	**18**	**116**	**8**
Extreme Weather	5	5	5	3	18	100	**9**

Source: MWD's Natural Hazard Mitigation Advisory Committee

Section 1.4.1: Individual Hazard Discussions

MWD evaluated nine (9) natural hazard types that could significantly impact its critical infrastructure and operability. These hazard types align with those found to impact Lane County with the exclusion of volcano. Impacts from extreme weather were largely captured through an assessment of windstorms and winter storms' impacts to MWD's assets and ability to remain operable.

A discussion about each individual hazards' impact for EPUD follows in this subsection.

Landslide

Within the Coast range, the probability of landslide is **high**. Vulnerability to landslide is also classified as **high**.

Mapleton Water District has experienced several service-impacting landslides in its history, including dramatic events like the destruction of the original water treatment plant in 1974 by a landslide, and more recently, the destruction of the secondary intake on Berkshire Creek during the January 2024 Winter Storm (DR-4768). Landslides frequently impact the gravel access road to the raw water intake facilities and have crushed culverts, eroded roadbeds, destroyed fences, and damaged pipelines. Current emergency repairs planned to the raw water intake line and access road include landslide debris buffers designed to redirect landslide/mudslide materials away from critical infrastructure above the treatment plant.

Landslides also affect the rights-of-way owned by Lane County and the Oregon Department of Transportation within the service area, restricting access to and from slide damaged areas. The most landslide-affected state highway in Lane County is Highway 126. Sections of Highway 126 passing through mountainous areas in the Coast Range can experience periodic blockages throughout the year from rock falls and smaller landslides. Identified landslides also exist along segments of Highway 36 in the vicinity of Mapleton. Significant landslide activity can potentially cut off access to much of the community.

Flood

Floods occur frequently in Mapleton. The probability of flood in Lane County and in Mapleton is **high** and includes riverine, coastal, and storm water system events. Vulnerability of floods is **high**, with this coastal community facing risks from both coastal and riverine flooding.

The Siuslaw River has seen frequent flood events. The commercial core of Mapleton and the houses along the river are within its 100-year floodplain and floodway. Between 1861-2012, five (5) major flood stage events have occurred in Mapleton, flooding the Riverview Avenue area and numerous homes and businesses, as well as significant flooding on roads adjacent to the Siuslaw River (including Highways 126 and 36). In that same time span, there were an additional 12 moderate floods in the Mapleton area, many of which were riverine floods exacerbated during high tide.

Figure 5: Siuslaw River Bridge, Mapleton

Recent floods in Mapleton include minor floods caused by heavy rain and/or strong winds in January and December 2021, December 2020, and February 2017. A major flood (at moderate flood stage) in Mapleton during April 2019 was caused by an atmospheric river that moved through the southern Willamette Valley over 2 days. See also the flood hazard profile found in Volume I, Section 2.

Floods severely damage property, pose high risk to life and safety, and are one of the most pervasive threats in Mapleton. Riverine flooding can significantly impact critical infrastructure systems, include wastewater leach fields, water intakes, water treatment plants, roadways, and bridges. Power outages can occur depending on the extent of land flooded. Floods may close highways and trap people either trying to escape rising water or getting back home safely. Residents of Mapleton have had to evacuate during previous floods (2006, 2012, and 2015).

Most notable is the impact of flooding on aging infrastructure. Heavy precipitation can turn rivers and creeks turbid, which presents challenges for older water treatment plans. Mapleton's aging water system infrastructure is already susceptible to pipe leaks and reduced capacity. Major flooding can cause their facilities to operate at a limited capacity or outright fail, imperiling access to healthy drinking water and water for sanitation purposes. Flooding in Mapleton is also frequently connected to increased incidence of landslides, mudslides, and downed trees, which impact the MWD's water intake and water treatment plant along Berkshire Creek. It also has severe impacts upon the community's aging sewer system (see photo to right of ongoing repairs to the sewer line adjacent to the river).

Figure 6: Sewer line repair project, River Road, Mapleton (May 2024)

MWD does not directly participate in the National Flood Insurance Program. However, Lane County does (and maintains a Community Rating System Rating of 7). There are 16 repetitive loss or severe repetitive loss properties (residential or commercial) within the Mapleton area. Recommendations regarding these properties are found in the Lane County Natural Hazard Mitigation Plan (Volume 1).

Winter Storm

Lane County experiences winter storms each year and there is a **high** probability of at least one (1) storm per year impacting residents in Mapleton. The vulnerability of winter storms countywide and in Mapleton is **high**. This determination resulted from the specific impacts to transportation throughout the county in either a heavy snow or ice scenario that both can result in isolating rural residents from transportation corridors and impeding access for first responders.

Winter storms can produce ice and freezing rain, heavy snowfall, and/or extreme cold and wind chill conditions. Because of its proximity to the coast, the planning area typically experiences snow of only about five (5) inches per year, and infrequent freezes. Snow and ice have the potential to affect the entire MWD customer service area/population, when power is interrupted due to tree limbs falling on

power lines or direct physical damage to infrastructure due to ice loading. Snow alone is generally not problematic. Ice storms have the potential to cause widespread power outages, but this depends entirely on the severity of an event. Outages do have the potential to last days.

Winter storms can bring heavy rains in addition to snowfall in the Coast region, which can trigger flooding along the Siuslaw River, Pacific coastline, and landslides in the Coast Range, creating blockages along roadways such as Highways 126 and 36. During the January 2024 Winter Storm (DR-4768), Mapleton was temporarily cut off from communities to the north on Hwy 36 and from Eugene to the east on Highway 126 due to downed trees. The ice accumulation caused extensive damage to the tree canopy, bringing several trees down along the easement leading to the MWD's raw water intake (see photo to right of January 2024 winter storm damage at the intake).

Figure 7: Damaged Raw Water Intake, Mapleton Water District (January 2024)

Windstorm

The geography of Mapleton, with its narrow valleys between Coast Range mountains, results in a **high** probability of windstorms within the MWD area. The MWD's vulnerability to windstorms is **moderate**.

In the Pacific Northwest, windstorms typically involve sustained winds in excess of 50 mph with less frequent events exceeding 80 mph. Windstorms result from the low-pressure systems in the Pacific that most often occur from October through March. The Coast range also creates a specific wind effect called Foehn winds. These winds are defined as a "warm, dry and strong general wind that flows down into the valleys when stable, high-pressured air is forced across and then down the lee slopes of a mountain range. The descending air is warmed and dried due to adiabatic compression …"[2] When Foehn winds occur during the summer months, they can add to the risk for spreading wildfires.

The vulnerability to those windstorms of MWD's infrastructure is moderate, with most of the damage expected due to downed trees, blown debris, blocked roadways, and damaged structures. On the coast, windstorms can also influence hazardous wave conditions and push water inland potentially triggering flooding along Highway 126 West, particularly during the wetter, winter months. During the dry, summer months, sustained high winds contribute to greater wildfire risk.

Wildfire

The probability of wildfire in Lane County, and in the Mapleton area, is **high**. Vulnerability of wildfire countywide is **high**. The Lane County Community Wildfire Protection Plan (2020) identified most areas within the Coast region as having moderate risk for wildfire. Small pockets of high-risk areas exist,

[2] National Wildfire Coordinating Group. (n.d.). "Glossary: Foehn Wind."

however, along Highway 126 West past Walton and at the junction of Highways 36 and 126 next to Mapleton along East Mapleton Road.[3]

Beyond the threat to buildings that include residences and buildings, wildfires pose significant risk to community lifelines, causing power outages, communications failures, transportation disruptions, and destroying infrastructure (e.g., pipelines, pumping stations, substations, above-ground transmission lines, fuel depots, etc.). Smoke from wildfires poses health risks to people exposed to the particulate matter, causing irritation of the eyes, nose, and throat. In the aftermath of wildfires, the impacts to the burned ground and soils also leaves the area in the burn scar less capable of absorbing water or stabilizing vegetation along slopes, leading to landslides.

Wildfires can occur throughout most of the planning area because of the presence of substantial vegetation. If the area was to burn, most of the MWD's infrastructure would be at risk, and the results of a significant fire would be days to weeks of interrupted service while the infrastructure was inspected and repaired. While Oregon has experienced significant wildfires over the past decade, these have not dramatically affected the planning area, in large part because of the high rainfall and lack of antecedent conditions. The 2020 Sweet Creek Fire occurred one mile south of Mapleton (see photo to the right, taken from the Mapleton Community Dock, looking towards recent fire scar). See also the wildfire hazard profile found in Volume I, Section 2.

Figure 8: View of Siuslaw River (downstream) from Mapleton dock

Earthquake

Most of the U.S. west coast has some exposure to earthquake risks, particularly from the Cascadia Subduction Zone (CSZ). The source of CSZ event is off the Pacific coast, but the nature of the fault means that it may produce an earthquake or earthquakes of very high magnitude and affect a very large geographic area. Strong ground shaking can cause major damage to water systems, especially for higher altitude reservoirs and concrete asbestos distribution lines like those owned by the MWD.

Although the probability of earthquake in Lane County is **low**, the vulnerability to earthquake is classified as **high**. The physical extent of earthquake effects is the entire planning area, although levels of ground shaking are related to distance from the fault and soil characteristics, among other factors. A major CSZ event would likely result in extreme damage, with service restoration times measured in weeks or months, rather than hours or days. A major event would likely result in more than $1M in damages. Offshore, oceanic earthquakes could also trigger local or distant tsunamis along the Oregon coast, with high water levels equal to 100-year floods reaching Mapleton.

[3] Lane County. (2020) *Lane County Community Wildfire Protection Plan*.

See the earthquake hazard profile found in Volume I, Section 2 for a broader examination of the earthquake hazard risk in Lane County.

Tsunami

The probability of tsunami in Lane County is **low**. Vulnerability to tsunami is classified as **high**, with tsunamis affecting the communities located closest to the Pacific coastline.

The destructive potential of tsunamis is enormous. In addition to property damage and fatalities, tsunamis cause disease and environmental damage. Areas near the coast get flooded with sea water, damaging infrastructure, such as drinking water supplies and water treatment plants. These effects result in water contamination that can cause the spread of diseases, such as malaria. Tsunamis also affect natural resources, animals, plants, and landscapes. Waste mixes with toxic substances and hazardous materials, contaminating soils and water. Tsunamis most directly act as a trigger of flooding when they reach land. Coastal flooding can result with the subsequent waves that form and travel towards the shoreline following the initial tsunami. Depending on the size of the wave and its force, riverine flooding is possible along waterways more inland from the coast. In Lane County, estimates suggest that a large local tsunami produced by a CSZ earthquake can trigger flooding along the Siuslaw as far inland as Mapleton.[4]

Drought

The probability of drought impacting MWD is **moderate**. Drought is increasingly impacting Oregon's instream and out-of-stream uses in a variety of ways. Drinking water systems can be impacted due to: increased numbers of dry domestic wells, increased need (and costs) for outreach efforts by water suppliers to their customers, municipal water conservation and curtailment requests, reduced water quality (e.g. concentration of contaminants, harmful algal blooms), and reduced water available for firefighting.[5] The vulnerability of MWD to drought is **moderate**.

Although Mapleton Water District has not yet had to curtail water services due to extreme drought conditions, recent years have shown lower flows within Berkshire Creek at the height of summer, evidence that the climate change may be having impacts upon surface water conditions within the Coast Range. The MWD must begin incorporating water conservation ethics into their community outreach and upcoming infrastructure improvement projects to address this new issue.

Extreme Weather

The probability of extreme weather in Mapleton is **moderate**. Extreme weather includes extreme temperatures (e.g., cold blasts & heat domes), thunderstorms that produce hail, and violent winds storm types such as tornados. The overall vulnerability of Lane County to extreme weather is classified as **moderate**.

Extreme weather events can stress the MWD's ability to adequately serve its customers (due to inability to meet higher demands for water) or cause damage to weak distribution or connection systems. They can also cause downed trees and landslides along Berkshire Creek, which can destroy critical infrastructure.

[4] DOGAMI (2013). "TIM-Lane-07, Tsunami Inundation Maps for Dunes City, Lane County, Oregon."
[5] 2024 Oregon's Integrated Water Resources Strategy (March 2024 draft).

Section 1.5: Mitigation Projects

This section describes mitigation projects identified by MWD during the planning process. See Volume I, Section 4 for additional information regarding mitigation action item methodology and prioritization.

Mitigation Action Item (a)	Raw Water Intake Repairs/Improvements (including Culvert & Distribution Line Replacement)
Location	Water Treatment Plant
Coordinating Agencies	US Forest Service, Confederated Tribes of the Coos, Lower Umpqua and Siuslaw Indians
Implementation Timeframe	2024-2025
Estimated Cost	$1.5 million
Potential Funding Sources	USDA, FEMA
Hazards Mitigated	Multi-Hazard (Winter Storms, Windstorm, Flooding, Landslide, Wildfire, Drought)
Comments	• Project on existing USFS easement • Emergency repair of secondary intake, replacement of outdated culverts and diversion equipment, replacement of ½ mile of pipe leading from intake to plant • Funding secured from US Development Authority (USDA)

Mitigation Action Item (b)	**Water Treatment Plant expansion/upgrade**
Location	Water Treatment Plant
Coordinating Agencies	Oregon Health Authority (OHA), US Forest Service
Implementation Timeframe	2024-2026
Estimated Cost	$3 million
Potential Funding Sources	Oregon State Lottery Fund, Business Oregon, ARPA, OHA
Hazards Mitigated	Multi-Hazard (Winter Storms, Windstorm, Flooding, Landslide, Drought, Earthquake, Tsunami)
Comments	Planned expansion of water treatment plant building and installation of new water treatment equipment.

Mitigation Action Item (c)	Water System Master Plan development and implementation
Location	All service locations
Coordinating Agencies	Oregon Health Authority
Implementation Timeframe	2025, TBD
Estimated Cost	$86,000 (plan development), TBD (implementation)
Potential Funding Sources	Local funds, FEMA, ODEM, BRIC, HMG, OHA, USDA
Hazards Mitigated	Multi-Hazard (Winter Storms, Windstorm, Flooding, Landslide, Drought, Earthquake, Tsunami, Wildfire)
Comments	Due to the MWD's high vulnerability to a broad range of natural hazards and lack of comprehensive long-term facility or programmatic planning, it is imperative that the MWD develop a Water System Master Plan to plan for the next 20 years of improvements and maintenance needs. The completion of this Master Plan by winter 2025 by Civil West will be vital to the future of the MWD. Implementation of the plan's recommendations will begin after plan completion. Potential projects include relocation of the current water treatment plant, development of a raw water intake storage unit, distribution line replacement, and added/hardened treated water storage.

Mitigation Action Item (d)	Resilience Hub planning and implementation (Mapleton School District campus)
Location	Mapleton School Campus
Coordinating Agencies	Mapleton School District, Mapleton Fire District, Siuslaw Watershed Council
Implementation Timeframe	2025-2027
Estimated Cost	TBD
Potential Funding Sources	EPUD, HMGP, BRIC, Oregon Seismic Rehabilitation Program, Community Energy Resilience Grant, Oregon Department of Education
Hazards Mitigated	Earthquake, Winter Storm, Flooding, Extreme Weather, Windstorm, Wildfire
Comments	MWD will work with the Mapleton School District to upgrade and add to the Mapleton School Campus to increase its resilience and usefulness during a community-wide disaster, combining resources to develop a community Resilience Hub at this location. Phased project will improve school campus' preparedness, response, and mitigation capacity. Elements may include RARE staff support, solar array with backup generation, RV hookups for emergency sheltering, communication system improvements, living garden, communication station, etc.

Mitigation Action Item (e)	School Campus Secondary Water Source, Water Treatment capacity development
Location	Mapleton School Campus
Coordinating Agencies	Mapleton School District, Mapleton Fire District
Implementation Timeframe	2025-2027
Estimated Cost	$5 million
Potential Funding Sources	HMGP, BRIC
Hazards Mitigated	Earthquake, Winter Storm, Flooding, Extreme Weather, Windstorm, Wildfire
Comments	MWD will work with the Mapleton School District to complete installation of drinking water well(s) as a secondary water source on the school campus to provide a public water source when/if the MWD plant is down. They will also install a secondary treatment skid to treat water on the east side of Mapleton (if bridge or west side plant goes down).

Mitigation Action Item (f)	Additional Water Storage (east side)
Location	Mapleton School Campus (Northeast corner behind track)
Coordinating Agencies	US Forest Service, Oregon Department of Forestry, Confederated Tribes of the Coos, Lower Umpqua and Siuslaw Indians
Implementation Timeframe	2025-2027
Estimated Cost	$3 million
Potential Funding Sources	HMGP, BRIC
Hazards Mitigated	Earthquake, Winter Storm, Flooding, Extreme Weather, Windstorm, Wildfire
Comments	MWD will used secured BRIC funds and other funding to develop an additional treated water storage tank on the east side of the river.

Mitigation Action Item (g)	Water Distribution System Repair/Replacement
Location	District-wide
Coordinating Agencies	Oregon Department of Fish & Wildlife, Oregon Department of Emergency Management, Federal Emergency Management Agency, Oregon Department of Water Resources
Implementation Timeframe	2026-2029

Estimated Cost	$25 million
Potential Funding Sources	HMGP, BRIC, OREM, OEM, EPA
Hazards Mitigated	Multi-Hazard (Drought, Flooding, Tsunami, Earthquake, Landslide, Wildfire)
Comments	MWD must repair and/or replace 1950's era concrete asbestos piping used for drinking water distribution throughout the community to address excessive leakages and loss of treated drinking water, and to harden the distribution system against hazard events, including earthquakes and landslides. This large project will likely need to be phased. MWD is about to begin work on this project through a $800,000 EPA Community Grants award. MWD will need to seek technical assistance to develop supporting documentation required for further grants.

Mitigation Action Item (h)	**Water Intake and Settling Pond Replacement**
Location	Water Treatment Plant and easement
Coordinating Agencies	Oregon Department of Fish & Wildlife, Oregon Department of Water Resources, Oregon Health Authority, Confederated Tribes of the Coos, Lower Umpqua and Siuslaw Indians
Implementation Timeframe	2026-2029
Estimated Cost	TBD
Potential Funding Sources	HMGP, BRIC, OEM, EPA
Hazards Mitigated	Multi-Hazard (Drought, Flooding, Tsunami, Earthquake, Landslide, Wildfire)
Comments	MWD must repair and/or replace 1950's era water intake and settling pond address excessive leakages and loss of raw water and reduce of intake to landslide and earthquake hazards. This large project will likely need to be phased. MWD will need to seek technical assistance to develop supporting documentation required for grants.

Mitigation Action Item (i)	**Sewer System (Leach Field) Repair/Replacement**
Location	Mapleton Sewer System Leach field
Coordinating Agencies	Mapleton Sewer District
Implementation Timeframe	2025-2027
Estimated Cost	$2 million
Potential Funding Sources	HMGP, BRIC, EPA, DEQ

Hazards Mitigated	Flooding, Tsunami, Earthquake
Comments	MWD currently delivers a large percentage of their treated water to the Mapleton Sewer District, who uses the water to treat the community sewer system at a leach field originally constructed in the 1950s. This leach field is within the 100-year floodplain. The sewer district can no longer safely apply the treatment regime it has long used due to the harshness of the chemicals and is subsequently allowing grey water to directly enter the river without treatment. Repair or replacement of this leach field is a community priority to maintain healthy water, a healthy ecosystem, and a healthy community. The current leach field could create extreme health risks during potential floods, tsunamis, or earthquakes.

Mitigation Action Item (j)	**Backup generators for critical facilities**
Location	Mapleton Water Treatment Plant, Mapleton School Campus, Mapleton Sewer Plant
Coordinating Agencies	Mapleton School District
Implementation Timeframe	2025-2028
Estimated Cost	$100,000
Potential Funding Sources	Lincoln Electric, HMGP, BRIC, ODOE, SPIRE, OREM
Hazards Mitigated	Flooding, Tsunami, Earthquake, Winter Storm, Windstorm, Wildfire
Comments	Critical infrastructure, including primary water and sewer treatment facilities and secondary treatment facilities, need to be able to run without electricity in the event of many of the types of hazards facing Mapleton. It is critical that backup generators be installed at each of the MWD's water treatment facilities (current and proposed at Mapleton School Campus) and the community sewer facility

Mitigation Action Item (k)	**Landslide Prevention and Hillside Stabilization**
Location	Mapleton Water Treatment Plant
Coordinating Agencies	US Forest Service
Implementation Timeframe	2024-2029
Estimated Cost	TBD
Potential Funding Sources	USFS, OWEB, BRIC, HMGP
Hazards Mitigated	Flooding, Earthquake, Landslide, Winter Storm, Windstorm, Wildfire

Comments	MWD currently draws its raw water from Berkshire Creek, one half mile up a steep narrow valley along a gravel access road from the Water Treatment Plant. This access road is within an easement maintained by the MWD. This easement is heavily forested and highly susceptible to natural hazards, including windstorms, heavy rains causing landslides and erosion, tree damage, and wildfire. MWD needs to develop a plan to prevent landslides from impacting critical infrastructure along this road, identify and remove hazard trees, and stabilize the hillsides held up by these trees.

Section 1.6: Progress on Mitigation Actions

This plan marks Mapleton Water District's first Natural Hazards Mitigation Plan. Hence there is no progress of previous NHMP action items to document. However, the Board of Directors has been actively pursuing improvements to their infrastructure that address hazard concerns. These projects include emergency repairs to the raw water intake and the Water Treatment Plant, hardening of water storage tanks, identification of potential well sites at the Mapleton School Campus, and hazard tree removal above the Water Treatment Plant. MWD is currently pursuing a FEMA Building Resilient Infrastructure and Communities (BRIC) grant for additional treated drinking water storage.