Panther Creek Water District Addendum

to the Lincoln County Multi-Jurisdictional NHMP

Photos courtesy Explore Lincoln City

Effective: December 17, 2025 through December 16, 2030

Prepared for
Panther Creek Water District
PO Box 171
Otis, OR 97368

Prepared by
The University of Oregon
Institute for Policy Research & Engagement
School of Planning, Public Policy, and Management

Prepared for
Panther Creek Water District
PO Box 171

This Natural Hazard Mitigation Plan was prepared by:

UNIVERSITY OF OREGON | School of Planning, Public Policy and Management | Institute for Policy Research and Engagement

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OREGON DEPARTMENT OF EMERGENCY MANAGEMENT OEM

U.S. Department of Homeland Security
Federal Emergency Management Agency
Region 10

130 228th St SW
Bothell, WA 98021

December 17, 2025

Stephen Richardson
State Hazard Mitigation Officer
Oregon Department of Emergency Management
3930 Fairview Industrial Dr SE
Salem, OR 97302

Reference: Approval of the Lincoln County Multi-Jurisdictional Natural Hazard Mitigation Plan

Dear Officer Richardson:

In accordance with applicable[1] laws, regulations and policy, the Risk Analysis Branch of FEMA Region 10 Mitigation Division has approved the local mitigation plan for the following jurisdictions:

Lincoln County	City of Depoe Bay	City of Newport
City of Toledo	Beverly Beach Water District	Central Lincoln People's Utility District
Central Oregon Coast FRD	Depoe Bay Fire District	Gleneden Sanitary District
Kernville-Gleneden Beach-Lincoln Beach Water District	North Lincoln Fire and Rescue District	Otter Rock Water District
Panther Creek Water District	Salishan Sanitary District	Seal Rock Water District
Siletz Valley Fire District	SW Lincoln County Water People's Utility District	

Mitigation plans may include additional content to meet Element H: Additional State Requirements or content the local government included beyond applicable FEMA mitigation planning requirements. FEMA approval does not include the review or approval of content that exceeds these applicable FEMA mitigation planning requirements.

The approval period for this plan is from December 17, 2025 through December 16, 2030.

[1] Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and National Dam Safety Program Act, as amended; 44 CFR Part 201, Mitigation Planning; and Local Mitigation Planning Policy Guide (FP-206-21-0002).

The jurisdictions' plan approval ensures the eligibility for project grants under FEMA's Hazard Mitigation Assistance programs. All requests for funding are evaluated individually according to eligibility and other program requirements. Having an approved mitigation plan does not mean that mitigation grant funding will be awarded. Specific application and eligibility requirements can be found in each FEMA grant program's respective policies and annual Notice of Funding Opportunities, as applicable.

FEMA's approval is for a period of five years, effective the date FEMA received the adoption documentation. For this plan, documentation was received on December 17, 2025 and is considered approved as of then. Prior to December 16, 2030, each jurisdiction must review, revise, and submit their plan to FEMA for approval to maintain eligibility for grant funding. The enclosed plan review tool provides opportunities to incorporate into future updates.

Sincerely,

Wendy Shaw, P.E.
Risk Analysis Branch Chief
Mitigation Division

JG: MB

Attachment**:** Local Mitigation Plan Review Tool

Panther Creek Water District
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PANTHER CREEK WATER DISTRICT
Resolution No. 25-10-01 - October 14, 2025

A Resolution Adopting the District of Panther Creek Water District Representation in the Updates to the Lincoln County Multi-Jurisdictional Natural Hazards Mitigation Plan

Whereas, the District of Panther Creek Water District recognizes the threat that natural hazards pose to people, property and infrastructure within our community; and

Whereas, undertaking hazard mitigation actions will reduce the potential for harm to people, property and infrastructure from future hazard occurrences; and

Whereas, an adopted Natural Hazards Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

Whereas, the District of Panther Creek Water District has fully participated in the FEMA prescribed mitigation planning process to prepare the Lincoln County, Multi-Jurisdictional Natural Hazards Mitigation Plan, which has established a comprehensive, coordinated planning process to eliminate or minimize these vulnerabilities; and

Whereas, the District of Panther Creek Water District has identified natural hazard risks and prioritized a number of proposed actions and programs needed to mitigate the vulnerabilities of the District of Panther Creek Water District to the impacts of future disasters within the Lincoln County, Multi-Jurisdictional Natural Hazards Mitigation Plan; and

Whereas, these proposed projects and programs have been incorporated into the Lincoln County, Multi-Jurisdictional Natural Hazards Mitigation Plan that has been prepared and promulgated for consideration and implementation by the participating cities and special districts of Lincoln County; and

Whereas, the Oregon Department of Emergency Management and Federal Emergency Management Agency, Region 10 officials have reviewed the Lincoln County, Multi-Jurisdictional Natural Hazards Mitigation Plan and pre-approved it contingent upon this official adoption of the participating governments and entities; and

Whereas, the NHMP is in an on-going cycle of development and revision to improve it's effectiveness; and

Whereas, District of Panther Creek Water District adopts the NHMP and directs the Board Chair and General Manager to develop, approve, and implement the mitigation strategies and any administrative changes to the NHMP.

Now, therefore, be it resolved, that the District of Panther Creek Water District adopts the Lincoln County Multi-Jurisdictional Natural Hazards Mitigation Plan as an official plan; and

Be it further resolved, that the District of Panther Creek Water District will submit this Adoption Resolution to the Oregon Department of Emergency Management and Federal Emergency Management Agency, Region 10 officials to enable final approval of the Lincoln County Multi-Jurisdictional Natural Hazards Mitigation Plan.

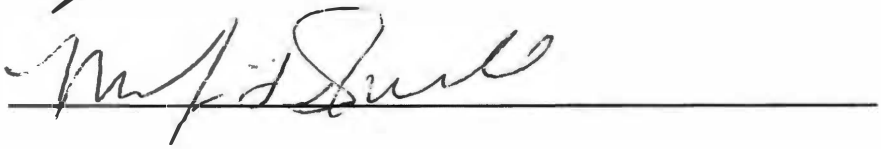
Adopted this 14th day of October, 2025

Affirmed by (Directors):

Dan Harvey, Chair: 

Ralph Beavers: 

Joe Windes: 

Melynda Small: 

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Introduction

Purpose and Adoption

This is the Panther Creek Water District (Panther Creek WD) addendum to the Lincoln County Multi-Jurisdictional Natural Hazards Mitigation Plan (NHMP). This addendum is not intended to be a standalone document, rather information contained herein supplements information contained in Volume I (Basic Plan) which serves as the NHMP foundation and Volume II (Appendices), which provides additional information. This addendum meets the following requirements:

- Multi-jurisdictional **Plan Requirements: Participation** §201.6(a)(4),
- Multi-Jurisdictional **Plan Content: Risk Assessment** §201.6(c)(2)(iii),
- Multi-jurisdictional **Plan Content: Mitigation Strategy** §201.6(c)(3)(iv), and
- Multi-jurisdictional **Plan Content: Documentation** §201.6(c)(5).

This is the first addendum to the Lincoln County NHMP for the Panther Creek WD.

Panther Creek WD adopted their addendum to the Lincoln County Multi-jurisdictional NHMP on October 14, 2025. FEMA Region X approved the Lincoln County NHMP and the district's addendum on December 17, 2025. With approval of this NHMP the district is now eligible to apply for the Robert T. Stafford Disaster Relief and Emergency Assistance Act's hazard mitigation project grants through December 16, 2030.

Process and Participation

This section of the NHMP addendum addresses 44 CFR 201.6(a)(3), *Participation and* 44 CFR 201.6(c)(5), *Plan Adoption.*

In addition to establishing a comprehensive community-level mitigation strategy, the Disaster Mitigation Act of 2000 (DMA2K), and the regulations contained in 44 CFR 201, require that jurisdictions maintain an approved NHMP to receive federal funds for mitigation projects. Local adoption, and federal approval of this NHMP ensures that the Panther Creek WD will remain eligible for hazard mitigation assistance project grants.

The Oregon Partnership for Disaster Resilience (OPDR) at the University of Oregon's Institute for Policy Research and Engagement (IPRE) collaborated with the Oregon Department of Emergency Management (OEM), Lincoln County, and Panther Creek WD to develop this addendum. Members of Panther Creek WD participated in the County NHMP update process (Attachment A and Volume II, Appendix B).

Convener and Committee

The district's General Manager serves as the NHMP addendum convener. The convener of the NHMP addendum will take the lead in implementing, maintaining, and updating the addendum in collaboration with the designated convener of the Lincoln County NHMP (Lincoln County Emergency Manager).

Representatives from the District met formally, and informally, to discuss the development of their addendum (Attachment A). They reviewed and developed the district's addendum, with a focus on their risk assessment and mitigation strategy (action items).

This addendum reflects decisions made at the designated meetings, and during subsequent work, and communication with OPDR.

The Panther Creek WD steering committee was comprised of the following representatives:

- Convener, Jeffrey Hume, District Manager
- Tim Gross, Civil West Senior Engineer

Implementation and Maintenance

The Panther Creek WD Board of Directors will be responsible for adopting the addendum to the Lincoln County NHMP. This addendum designates the steering committee, and a convener to oversee the development, and implementation of action items. Because the District is part of the County's multi-jurisdictional NHMP, the District will look for opportunities to partner with the County. The district's steering committee will convene after adoption of the addendum on an annual schedule. The County is meeting on a quarterly basis and will provide opportunities for participating jurisdictions (cities and special districts) to report on NHMP implementation and maintenance during their meetings. The steering committee, assembled by the convener, will be responsible for:

- Reviewing existing action items to determine suitability of funding;
- Reviewing existing and new risk assessment data to identify issues that may not have been identified at NHMP creation;
- Educating, and training new steering committee members on the NHMP, and mitigation actions in general;
- Assisting in the development of funding proposals for priority action items;
- Discussing methods for continued public involvement;
- Evaluating effectiveness of the NHMP at achieving its purpose and goals (use Table 4-1, Volume I, Section 4, as one tool to help measure effectiveness); and
- Documenting successes, and lessons learned.

The convener will also remain active in the County's implementation and maintenance process (Volume I, Section 4).

The Steering Committee will be responsible for activities outlined in Volume I, Section 4.

The district will utilize the same action item prioritization process as the County (Volume I, Section 4 and Volume II, Appendix D).

Implementation through Existing Programs

Many of the NHMP's recommendations are consistent with the goals and objectives of the district's existing plans and policies. Where possible, the Panther Creek WD will implement the NHMP's recommended actions through existing plans and policies. Plans and policies already in existence have support from residents, businesses, and policy makers. Many land-use, comprehensive, and strategic plans get updated regularly, allowing them to adapt to changing conditions and needs. Implementing the NHMP's action items through such plans and policies increases their likelihood of being supported and implemented.

This NHMP is strategic and non-regulatory in nature, meaning that it does not necessarily set forth any new policy. It does, however, provide: (1) a foundation for coordination and collaboration among agencies, residents, and the district; (2) identification and prioritization of future mitigation activities; and (3) aid in meeting federal planning requirements and qualifying for assistance programs. The Panther Creek WD currently has the following plan that relates to natural hazard mitigation. For a complete list visit the district's website.

- Water System Master Plan (2022)
- Water System Resilience Planning Report (2023)

Capability Assessment

The Capability Assessment identifies and describes the ability of the Panther Creek WD to implement the mitigation strategy and associated action items. This is a key component of the 2024 Natural Hazard Mitigation Plan (NHMP) update. Capabilities can be evaluated through an examination of broad categories, including existing authorities, policies, programs, funding, and resources.

Policies and Programs

The NHMP provides direction for the Panther Creek WD to explore integration into other planning documents and processes.

Water System Master Plan (2022)
The Plan recommends improvements to improve and maintain safe drinking water, fire flows, water storage, redundancy, and seismic resiliency. The plan identifies the district's infrastructure as vulnerable to earthquake. The district would not be impacted by tsunami because of its elevation and distance from the inundation zone.

Water System Resilience Planning Report (2023)
This report is an evaluation of the potential for the district to develop interconnections with neighboring water systems. The report contains cost estimations for the interconnections and a draft scope of work for the interconnection design. It is feasible for interconnections to be built as the district's system has the capacity for additional demand.

Personnel

The following Panther Creek WD personnel have assignments that correspond to natural hazard mitigation.

- Board of Commissioners
- District Manager

Mitigation Successes

This is a list of funding that Panther Creek WD has sought out or received, as well as recently completed projects to improve mitigation.

- American Rescue Plan Act (ARPA) funds of $8,000 for propane tank and generator
- Community driven volunteering for emergency repairs
- American Rescue Plan Act (ARPA) - $11M
    - Distribution system improvements to replace asbestos concrete pipe with PVC and HDPE pipes and add additional fire hydrants (Completed 2025)
    - Storage tank replacement to replace existing tanks with seismically resilient tanks and add capacity (in progress)
    - Water Treatment Plant Retaining Wall to protect plant from landslide (in progress)

Mitigation Strategy

This section of the NHMP addendum addresses 44 CFR 201.6(c)(3)(iv), *Mitigation Strategy*.

The Panther Creek WD adopts the mission and hazard mitigation goals described in Volume I.

To develop the district's mitigation strategy (action items), the Steering Committee assessed the district's risk and identified potential issues to be addressed. The Steering Committee also noted what mitigation accomplishments have been made in recent years.

Priority Action Items

Table WD-1 presents a list of mitigation actions. The highest priority actions are shown with orange highlight. The District will focus their attention, and resource availability, upon these achievable, high leverage, activities over the next five-years. Although this methodology provides a guide for the steering committee in terms of implementation, the steering committee has the option to implement any of the action items at any time. This option to consider all action items for implementation allows the committee to consider mitigation strategies as new opportunities arise, such as capitalizing on funding sources that could pertain to an action item that is not currently listed as the highest priority.

Table WD-1 Action Items

Mitigation Strategies		Impacted Hazard												Implementation and Maintenance			
Action Item #	Statement	Air Quality	Coastal Erosion	Drought	Earthquake	Extreme Heat	Flood	Landslide	Tsunami	Volcanic Event	Wildfire	Windstorm	Winter Storm	Potential Funding Resources	Lead	Timeline	Cost
1	Establish a dedicated contingency fund and acquire essential repair equipment—such as an excavator or similar utility vehicle—to enable rapid response to infrastructure damage caused by natural hazards. This action will enhance the district's operational resilience and reduce downtime following events such as earthquakes, floods, or landslides.				X		X	X						Local Funds, SDAO Assistance	District	M	M
2	Construct a seismic retaining wall to protect the water treatment plant and sand filters from earthquake-induced landslides. This project will follow geotechnical recommendations.				X			X						Local Funds, HMA	District	S	M
3	Establish a fully stocked emergency supply cache at the Community Center, including cots, food, water, and medical supplies, to support up to 100 residents during extreme heat or disaster events. Supplies will be maintained and inventoried semi-annually.				X	X	X	X			X	X	X	Local Funds, County grants	District	S	L
4	Develop and adopt a comprehensive Emergency Response Plan and Continuity of Operations Plan for PCWD, including protocols for communication, staffing, and service continuity during natural hazard events.				X		X	X			X	X	X	Local Funds, County grants	District	S	L
5	Increase on-site fuel storage capacity by at least 50% and evaluate the feasibility of integrating solar or other alternative power sources to ensure uninterrupted operation of critical infrastructure during extended power outages.				X						X	X	X	Local Funds, HMA, USDA grants	District	S	L
6	Execute a Memorandum of Understanding (MOU) with North Lincoln Fire & Rescue to formalize a hydrant maintenance and inspection schedule, ensuring all 42 hydrants are serviced at least annually and are operational during emergencies.					X					X			Local Funds	District	M	L
7	Acquire and deploy at least three backup communication devices (e.g., radios or satellite phones) that are independent of the electrical grid, to ensure reliable communication during power outages or network failures.				X			X			X	X	X	Local Funds, HMA	District	S	L
8	Complete a professional geotechnical assessment of the hillside above the water intake and sand filters, and develop a mitigation plan to address identified risks, including potential stabilization or drainage improvements.							X						Local Funds, HMA	District	S	L

Mitigation Strategies		Impacted Hazard												Implementation and Maintenance			
Action Item #	Statement	Air Quality	Coastal Erosion	Drought	Earthquake	Extreme Heat	Flood	Landslide	Tsunami	Volcanic Event	Wildfire	Windstorm	Winter Storm	Potential Funding Resources	Lead	Timeline	Cost
9	Coordinate with the local road district and community center to designate and signpost at least two emergency staging areas for use during disasters, ensuring they are accessible, out of flood-prone zones, and equipped with basic emergency signage and supplies.				X		X	X			X	X	X	Local Funds	District	S	L

Source: Panther Creek WD steering committee, 2025.
Cost: L (less than $50,000), M ($50,000-$499,999), H ($500,000-$5 million), VH (more than $5 million),
Potential Funding Sources: HMA=FEMA's Hazard Mitigation Assistance disaster and non-disaster grant programs
Timing: Short (1-4 years), Medium (4-10 years), Long (10 or more years)
Priority Actions: Identified with orange highlight
Dark Grey highlight indicates that the hazard does not impact the jurisdiction.

Risk Assessment

This section of the NHMP addendum addresses 44 CFR 201.6(b)(2) - *Risk Assessment*. In addition, this chapter can serve as the factual basis for addressing Oregon Statewide Planning Goal 7 – Areas Subject to Natural Hazards. Assessing natural hazard risk has three phases:

Phase 1: Identify hazards that can impact the jurisdiction. This includes an evaluation of potential hazard impacts – type, location, extent, etc.

Phase 2: Identify important community assets and system vulnerabilities. Example vulnerabilities include people, businesses, homes, roads, historic places and drinking water sources.

Phase 3: Evaluate the extent to which the identified hazards overlap with, or have an impact on, the important assets identified by the community.

The local level rationale for the identified mitigation strategies (action items) is presented herein, and within Volume I, Section 2, and Volume II, Appendix C.

Hazard Analysis

The district developed their hazard analysis, using the County's (Volume I, Section 2) as a reference. Where appropriate, changes were made to distinguish the district's risks from those in the County's hazard analysis, as detailed throughout this addendum.

Table WD-2 shows the hazard analysis matrix listing each hazard in rank from high to low. For local governments, conducting hazard analysis is a useful step in planning for hazard mitigation, response, and recovery. The method provides the jurisdiction with a sense of hazard priorities but does not predict the occurrence of a particular hazard. See Volume I, Section 2 for methodology details.

Landslide, wildfire, Cascadia Subduction Zone earthquake, riverine flood, windstorm, and winter storm are the high hazard threats to the city. Extreme heat event and crustal earthquake are the low hazard threats.

The water district's primary responsibilities focus on the management, protection, and operation of water-related infrastructure. While the safety of people is important to the district's mission, it does not serve as the lead agency for emergency response or public safety during hazard events.

Instead, the district works in close collaboration with county and city agencies that have broader responsibilities for managing community-wide impacts. The district provides technical expertise and support related to water infrastructure, while local jurisdictions lead efforts in emergency response, public safety, and disaster recovery.

Given this operational scope, the district is not directly affected by the following hazards and does not have infrastructure or responsibilities that warrant profiling them in its hazard analysis: air quality, coastal erosion, drought, coastal flood, local tsunami, distant tsunami, tornado, and volcanic event. These hazards fall outside the district's direct impact zone or operational purview

and are more appropriately addressed by other agencies within the broader emergency management framework.

In addition, hazards identified within the "bottom tier" have low vulnerability and/or low probability to the district. as such the district has elected to not include mitigation strategies. Instead. the district will collaborate with the County and applicable cities to implement mitigation strategies related to these hazards.

Table WD-2 Hazard Analysis Matrix

Hazard	History	Vulnerability	Maximum Threat	Probability	Total Threat Score	Hazard Rank	Hazard Tiers
Landslide	20	35	80	70	205	#1	
Wildfire	20	25	90	70	205	#2	
Earthquake (Cascadia)	2	50	100	49	201	#3	*Top Tier*
Flood (Riverine)	10	30	80	63	183	#4	
Windstorm	20	20	50	70	160	#5	
Winter Storm	18	20	50	70	158	#6	
Extreme Heat Event	14	20	60	56	150	#7	*Bottom Tier*
Earthquake (Crustal)	10	20	40	21	91	#8	

Source: Panther Creek WD steering committee, 2025

Community Characteristics and Assets

The following section provides information on Panther Creek WD specific demographics and assets (see Table WD-4). Many of these community characteristics can affect how natural hazards impact communities, and how communities choose to plan for natural hazard mitigation. Considering the District specific assets during the planning process can assist in identifying appropriate measures for natural hazard mitigation.

Community Characteristics

The Panther Creek Water District is a community public water system located in the Otis area of north Lincoln County, northeast of Lincoln City and north of Highway 18. The district currently serves approximately 336 active service connections, with an average of two new connections added each month. Prior to the 2020 Echo Mountain Fire, the district served close to 1,000 residents, but the fire displaced about 25% of the population and destroyed numerous homes. Many of these lots are now being redeveloped, with a mix of returning residents and new households, including younger families. The district has also annexed Salmon River Park and anticipates potential future expansion into nearby communities such as the Highland District and Riverton, which could significantly increase service demand. The district's infrastructure has been rebuilt to modern standards, with enhanced seismic and fire protection features, positioning it as one of the most resilient systems in the county.

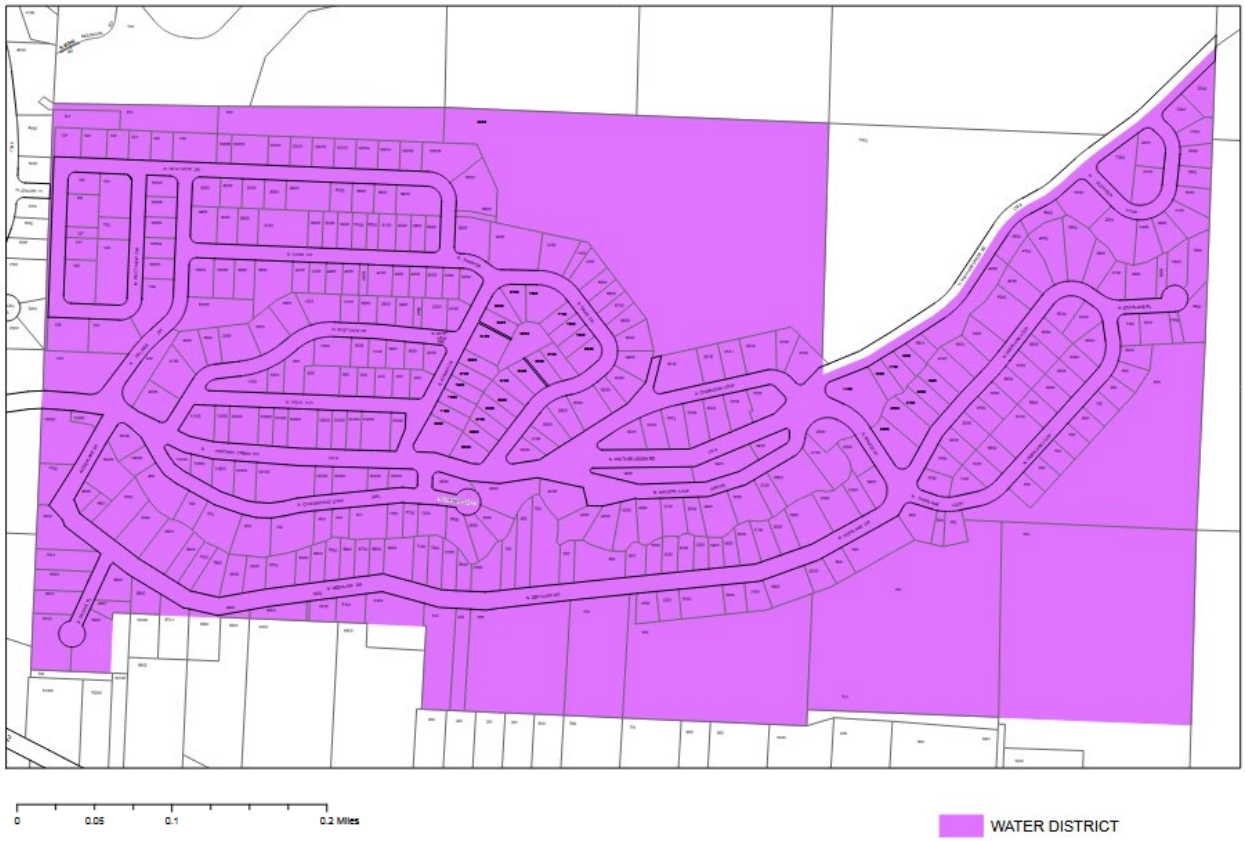
Facilities and Property Assets Inventory

This section provides information on district specific assets. Assets that may be affected by hazard events include residential and nonresidential buildings, critical facilities, and infrastructure. Considering the district specific assets during the planning process can assist in identifying appropriate measures for natural hazard mitigation.

Table WD-4 lists the resources, facilities, and infrastructure that, if damaged, could significantly impact the public safety, economic conditions, and environmental integrity of the district.

The district's facilities are located within their service area (Map WD-1) which includes the Lincoln County unincorporated communities of Otis and Rose Lodge.

Map WD-1 District Boundaries



Source: Lincoln County GIS - Click link for more information

Hazard Identification

This section profiles the district's hazards and assesses their vulnerabilities, distinct from the countywide planning area. Detailed hazard profiles of the most significant countywide hazards are described in Volume I, Section 2. The detailed profiles include hazard characteristics, history, location, extent, previous occurrences, and probability of future occurrences. An event that affects the County is likely to affect the district as well. However, not all hazards impact the district assets. The district chose to profile the hazards shown in Table WD-2 due to the impact these hazards have upon their assets. Factors included during discussions by the district included the number of potential assets damaged, extent of damage, and length of time required for repairs (economic losses were also considered).

Hazards that were determined to not impact the district include: Coastal erosion, air quality, tornado, drought, coastal flood, local tsunami, distant tsunami, and volcano.

Additional information is found in the Risk Assessment for Region 1, Oregon Coast, Oregon SNHMP (2020).

National Flood Insurance Program (NFIP)

The district does not have the authority to adopt and enforce floodplain management or other land use regulations for the areas within its jurisdiction. For more information on National Flood

Insurance Program (NFIP) claims and other potential flood impacts, see the County plan (Volume I).

Vulnerability Assessment

Development and population forecasts are not expected to increase or decrease the impact of their profiled hazards.

The district's concentrated population and resources, as well as the soil characteristics and relative earthquake hazards described herein and in Volume I, Section 2 are cause for significant effort toward mitigating the earthquake hazard. The district's infrastructure (water lines, tanks, treatment plant, etc.) is highly vulnerable to a severe earthquake event. No quantitative assessment of the risk of natural hazards has been conducted at a district wide scale. However, there have been several reports conducted for the unincorporated region of the county that include the district's service area.

Table WD-3 provides the ranking of hazards of concern based on total threat score and Table WD-4 shows hazard impact to the district's assets.

Hazard area extent and location maps are included in Attachment B. Information shown on the maps is for planning purposes, represents the conditions that exist at the map date, and is subject to change. Refer to the original source documentation to better understand the data sources, results, methodologies and limitations of each dataset presented.

Table WD-3 Hazard Risk and Description of Impact

Hazard	Description of Impact	Total Threat Score
Landslide	Landslides pose a localized but significant threat to infrastructure, particularly the water treatment plant, which is situated downslope near a creek. The hillside above the sand filters is of concern, and a geotechnical review is planned to assess and mitigate this risk. Limited road access could further complicate emergency response during a slide event.	205
Wildfire	Wildfire is a major concern, especially following the recent fire that displaced about 25% of residents. While the district has rebuilt with improved standards, above-ground infrastructure and water quality remain vulnerable to ashfall and debris. The community has engaged in redevelopment efforts, but defensible space and emergency planning remain priorities.	205
Earthquake (CSZ Event)	A Cascadia Subduction Zone earthquake could significantly impact infrastructure. Although the newer system is designed to withstand seismic activity, concerns remain about the vulnerability of the sand filters and water plant. A seismic	201

Hazard	Description of Impact	Total Threat Score
	retaining wall is under construction to mitigate potential damage.	
Flood (Riverine)	Flooding is a concern primarily for the water plant's inlet and water quality, especially during heavy rain events. The plant's location near a creek increases its exposure, and access roads may become impassable, affecting emergency response and operations.	183
Windstorm	High winds can lead to power outages, which are a critical concern for operations. Although the district has a generator, fuel storage is limited, and access to refueling during prolonged outages is uncertain. Pacific Power's Public Safety Power Shutoffs (PSPS) could further disrupt service.	160
Winter Storm	Winter storms in the district can bring heavy rain and wind, increasing the risk of landslides, flooding, and power outages. While snow and ice are rare, saturated soils and strong winds can still damage infrastructure and limit access to key facilities.	158
Extreme Heat Event	Extreme heat is an emerging concern, particularly for vulnerable populations. The community center lacks air conditioning, prompting plans to install HEPA-filtered AC units to create a clean air refuge. Emergency supplies and cooling strategies are being explored through county and state grants.	150
Earthquake (Crustal)	Crustal earthquakes could damage pipelines, tanks, and the treatment plant, especially if accompanied by landslides or ground movement. While the district's newer infrastructure is more resilient, critical components like the sand filters and intake system remain at risk.	91

Source: Panther Creek WD steering committee, 2025.

Table WD-4 Facilities Summary

Name/Number	Address	Identified Hazard Exposure											
		AQ	CE	DR	EQ	EH	FL	LS	TS	VE	WF	WS	WT
Water Treatment													
Water Treatment Plant					X	X	X	X					
Sand Filter								X					
Sediment Pond													
Storage Tanks													
Three contact tanks – ea. 6,500 gal					X								
Storage tank – 100,000 gal					X								
Storage tank – 50,000 gal					X								
Pump Stations													
Three pumps in conjunction with treatment plant					X								
Piping, Hydrants, Generators, and other infrastructure													
Water lines – 24,000 ft. total					X						X		
Community Center					X	X					X		X
Hydrants											X		
Generator												X	X

Source: Information provided by Panther Creek WD
Dark Grey highlight indicates that the hazard does not impact the jurisdiction.

Table Key:
"X" – Facility may be exposed and may be impacted by the identified hazard per a visual inspection of the mapped hazard area
[blank] = facility exposure has not been assessed for this hazard

Hazard Descriptions:

AQ = Air Quality	EH = Extreme Heat	LS = Landslide	WF = Wildfire
CE = Coastal Erosion	EQ = Earthquake	TS = Tsunami	WS = Windstorm/Tornado
DR = Drought	FL = Flood	VE = Volcanic Event	WT = Winter Storm

Attachment A: Public Involvement Summary

Members of the Steering Committee provided edits and updates to the NHMP prior to the public review period as reflected in the final document. In addition, a survey was distributed that included responses from residents of the district (Volume II, Appendix F).

To provide the public information regarding the draft NHMP addendum, and provide an opportunity for comment, an announcement was provided from August 7 through 21, 2025 on the County's website and publicized by the district. Comments were reviewed and integrated into the NHMP as applicable. Additional opportunities for stakeholders and the public to be involved in the planning process are addressed in Volume II, Appendix B.

Various agencies and organizations contributed input through multiple channels, including comments on the draft. These groups include local and regional hazard mitigation agencies, development regulators, neighboring communities, businesses, academia, nonprofits, and community-based organizations serving underserved and socially vulnerable populations (see Volume II, Appendix B).

Steering Committee

Steering Committee members possessed familiarity with the district and how it is affected by natural hazard events. The Steering Committee guided the update process through several steps including goal confirmation and prioritization, action item review and development, and information sharing, to update the NHMP and to make the NHMP as comprehensive as possible. The Steering Committee met formally on the following dates:

Meeting #1: April 22, 2025 (virtually via Zoom)
During this meeting, the Steering Committee was provided updates on hazard mitigation planning, the NHMP update process, and project timeline. The Steering Committee meeting details include:

- Reviewed and provided feedback on recent history of hazard events.
- Reviewed and confirmed the County NHMP's mission and goals.
- Discussed the NHMP public outreach strategy.
- Reviewed and provided feedback on the draft risk assessment including community vulnerabilities and hazard information.
- Developed their mitigation strategy (actions).
- Reviewed and provided feedback on their implementation and maintenance program.

Meeting Attendees:

- Convener, Jeffrey Hume, District Manager
- Tim Gross, Civil West Senior Engineer

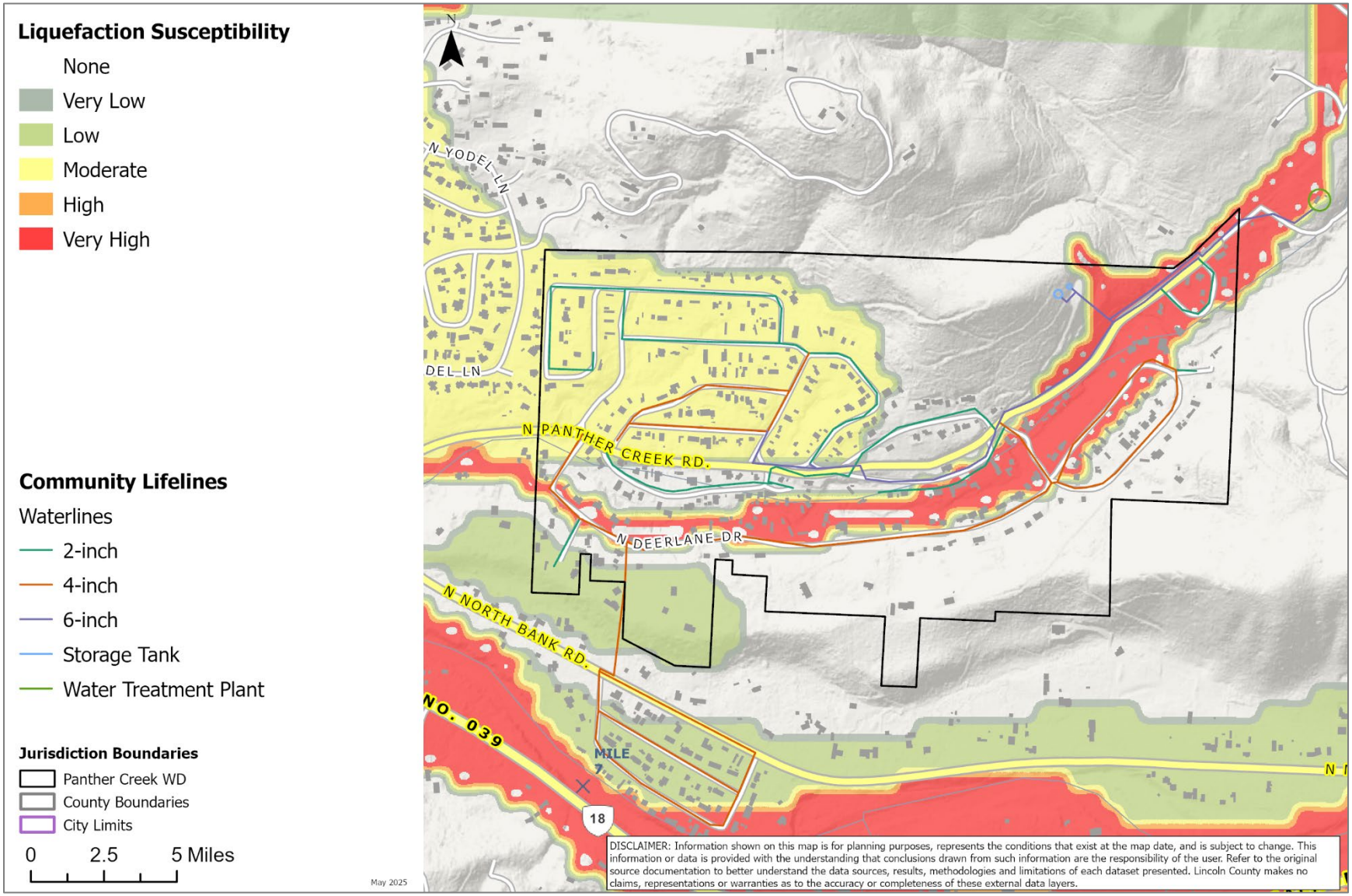
Meeting Summary:

Key concerns discussed included earthquake resilience, flood risks to the water plant, extreme heat impacts, and the need for emergency supplies and backup power. The meeting also addressed recent demographic and development changes, such as post-fire redevelopment and potential annexations, which could significantly impact service demands and risk profiles.

Participants collaborated to craft new mitigation strategies and action items, including constructing a seismic retaining wall, establishing emergency caches, expanding fuel storage, and developing formal emergency response plans. The district highlighted past mitigation successes funded through grants and community efforts and emphasized the need for a fire-resistant office and improved communication tools. The meeting concluded with next steps for reviewing and finalizing the addendum, integrating it into the broader NHMP update.

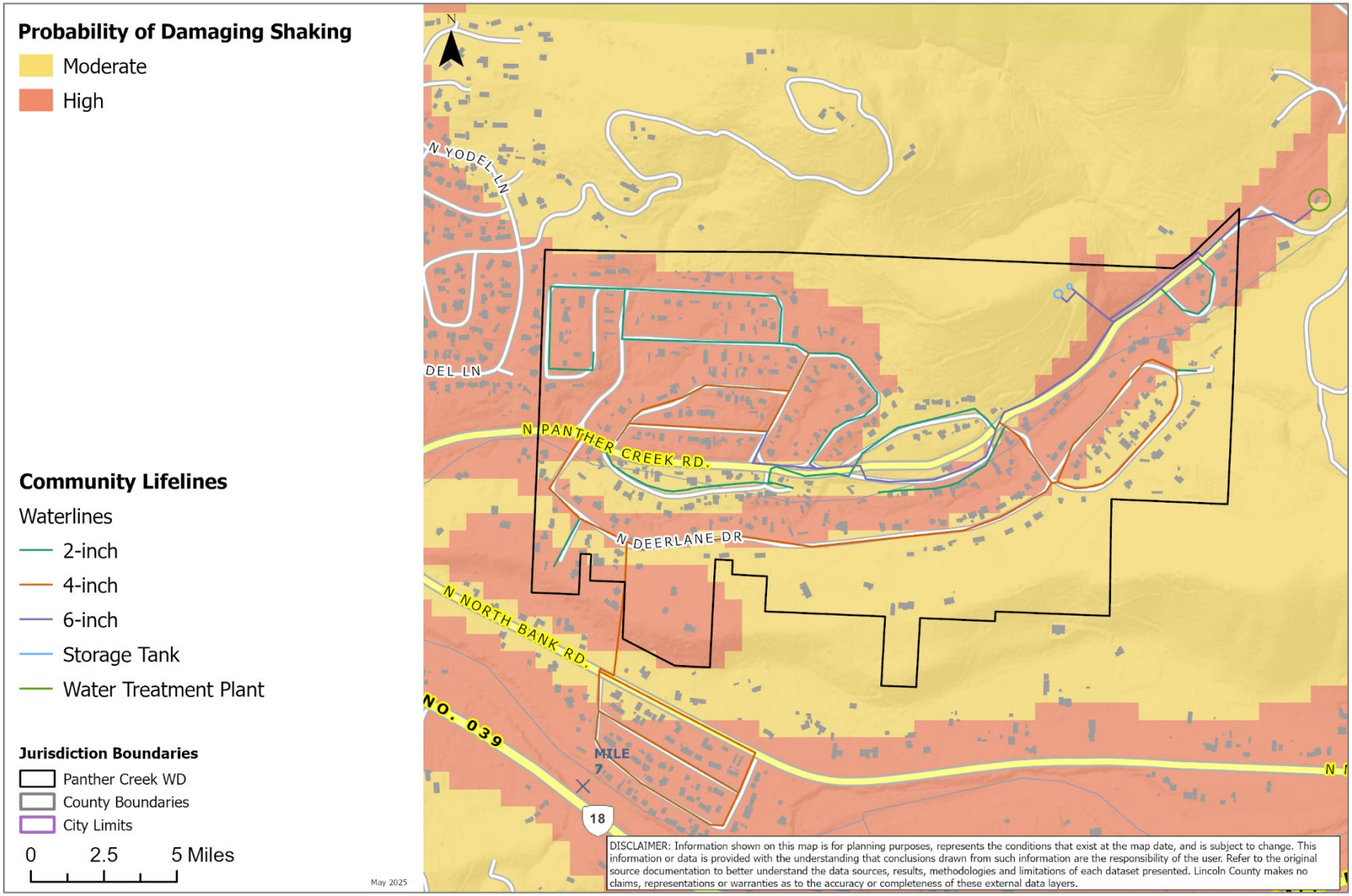
Attachment B: Hazard Maps

Map WD-2 Earthquake Liquefaction (Soft Soil) Hazard and Active Faults



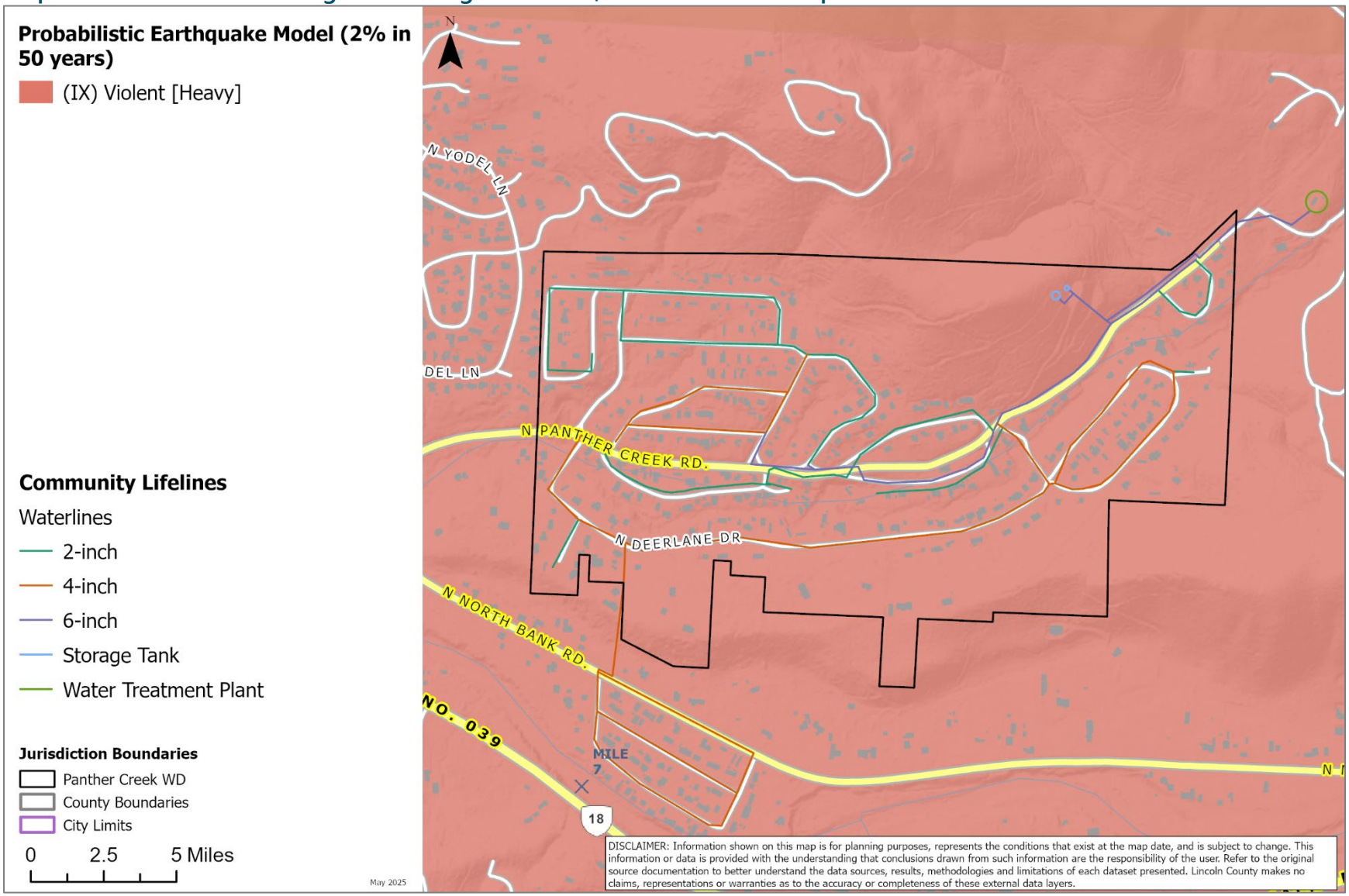
Source: Oregon Explorer: Map Viewer – To view map detail click hyperlink to left.

Map WD-3 Probability of Damaging Shaking



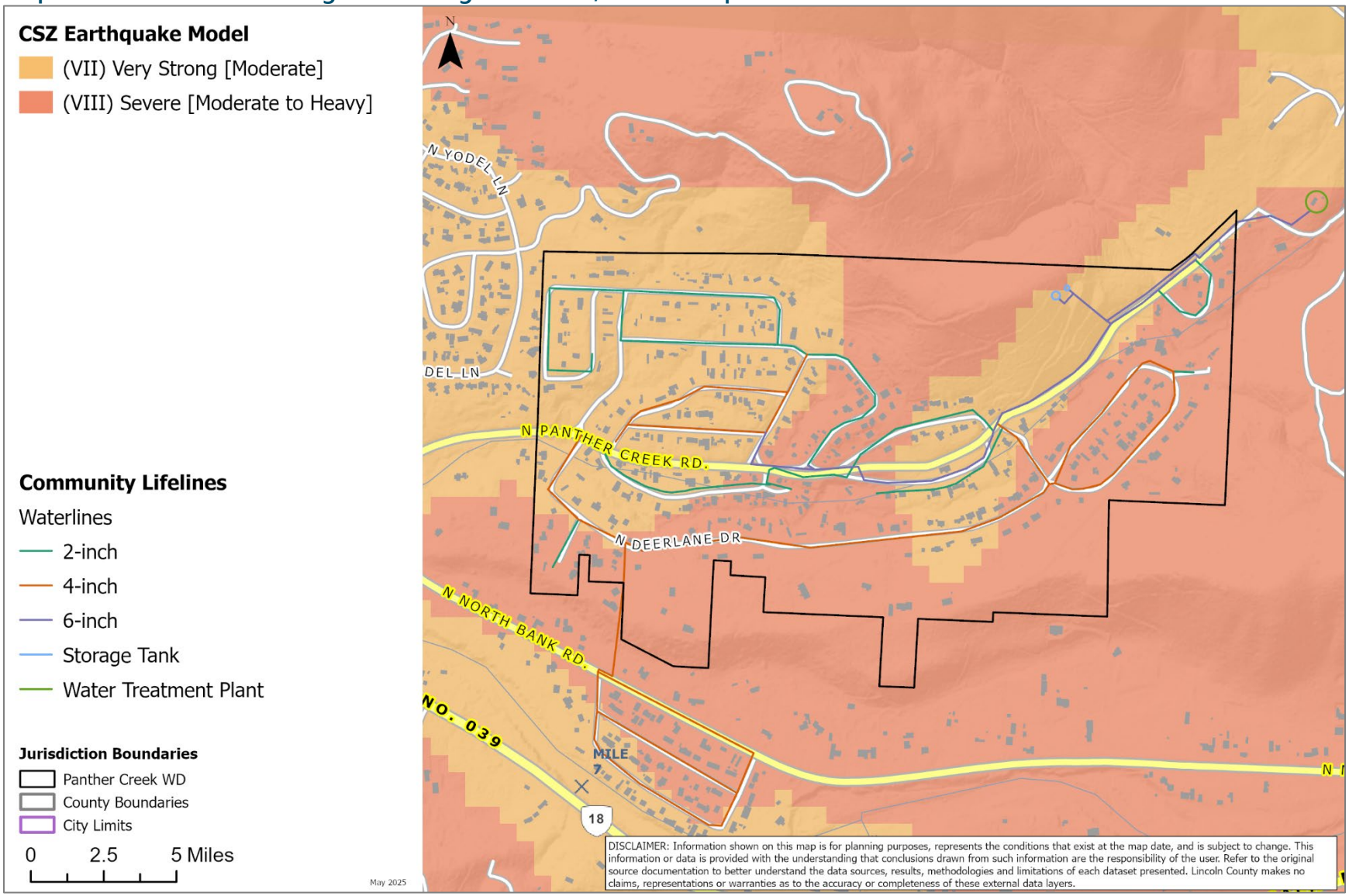
Source: Oregon Explorer: Map Viewer – To view map detail click hyperlink to left.

Map WD-4 Perceived Shaking and Damage Potential, Probabilistic Earthquake Model



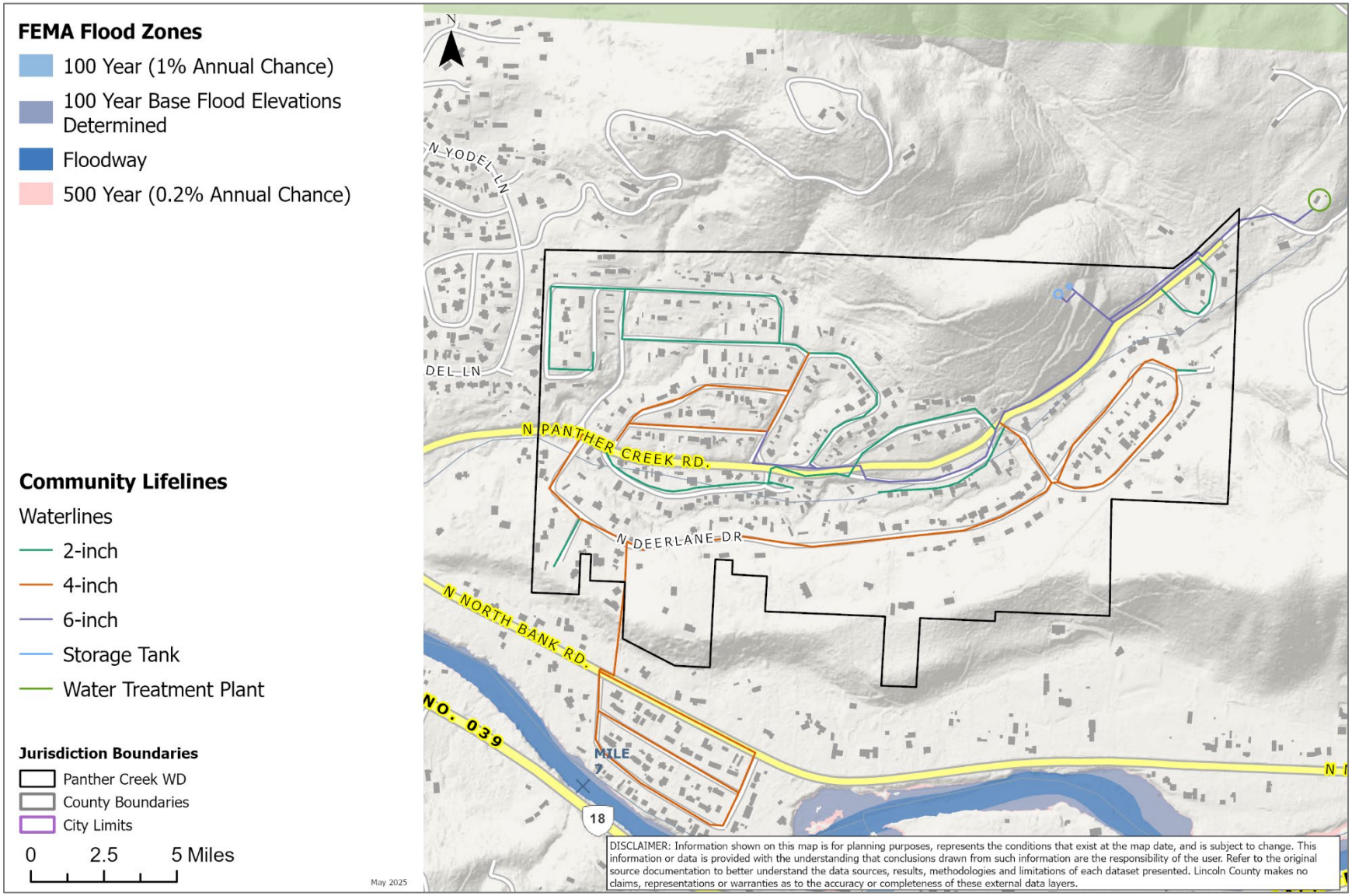
Source: Oregon Explorer: Map Viewer – To view map detail click hyperlink to left.

Map WD-5 Perceived Shaking and Damage Potential, CSZ Earthquake Model



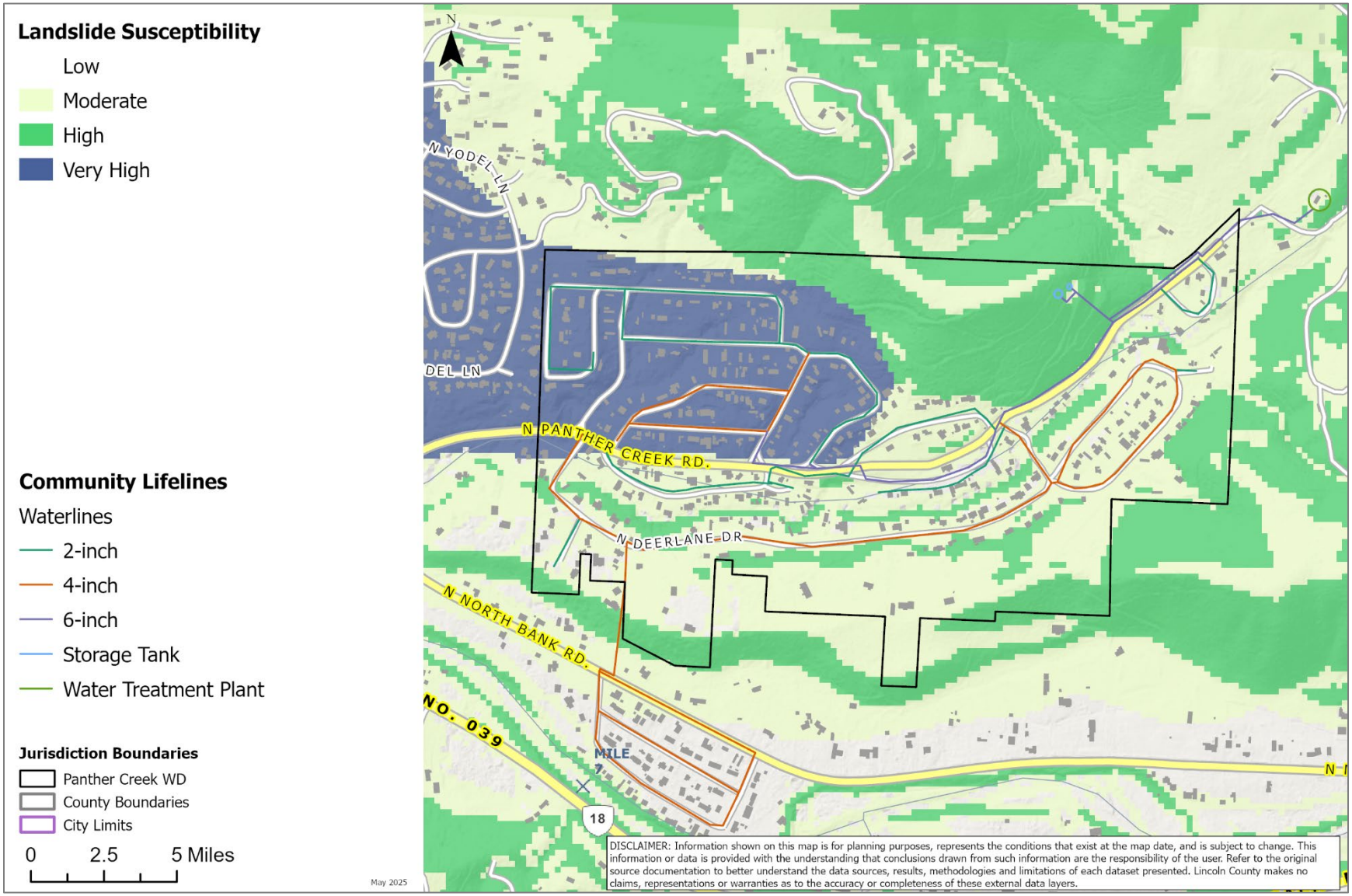
Source: Oregon Explorer: Map Viewer – To view map detail click hyperlink to left.

Map WD-6 Flood Hazard Zones (100- and 500-year floodplains)



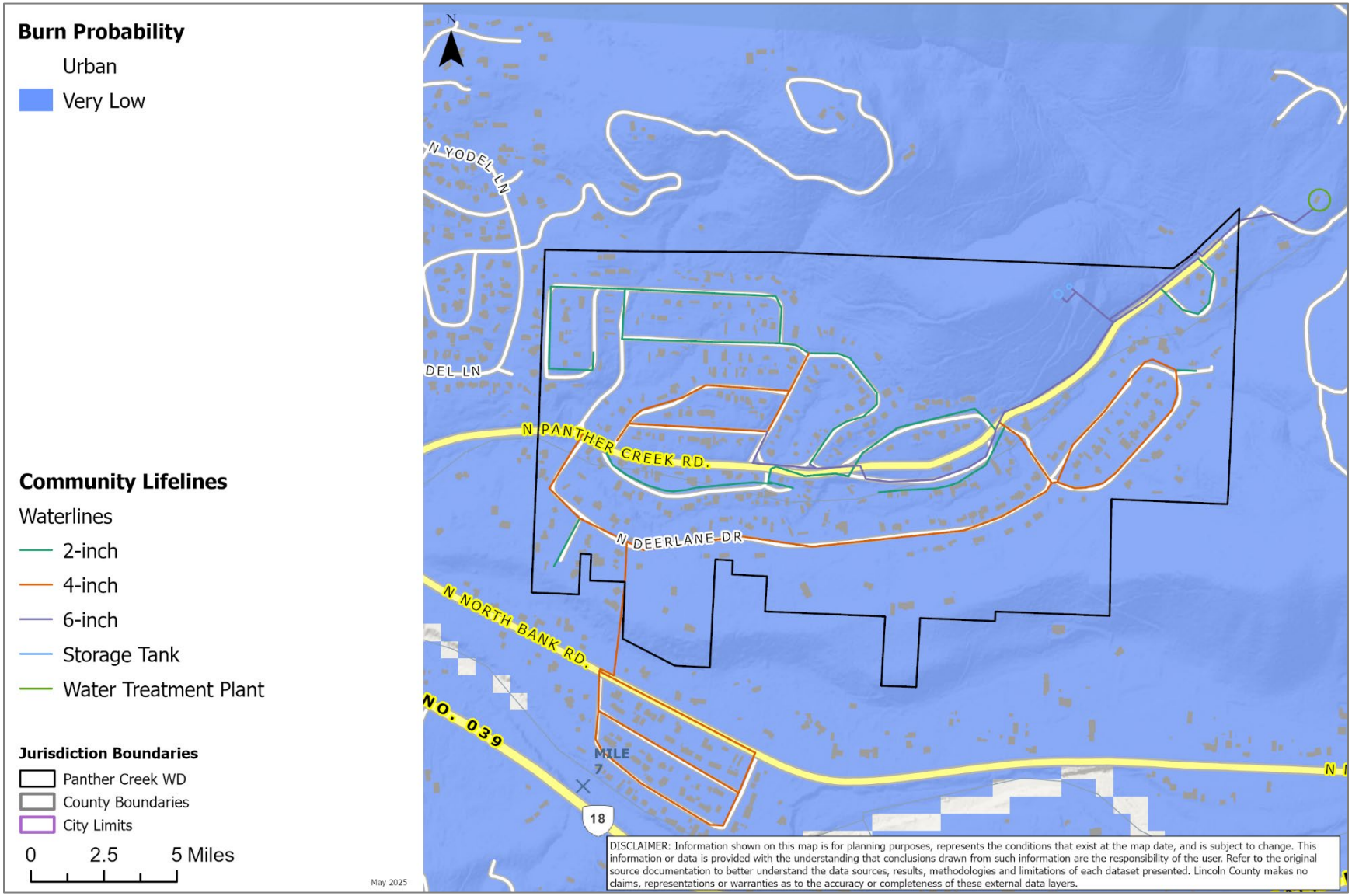
Source: Oregon Explorer: Map Viewer – To view map detail click hyperlink to left.

Map WD-7 Landslide Susceptibility Exposure



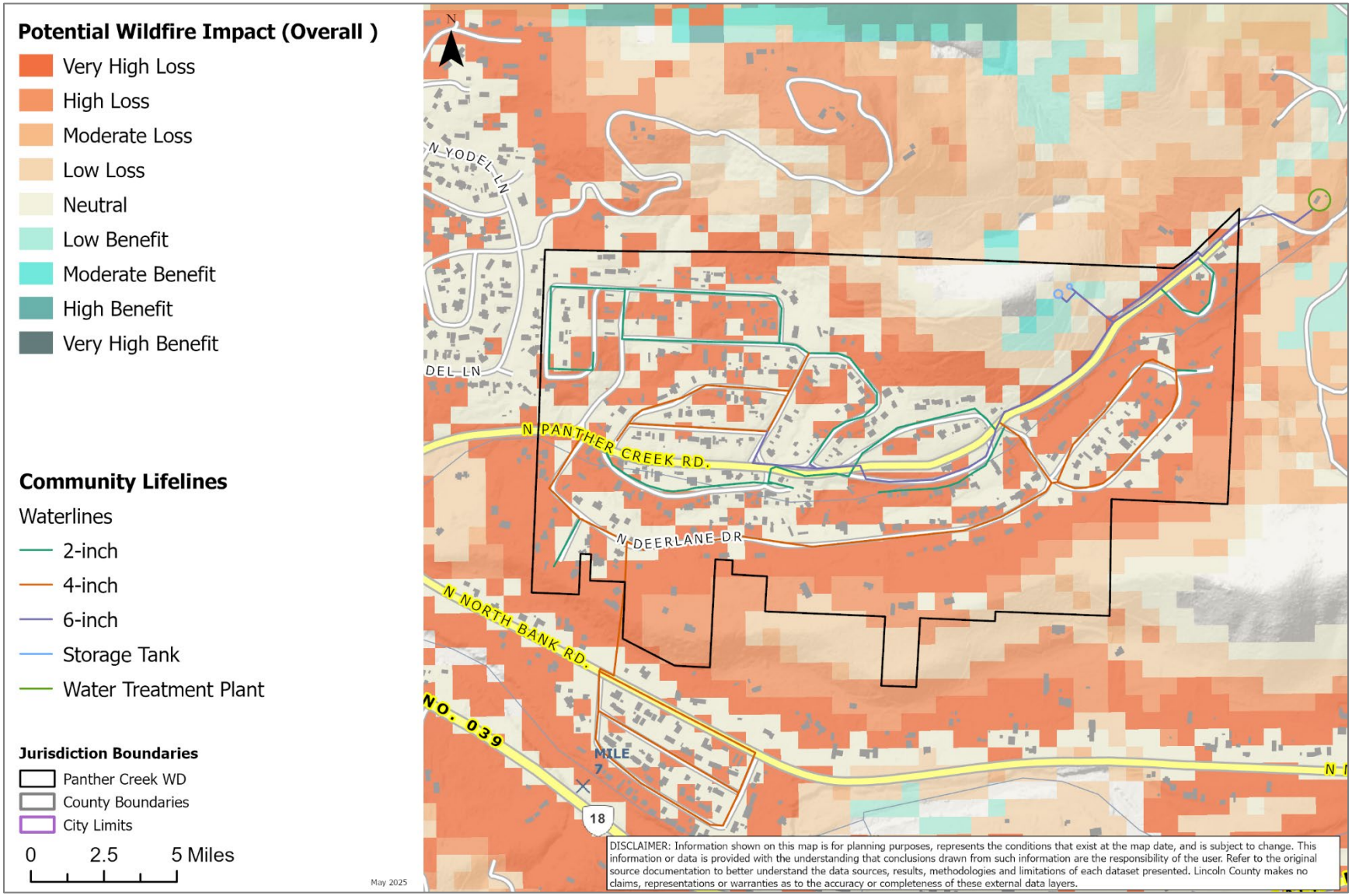
Source: Oregon Explorer: Map Viewer – To view map detail click hyperlink to left.

Map WD-8 Burn Probability and Fire History (1992-2022)



Source: Oregon Explorer: Map Viewer – To view map detail click hyperlink to left.

Map WD-9 Potential Wildfire Impact (Overall)



Source: PNW Quantitative Wildfire Risk Assessment (2023, layer name = icNVC), To view map detail click hyperlink to left..