

CITY OF ADAIR VILLAGE ADDENDUM

Purpose

This document serves as the City of Adair Village's Addendum to the Benton County Multi-Jurisdictional Natural Hazards Mitigation Plan (MNHMP, NHMP). This addendum seeks to supplement information contained in Volume I: Basic Plan of this multi-jurisdictional NHMP which serves as the foundation for the City of Adair Village's addendum and Volume III: Appendices which provides additional information particularly regarding participation and mitigation strategy.

Plan Process, Participation, and Adoption

In the summer of 2022, the Department of Land Conservation and Development (DLCD) partnered with the Oregon Department of Emergency Management (OEM), Benton County, a special district and all the cities in the county, including Adair Village, to update their NHMP. The NHMP expired on August 11, 2022. This project is funded through the Federal Emergency Management Agency's (FEMA) Hazard Mitigation Grant Program - Post Fire for FM-5327-OR (FM-5327-05-NHMP Updates-Benton and Linn Counties, the City of La Grande, and Linn-Benton Community College).

By developing this addendum to the Benton County NHMP, having it approved pending adoption by FEMA, and, locally adopting it, Adair Village will regain eligibility for FEMA Hazard Mitigation Assistance (HMA) funding that includes three programs: Building Resilient Infrastructure & Communities (BRIC), formerly the Pre-Disaster Mitigation grant program, the Hazard Mitigation Grant Program (HMGP), and the Flood Mitigation Assistance (FMA) program.

The Benton County NHMP and Adair Village addendum are the result of a collaborative effort among citizens, city staff, non-profit organizations, the private sector, and regional organizations. The city produces a monthly newsletter to inform residents about efforts like the NHMP update process. In collaboration, the Village Christian Church shares the city newsletter with visitors. The church reaches vulnerable people because it provides food to those in need. A Benton County project steering committee (NHMP Steering Committee or Steering Committee) guided the process of developing the plan with the city representatives. For more information on the composition of the Steering Committee see the *Acknowledgements*, *Plan Summary*, and *Plan Process* (Appendix B).

The Adair Village City Administrator is the designated convener of the local NHMP update committee and will take the lead in implementing, maintaining, and updating the city's NHMP addendum. He works with the local plan update committee, the City Council, and represents the City of Adair Village in the Benton NHMP Steering Committee in collaboration with the designated convener of the Benton County MNHMP, the County Emergency Manager.

The Adair Village City Council acts as the local plan update committee. The City Administrator acts as the liaison from the city council to the NHMP update Steering Committee. He is supported in this role by the Public Works Supervisor, Matt Lydon, and the Adair Rural Fire Protection District Fire Chief, Chuck Harris.

The city's addendum reflects decisions made during Steering Committee meetings, at Adair Village City Council meetings and during subsequent work and communication with the DLCD project manager.

The Adair Village local update meeting group was comprised of the following representatives:

- Bill Currier, Mayor
- Bret Ray, Councilor
- Aaron Fuller, Councilor
- Dawson Officer, Councilor

Public participation was achieved with the establishment of the local plan update committee, which was comprised of city officials and special districts representing different organizations and sectors including members of the Adair Village Fire and Rescue. The local plan update committee was closely involved throughout the development of the plan and served as the local oversight body for the plan's development. The city posted drafts of the Adair Village Addendum on its website and publicized it in the monthly newsletter (see Appendix B for more information) and a survey regarding community perceptions of natural hazards was developed and promoted by the county (see Appendix F details of the survey).

The Benton County MNHMP was approved by FEMA on [Month Day], 2023. The Adair Village addendum was adopted via resolution on [Month Day], 2023. The Benton County NHMP and Adair Village addendum are effective through [Month Day], 2028.

Risk Assessment

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 and action items is presented herein, and within Section 2, *Risk Assessment*, and Appendix C, *Community Profile*. The risk assessment process is graphically depicted in Figure AVA-1 below. Ultimately, the goal of hazard mitigation is to reduce the area of risk, where hazards overlap vulnerable systems.

Figure AVA-I Understanding Risk



Phase I: Hazard Identification

The National Oceanic and Atmospheric Administration’s (NOAA) Storm event database identifies a number of natural hazard events during the period of interest. These are detailed in the Basic Plan within the Risk Assessment section.

The Steering Committee was asked to identify any other natural hazards that it would like to address in this MNHMP update. Extreme Heat, Pandemic and Dam Failure were identified as new hazards to address.

The group then began the Risk Assessment phase of the project during the second Steering Committee meeting on July 21, 2022 by identifying natural hazard events that have occurred in the county during the period of interest beginning in January 2016 and extending to the end of 2022. The characteristics of natural hazards that occur in Adair Village and the local plan update committee’s assessment of them is provided in the section titled Hazard Characteristics found on page AVA-7 in this addendum. A more thorough treatment of the character and extent of these natural hazards can be found in Volume I: Basic Plan.

The Steering Committee members identified hazards within the county that were notable within the period of interest. These included the 2019 floods, the 2021 ice storm and winter storm as important natural hazard events during this period. A fire in 2021 near or in Alsea along Route 34 was identified as having brought awareness to issues concerning evacuation routes. Natural hazard events that have specifically affected the City of Adair Village during this time period include February 2021 ice storm that resulted in a large number of trees to fall and power outages for the city.

Phase 2: Community Assets and Vulnerabilities

This section provides information on city specific assets. For additional information on the characteristics of Adair Village, in terms of geography, environment, population,

demographics, employment and economics, as well as housing and transportation see Volume III, Appendix C, *Community Profile*. Many of these community characteristics can affect how natural hazards impact communities and how communities choose to plan for natural hazard mitigation. Considering the city specific assets during the planning process can assist in identifying appropriate measures for natural hazard mitigation.

Community Characteristics

Adair Village is located in the mid-Willamette Valley, in northern Benton County and north of Corvallis and is the second least populous city in Benton County. The city is located on the site of former Camp Adair and covers about 0.23 square miles. The climate of Adair Village is moderate; the average monthly temperatures range from 51 – 81 degrees Fahrenheit in July and August, and 33-46 degrees Fahrenheit in December and January, and the city receives approximately 43 inches of rain each year. Monthly precipitation is about 6-7 inches during the wetter months of November – January, and about .04 inches during the drier months of June - August. The city’s topography is generally flat with some steeper sloped areas along the western edge of the city.

Economy

Adair Village benefits from its location near Corvallis which is a regional center for higher education (Oregon State University), industrial technology, engineering, research, commerce, and health care. Adair Village has some local businesses, however, most employment is outside of the city.

Critical and Important Facilities

Critical and important facilities include the following:

Facility Type	Name	Address (Adair Village unless otherwise noted)
Fire Station	Adair Village RFPD	6021 Marcus Harris Ave NE
Administrative/Social Services	City Hall/ Community Center	6030 NE William R Carr Ave
Utility-Water System	Water Treatment Facility	5011 HWY 20 NE, Albany 97321
Utility-Wastewater System	Wastewater System	Adair County Park
Block Building	Military Building	7170 NE Arnold Ave
Church	Village Christian Church	7234 NE Arnold Ave
School	Santiam Christian School	7220 NE Arnold Ave

See hazards sections below and Section 2, *Risk Assessment*, for potential hazard vulnerabilities to these facilities.

Phase 3: Hazard Analysis

Methodologies Used

The Benton County MNHMP update Steering Committee utilized two methods for assessing vulnerability to natural hazards. At a county level the Steering Committee was guided through the OEM Hazard Analysis Methodology. This first approach is a hazard analysis methodology that was first developed by FEMA around 1983 and refined by the Oregon Department of Emergency Management since that time. Details of the results of this methodology is available in the Risk Assessment section of the Basic Plan in Volume I.

In summary, this methodology produces scores that range from 24 (lowest possible) to 240 (highest possible) using scores for four factors that impact risk. These factors are History, Probability, Vulnerability and Maximum Threat. Vulnerability and Probability are two key components of this methodology. Vulnerability examines a typical occurrence of the hazard and Maximum Threat examines a maximum credible event. Probability endeavors to reflect how physical changes in the jurisdiction and scientific research modify the historical record for each hazard. Vulnerability and Maximum Threat factors account for approximately 60% of the total score, and Probability is weighted to account for approximately 40% of the total score. In this analysis severity rankings were agreed on as a group using a consensus-based approach and were applied at the scale of the county. The results of this county level assessment are available in the Basic Plan within the Risk Assessment section.

The second methodology was a modification of this approach applied at the local level to provide differentiation among the regions of the county and for the several cities and the participating district within Benton County. Using an online survey tool jurisdictions ranked the natural hazards addressed in the Plan for each of the four factors. Following that exercise, the City of Adair Village representatives discussed their vulnerability to natural hazards in a small group meeting with the DLCD project manager, using the county's HVA as a reference. To allow generalized categories, rankings of 1-4 will be categorized as low, 5-8 will be categorized as moderate, and 9-12 will be categorized as high. The rankings are the result of one representative from the City of Adair Village providing their responses to the survey.

Figures AV-1 through AV-4 show the ranked responses for the City of Adair Village for each of the four factors that comprise the OEM methodology.

Figure 0-1 Ranking of Hazard History in Adair Village

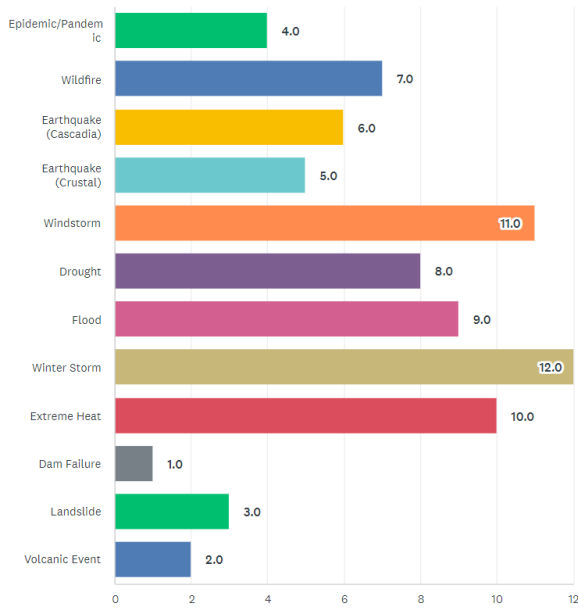


Figure 0-2. Ranking of Hazard Probability in Adair Village

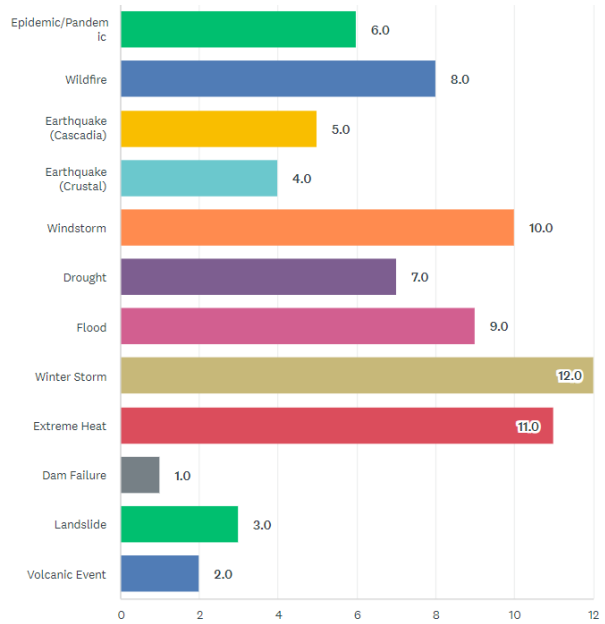


Figure 0-3. Ranking of Hazard Vulnerability in Adair Village

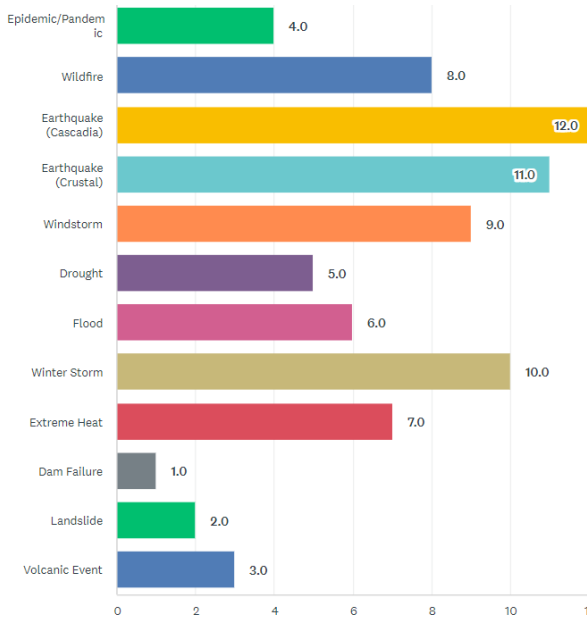
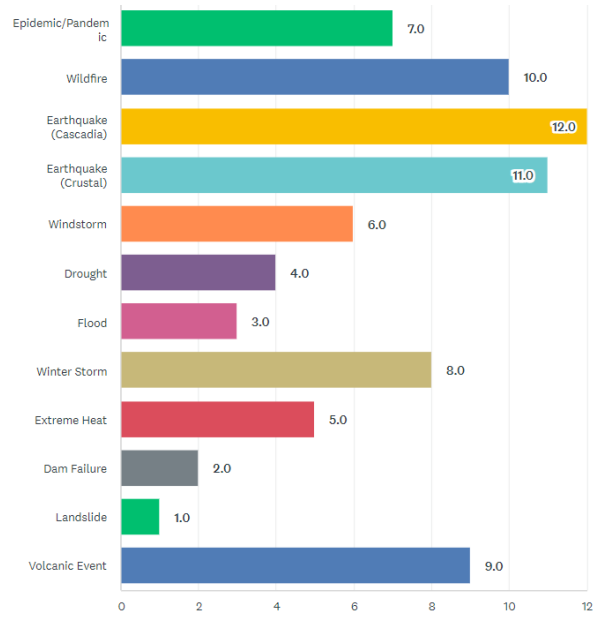


Figure 0-4. Ranking of Hazard Maximum Threat in Adair Village



The historic frequency and probability of future occurrences are highest for some chronic hazards (Windstorm, Winter Storm, and Extreme Heat). Flood and drought are also chronic hazards that have occurred frequently in the past and probably will occur frequently in the future. Two catastrophic hazards (Cascadia Subduction Zone earthquake and crustal earthquakes) rank highest in terms of vulnerability and the maximum threat of these hazard threats to the city. Wildfire, a catastrophic hazard, is ranked at a moderate level for historic occurrence, probable future occurrence, and vulnerability. However, Wildfire is ranked at the high end of the spectrum for the maximum impact of this hazard. Dam Failure and Landslide are ranked low for all factors. Epidemic/Pandemic and Volcanic Event are both ranked moderately or low for History, Probability and Vulnerability, but much higher for their Maximum Threat.

These methods provide City of Adair Village representatives and residents with a sense of hazard priorities, or relative risk. These methods do not predict the occurrence of a particular hazard, but they do rank the risk of one hazard compared with another. By doing this analysis, planning can first be focused where the risk is greatest.

Hazard Characteristics

[Note: the sections below will be further revised with forthcoming data from DOGAMI]

The summaries below evaluate the local ranking of probability and vulnerability where High indicates a ranking between 9 and 12, Moderate indicates a ranking between 5 and 8, and Low indicates a ranking between 1 and 4.

Epidemic/Pandemic

The local plan update representative estimated that the city's probability for epidemic/pandemic is **moderate** ranking 6 out of 12 and resident's vulnerability to epidemic/pandemic is **low to moderate** being ranked 4 out of 12.

Volume I, Section 2, *Risk Assessment*, describes the characteristics of the hazard of epidemic/pandemic, as well as the location and extent of a potential event.

In summary, the COVID-19 pandemic that impacted the entire country has led to the inclusion of this hazard for the first time in the 2023 update to the Benton County MNHMP.

Extreme Heat

The local plan update representatives estimated that the city's probability for extreme heat is **high** ranking 11 out of 12 and resident's vulnerability to extreme heat is **moderate** being ranked 7 out of 12.

Several days in June, July and August 2021 saw temperatures reach and break old records. On June 26, 2021 in the southern Willamette Valley and the Southern Coast Range a high-pressure heat dome over the region led to stretch of extreme heat, shattering records from June 26 through June 29. All time max temperatures were broken by 8 to 10 degrees. Widespread fatalities occurred due to the heat (123 in total), as many were without air-conditioning, as well as an increase in the number of drownings. Widespread closures and postponements of businesses and events also occurred.

Volume I, Section 2, Risk Assessment, describes the characteristics of the hazard of extreme heat, as well as the location and extent of a potential event. The impact of a changing climate is addressed with respect to the potential extent of future occurrences in the Risk Assessment Section 2 of the Basic Plan.

Dam Failure

The steering committee determined that the city's probability for dam failure is **low** (ranked 1 out of 12) and that the resident's vulnerability to dam failure is also low (ranked 1 out of 12).

No dam failure has occurred during the period 2016-2022.

Volume I, Section 2, *Risk Assessment*, describes the characteristics of the hazard of dam failure, as well as the location and extent of a potential event.

Drought

The local plan update representative estimated that the city's probability for drought ranks 7th out of 12, a **moderate** ranking, and that the resident's vulnerability to drought ranks 5th out of 12, also a **moderate** ranking.

Volume I, Section 2, *Risk Assessment*, describes the characteristics of drought hazards, as well as the location and extent of a potential event. Due to a cool, wet climate, past and present weather conditions have generally spared Benton County communities from the effects of drought; however, Benton County was included in Presidential Drought Declarations in 1992 and 2015.

[Statement about drought conditions in Adair Village from 2016-2022]

Adair Village's primary water supply comes from the Willamette River and Hyak Park. The city has two water storage reservoirs. In general, water supply is available and sufficient, however, the town lacks redundancy and could add resilience by improving the existing water system. Additional, drought-related community impacts are described within the county's Drought Hazard Annex.

Please review the Risk Assessment (Volume I, Section 2) for additional information on this hazard.

Earthquake

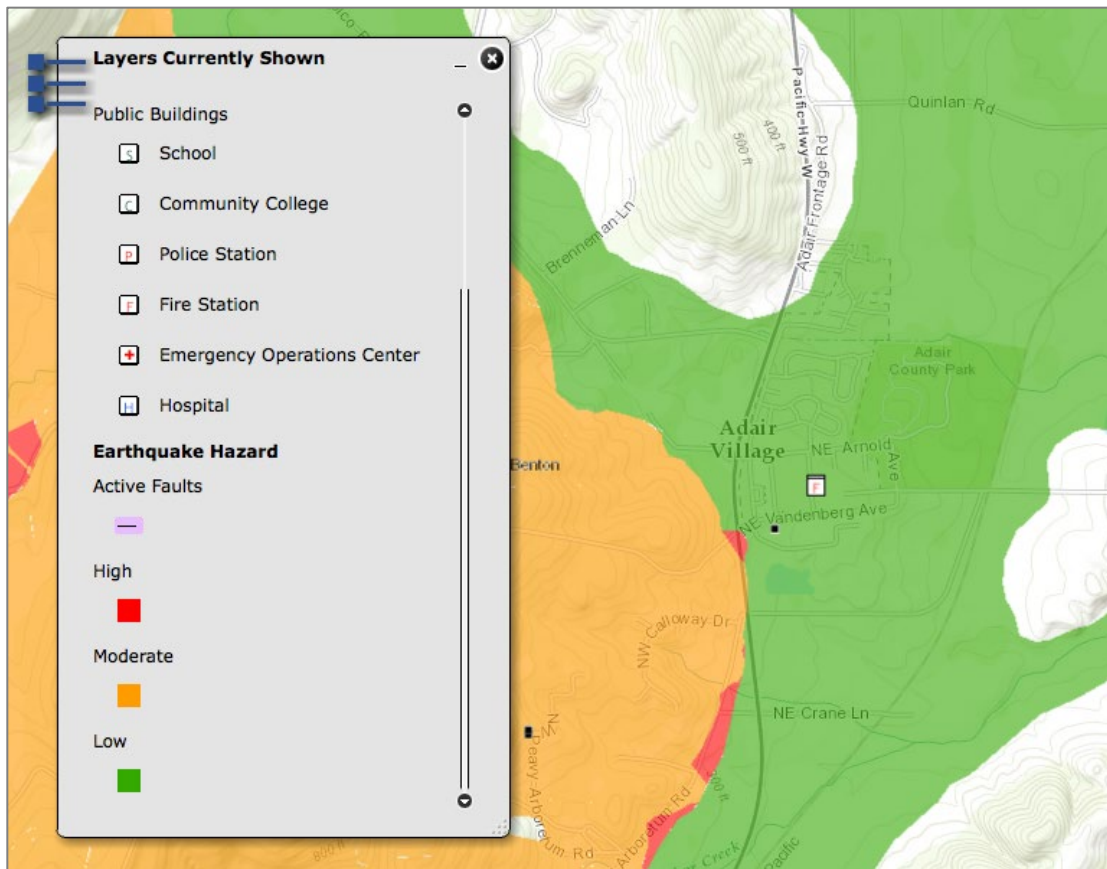
The local plan update representative estimated that the city's probability for a Cascadia Subduction Zone (CSZ) Earthquake event ranks **moderate** (5th out of a possible ranking of 12 hazards) and that the resident's vulnerability to a Cascadia Earthquake event is **high** ranking 12th out of 12 hazards. The local plan update representative estimated that the city's probability for a Crustal Earthquake event is **moderate** ranking 4th out of 12 and that the resident's vulnerability to a Crustal Earthquake event is **high** ranking 11th out of 12. Distinct rankings for CSZ and crustal events were retained in this MNHMP update due to the potential for different impacts from each. A CSZ event may result in an influx of evacuees from coastal locations.

Volume I, Section 2, *Risk Assessment*, describes the characteristics of earthquake hazards, history, as well as the location and extent of a potential event. Generally, an event that affects the county is likely to affect Adair Village as well. The causes and characteristics of an earthquake event are appropriately described within the county’s plan, as well as the location and extent of potential hazards. Previous occurrences are well-documented within the county’s plan, and the community impacts described by the county would generally be the same for Adair Village as well.

[Statement about earthquake occurrence in Adair Village from 2016-2022]

Earthquake-induced damages are difficult to predict, and depend on the size, type, and location of the earthquake, as well as site-specific building and soil characteristics. Presently, it is not possible to accurately forecast the location or size of earthquakes, but it is possible to predict the behavior of soil at any particular site. In many major earthquakes, damages have primarily been caused by the behavior of the soil. Figure AVA-2 displays active faults and soft soils in Adair Village.

Figure AVA-2 Active Faults and Soft Soils



Source: [Oregon HazVu: Statewide Geohazards Viewer \(DOGAMI\)](#)

As noted in the community profile approximately 60% of residential buildings were built prior to 1990, which increases the city’s vulnerability to the earthquake hazard. Information on specific public buildings’ (schools and public safety) estimated seismic resistance, determined by

DOGAMI in 2007, is shown in Table AVA-5; each “X” represents one building within that ranking category. The one facility evaluated by DOGAMI using RVS does not have Very High (100% chance) or High (greater than 10%) collapse potential. The Santiam Christian private school may potentially be vulnerable to earthquake, however, an assessment was not performed by DOGAMI in 2007.

In addition to building damages, utility (electric power, water, wastewater, natural gas) and transportation systems (bridges, pipelines) are also likely to experience significant damage. The city’s reservoirs are potentially vulnerable to earthquake.

Utility systems will be significantly damaged, including damaged buildings and damage to utility infrastructure, including water treatment plants and equipment at high voltage substations (especially 230 kV or higher which are more vulnerable than lower voltage substations). Buried pipe systems will suffer extensive damage with approximately one break per mile in soft soil areas. There would be much lower rate of pipe breaks in other areas. Restoration of utility services will require substantial mutual aid from utilities outside of the affected area.¹

Please review the Risk Assessment (Volume I, Section 2) for additional information on this hazard.

Flood

The local plan update representatives estimated that the city’s probability for riverine flood ranks **high** at 9th of 12 natural hazards and that the resident’s vulnerability to flood ranks **moderate** at 6th out of 12 hazards.

Volume I, Section 2, *Risk Assessment*, describes the causes and characteristics of flooding hazards within the region, as well as previous flooding occurrences. General flood-related community impacts are adequately described within the Flood Hazard Annex of Benton County’s Natural Hazards Mitigation Plan. Adair Village does not participate in the National Flood Insurance Program and as such does not have any mapped Special Flood Hazard Areas nor are there significant riverine sources of flooding in the city. Nonetheless, during heavy rainfall events portions of the City of Adair Village may be subject to nuisance flooding from local stormwater drainage.

[Statement about flood occurrence in Adair Village from 2016-2022]

National Flood Insurance Program (NFIP)

As noted above, the City of Adair Village does not participate in the National Flood Insurance Program (NFIP).

Please review the Risk Assessment (Volume I, Section 2) for additional information on this hazard.

¹ Regional All Hazard Mitigation Master Plan for Benton, Lane, and Linn Counties: Phase II (2001)

Landslide

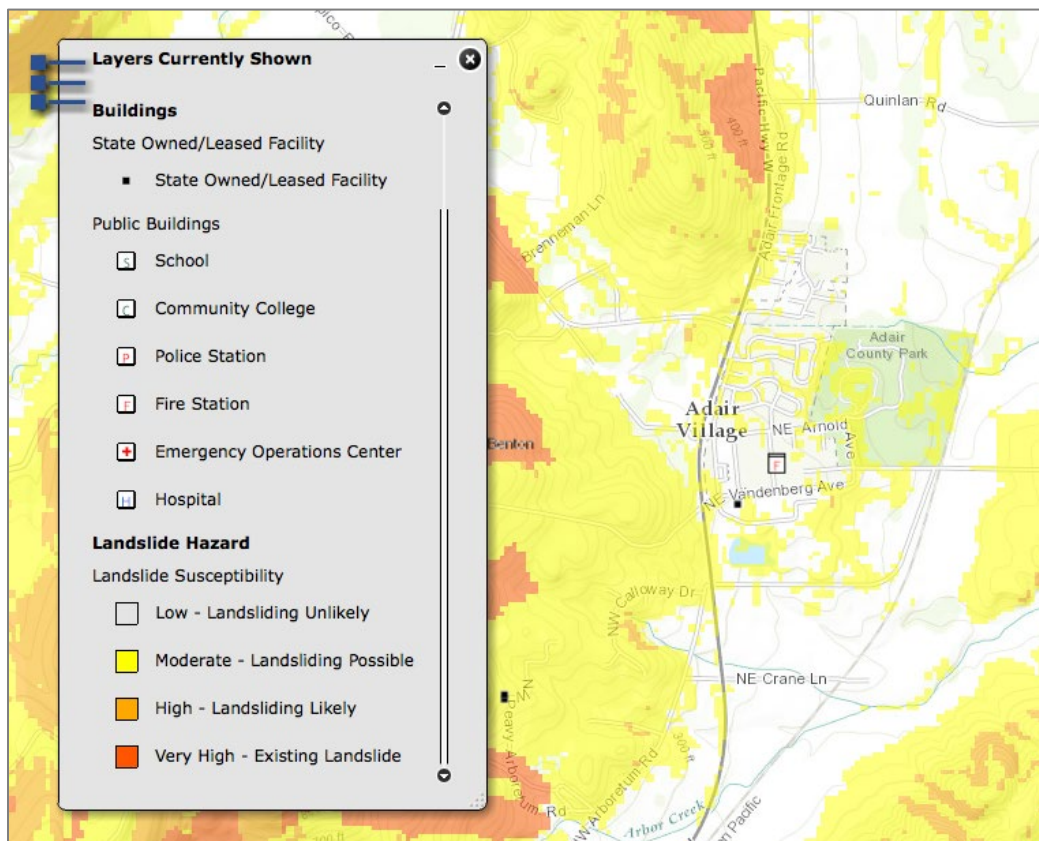
The local plan update representative estimated that the city’s probability for landslide ranks 3rd out of 12 hazards, a **low** probability and that the resident’s vulnerability to landslide also ranks **low** (3rd of 12 hazards ranked).

Volume I, Section 2, *Risk Assessment*, describes the causes and characteristics of landslides, and appropriately identifies previous landslide occurrences within the region.

[Statement about landslide occurrence in Adair Village from 2016-2022]

Landslide susceptibility exposure for the City of Adair Village is shown in Figure AVA-3. Approximately 0.3% of Adair Village has High, and approximately 25% has Moderate, landslide susceptibility exposure with the remaining ~ 75% having a low susceptibility to landslides².

Figure AVA-3 Landslide Susceptibility Exposure



Source: [Oregon HazVu: Statewide Geohazards Viewer \(DOGAMI\)](#)

Potential landslide-related impacts are adequately described within the county’s plan, and include infrastructural damages, economic impacts (due to isolation and/or arterial road closures), property damages, and obstruction to evacuation routes. Rain-induced landslides and

² DOGAMI Open-File Report, O-16-02, Landslide Susceptibility Overview Map of Oregon (2016)

debris flows can potentially occur during any winter in Benton County, and thoroughfares beyond city limits are susceptible to obstruction as well.

Please review the Risk Assessment (Volume I, Section 2) for additional information on this hazard.

Volcano

The local plan update representative estimated that the city's probability for volcanic event is **low**, ranked 2 out of 12 hazards and that the resident's vulnerability to volcanic event also ranks **low** (3 out of 12).

Volume I, Section 2, *Risk Assessment*, describes the City of Adair Village's risk to volcanic events. Generally, an event that affects the county is likely to affect Adair Village as well. The causes and characteristics of a volcanic event are appropriately described within the county's plan, as well as the location and extent of potential hazards. Previous occurrences are documented within the county's plan, and the community impacts described by the county would generally be the same for Adair Village as well. Adair Village is very unlikely to experience anything more than volcanic ash during a volcanic event. When Mt. Saint Helens erupted in 1980, the city was not impacted.

There have been no volcanic event occurrences experienced in Adair Village from 2016-2022.

Please review the Risk Assessment (Volume I, Section 2) for additional information on this hazard.

Wildfire

The local plan update representative estimated that the city's probability for wildfire ranks 8 out of 12, a **moderate** to high ranking and that the resident's vulnerability to wildfire also ranks **moderately high**, 8 out of 12.

Volume I, Section 2, *Risk Assessment*, describes the causes and characteristics of wildfires, as well as the county and city's history of wildfire events. There have been no known wildfire events in Adair Village. The location and extent of a wildfire vary depending on fuel, topography, and weather conditions. Weather and urbanization conditions are primarily at cause for the hazard level. The higher ranking of this hazard may be explained by recent concerns about wildfire potential following the devastating 2020 wildfires in nearby Lane, Linn and Marion County.

The potential community impacts and vulnerabilities described in the county's plan are generally accurate for the city as well. Benton County developed an update to the Community Wildfire Protection Plan (CWPP) in 2022, which mapped wildland urban interface areas and developed actions to mitigate wildfire risk. The city is a participant in the CWPP and will update the city's wildfire risk assessment as appropriate during future updates.

There have been no wildfire occurrences in Adair Village from 2016-2022.

Please review the Risk Assessment (Volume I, Section 2) for additional information on this hazard.

Windstorm

The local plan update representative estimated that the city's probability for windstorm ranks **high** at 10 out of 12 and that the resident's vulnerability to windstorm also ranks **high** at 9 out of 12.

Volume I, Section 2, *Risk Assessment*, describes the causes and characteristics of windstorms, as well as the location and extent of windstorm hazards. The region's (and city's) history of events is adequately described within the county's plan as well. Because windstorms typically occur during winter months, they are sometimes accompanied by ice, freezing rain, flooding, and very rarely, snow.

Benton County's plan describes the impacts caused by windstorms, including power outages, downed trees, heavy precipitation, building damages, and storm-related debris. Additionally, transportation and economic disruptions result as well.

[Statement about windstorm occurrences in Adair Village from 2016-2022]

Please review the Risk Assessment (Volume I, Section 2) for additional information on this hazard.

Winter Storm (Snow/ Ice)

The local plan update representative estimated that the city's probability for winter storm ranks **high** and as the most probable of all the hazards addressed in this plan at 12th out of 12 and that the resident's vulnerability to winter storm ranks 10th out of 12, also a **high** ranking.

Volume I, Section 2, *Risk Assessment*, describes the causes and characteristics of winter storms, as well as the location and extent of winter storm hazards. The region's (and city's) history of events is described within the county's plan as well. Severe winter storms can consist of rain, freezing rain, ice, snow, cold temperatures, and wind. They originate from troughs of low pressure offshore that ride along the jet stream during fall, winter, and early spring months. Severe winter storms affecting the city typically originate in the Gulf of Alaska or in the central Pacific Ocean. These storms are most common from November through March.

Major winter storms can and have occurred in the Adair Village area, and while they typically do not cause significant damage, they are frequent and have the potential to impact economic activity.

The most recent winter storm to affect the city occurred in February 2021 and downed many trees in the city. This storm caused power outages for many residents and resulted in a federal disaster declaration (DR-4599-OR).

Please review the Risk Assessment (Volume I, Section 2) for additional information on this hazard.

Mitigation Strategy

[This section is under development]