

CITY OF INDEPENDENCE ADDENDUM

Purpose

This document serves as the City of Independence's Addendum to the Polk County Multi-Jurisdictional Natural Hazards Mitigation Plan (MNHMP, NHMP). This addendum supplements information contained in Volume I (Basic Plan) of this NHMP, which serves as the foundation for this jurisdiction's addendum, and Volume III (Appendices), which provides additional information (particularly regarding participation and mitigation strategy). This addendum meets the following requirements:

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

Plan Process, Participation, and Adoption

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

In the Fall of 2016, the Oregon Partnership for Disaster Resilience (OPDR) at the University of Oregon's Community Service Center (CSC) partnered with the Oregon Military Department's Office of Emergency Management (OEM), and Polk County and cities, including Independence, to update their NHMP, which expired October 14, 2014. This project is funded through the Federal Emergency Management Agency's (FEMA) FY14 Pre-Disaster Mitigation Competitive Grant Program (PDMC-PL-10-OR-2014-002).

By developing this addendum to the Polk County NHMP, locally adopting it, and having it approved by FEMA, Independence will regain eligibility for FEMA Hazard Mitigation, Pre-Disaster Mitigation, and Flood Mitigation Assistance grant program funds.

The Polk County NHMP, and Independence addendum, are the result of a collaborative effort between citizens, public agencies, non-profit organizations, the private sector, and regional organizations. A project steering committee guided the process of developing the plan. For more information on the composition of the steering committee see the *Acknowledgements*, *Plan Summary*, and *Plan Process* (Volume III, Appendix A).

The Economic Development Director of Independence is the designated local convener and will take the lead in implementing, maintaining, and updating the addendum to the NHMP in collaboration with the designated convener of the Polk County NHMP (County Planning Department).

Representatives from the City of Independence steering committee convened on the following occasions (see Appendix A for more information):

- July 27, 2016 - Polk County NHMP Kick-Off Meeting
- October 18, 2016 – Polk County NHMP Second Meeting
- November 1, 2016 – City Meeting concentrating on mitigation strategy
- Several follow-up conversations between steering committee members

The city’s addendum reflects decisions decided upon at the plan update meeting and during subsequent work and communication with OPDR.

The Independence Steering Committee was comprised of the following representatives:

- Convener, Shawn Irvine, Economic Development Director
- Robert Mason, Police Chief
- Michael Danko, Community Development Director
- Jason Kistler, Information Services Manager
- Matthew Carpenter, Public Works Lead Worker

Public participation was achieved with the establishment of the steering committee, which was comprised of city officials and special districts representing different organizations and sectors. The Steering Committee was closely involved throughout the development of the plan and served as the local oversight body for the plan’s development. In addition, community members outside of the steering committee were provided an opportunity for comment via the plan review process (see Appendix A for more information).

The Polk County NHMP was approved by FEMA on February 6, 2018 and the Independence addendum was adopted via resolution on February 27, 2018. This NHMP is effective through February 5, 2023.

Mitigation Strategy

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

During the 2016/2017 Polk County update process OPDR re-evaluated the Action Items with the county and local steering committees. Following the review actions were updated, noting what accomplishments had been made, and whether the actions were still relevant; any new action items were identified at this time (see Appendix A for more information). Each jurisdiction developed a list of priority actions any actions that were not prioritized were placed in an Action Item Pool and will be considered during the annual Implementation and Maintenance meetings.

Priority Actions

The city is listing a set of high priority actions in an effort to focus attention on an achievable set of high leverage activities over the next five-years. The city’s priority actions are listed below in Table IA-1.

Action Item Pool

Table IA-2 presents a pool of mitigation actions. This expanded list of actions is available for local consideration as resources, capacity, technical expertise and/or political will become available.

The majority of these actions carry forward from prior versions of this plan.

Table IA-I Independence Priority Action Items

Action Item #	Description	Managing Department / Agency	Timeline	Potential Funding Source(s)	Benefit-Costs / Technical Feasibility
Priority Actions					
Multi-Hazard Action (MH)					
MH #1	Develop a secondary or backup communication link to the County EOC for assured communication during natural or manmade hazards.	Police Dept.	Short Term (0-2 Years)	Homeland Security Grants/ Partnerships	BC: TBD TF: Yes
Earthquake Actions (EQ)					
EQ #1	Inspect, prioritize, and retrofit any critical facility or public infrastructure that does not meet current Building Codes.	Community Development	Short Term (0-2 Years)	General Fund, HMGP, HMA, SRGP	BC: TBD TF: Yes
EQ #2	Structurally retrofit the historic buildings in the downtown core for earthquake survivability.	Historic Preservation Commission	Long Term (5+ Years)	URD/Property Owners	BC: TBD TF: Yes
Flood Actions (FL) - including erosion					
FL #1	Build a new Gun Club Road bridge to mitigate the flood and the resultant transportation hazard.	Community Development	Short Term (0-2 Years)	Transportation Fund/ General Fund/ Storm Fund	BC: TBD TF: Yes
FL #2	Identify and resolve areas of persistent stormwater flooding due to undersized, underperforming, stormwater infrastructure.	Public Works	Mid-Term (2-5 Years)	OWEB, General Fund, Grants, SDCs	BC: TBD TF: Yes
FL #3	Create access along Ash Creek to allow for early discovery of debris dams which causes backflow flooding and allow emergency removal of flood causing debris blockages.	Community Development	Short Term (0-2 Years)	State Parks/ Transportation Fund/ Watershed Enhancement grant	BC: TBD TF: Yes

Source: City of Independence NHMP Steering Committee, 2016.
MH=Multi-Hazard, EQ=Earthquake, FL=Flood

Table IA-2 Independence Action Item Pool

Action Item #	Description	Managing Department / Agency	Timeline	Potential Funding Source(s)	Benefit-Costs / Technical Feasibility
Action Item Pool					
Multi-Hazard Actions (MH)					
MH #2	Develop outreach program to educate and encourage residents to maintain several days of emergency supplies for power outages or road closures.	Community Development/ Police Dept/ CERT	Short Term (0-2 Years)	General Fund	BC: TBD TF: Yes
MH #3	Enhance Public Works fuel storage capacity.	Public Works	Short Term (0-2 Years)	General Fund	BC: TBD TF: Yes
MH #4	Install electrical connection at private gas station so pumps can be run with a portable generator.	Public Works	Mid-Term (3-5 Years)	General Fund	BC: TBD TF: Yes
Drought Action (DR) - including expansive soils					
DR #1	Develop educational programs and implement initiatives related to water conservation and irrigation during drought periods.	Public Works/ Public Health	Short Term (0-2 Years)	Water Fund/ General Fund	BC: TBD TF: Yes
Earthquake Actions (EQ)					
<i>See priority action items.</i>					
Flood Actions (FL) - including erosion					
FL #4	Ash Creek clean up of major debris-log jams at the railroad trestle @ 2nd Street and install debris deflector. Would allow the water to flow without any blockage	ACWCD/ Public Works	Mid-Term (2-5 Years)	Ash Creek Water Control District/ Watershed Grants/ RR	BC: TBD TF: Yes
Landslide Actions (LS)					
<i>No specific actions identified; see multi-hazard actions.</i>					
Volcano Actions (VE)					
<i>No specific actions identified; see multi-hazard actions.</i>					

Source: City of Independence NHMP Steering Committee, 2016
 MH=Multi-Hazard, DR=Drought, FL=Flood

Table IA-2 Independence Action Item Pool (continued)

Action Item #	Description	Managing Department / Agency	Timeline	Potential Funding Source(s)	Benefit- Costs / Technical Feasibility
Wildfire Action (WF)					
WF #1	Participate in the maintenance, implementation, and update of the Polk County Community Wildfire Protection Plan (2009).	PC SW Rural Fire District Polk County & City Manager	Ongoing	General Fund	BC: TBD TF: Yes
Windstorm Action (WS)					
WS #1	Identify and prioritize critical facilities' overhead utilities that could be placed underground to reduce power disruption from wind storm / tree blow down damage.	PP&L/ Public Works	Mid-Term (2-5 Years)	PP&L/School District/Fire District	BC: TBD TF: Yes
Winter Storm Actions (WT)					
WT #1	Develop and implement programs to coordinate maintenance and mitigation activities to reduce risk to public infrastructure from severe winter storms.	Public Works	Short Term (0-2 Years)	General Fund	BC: TBD TF: Yes
WT #2	Develop and maintain severe winter storm public outreach program defining mitigation activity benefits through educational outreach aimed at households and businesses while targeting special needs populations.	Police, Fire, Public Works	Short Term (0-2 Years)	General Fund, NOAA/ NWS, HMGP	BC: TBD TF: Yes

Source: City of Independence NHMP Steering Committee, 2016
 WF=Wildfire, WS=Windstorm, WT=Winter Storm

Plan Implementation and Maintenance

The City Council will be responsible for adopting the City of Independence addendum to the Polk County NHMP. This addendum designates a coordinating body and a convener to oversee the development and implementation of action items. Because the city addendum is part of the county's multi-jurisdictional NHMP, the city will look for opportunities to partner with the county. The city's steering committee will convene after re-adoption of the City of Independence addendum on an annual schedule; the county is meeting on a semi-annual basis and will provide opportunities for the cities to report on NHMP implementation and maintenance during their meetings. The Economic Development Director will serve as the convener and will be responsible for assembling the steering committee (coordinating body). The steering committee will be responsible for:

- identifying new risk assessment data,
- reviewing status of mitigation actions,
- identifying new actions, and
- seeking funding to implement the city's mitigation strategy (actions).

The convener will also remain active in the county's implementation and maintenance process (see Volume I, Section 4 for more information).

The city will utilize the same prioritization process as the county (See Volume I, Section 4: Plan Implementation and Maintenance and Volume III, Appendix C: Economic Analysis of Natural Hazard Mitigation Projects for more information).

Implementation through Existing Programs

Many of the Natural Hazards Mitigation Plan's recommendations are consistent with the goals and objectives of the city's existing plans and policies. Where possible, the City of Independence will implement the NHMP's recommended actions through existing plans and policies. Plans and policies already in existence have support from local 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.

Independence's acknowledged comprehensive plan is the Independence Comprehensive Plan. The Oregon Land Conservation and Development Commission first acknowledged the plan in 1979. The City last amended the plan in 2009. The City implements the plan through the Independence Zoning and Development Code, which was last amended in 2016.

Independence currently has the following plans, programs, and policies that relate to natural hazard mitigation. For a complete list visit the city [website](#):

Table IA-3 Legal and Regulatory Resources Available for Hazard Mitigation

Regulatory Tool	Name	Effects on Hazard Mitigation
Plans	Emergency Operations Plan (2003)	Identifies emergency planning, policies, procedures, and response to extraordinary emergency situations associated with natural and manmade disasters, technological incidents, and national security emergencies
	Standard Operating Procedures (2005)	To establish guidelines and procedures for the planning, response to, and control of unusual occurrences and disaster situations such as civil disturbances, hazardous materials and contaminant spills, fire coverage, etc.
	Comprehensive Plan (2009)	To establish Urban Growth Boundary and land use regulations.
	Southwest Independence Concept Plan (2012), Part 1 , Part 2	Establishes policies for 270-acre area in southwest Independence that was brought into the UGB in 2008 to provide for additional residential growth, including multifamily.
	Urban Renewal District Plan (2008)	Establishes goals and policies for the urban renewal area.
	Transportation System Plan (2007) Appendices	A component of the Capital Improvement Plan. To establish the City’s goals, policies, and action strategies for developing and improving the transportation system within the Independence Urban Growth Boundary.
	Parks & Open Space Master Plan (2015)	Provides guidance and recommendations on how to develop an interconnected and accessible park system.
	Water System Master Plan (1997) Updated in 2007, and 2015. Volume 1 Volume 2 Volume 3	A component of the Capital Improvement Plan. Outlines the water system improvements and expansion necessary to accommodate anticipated growth and current deficiencies. The time span of this study is 20 years outlining the projected needs of the water system from year 1997 to 2017, inclusive.
Wastewater Master Plan (2015)	A component of the Capital Improvement Plan. Includes summary, review and analysis of historic influent flows, biochemical and solids loading to the Water Treatment Facility and key pump stations. Identifies the collection system and WWTF deficiencies and	

		projected future improvements that will be required to accommodate growth and anticipated regulatory changes.
	Sanitary Sewerage System Facilities Plan (2015)	Provides information on existing conditions and future needs of the sanitary sewerage system and facilities
	Stormwater Master Plan (2015) Part 1 Part 2	A component of the Capital Improvement Plan. Provides analysis and recommendations through bull build out within the Urban Growth Boundary as well as recommendations for current and future needs of the stormwater conveyance system in Independence.
Programs	National Flood Insurance Program (NFIP)	Makes affordable flood insurance available to homeowners, business owners, and renters in participating communities. In exchange, those communities must adopt and enforce minimum floodplain management regulations to reduce the risk of damage from future floods.
	CIS Flood Insurance	Independence has a \$5M flood insurance policy with CIS Services.
	CRS Participant	No, the City of Independence is not a CRS participant but is seeking participation.
Policies (Municipal Codes)	Zoning Map (2017)	2017 Zoning Map
	Subchapter 51 - Flood Damage Prevention Ordinance	To minimize public and private losses due to flood conditions
	Subchapter 55 - Storm Water Management Requirements Code	For addition to or change in storm water, erosion, drainage or flooding
	Chapter 6: Buildings & Construction Ordinance	Adopts and enforces the Oregon Building Code (Oregon Structural Specialty Code)
	Property Maintenance	To protect the health, safety and welfare of Independence citizens, to prevent deterioration of existing structures and to contribute to vital neighborhoods.

Table IA-4 Administrative and Technical Resources for Hazard Mitigation

Staff/Personnel Resources	Department/Division Position
Planner(s) or engineer(s) with knowledge of land development and land management practices	Community Development Director: Shawn Irvine and a contract planner Economic Development Director: Shawn Irvine
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Building Department Official: Jeff Kennedy
Planner(s) or engineer(s) with an understanding of manmade or natural hazards	Contract Services: Mid-Willamette Valley Council of Governments: Renata Wakely, Community Development Director
Floodplain manager	Economic Development Director: Shawn Irvine
Personnel skilled in GIS and/or HAZUS-MH	Polk County: Dan Anderson
Director of Emergency Services	City Manager: David Clyne
Finance (grant writers, purchasing)	Finance Director: Gloria Butsch
Public Information Officers	City Manager: David Clyne

Table IA-5 Financial Resources for Hazard Mitigation

Financial Resources	Effect on Hazard Mitigation
General funds	None
Authority to levy taxes for specific purposes	Special assessment-voted on by citizens.
Incur debt through general obligation bonds	Voted on by citizens.
Incur debt through special tax and revenue bonds	Special tax-voted on by citizens, Revenue bonds-voted on by City Council.
Incur debt through private activity bonds	Voted on by citizens if no general fund-otherwise vote by City Council.

Note: See Appendix D – Grant Programs for additional financial resources.

Continued Public Participation

Keeping the public informed of the city’s efforts to reduce the city’s risk to future natural hazards events is important for successful plan implementation and maintenance. The city is committed to involving the public in the plan review and updated process. See Volume I, Section 4, for more information.

Plan Maintenance

The Polk County Multi-Jurisdictional Natural Hazards Mitigation Plan and city addendum will be updated every five years in accordance with the update schedule outlined in the Disaster Mitigation Act of 2000. During the county plan update process, the city will also review and

update its addendum. The convener will be responsible for convening the steering committee to address the questions outlined below.

- Are there new partners that should be brought to the table?
- Are there new local, regional, state, or federal policies influencing natural hazards that should be addressed?
- Has the community successfully implemented any mitigation activities since the plan was last updated?
- Have new issues or problems related to hazards been identified in the community?
- Are the actions still appropriate given current resources?
- Have there been any changes in development patterns that could influence the effects of hazards?
- Have there been any significant changes in the community's demographics that could influence the effects of hazards?
- Are there new studies or data available that would enhance the risk assessment?
- Has the community been affected by any disasters? Did the plan accurately address the impacts of this event?

These questions will help the steering committee determine what components of the mitigation plan need updating. The steering committee will be responsible for updating any deficiencies found in the plan.

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

Figure IA-1 Understanding Risk



Hazard Analysis Methodology

This NHMP utilizes a hazard analysis methodology that was first developed by FEMA circa 1983, and gradually refined by the Oregon Military Department's Office of Emergency Management over the years.

The methodology produces scores that range from 24 (lowest possible) to 240 (highest possible). Vulnerability and probability are the two key components of the methodology. Vulnerability examines both typical and maximum credible events, and probability endeavors to reflect how physical changes in the jurisdiction and scientific research modify the historical record for each hazard. Vulnerability accounts for approximately 60% of the total score, and probability approximately 40%.

This method provides the jurisdiction with a sense of hazard priorities, or relative risk. It doesn't predict the occurrence of a particular hazard, but it does "quantify" the risk of one hazard compared with another. By doing this analysis, planning can first be focused where the risk is greatest.

In this analysis, severity ratings, and weight factors, are applied to the four categories of history, vulnerability, maximum threat (worst-case scenario), and probability as shown in the table below. See Volume I, Section 2 (Risk Assessment) for more information.

Hazard Analysis

The Independence steering committee developed their hazard vulnerability assessment (HVA), using the county's HVA as a reference. Changes from the county's HVA were made where appropriate to reflect distinctions in vulnerability and risk from natural hazards unique to Independence, which are discussed throughout this addendum.

Table IA-6 shows the HVA matrix for Independence showing each hazard listed in order of rank from high to low. For local governments, conducting the hazard analysis is a useful step

in planning for hazard mitigation, response, and recovery. The method provides the jurisdiction with sense of hazard priorities, but does not predict the occurrence of a particular hazard.

Three chronic hazards (winter storm, drought, and windstorm) and one catastrophic hazard (Cascadia Subduction Zone earthquake) rank as the top hazard threats to the city (Top Tier). The crustal earthquake, flood, and volcano hazards comprise the next highest ranked hazards (Middle Tier), while landslide and wildfire hazards comprise the lowest ranked hazards (Bottom Tier).

Table IA-6 Hazard Analysis Matrix – Independence

Hazard	History	Probability	Vulnerability	Maximum Threat	Total Threat Score	Hazard Rank	
Winter Storm	18	63	35	100	216	# 1	<i>Top Tier</i>
Earthquake - Cascadia	2	28	50	100	180	# 2	
Drought	10	35	25	100	170	# 3	
Windstorm	16	56	25	70	167	# 4	
Earthquake - Crustal	4	14	30	80	128	# 5	<i>Middle Tier</i>
Flood - Riverine	10	35	25	50	120	# 6	
Volcano	2	7	25	50	84	# 7	
Landslide	2	7	5	10	24	# 8	<i>Bottom Tier</i>
Wildfire (WUI)	2	7	5	10	24	# 8	

Source: Independence NHMP Steering Committee, 2016.

Table IA-7 categorizes the probability and vulnerability scores from the hazard analysis for the city and compares the results to the assessment completed by the Polk County NHMP Steering Committee (areas of differences are noted with **bold** text within the city ratings). Notably, the city ranked their vulnerability to Cascadia Subduction Zone earthquakes higher than the county.

Table IA-7 Probability and Vulnerability Comparison

Hazard	Independence		County	
	Probability	Vulnerability	Probability	Vulnerability
Drought	Moderate	Moderate	Moderate	Moderate
Earthquake (Cascadia)	Moderate	High	Moderate	Moderate
Earthquake (Crustal)	Low	Moderate	Moderate	Moderate
Flood	Moderate	Moderate	High	Moderate
Landslide	Low	Low	High	Low
Volcano	Low	Moderate	Low	Moderate
Wildfire	Low	Low	Moderate	Moderate
Windstorm	High	Moderate	High	High
Winter Storm	High	Moderate	High	High

Source: Independence NHMP Steering Committee and Polk County NHMP Steering Committee, 2016.

Between 2010 and 2015 the City grew by 175 people (12%) and median household income decreased by 12% (see Appendix B). New development was placed outside of the floodplain per the city’s floodplain ordinance (see Table IA-3) and complied with the seismic safety standards within the [Oregon State Building Code](#). During this period Independence School

and Central High School were remodeled and upgraded. As such changes in population, demographics, and development have had a negligible impact upon vulnerability. However, decreased household income within the community may be a signal that segments of the community may have a difficult time recovering from a natural hazard. See specific hazard sections below for more information.

Community Asset Identification

This section provides information on city specific assets. For additional information on the characteristics of Independence, in terms of geography, environment, population, demographics, employment and economics, as well as housing and transportation see Volume III, Appendix B, *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

Independence is located in the mid-Willamette Valley near the foothills of the Coast Range and is located on the Willamette River covering an area of about 2.8 square miles. The climate of Independence is moderate; the average monthly temperatures range from 49 – 82 degrees in July through August, and 33-47 degrees in December and January, and the city receives approximately 40 inches of rain each year¹. Monthly precipitation is about 4-7 inches during the wetter months of November through March, and average about 0.5-1.5 inches during the drier months of June - September. The city's topography is relatively flat. The city abuts Monmouth to the west and is approximately 12 miles southwest of Salem.

Economy

Independence benefits from its location to Salem which is the State Capital and a regional center for industrial technology, engineering, research, commerce, and health care. Independence has some manufacturing businesses, however, most employment is outside of the city.

Asset Inventory

Asset inventory is the first step of a vulnerability analysis. Assets that may be affected by hazard events include population, residential and nonresidential buildings, critical facilities, and infrastructure.

The asset inventory delineates the City's existing building and infrastructure assets and insured values and are identified in detail in Table IA-8 and Map IA-1 (Attachment A).

¹ [Western Regional Climate Center, "Salem-McNary Field, Oregon \(357500\)". Retrieved November 22, 2016.](#)

Table IA-8 Independence Critical Facilities and Infrastructure

Facility Type	Name / Number	Address	Value ¹
Government	City Hall/Courthouse/ Police Station	555 South Main Street	\$811,530
	Public Works	160 G Street	\$623,740
Emergency Response	Polk County Fire District #1	1800 Monmouth St.	\$4,065,380
	Independence Police Station	240 Monmouth St.	See Govt. Facility
Educational	District Office/Henry Hill Educational Services	750 S. 5th Street	\$4,678,060
	Independence Elementary	150 S. 4th Street	\$3,667,170
	Talmadge Middle School	51 16th Street	\$9,098,320
	Central High School	1530 Monmouth Street	\$23,779,130
	School Health Clinic and Resource Center	1610 Monmouth Street	\$551,200
Educational	Mid-Valley Christian Academy	1483 N 16th (Monmouth)	\$1,225,000
	OCDC	535 G Street	\$1,344,000
	Head Start	475 I Street	\$728,000
Care Facility	Evergreen Health & Rehabilitation	1525 Monmouth Street	\$2,538,720
	Four Seasons Residential Care	202 S. 9th Street	\$1,477,040
Community	Independence-Monmouth Family Medicine	1430 Monmouth Street	\$627,120
	Sterling Savings Bank	302 Main Street	\$709,170
	Vacant (was Taylor's Fountain)	296 Main Street	\$213,000
	San Miguel Bakery	286 Main Street	\$392,350
	Vacant (was Independence Appliances)	268 Main Street	\$345,710
	S. Main Antiques	250 Main Street	\$235,480
	JTE Floor Coverings	240 Main Street	\$194,460
	Main Street Little Mall	226 Main Street	\$622,280
	Cooper Building	206 Main Street	\$558,000
	Elks Lodge/Book Store/Beauty Shop	289 Main Street	\$1,506,480
	Dusty Spur Pizza	301 Main Street	\$317,470
	Central Martial Arts	265 Main Street	\$166,730
	Tildon's Barber Shop	259 Main Street	\$89,280
	Part of Andy's Café	235 Main Street	\$141,850
	Andy's Café	227 Main Street	\$111,350
	Linen Warehouse	223 Main Street	\$113,620
	Campos Boutique	215 Main Street	\$119,600
	2EZ Restaurant	211 Main Street	\$145,190
	Ash Creek Animal Clinic	194 Main Street	\$453,620
	River Gallery Antiques	184 Main Street	\$209,240
	Schooner's	174 Main Street	\$282,030
	Ragin River Steakhouse/Wine & Flowers	154 Main Street	\$279,740
	Main Street Antiques	144 Main Street	\$405,700
	J. Bella/Lenora's Ghost	104 Main Street	\$416,010
	Heritage Museum	112 S. 3rd Street, Street	\$407,070
	Riverview Park Amphitheater	50 C Street	\$4.5M estimate
	Independence City Shops	160 F Street (Public Works)	\$623,740
	Independence Library/ Arts Center	175 Monmouth Street	\$1,987,380

Facility Type	Name / Number	Address	Value ¹
	St. Patrick Catholic Church	1275 E Street	\$2,058,150
	First Baptist Church	1505 Monmouth Street	\$2,278,700
	Cornerstone Christian Center	4395 Independence Highway	\$241,690
State and Federal Highways	Highway 51		\$4.1M estimate 4 miles
Railroads	Portland-Western Railroad (runs through east end of town)		2 miles
Bridges	16th Street @ Talmadge School over Ash Creek		\$1,900,000
	Gun Club Road Bridge		\$1,900,000
	F Street, Bridge between 10th & 9th Street		\$1,500,000
	Monmouth Street Bridge between 8th & 7th St.		ODOT State Highway (estimate \$1,500,000)
	River Road Bridge @ River Road & Main St.		County Bridge (Marion & Polk) (estimate \$75-100M)
	Main Street Bridge between B & A St.		ODOT State Highway (estimate \$30M)
	Ash Street No. of Albert		\$2,400,000
Transportation Facilities	Independence Airport		\$2,685,330
	Bus Maintenance Buidling (Central SD)		\$575.160
Utilities	Sewer Lagoon & Pump Station		\$3,891,260
	Sewer Lift Station		\$239,000
	Mt. Fir Sewer Lift Station		\$250,000
	Briar Sewer Lift Station		\$243,000
	North Sewer Lift Station		\$244,000
	Stryker Sewer Lift Station		\$244,000
	13th St. Sewer Lift Station		\$244,500
	9th St, Sewer Lift Station		\$250,500
	Riverview Lift Station		\$500,000
	Oak Sewer Lift Station		\$250,550
	Williams Sewer Lift Station		\$255,500
	Albert Sewer Lift Station		\$243,900
	Water well fields, east end of Polk Street @ River Road (4 wells-1 @ River Drive Well & 3 @ Polk St)		\$400,000
	Water Storage Tanks (2) plus Reservoir, River Oak Rd (3 wells)		\$2,750,000
	Qwest		Unknown
Pacific Power & Light Sub Station		PPL has their own HMP	
	Monmouth Street Water Tower		\$1,500,000

Facility Type	Name / Number	Address	Value ¹
	(Reservoir)		
	New River Wells (2) on Corvallis Road		\$50K each
	NW Natural-high pressure gas regulators @ Hoffman and Stryker		Unknown
	NW Natural-High pressure gas regulator @ D and 2nd Streets		Unknown
	Polk Water Reservoir		\$1,500,000
	Above-ground Fuel Station at City Shops site		\$10K estimate
	Monmouth Water Treatment and Storage Facility	4th Street	\$1,000,000
Other	Simplot Soil Builders		\$385,800
	Marquis Spas		\$1,193,970

Note: ¹Estimated and/or insured structural and/or Polk County Assessed value for critical facilities and estimated values for critical infrastructure in 2009 dollars. Items in **bold** have been revised to 2017 dollars.

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

Hazard Characteristics

Drought

The steering committee determined that the city’s probability for drought is **moderate** (which is the same as the county’s rating) and that their vulnerability to drought is **moderate** (which is the same as the county’s rating).

Volume I, Section 2, *Risk Assessment*, adequately 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 Polk County communities from the effects of drought; however, Polk County was included in a Governor declared drought declaration in 1992 and a Presidential drought declaration in 2015.

Independence’s primary water supply comes from nine individual groundwater wells (two are inactive) located at the South Well Field (5 wells – 2 inactive – produce a maximum yield of 500 GPM) and the Polk Street Well Field (4 wells produce a maximum yield of 1,000 GPM).² The city has additional water rights from the Willamette River (up to 2,000 GPM).³ The city has four (4) storage reservoir(s) for a total of 3.75 million gallons of treated water storage capacity.⁴ Based on projections current water storage will be satisfied by the year 2025, however, an planned 1.25 million gallon reservoir adjacent South Reservoir is anticipated to accommodate future needs through 2035.⁵ The city has been providing water

² Water System Master Plan Update (2015), Independence, OR. 4B Engineering and Consulting, LLC

³ Ibid.

⁴ Ibid.

⁵ Ibid.

service since the 1950's. The water supply comes from underground aquifers which is treated at the wellhead with chorine and fluoride before it is pumped to the storage reservoirs. The city has a water master plan (2015, [Part 1](#), [Part 2](#), [Part 3](#)), In general, water supply is available and sufficient. Additional, drought-related community impacts are described within the county's Drought Hazard section (Volume I, Section 2).

Expansive Soils

Volume I, Section 2, *Risk Assessment*, adequately describes the characteristics of drought hazards, as well as the location and extent of a potential event. The addition of moisture to any soil will cause a change in volume, which is referred to as a shrink-swell characteristic.⁶

Per the previous version of this plan the City of Independence has critical facilities and infrastructure located within areas of low, moderate and high risk; see Map IA-2 (Attachment A).

Low risk areas contain 1,901 residential structures (value \$191.8M) and 15 non-residential structures (value unknown). Moderate risk areas contain 684 residential structures (value \$69M), three non-residential structures (value unknown), one emergency response facility (value \$4.1M), one care facility (value \$1.5M), 23 community facilities (value \$7M), five bridges (value \$37.7M), and nine utility facilities (value \$8M).

A comprehensive risk and vulnerability assessment is not available for the drought hazard. Statewide droughts have historically occurred in Oregon, and as it is a region-wide phenomenon, all residents are equally at risk. Structural damage from drought is not expected; rather the risks are present to humans and resources. Agriculture, fishing, and timber have historically been impacted, as well as local and regional economies.

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

Earthquake

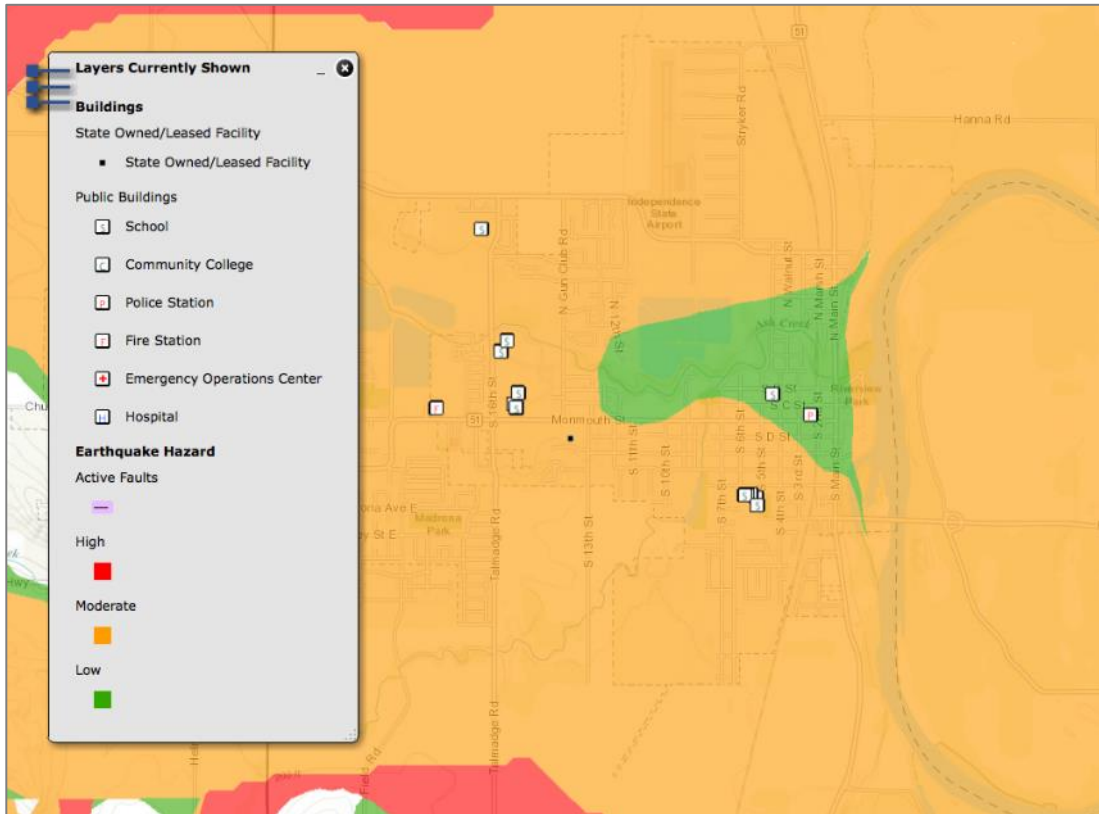
The steering committee determined that the city's probability for a Cascadia Subduction Zone (CSZ) Earthquake event is **moderate** (which is the same as the county's rating) and that their vulnerability to a Cascadia Earthquake event is **high** (which is higher than the county's rating). The steering committee determined that the city's probability for a Crustal Earthquake event is **low** (which is lower than the county's rating) and that their vulnerability to a Crustal Earthquake event is **moderate** (which is the same as the county's rating).

Volume I, Section 2, *Risk Assessment*, adequately 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 Independence 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 Independence as well.

⁶ US Department of Agriculture, Natural Resources Conservation Service (USDA NRCS). 2008. National Cooperative Soil Survey, Physical Soil Properties—Polk County, Oregon.

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 IA-2 displays relative liquefaction hazards. As shown, the areas of greatest concern are just outside of the city limits to the north and south (darker areas) and also the area that are adjacent to the Willamette River where the concentration of soft soils is the highest.

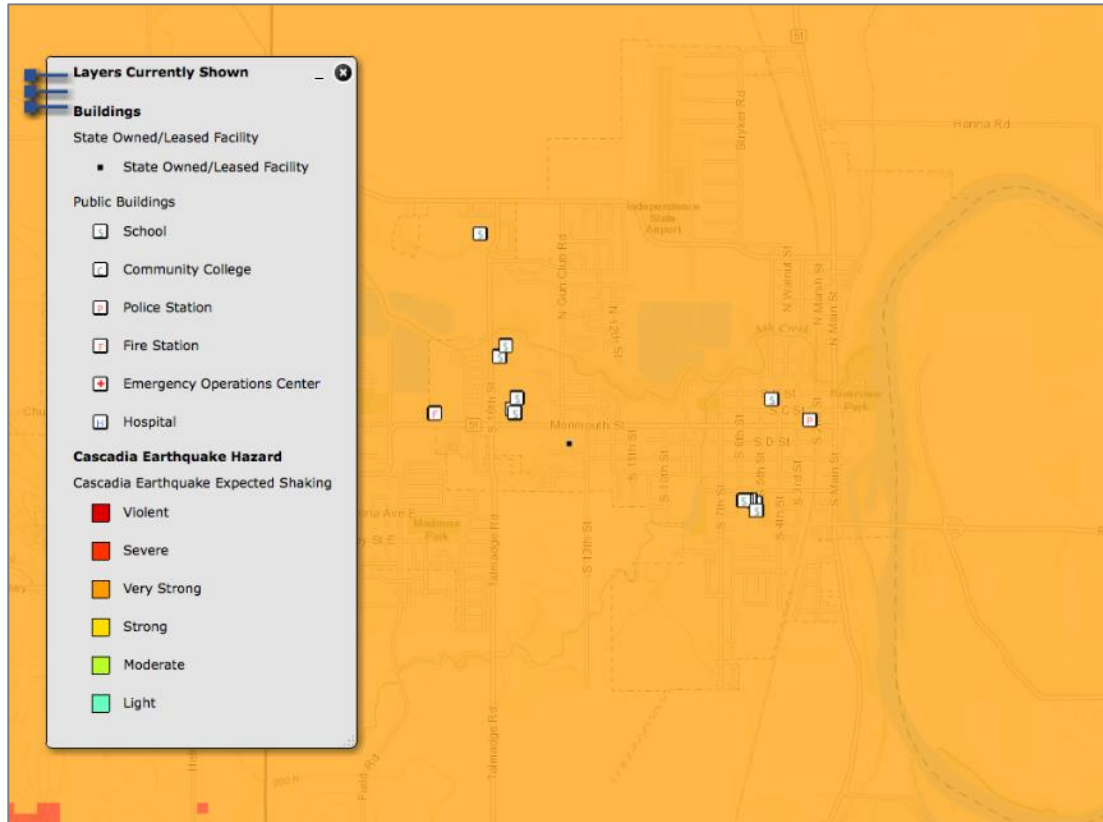
Figure IA-2 Active Faults and Soft Soils



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

Figure IA-3 below shows the expected shaking/ damage potential for Independence because of a Cascadia Subduction Zone (CSZ) earthquake event. The figure shows that the city will experience “very strong” shaking that will last two to four minutes. The shaking will be extremely damaging to lifeline transportation routes including Highway 99 and Interstate 5. For more information on expected losses due to a CSZ event see the [Oregon Resilience Plan](#).

Figure IA-3 Cascadia Subduction Zone Expected Shaking



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

As noted in the community profile approximately 45% 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 IA-9; each "X" represents one building within that ranking category. Of the facilities evaluated by DOGAMI using RVS, two (2) have very high (100% chance) collapse potential, and eight (8) have a high (greater than 10% chance) collapse potential. Note: Henry Hill Elementary School is now the home of the Central School District Educational Services.

The following structures have also had some structural and/ or non-structural seismic retrofitting:

- *Independence Elementary School remodeled.*⁷
- *Central High School significant upgrade.*⁸

In addition to building damages, utility (electric power, water, wastewater, natural gas) and transportation systems (bridges, pipelines) are also likely to experience significant damage.

⁷ Polk County Itemizer-Observer, *Will they Stand or Fall: Are Polk County governments ready for the 'big one'?*, September 9, 2015, <http://www.polkio.com/news/2015/sep/09/will-they-stand-or-fall/>

⁸ Ibid.

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.

Table IA-9 Rapid Visual Survey Scores

Facility	Site ID*	Level of Collapse Potential			
		Low (< 1%)	Moderate (>1%)	High (>10%)	Very High (100%)
Schools					
Henry Hill Elementary (Central SD 13J) (750 5th St)	Polk_sch03	X, X		X, X	X
Independence Elementary (Central SD 13J) (150 S 4th St)	Polk_sch09				X
Talmadge Middle (Central SD 13J) (51 16th St)	Polk_sch05		X	X	
Central High (Central SD 13J) (1530 Monmouth St)	Polk_sch06			X, X, X	
Public Safety					
Independence Police Department (240 Monmouth St)	Polk_pol03			X	
Polk County Fire District 1 (1800 Monmouth St)	Polk_fir01			X	

Source: [DOGAMI 2007. Open File Report 0-07-02. Statewide Seismic Needs Assessment Using Rapid Visual Assessment.](#) "*" – Site ID is referenced on the [RVS Polk County Map](#)

A comprehensive risk and vulnerability assessment is not available. As of the publication of this NHMP FEMA is providing an opportunity for the county and city to participate in a Risk Mapping, Assessment, and Planning (Risk MAP) process that would generate additional data on risks and vulnerabilities. The Risk Report would provide a quantitative risk assessment that informs communities of their risks related to certain natural hazards (including earthquake). If pursued, once complete the city can incorporate the risk assessment into their addendum to provide greater detail to sensitivity and exposure to the earthquake hazard.

According to the previous version of this plan approximately 2,066 residential structures (value \$ 208M), 15 non-residential structures (value unknown), two government facilities (value \$1.4M), two emergency response facilities (value \$4.1M), five educational facilities (value \$41.8M), two care facilities (value \$3.9M), 31 community facilities (value \$16M), four miles of highways (value \$4.1M), two rail segments (value unknown), seven bridges (value \$40M), two transportation facilities (value \$3.3M), 23 utilities (value \$13M), and two "other" facilities (value \$1.6M) which would be impacted by such an event.⁹

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

⁹ URS, 2009 Polk County Natural Hazards Mitigation Plan; values are in 2009 dollars.

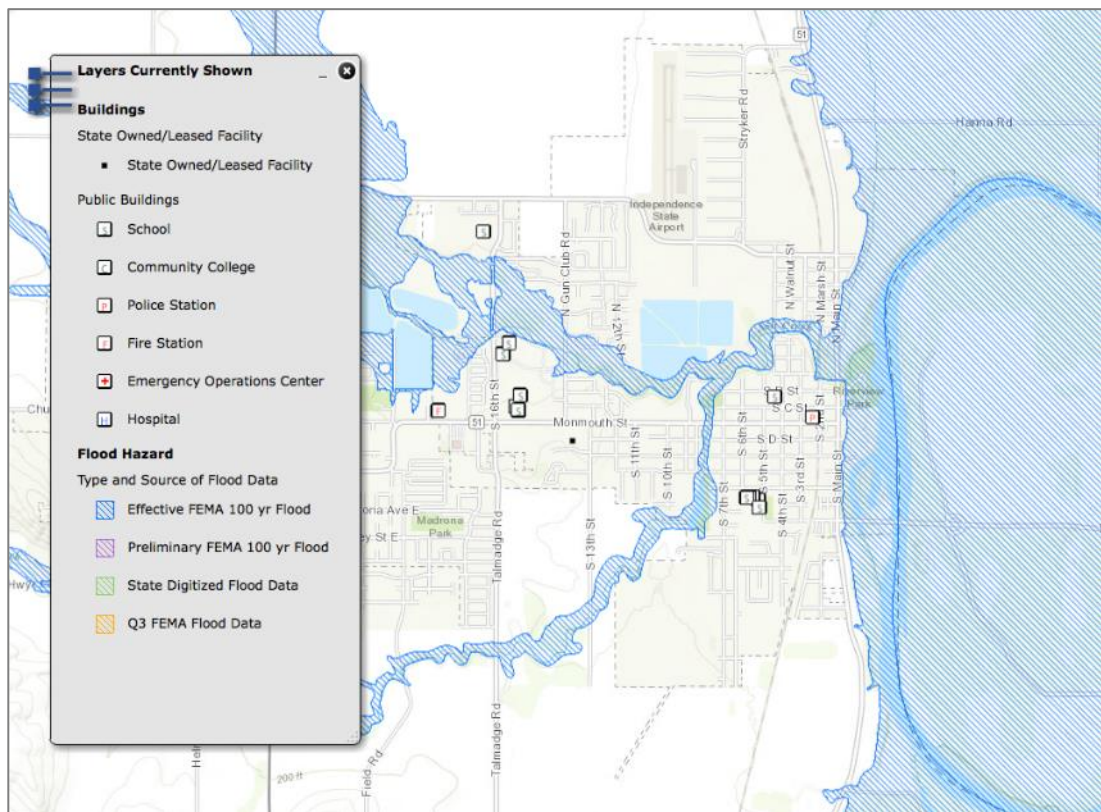
Flood

The steering committee determined that the city's probability for riverine flood is **moderate** (which is lower than the county's rating) and that their vulnerability to flood is **moderate** (which is the same as the county's rating).

Volume I, Section 2, *Risk Assessment*, adequately 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 Polk County's Natural Hazards Mitigation Plan. Portions of Independence have areas of flood plains (special flood hazard areas). These include areas along the Willamette River, Ash Creek, and South Fork Ash Creek (see Figure IA-4 and Attachment A, Map IA-3).

Furthermore, other portions of Independence, outside of the mapped floodplains, are also subject to significant, repetitive flooding from local storm water drainage. In general, the 100-year floodplain delineates an area of high risk, while the 500-year floodplain delineates an area of moderate risk.

Figure IA-4 Special Flood Hazard Area



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

A comprehensive risk and vulnerability assessment is not available. As of the publication of this NHMP FEMA is providing an opportunity for the county and city to participate in a Risk Mapping, Assessment, and Planning (Risk MAP) process that would generate additional data on risks and vulnerabilities. The Risk Report would provide a quantitative risk assessment that informs communities of their risks related to certain natural hazards (including flood). If

pursued, once complete the city can incorporate the risk assessment into their addendum to provide greater detail to sensitivity and exposure to the earthquake hazard.

Per the previous version of this plan approximately 726 residential structures (value \$73.3M), seven non-residential structures (value unknown), 25 community facilities (value \$8.2M), seven bridges (value \$7.7M), and nine utilities (value \$2.1M). Within the 500-year floodplain, the City of Independence has 781 residential structures (value \$78.8M), seven non-residential structures (value unknown), one government facility (value \$625K), and one care facility (value \$1.5M).¹⁰

For more information on flood risk see the [Polk County Flood Insurance Study \(2006\)](#).

National Flood Insurance Program (NFIP)

FEMA modernized the Independence Flood Insurance Rate Maps (FIRMs) in December 2006. Table IA-10 shows that as of September 2016, Independence has 61 National Flood Insurance Program (NFIP) policies in force. Of those, 16 are for properties that were constructed before the initial FIRM. The last Community Assistance Visit (CAV) for Independence was on April 20, 2004. Independence is not a member of the Community Rating System (CRS). The table shows that most flood insurance policies are for residential structures, primarily single-family homes. There have been zero paid claims.

The Community Repetitive Loss record for Independence identifies no Repetitive Loss Properties¹¹ and no Severe Repetitive Loss Properties¹².

Table IA-10 Flood Insurance Detail

Jurisdiction	Effective FIRM and FIS	Initial FIRM Date	Total Policies	Pre-FIRM Policies	Policies by Building Type				Minus Rated A Zone
					Single Family	2 to 4 Family	Other Residential	Non-Residential	
Polk County	-	-	428	183	334	27	25	42	28
Independence	12/19/2006	4/5/1988	61	16	38	0	19	4	3

Jurisdiction	Insurance in Force	Total Paid Claims	Pre-FIRM Claims Paid	Substantial Damage Claims	Total Paid Amount	Repetitive Loss Properties	Severe Repetitive Loss Properties	CRS Class Rating	Last CAV
Polk County	\$ 93,520,500	40	33	0	\$ 682,241	1	0	-	-
Independence	\$ 16,665,200	0	0	0	\$ -	0	0	-	4/20/2004

Source: Information compiled by Department of Land Conservation and Development, September 2016.

¹⁰ URS, 2009 Polk County Natural Hazards Mitigation Plan; values are in 2009 dollars.

¹¹ A Repetitive Loss (RL) property is any insurable building for which two or more claims of more than \$1,000 were paid by the National Flood Insurance Program (NFIP) within any rolling ten-year period, since 1978. A RL property may or may not be currently insured by the NFIP.

¹² A Severe Repetitive Loss (SRL) property is a single family property (consisting of 1 to 4 residences) that is covered under flood insurance by the NFIP and has incurred flood-related damage for which 4 or more separate claims payments have been paid under flood insurance coverage, with the amount of each claim payment exceeding \$5,000 and with cumulative amount of such claims payments exceeding \$20,000; or for which at least 2 separate claims payments have been made with the cumulative amount of such claims exceeding the reported value of the property.

Riverine Erosion

Riverine erosion rarely causes death or injury. However, erosion causes significant destruction of property, development, and infrastructure. Erosion hazard data is not readily available; however, descriptions of several localized areas were identified during the development of this document and are identified only by location on Map IA-4 (Attachment A). Critical facilities that may be at risk of erosion were identified using a 300 foot-buffer in the areas identified as having historic erosion impacts to conservatively account for building footprints.

A comprehensive risk and vulnerability assessment is not available for the riverine erosion hazard. Per the previous version of this plan there is a minor erosion threat to the City of Independence principally occurring where the Willamette River is slowly consuming the embankment along the East side of Riverview Park. This could eventually threaten the Amphitheater.¹³

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

Landslide

The steering committee determined that the city's probability for landslide is **low** (which is lower than the county's rating) and that their vulnerability to landslide is **low** (which is the same as the county's rating).

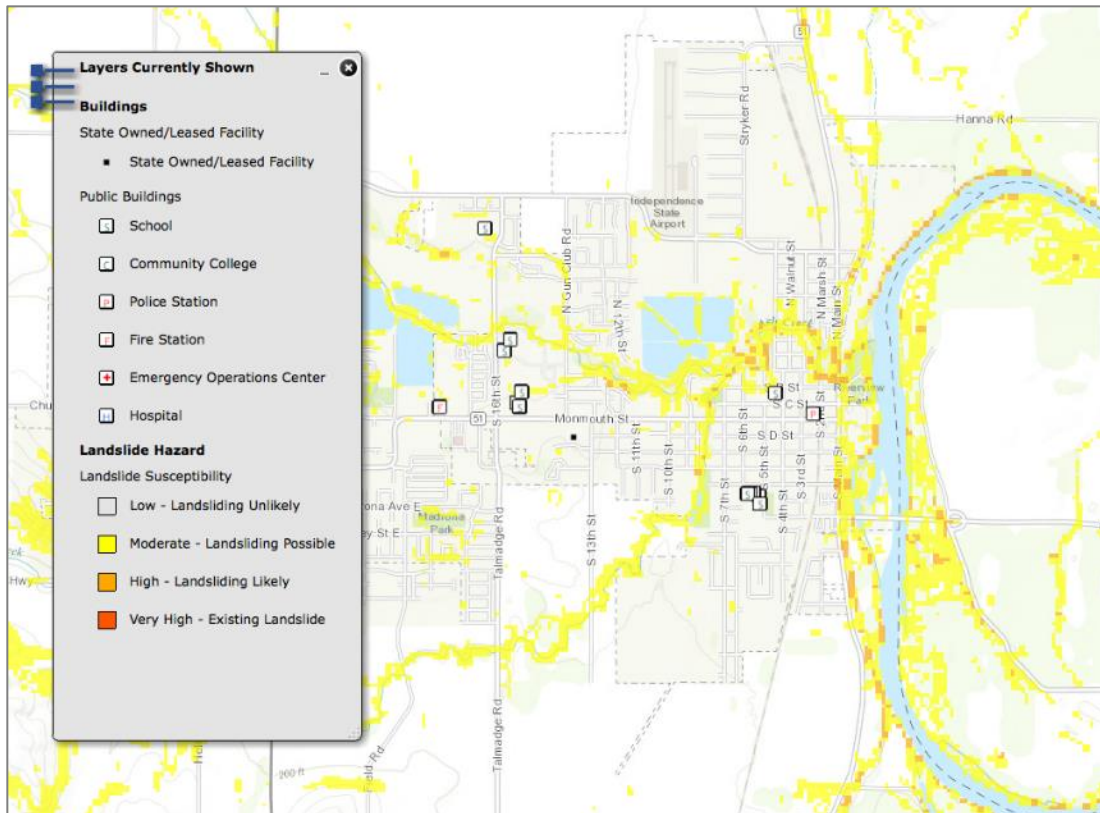
Volume I, Section 2, *Risk Assessment*, adequately describes the characteristics of landslide hazards, history, as well as the location, extent, and probability of a potential event within the region. Independence has a flat topography and the potential for landslide is low except for areas immediately adjacent to Ash Creek, South Fork Ash Creek, and the Willamette River.

Sedimentary rock underlies Independence. Sedimentary rock is primarily conglomerate, claystone, and siltstone with some sandstone toward the west. Sedimentary rock is less resistant to stream action. Landslide susceptibility exposure for Independence is shown in Figure IA-5 and Map IA-5 (Attachment A). Approximately 2% of Independence has High, and approximately 10% Moderate, landslide susceptibility exposure¹⁴.

¹³ URS, 2009 Polk County Natural Hazards Mitigation Plan; values are in 2009 dollars.

¹⁴ DOGAMI Open-File Report, O-16-02, Landslide Susceptibility Overview Map of Oregon (2016)

Figure IA-5 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 debris flows can potentially occur during any winter in Polk County, and highway and other major roads beyond city limits are susceptible to obstruction as well.

A comprehensive risk and vulnerability assessment is not available. As of the publication of this NHMP FEMA is providing an opportunity for the county and city to participate in a Risk Mapping, Assessment, and Planning (Risk MAP) process that would generate additional data on risks and vulnerabilities. The Risk Report would provide a quantitative risk assessment that informs communities of their risks related to certain natural hazards (including landslide). If pursued, once complete the city can incorporate the risk assessment into their addendum to provide greater detail to sensitivity and exposure to the landslide hazard.

According to the previous version of this plan approximately 547 residential structures (value \$55.2M), six non-residential structures (value unknown), one government facility (value \$625K), one care facility (value \$1.5M), two community facilities (value \$865K), three bridges (value \$2.4M), six utility facilities value (\$1.3M) and one “other” facility (value

\$385K) were located in areas of moderate risk while no facilities were located within areas of high risk.¹⁵

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

Volcano

The steering committee determined that the city's probability for volcanic event is **low** (which is the same as the county's rating) and that their vulnerability to volcanic event is **moderate** (which is the same as the county's rating).

Volume I, Section 2, *Risk Assessment*, adequately describes Independence's risk to volcanic events. Generally, an event that affects the county is likely to affect Independence 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 well-documented within the county's plan, and the community impacts described by the county would generally be the same for Independence as well. Independence 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.

A comprehensive risk and vulnerability assessment is not available for the volcano hazard. Due to the nature of the hazard, it is impossible to predict the location or extent of future events with any probability, although it can be assumed that all residential and critical facilities and infrastructure within the City of Independence are at risk.

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

Wildfire

The steering committee determined that the city's probability for wildfire is **low** (which is lower than the county's rating) and that their vulnerability to wildfire is **low** (which is lower than the county's rating).

Volume I, Section 2, *Risk Assessment*, adequately describes the causes and characteristics of wildfires, as well as the county and city's history of wildfire events. There are no known large wildfire events in Independence. 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 potential community impacts and vulnerabilities described in the county's plan are generally accurate for the city as well. Polk County developed a Community Wildfire Protection Plan (CWPP) in 2009, which mapped wildland urban interface areas and developed actions to mitigate wildfire risk (see Attachment A, Map IA-6). The city is a participant in the CWPP and will update the city's wildfire risk assessment if the CWPP

¹⁵ URS, 2009 Polk County Natural Hazards Mitigation Plan; values are in 2009 dollars.

presents better data during future updates. In general, wildfire conditions are greatest in the populated areas adjacent to the interface area.

Irrigated agricultural land surrounds much of Independence, thereby reducing the risk to wildfire to the city.

A comprehensive risk and vulnerability assessment is not available. The Polk County CWPP provides some risk and vulnerability information related to Independence that has been incorporated into this plan as applicable.

Per the previous version of this plan Independence has critical facilities and infrastructure located within areas of moderate, high, and very high risk.¹⁶

Moderate risk areas contain 1,904 residential structures (value \$192.1M), 15 non-residential structures (value unknown), two government facilities (value \$1.4M), two emergency response facilities (value \$4.1M), five education facilities (value \$41.8M), two care facilities (value \$3.9M), 31 community facilities (value \$16M), seven bridges (value \$7.7M), two transportation facilities (value \$3.3M), 23 utility facilities (value \$12.7M) and two “other” facilities (value \$1.6M).

High risk areas contain 854 residential structures (value \$86.2M), seven non-residential structures (value unknown), one care facility (value \$1.5M), 14 community facilities (value \$6M), seven bridges (value \$7.7M), and 12 utilities facilities (value \$7.7M).

Very high risk areas contain 221 residential structures (value \$22.3M) and one bridge (value \$2.4M).

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

Windstorm

The steering committee determined that the city’s probability for windstorm is **high** (which is the same as the county’s rating) and that their vulnerability to windstorm is **moderate** (which is lower than the county’s rating).

Volume I, Section 2, *Risk Assessment*, adequately 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.

Polk County’s plan adequately 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.

A comprehensive risk and vulnerability assessment is not available for the windstorm hazard. Due to the nature of the hazard, it is impossible to predict the location or extent of

¹⁶ URS, 2009 Polk County Natural Hazards Mitigation Plan; values are in 2009 dollars.

future events with any probability, although it can be assumed that all residential and critical facilities and infrastructure within Independence are at risk.

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

Winter Storm (Snow/ Ice)

The steering committee determined that the city's probability for winter storm is **high** (which is the same as the county's rating) and that their vulnerability to winter storm is **moderate** (which is lower than the county's rating).

Volume I, Section 2, *Risk Assessment*, adequately 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 adequately 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 Independence area, and while they typically do not cause significant damage, they are frequent and have the potential to impact economic activity. Road closures on major roads due to winter weather are an uncommon occurrence, but can interrupt commuter and large truck traffic.

A comprehensive risk and vulnerability assessment is not available for the winter storm (snow/ice) hazard. Due to the nature of the hazard, it is impossible to predict the location or extent of future events with any probability, although it can be assumed that all residential and critical facilities and infrastructure within Independence are at risk.

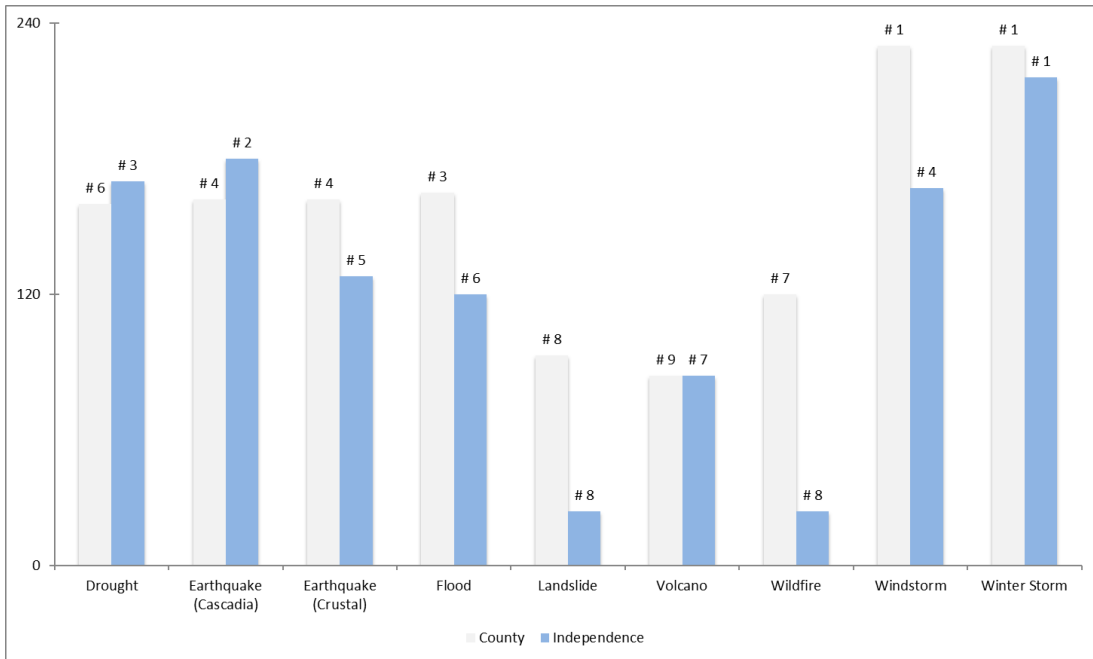
Please review the Risk Assessment (Volume I, Section 2) for additional information on this hazard.

Summary

Figure IA-6 presents a summary of the hazard analysis for the City of Independence and compares the results to the assessment completed by Polk County.

The city rated their threat to the Drought and Cascadia Subduction Zone earthquake higher than the county. The top four hazards for the city are winter storm, Cascadia Subduction Zone earthquake, drought, and windstorm.

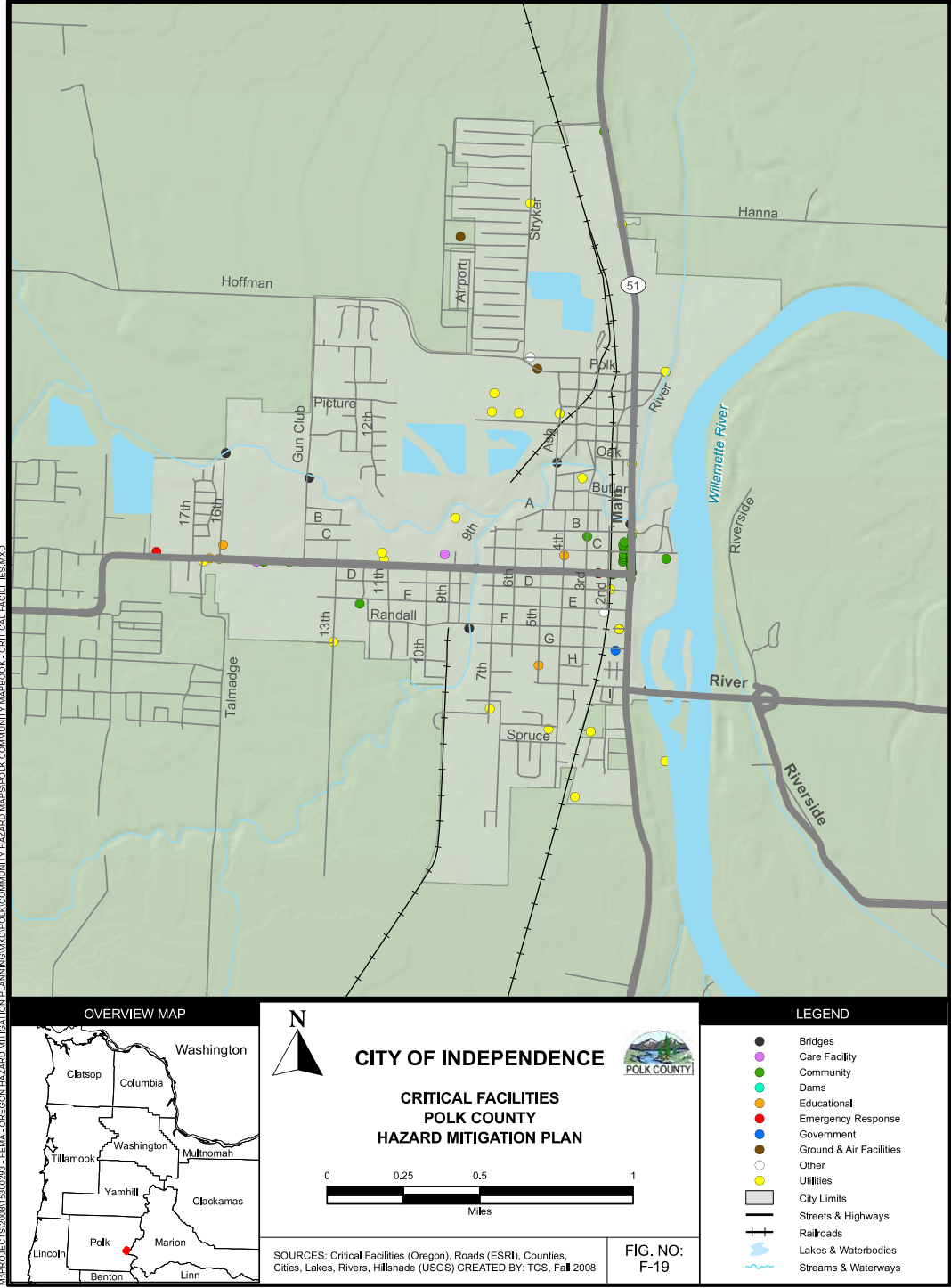
Figure IA-6 Overall Hazard Analysis Comparison –Polk County/ Independence



Source: City of Independence NHMP Steering Committee and Polk County NHMP Steering Committee

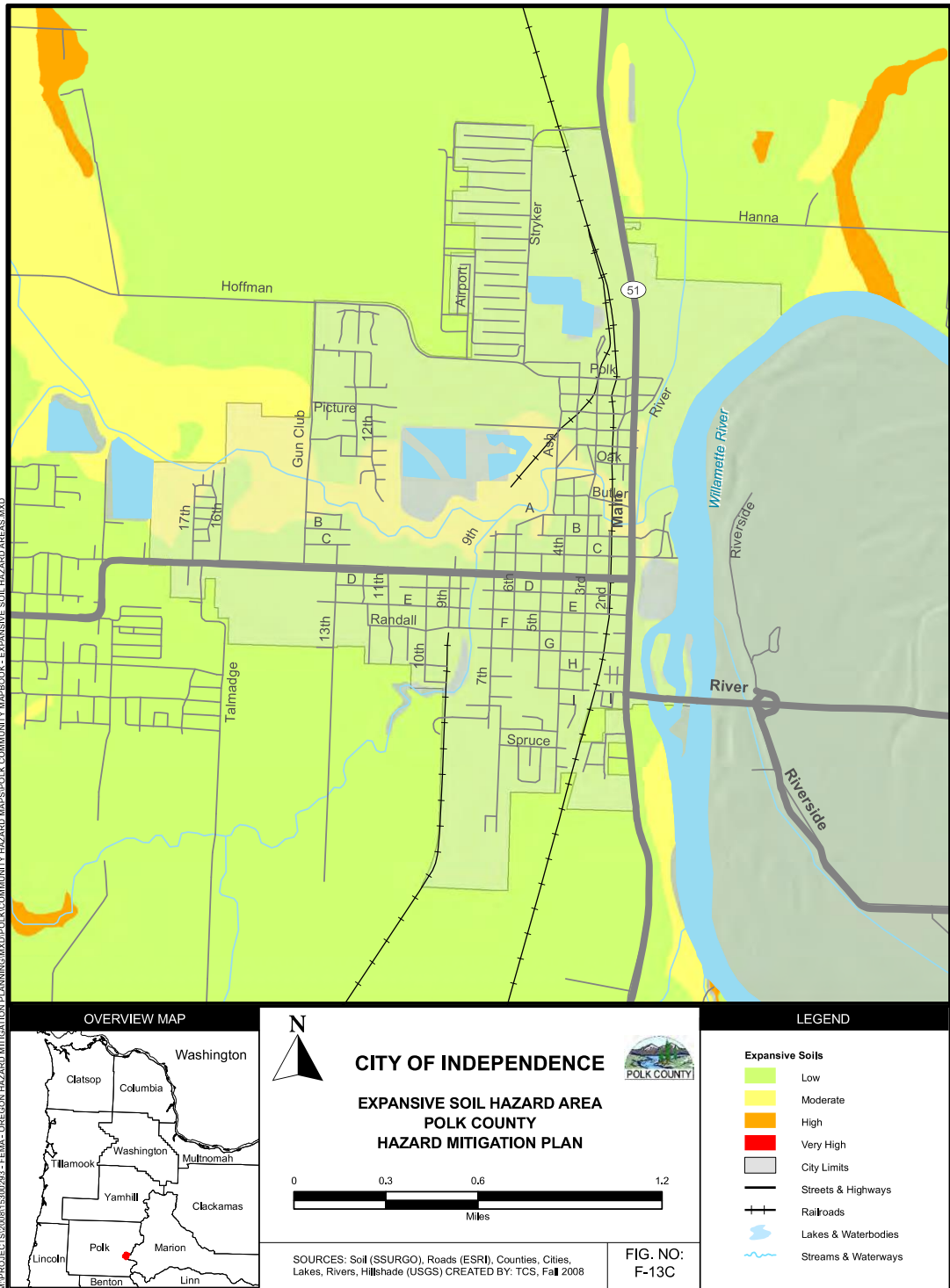
ATTACHMENT A - MAPS

Map IA-I Critical Facilities - Independence



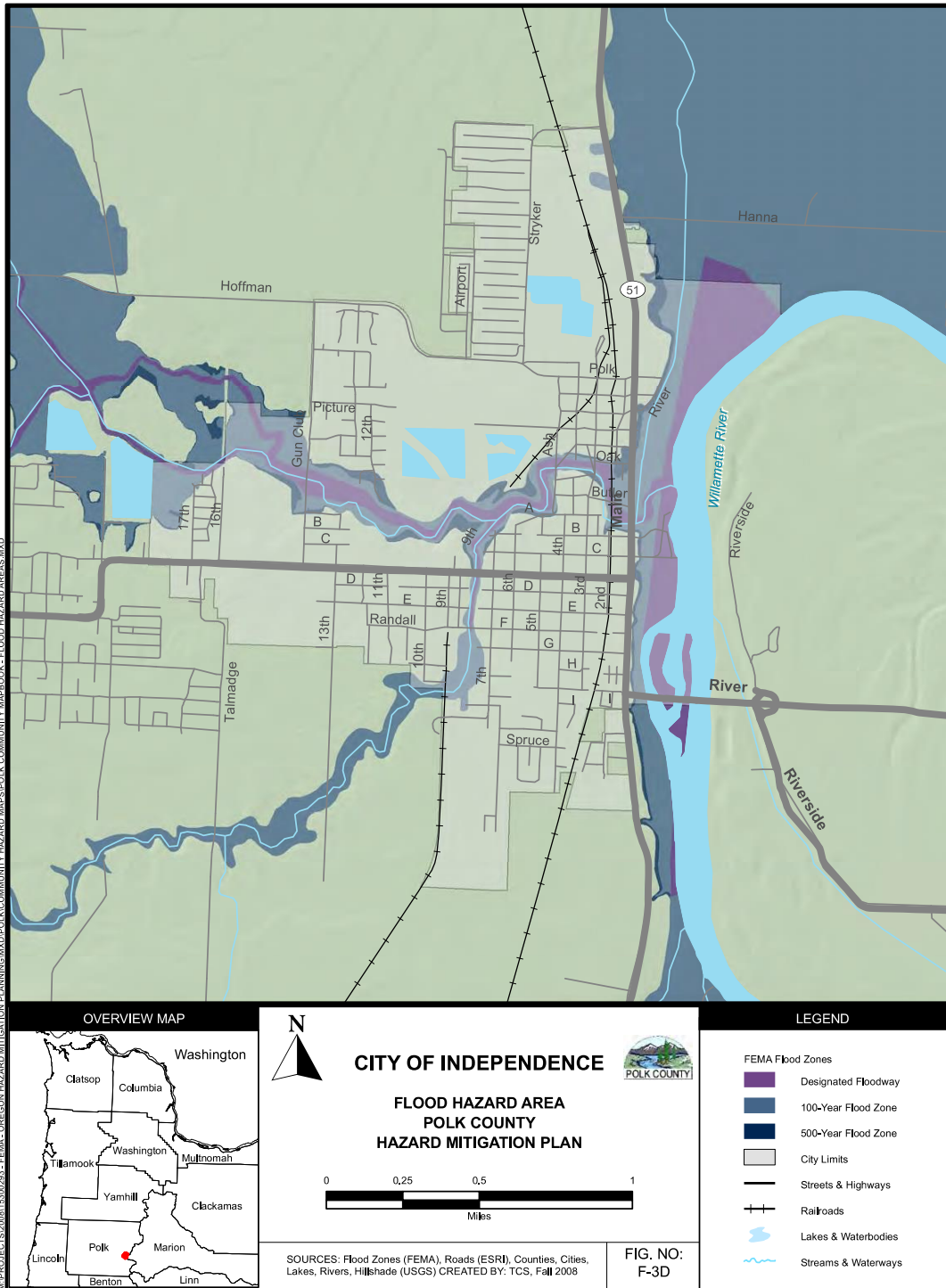
Source: Polk County NHMP (2009).

Map IA-2 Expansive Soils Hazard Area - Independence



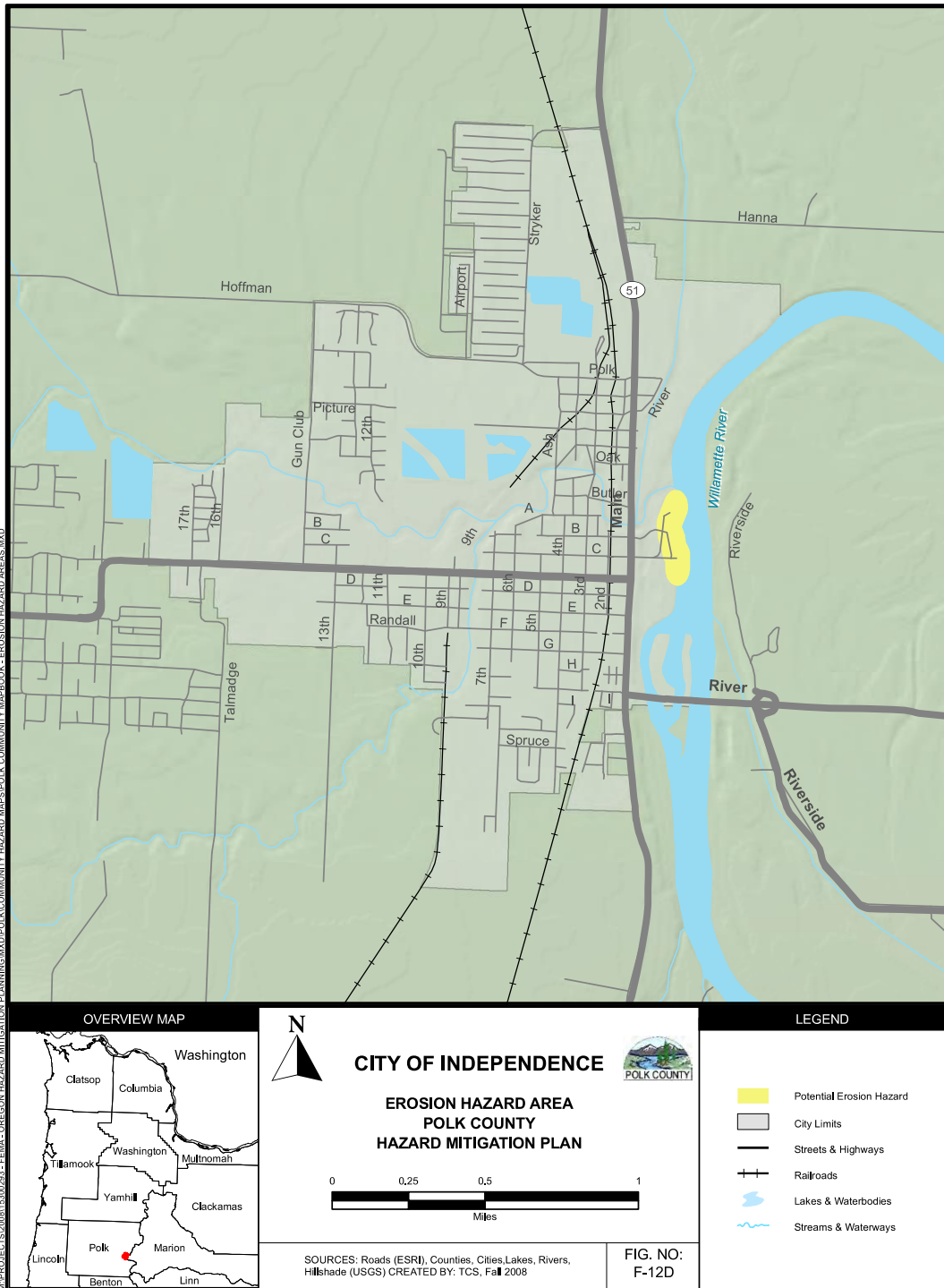
Source: Polk County NHMP (2009).

Map IA-3 Flood Hazard Area - Independence



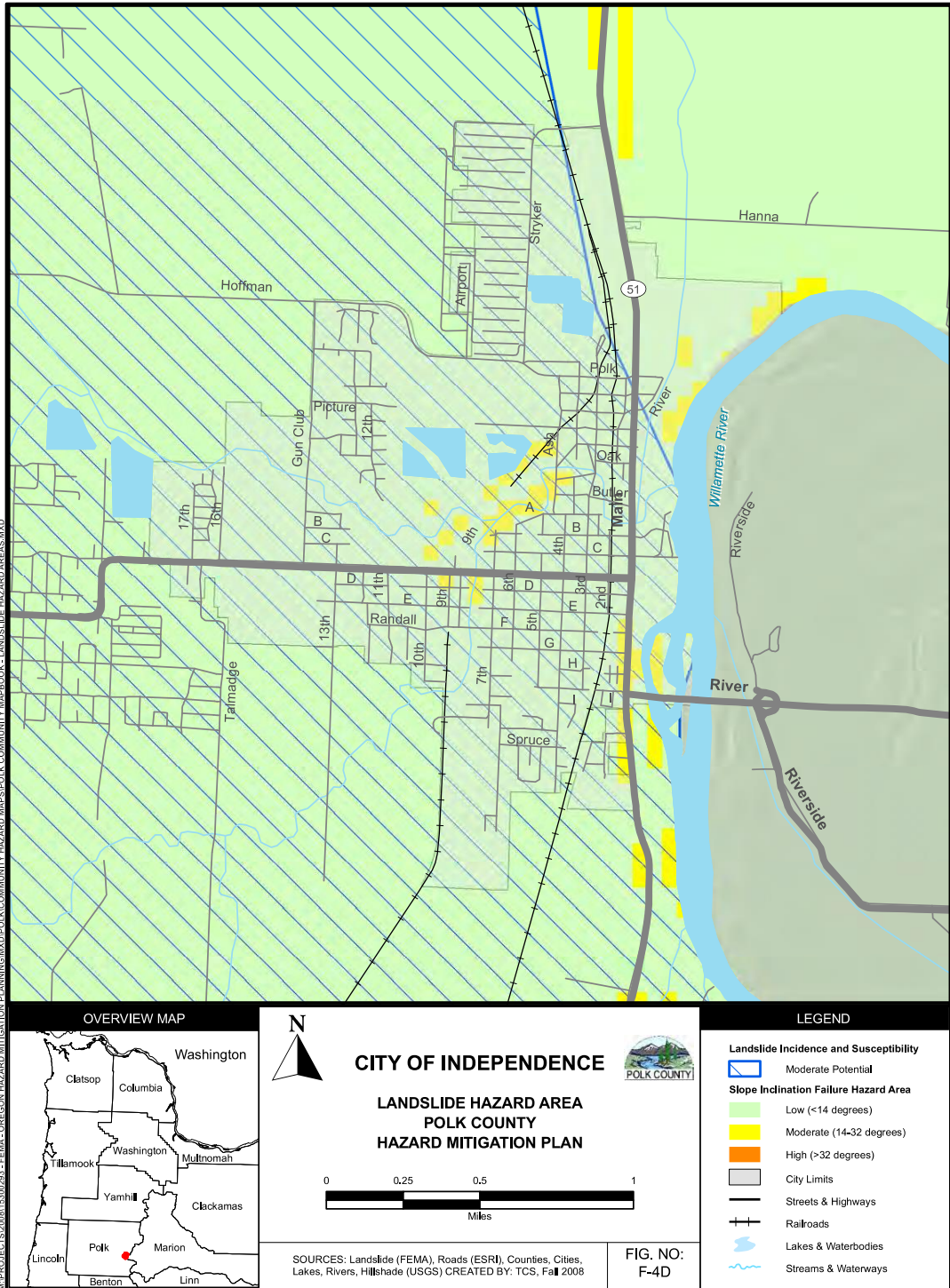
Source: Polk County NHMP (2009).

Map IA-4 Erosion Hazard Area - Independence



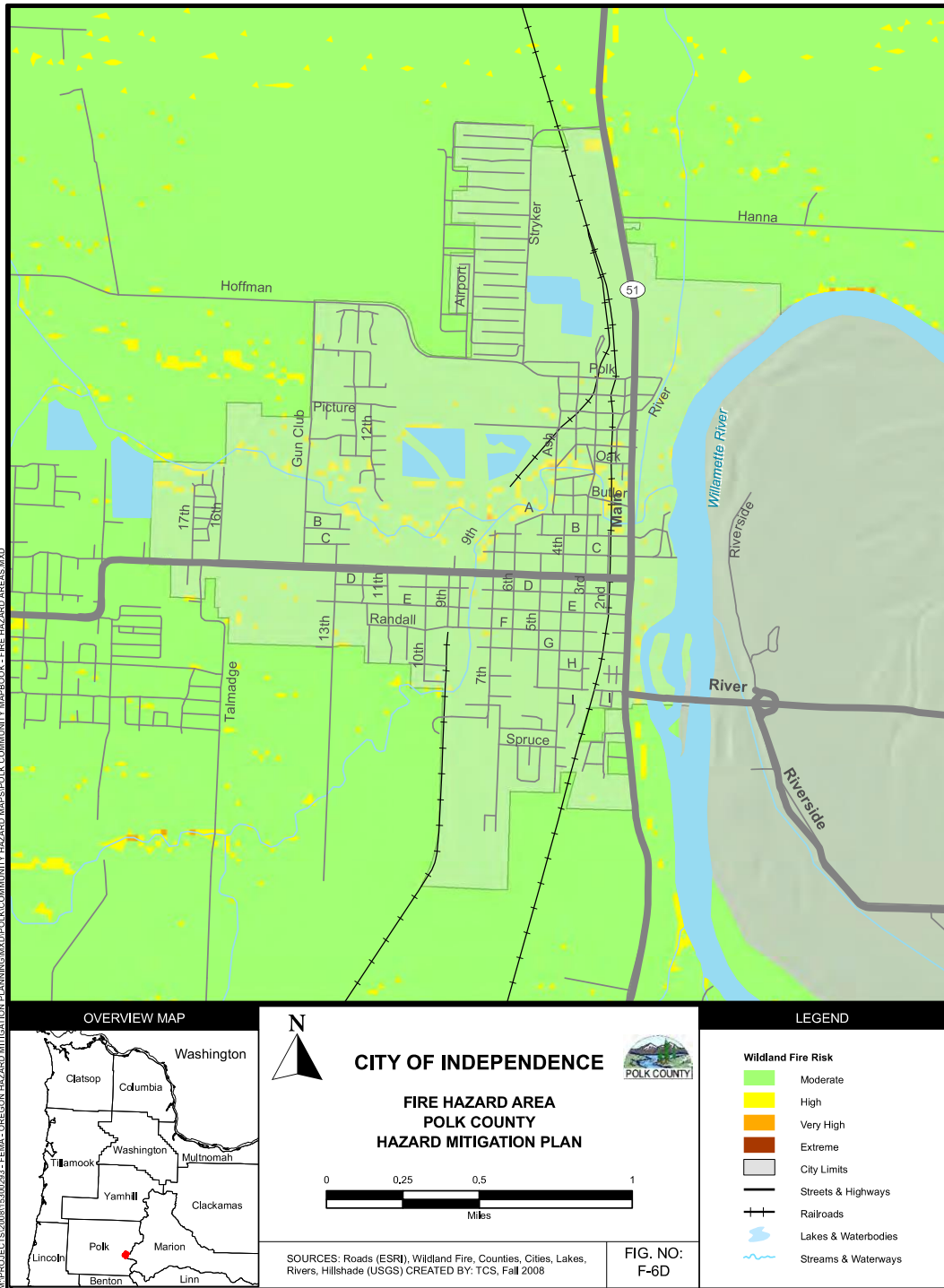
Source: Polk County NHMP (2009).

Map IA-5 Landslide Hazard Area - Independence



Source: Polk County NHMP (2009).

Map IA-6 Wildfire Hazard Area - Independence



Source: Polk County NHMP (2009).