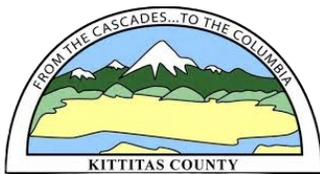


KITTITAS COUNTY

HAZARD MITIGATION PLAN

Kittitas Valley Fire & Rescue Annex



Kittitas County
Public Works Department





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1. INTRODUCTION

This Annex details the hazard mitigation elements specific to the Kittitas Valley Fire & Rescue, a participating jurisdiction to the 2025 Kittitas County Hazard Mitigation Plan update. This Annex is not intended to be a standalone document but supplements the information contained in **Volume 1 (Countywide Planning Elements)**. Therefore, all sections of **Volume 1** including the planning process, hazard identification and risk assessment, mitigation strategy (includes mitigation goals and objectives), and plan maintenance apply to and were met by the Kittitas Valley Fire & Rescue. This Annex provides additional information specific to the District, with a focus on providing additional details on the hazard risk assessment and mitigation strategy (i.e., mitigation actions) for this community.

2. LOCAL PLANNING TEAM

The Kittitas Valley Fire & Rescue Local Planning Team was comprised of the members listed on **Table 1**.

Table 1. Kittitas Valley Fire & Rescue Local Planning Team Members

Name	Title	Department
John Sinclair	Fire Chief	Kittitas Valley Fire & Rescue

3. JURISDICTION PROFILE

Kittitas Valley Fire and Rescue (KVFR) service area spans 278 square miles for fire suppression and 1,200 square miles for Emergency Medical Services (EMS), covering a diverse landscape that includes micro-urban, suburban, rural, and wildland-urban interface areas. KVFR is equipped and staffed to respond to structure and wildland fires, rescues, motor vehicle crashes, hazardous material releases and medical emergencies.

The District delivers comprehensive emergency services, including fire suppression, technical rescue, advanced and basic life support (ALS and BLS), and ambulance transport, which encompasses inter-facility transfers. Additionally, responsibilities extend to fire prevention, code enforcement, hazardous material response, and fire investigations. KVFR serves a permanent population of approximately 28,500, augmented by an additional 9,000 students when Central Washington University (CWU) is in session.

KVFR collaborates closely with neighboring agencies, providing mutual aid to the United States Forest Service (USFS), Washington State Department of Natural Resources (DNR), Bureau of Land Management (BLM), the Yakima Training Center (a Department of Defense facility), as well as the City of Kittitas and Kittitas County Fire Districts #1, #4, and #7. Additionally, KVFR offers fire protection services to the Central Washington University campus under a contractual agreement.

KVFR is an active partner with the CWU Dorothy Purser Paramedic Program in providing paramedic students an opportunity to provide emergency medical care in a supervised setting with ambulance units.

The District personnel is a combination consisting of 43 career firefighters split into three (3) different shifts, approximately 70 volunteer firefighters, and five (5) resident firefighters. Additionally, the District has two (2) fire stations that are staffed by career personnel 24 hours a day, and there are 10 volunteer stations throughout the District.



3.1. Population

The Kittitas Valley Fire & Rescue had a population of 28,500 as of July 1, 2022. Between 2010 and 2020, the population increased by approximately 7.7%; and a population increase of 1.8% occurred between 2020 and 2022. **Table 2** shows the District’s population distribution between 2010 and 2022.

Table 2. Population Estimates

Jurisdiction	2010	2020	2022	Population Change (2010 – 2022)
Kittitas Valley Fire & Rescue	26,000	28,000	28,500	9.6%

3.1.1. Underserved Population

FEMA defines underserved populations as groups that have limited or no access to resources or that are otherwise disenfranchised. These groups may include, but are not limited to, people who are socioeconomically disadvantaged, people with limited English proficiency, geographically isolated or educationally disenfranchised people, people of color as well as those of ethnic and national origin minorities, women and children, individuals with disabilities and others with access and functional needs, and seniors.¹

The CDC’s SVI is considered an appropriate and authoritative dataset to identify areas where efforts can be prioritized to ensure equitable outcomes from mitigation planning and actions. Social vulnerability refers to a community’s capacity to prepare for and respond to the stress of natural, human-caused, and technological disasters. CDC’s SVI combines 16 census-derived social factors, within four (4) themes (i.e., socioeconomic status, household characteristics, racial and ethnic minority status, and housing type and transportation) that summarizes the extent to which an area is socially vulnerable to disasters. The overall SVI combines all variables to provide a comprehensive assessment, and the possible scores range from zero (0) (lowest vulnerability) to one (1) (highest vulnerability).²

The overall SVI score for Kittitas County is 0.3366 which indicates a low to medium level vulnerability. **Table 3** outlines the SVI information for each social factor for the Kittitas Valley Fire & Rescue.³

Note: ArcGIS mapping analysis was performed utilizing Census Tract data by overlaying Census Tracts with the District planning area boundary. The information outlined in this section includes the best available data from the entire Census Tracts that intersect the jurisdiction.

Table 3. Social Vulnerability Index (2022)

Theme	Social Factors	Percent
Socioeconomic Status	People below 150% poverty estimate	23.5%
	Unemployed (Civilian 16 years old and older)	3.6%
	Housing Cost Burden	13.9%
	No High School Diploma	3.3%

¹ Federal Emergency Management Agency. (n.d.). Glossary: Underserved Population/Communities. Retrieved from <https://www.fema.gov/about/glossary>.

² Centers for Disease Control and Prevention. (2024). CDC/ATSDR SVI 2022 Documentation. Retrieved from <https://www.atsdr.cdc.gov/placeandhealth/svi/documentation/pdf/SVI-2022-Documentation-H.pdf>.

³ Centers for Disease Control and Prevention. (2022). CDC/ATSDR Social Vulnerability Index (SVI). Retrieved from https://www.atsdr.cdc.gov/placeandhealth/svi/interactive_map.html.



Theme	Social Factors	Percent
	No Health Insurance	4.6%
Household Characteristics	65 years old and older	14.7%
	17 years and younger	17.9%
	Civilian with a Disability	11.7%
	Single-Parent Household	2.0%
	English Language Proficiency	0.5%
Racial and Ethnic Minority Status	<ul style="list-style-type: none"> • Hispanic or Latino (of any race) • Black or African American • Asian • American Indian or Alaska Native • Native Hawaiian or Pacific Islander • Two or More Races • Other Races 	19.9%
Housing Type and Transportation	Multi-Unit Structures	6.7%
	Mobile Homes	3.3%
	Crowding	1.0%
	No Vehicle	1.8%
	Group Quarters	6.4%

3.2. Brief History

In 2005, the Kittitas County Fire District #2 Board of Commissioners and the Ellensburg City Council established a Citizens Advisory Committee to explore the potential merger of the City of Ellensburg Fire Department with Kittitas County Fire District #2. The Committee highlighted the advantages of reducing service duplication and optimizing the use of equipment and personnel, ultimately recommending the merger to enhance emergency response services for the communities involved.

The proposal was placed on the ballot in 2006, and voters approved the annexation of tax parcels within the City of Ellensburg into Kittitas County Fire District #2. The merged entity began operations on January 1, 2007, under the name Kittitas Valley Fire & Rescue (KVFR), bringing together the Ellensburg Fire Department, originally established in 1883, and Kittitas County Fire District #2, founded in 1945. In 2017, the City of Kittitas was also annexed into KVFR.

3.3. Governing Body Format

The governing body is a five (5) member elected Board of Commissioners comprised of a Fire Chief, Deputy Fire Chief, Prevention Captain, Inspector, Training Captain, Training Lieutenant, four (4) office support staff, a facilities maintenance employee, and mechanic. The Board will assume the responsibility for adoption and implementation of this Plan.

4. DEVELOPMENT TRENDS

Call volume continues to rise. In 2019, the District responded to 4,106 calls for service. In 2023, the number increased to 4,938 and the District expects to break 5,000 calls by the end of 2024. The largest



increases are occurring in EMS. The population and construction within the District continue to rise, along with traffic volume on Interstate 90. Additionally, wildfires in the County are occurring more frequently and the District is responding to surrounding districts more often through Mutual Aid Agreements.

4.1. Changes in Priority

KVFR did not participate in the previous iteration of the Kittitas County Hazard Mitigation Plan; therefore, a change in priority for the District includes ensuring participation in hazard mitigation initiatives and implementation of this Hazard Mitigation Plan throughout other planning mechanism in the District. Additionally, a more concerted effort on achieving equitable outcomes for all communities, including underserved communities and socially vulnerable populations, has been implemented in the mitigation actions identified for this Plan.

5. CAPABILITY ASSESSMENT

Federal regulations require hazard mitigation plans to identify goals for reducing long-term vulnerabilities to the identified hazards in the planning area (Section 201.6(c)(3)(i)). A critical step in the development of specific hazard mitigation actions and projects is assessing existing authorities, policies, programs, and resources and capabilities to use or modify local tools to reduce losses and vulnerability from profiled hazards.

A capability assessment was conducted for KVFR and participating jurisdictions' authorities, policies, programs, and resources. Goals and mitigation actions were developed using input from this assessment. Information regarding the District's implementation of and continued participation in the National Flood Insurance Program (NFIP) can be found in Section 8 of this Annex.

The Local Planning Team assessed the District's capabilities that can contribute to the reduction of long-term vulnerabilities to hazards. The capabilities include the following categories:

- Planning and Regulatory Capabilities
- Administrative and Technical Capabilities
- Financial Capabilities
- Education and Outreach Capabilities

Additionally, ways to expand on and improve these existing policies and programs to integrate hazard mitigation into the day-to-day activities and programs of the District were considered.

5.1. Planning and Regulatory Capabilities

These include local ordinances, policies, and laws to manage growth and development (e.g., land use plans, capital improvement plans, transportation plans, emergency preparedness and response plans, building codes, and zoning ordinances). KVFR relies on Kittitas County and the City of Ellensburg to maintain a strong framework of codes, ordinances, and requirements to help mitigate the impacts of the hazards identified in this Plan. **Table 4** contains a list of legal and regulatory capabilities.



Table 4. Planning and Regulatory Capabilities

Capability Category	Local Authority	Other Authority	State Mandated	Comments
Codes, Ordinances, and Requirements				
Washington State Fire Code	Yes <i>(City of Ellensburg)</i>	No	Yes	The International Fire Code (IFC), Chapter 51-54A of the Washington Administrative Code (WAC), is adopted by the Washington State Building Code Council pursuant to Chapters 19.27 and 70.92 RCW. The Code includes specific amendments to the IFC tailored to the State and it addresses local fire hazards and response capabilities.
Fire Protection Districts	No	No	Yes	Title 52 of the Revised Code of Washington (RCW) Governs the establishment and operation of the fire protection districts.
Building Code	Yes	No	Yes	Title 14 of the KCC (Buildings and Construction) Adopts the 2018 International Building Code (IBC), as adopted and amended by the State of Washington in Chapter 51-50 WAC. Adopts the 2018 IFC, as adopted and amended by the State of Washington in Chapter 51-54A WAC, including those standards of the National Fire Protection Association specifically referenced in the IFC.
Fire and Life Safety Code	Yes	No	Yes	Title 20 of the Kittitas County Code (KCC) Title 3 of the Ellensburg City Code
National Fire Protection Association Standards	No	No	Yes	Some NFPA standards are adopted by reference.
Mutual Aid Agreements	Yes	No	No	The District participates in Mutual Aid Agreements with other fire districts within and outside the planning area.
Special Purpose (flood management, critical areas)	Yes	No	No	Flood damage Prevention: Title 15, Chapter 15.24; 2002 Critical Areas: Title 18, CEMC, 2010
Capability Category	Local Authority	Other Authority	State Mandated	Comments
Planning Documents				
Comprehensive Plan	Yes	No	Yes	Washington State Growth Management Act, 36.70A RCW, under authority of the Planning Commission Act, 35.63 RCW. Updated annually.
Comprehensive Emergency Management Plan	Yes	No	Yes	38.52 RCW 118-30-060 WAC Last update of the CEMP was 2012.



Capability Category	Local Authority	Other Authority	State Mandated	Comments
Community Wildfire Protection Plan	Yes	No	No	Kittitas County Community Wildfire Protection Plan was updated in 2018. An update is planned for 2023/2024 with Community Wildfire Defense Grant (CWDG) Program grant through the Kittitas Fire Adapted Communities Coalition.
Capital Improvement Plan	Yes	No	No	The 2023 Capital Facilities Plan, is adopted as part of the Comprehensive Plan.
Emergency Response Plans	Yes	No	Yes	
Community Risk Reduction Programs	Yes	No	Yes	
Post-Disaster Recovery Plan	Yes	No	No	

5.2. Administrative and Technical Capabilities

The administrative and technical capabilities include community (i.e., public and private) staff and their skills and tools, which can be used for mitigation planning and implementation. This capability includes engineers, planners, emergency managers, GIS analysts, building inspectors, grant writers, and floodplain managers. Small communities may rely on other government entities, such as counties or special districts, for resources. These capabilities may be used to support mitigation activities. **Table 5** lists administrative and technical capabilities.

Table 5. Administrative and Technical Capabilities

Staff/Personnel Resources	Available	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	No	N/A
Engineers or professionals trained in building or infrastructure construction practices	No	N/A
Planners or engineers with an understanding of natural hazards	No	N/A
Staff with training in benefit/cost analysis	No	N/A
Floodplain Manager/Administrator	No	N/A
Surveyors	No	N/A
Personnel skilled or trained in GIS applications	No	N/A
Staff familiar with natural hazards in local area	Yes	Fire Chief, KVFR
Emergency Manager	Yes	Fire Chief, KVFR
Grant writers	Yes	Financial Services Manager, KVFR

5.3. Financial Resources

Table 6 contains a list of financial capabilities available to the District. These financial resources may be used to support mitigation activities based on procedures for each resource.



Table 6. Financial Resources

Financial Resources	Accessible or Eligible to Use
Community Development Block Grants (CDBG)	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for <u>Ambulance</u> , Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No

5.4. Education and Outreach Capabilities

Table 7 lists the District's financial and public outreach capabilities. These capabilities include fire safety programs, hazard awareness campaigns, public information, and communications offices. Education and outreach capabilities can be used to inform the public about current and potential mitigation activities.

Table 7. Education and Outreach Resources

Resource	Available	Department/Agency/Position/Description
Public Information Officer	Yes	District Secretary, KVFR
Personnel skilled or trained in website development	No	N/A
Hazard mitigation information available on your website	Yes	N/A
Utilize social media for hazard mitigation education and outreach	Yes	Facebook: facebook.com/KVFRFD2 X: x.com/KVFRFD2
Citizen boards or commissions that address issues related to hazard mitigation	No	N/A
Other programs already in place that could be used to communicate hazard-related information	No	N/A
An established warning systems for hazard events	Yes	Emergency Management, Kittitas County Sheriff's Office

5.5. Needs to Expand/Improve Capabilities

KVFR identified existing authorities, policies, programs, funding, and/or resources that need to be expanded and/or improved in order to support the implementation of the hazard mitigation initiatives identified in this Plan (e.g., mitigation actions).

- In order to increase the District's capability to apply for hazard mitigation grants and fund the local match for hazard mitigation grants, the District needs to expand its grant writing capabilities by potentially hiring more grant writers.
- Building codes and ordinances should be reviewed based on developing trends in identified hazards and mitigation measures that can make them more effective at preventing losses.



Furthermore, building codes should be updated to comply with the latest international and state building codes.

6. HAZARD MITIGATION PLAN INTEGRATION

The information on hazards, risk, vulnerability, and mitigation contained in this Hazard Mitigation Plan is based on the best available data at the time of the Plan update. Plan integration consists of the incorporation of hazard mitigation into other relevant planning mechanisms (e.g., general planning and capital improvement planning). It includes the integration of natural hazard information and mitigation policies, principles, and actions into local planning mechanisms and vice versa. Additionally, plan integration is achieved through the involvement of key staff and community officials in collaborative hazard mitigation planning.

6.1. Existing Plan Integration

KVFR did not participate in the previous iteration of the Kittitas County Hazard Mitigation Plan.

6.2. Potential Future Integration

As the Hazard Mitigation Plan is implemented, Kittitas Valley Fire & Rescue will use information from the Plan as the best available science and data on hazards. The capability assessment presented in Section 5 of this Annex identifies codes, plans, and programs that provide opportunities for integration. The Districtwide and local action plans developed for this Hazard Mitigation Plan are related to plan integration. The capability assessment identified plans and programs, listed in **Table 8**, that do not currently integrate goals and recommendations of this Plan but provide opportunities to do so in the future.

Table 8. Potential Future Integration

Planning Initiative	Description
Community Wildfire Protection Plan	This Hazard Mitigation Plan and County’s Community Wildfire Protection Plan (CWPP) should be aligned where mitigation actions support the goals of the CWPP. The wildfire analysis in this Hazard Mitigation Plan can inform updates and revisions to the CWPP.
Emergency Response Plan	Updates to the Emergency Response Plan will include information from this Hazard Mitigation Plan to continue a comprehensive approach to wildfire mitigation and response.
Community Risk Reduction Programs	The District will integrate the risk assessment of this Hazard Mitigation Plan with the Community Risk Reduction Programs to enhance the community’s resilience by addressing vulnerabilities and reducing risks through comprehensive strategies.
Capital Improvement Plan	The District will continue to ensure consistency between this Hazard Mitigation Plan and future updates of the CIP. The Hazard Mitigation Plan may identify new possible funding sources for capital improvement projects and may result in modifications to proposed projects based on results of the risk assessment.

The District’s Local Planning Team will identify all relevant planning initiatives that are scheduled to be updated in the next year and during the annual update process of the Hazard Mitigation Plan. Additionally, opportunities to integrate key elements of the Hazard Mitigation Plan, specifically any relevant strategies, into the planning initiatives will be identified by the Local Planning Team. Mitigation actions were identified to promote plan integration in future revisions of this Plan.



7. SIGNIFICANT HAZARD PAST EVENTS

A complete risk assessment, including past incidents, for each identified hazard of concern can be found in **Volume 1** of this Plan.

8. NATIONAL FLOOD INSURANCE PROGRAM

As a special district, KVFR is not eligible to participate in FEMA’s National Flood Insurance Program (NFIP). Further information on Kittitas County’s NFIP and Community Rating System (CRS) participation is available on **Volume 1** of this Plan.

9. HAZARD VULNERABILITY AND IMPACT ASSESSMENT

Exposure and vulnerability to certain hazards affect the entire County and others are geographically defined. Although the entire County may be vulnerable to these hazards, their impacts may vary based on existing community conditions (e.g., underserved, or functional access needs populations may be more susceptible based on certain conditions, vulnerabilities, or needs).

Table 9 outlines the *unique vulnerabilities and impacts* for the Kittitas Valley Fire & Rescue and only addresses the hazards that are relevant and unique to the jurisdiction. A complete risk assessment for each identified hazard of concern is in **Volume 1** of this Plan. Hazard mapping can be found in **Appendix A** of this Annex.

Table 9. Hazard Vulnerability and Impact Assessment

Hazards	Vulnerabilities and Impacts
Avalanche	The Local Planning Team determined that the District does not have unique vulnerabilities and impacts to avalanches.
Dam and Levee Failure	Flood inundation maps indicate that the City of Ellensburg, and other portions of the District, would experience significant flooding in the event of a breach from the Cle Elum, Keechelus, and/or Kachess dams located upstream on the Yakima River.
Drought	The drought impacts the local economy, particularly affecting hay farmers, and adds complexity to the District’s year to year economic stability.
Earthquake	The City of Ellensburg’s downtown is home to numerous historical buildings that do not meet current seismic codes. Although this issue is also present in the cities of Cle Elum and Roslyn, Ellensburg has a higher population at risk.
Flood	The Local Planning Team determined that the District does not have unique vulnerabilities and impacts to flooding.
Landslide	The Local Planning Team determined that the District does not have unique vulnerabilities and impacts to landslides.
Severe Weather <i>(thunderstorms, hail, tornado, strong winds/damaging winds, extreme temperatures)</i>	The Local Planning Team determined that the District does not have unique vulnerabilities and impacts to severe weather.
Volcanic Activity	The Local Planning Team determined that the District does not have unique vulnerabilities and impacts to volcanic activity.
Wildfire <i>(wildfire smoke)</i>	The diseased, dying, and dead forests to the west and north of the Kittitas Valley, combined with predictable winds, lead to smoke from fires settling in the Valley. As a result, the District has experienced multiple episodes of unhealthy air quality due to wildfire smoke persisting for several days.
Winter Weather <i>(ice storms, heavy snow, and blizzards)</i>	The Local Planning Team determined that the District does not have unique vulnerabilities and impacts to winter weather.



Hazards	Vulnerabilities and Impacts
Communicable Diseases/Pandemic	CWU is located within the District and the University has a higher percentage of international travelers compared to the remaining citizens within the District.

The District evaluated whether vulnerability and impact in hazard prone areas had increased, decreased, or remained the same for each natural hazard identified in this Hazard Mitigation Plan. Climate change, changes in population, infrastructure expansion, and economic shifts that can affect vulnerability were considered. For example, if planned development is in an identified hazard areas or is not built to the updated building codes, it may increase the community’s vulnerability to future hazards and disasters. On the other hand, if development occurred with mitigation practices in place, the vulnerability may have remained the same or decreased. Additionally, shifting demographics (e.g., underserved population) were taken into consideration.

Table 10 outlines if climate change has increased or decreased the District's vulnerability (i.e., exposure) and impact to each natural hazard over the past five (5) years, and the effect of climate change in the future probability of occurrence and impacts from each natural hazard.

Table 10. Climate Change Current and Future Vulnerability and Impact

Hazard	Vulnerability and Impact
<i>Current Vulnerability and Impact</i>	
Avalanche	Remained the Same
Communicable Diseases/Pandemic	Remained the Same
Dam and Levee Failure	Remained the Same
Drought	Increased
Earthquake	Remained the Same
Flood	Remained the Same
Landslide	Remained the Same
Severe Weather (<i>thunderstorms, hail, tornado, strong winds/damaging winds, extreme temperatures</i>)	Remained the Same
Volcanic Activity	Remained the Same
Winter Weather (<i>ice storms, heavy snow, blizzards</i>)	Remained the Same
Wildfire (<i>Wildfire Smoke</i>)	Increased
<i>Future Vulnerability and Impact</i>	
Avalanche	Increase
Communicable Diseases/Pandemic	No Change Anticipated
Dam and Levee Failure	No Change Anticipated
Drought	Increase
Earthquake	No Change Anticipated
Flood	Increase
Landslide	Increase



Hazard	Vulnerability and Impact
Severe Weather (<i>thunderstorms, hail, tornado, strong winds/damaging winds, extreme temperatures</i>)	Increase
Volcanic Activity	No Change Anticipated
Winter Weather (<i>ice storms, heavy snow, blizzards</i>)	Increase
Wildfire (<i>Wildfire Smoke</i>)	Increase

Table 11 outlines if changes in population within the District over the past five (5) years have increased or decreased the vulnerability (i.e., exposure) and impact to these natural hazards, and the anticipated effects changes in population may have on the future probability of occurrence and impacts from these natural hazards.

Table 11. Changes in Population Current and Future Vulnerability and Impact

Hazard	Vulnerability and Impact
Current Vulnerability and Impact	
Avalanche	Remained the Same
Communicable Diseases/Pandemic	Increased
Dam and Levee Failure	Remained the Same
Drought	Remained the Same
Earthquake	Remained the Same
Flood	Remained the Same
Landslide	Remained the Same
Severe Weather (<i>thunderstorms, hail, tornado, strong winds/damaging winds, extreme temperatures</i>)	Remained the Same
Volcanic Activity	Remained the Same
Winter Weather (<i>ice storms, heavy snow, blizzards</i>)	Remained the Same
Wildfire (<i>Wildfire Smoke</i>)	Remained the Same
Future Vulnerability and Impact	
Avalanche	No Change is Anticipated
Communicable Diseases/Pandemic	Increase
Dam and Levee Failure	No Change is Anticipated
Drought	No Change is Anticipated
Earthquake	No Change is Anticipated
Flood	No Change is Anticipated
Landslide	No Change is Anticipated
Severe Weather (<i>thunderstorms, hail, tornado, strong winds/damaging winds, extreme temperatures</i>)	No Change is Anticipated
Volcanic Activity	No Change is Anticipated
Winter Weather (<i>ice storms, heavy snow, blizzards</i>)	No Change is Anticipated



Hazard	Vulnerability and Impact
Wildfire (<i>Wildfire Smoke</i>)	No Change is Anticipated

Table 12 outlines if development over the past five (5) years has increased or decreased the jurisdiction’s vulnerability (i.e., exposure) and impact to these natural hazards, and the anticipated effects changes in development may have on the future probability of occurrence and impacts from these natural hazards.

Table 12. Changes in Development Current and Future Vulnerability and Impact

Hazard	Vulnerability and Impact
<i>Current Vulnerability and Impact</i>	
Avalanche	Remained the Same
Communicable Diseases/Pandemic	Remained the Same
Dam and Levee Failure	Remained the Same
Drought	Remained the Same
Earthquake	Remained the Same
Flood	Remained the Same
Landslide	Increased
Severe Weather (<i>thunderstorms, hail, tornado, strong winds/damaging winds, extreme temperatures</i>)	Remained the Same
Volcanic Activity	Remained the Same
Winter Weather (<i>ice storms, heavy snow, blizzards</i>)	Remained the Same
Wildfire (<i>Wildfire Smoke</i>)	Increased
<i>Future Vulnerability and Impact</i>	
Avalanche	No Change Anticipated
Communicable Diseases/Pandemic	No Change Anticipated
Dam and Levee Failure	No Change Anticipated
Drought	No Change Anticipated
Earthquake	No Change Anticipated
Flood	No Change Anticipated
Landslide	Increase
Severe Weather (<i>thunderstorms, hail, tornado, strong winds/damaging winds, extreme temperatures</i>)	No Change Anticipated
Volcanic Activity	No Change Anticipated
Winter Weather (<i>ice storms, heavy snow, blizzards</i>)	No Change Anticipated
Wildfire (<i>Wildfire Smoke</i>)	Increase

The District does not anticipate future major assets to be exposed or vulnerable to any of the hazards identified in this Plan. Any new assets (e.g., new construction in hazard prone areas) will be constructed



to adhere to the latest building codes and standards, and mitigation to protect them from identified and anticipated hazards, especially those that are expected to increase due to climate change.

10. HAZARD RISK RANKING

Table 13 presents the local hazard ranking for Kittitas Valley Fire & Rescue of all hazards of concern listed in **Volume 1** of this Plan. This ranking summarizes how hazards vary for this jurisdiction. As described in detail in **Volume 1**, the ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy.

It is important to note that the sub hazards for severe weather (i.e., strong wind/damaging winds, thunderstorms, cold wave/extreme cold, heat wave/extreme heat, hail and tornado) and wildfire (i.e., wildfire smoke) were individually ranked in the hazard risk ranking; however, severe weather and wildfire are each considered as the main hazard throughout this Annex and **Volume 1**.

Table 13. Hazard Risk Ranking

Hazard Event	Probability Factor	Sum of Weighted Extent Factors	Sum of Weighted Vulnerability Factors	Sum of Weighted Impact Factors	Consequence Score	Total Risk Score (Probability x Consequence)
Wildfire	3	15	11	29	55	77
Winter Weather (Blizzard/Heavy Snow, Ice Storm)	3	15	16	24	55	77
Earthquake	2	12	16	33	61	59
Strong Wind / Damaging Winds (Severe Weather)	3	9	16	15	40	59
Flood	2	18	11	29	58	57
Wildfire Smoke (Wildfire)	3	9	10	20	39	57
Communicable Diseases / Pandemic	2	18	10	20	48	48
Thunderstorms (Severe Weather)	2	6	16	22	44	45
Cold Wave/Extreme Cold (Severe Weather)	2	12	12	20	44	45
Drought	2	9	6	26	41	42
Heat Wave/Extreme Heat (Severe Weather)	2	12	12	17	41	42
Landslide	2	9	6	13	28	31
Avalanche	2	9	6	13	28	31
Dam and Levee Failure	1	18	16	26	60	32
Hail (Severe Weather)	1	6	16	16	38	22
Tornado (Severe Weather)	1	6	14	16	36	21



Hazard Event	Probability Factor	Sum of Weighted Extent Factors	Sum of Weighted Vulnerability Factors	Sum of Weighted Impact Factors	Consequence Score	Total Risk Score (Probability x Consequence)
Volcanic Activity	1	12	6	14	32	19
<p><i>Consequence:</i> Sum of <u>all</u> weighted factors. <i>Extent:</i> Sum of the weighted <u>Extent</u> factors. <i>Vulnerability:</i> Sum of the weighted <u>Vulnerability</u> factors.</p> <p><i>Impact:</i> Sum of the weighted <u>Impact</u> factors. Total Risk Score* = Probability x Consequence * Normalized to 100</p>						
Total Risk Score Legend						
Classification	Probability Factor	Extent	Vulnerability	Impact	Consequence Score	Total Risk Score
Low (L)	1	0 – 6	0 – 6	0 – 12	0 – 24	0 – 24
Medium (M)	2	7 – 12	7 – 12	13 – 26	25 – 50	25 – 52
High (H)	3	13 – 18	13 – 18	27 – 39	51 – 75	53 and above
<p>The legend—specifically the assignment of low, medium, and high—provides an additional means to qualitatively assess the probability factor, sum of weighted factors, and the total risk scores for each hazard. The Consequence Score represents the sum of the Extent, Vulnerability, and Impact Factors. The Total Risk Score is a measure of Probability and Consequence.</p>						



11. MITIGATION ACTIONS

This section includes the mitigation actions that were developed to address identified risks and vulnerabilities to hazards identified in this Plan. This Plan serves only to recommend mitigation measures based on the potential for risk reduction and available funding. Implementation of mitigation actions is dependent on risk reduction priorities, feasibility, and available funding. It is also dependent on the cooperation and support of the jurisdiction and/or department responsible for each action item.

Kittitas Valley Fire & Rescue agreed upon **eight (8)** mitigation actions that apply to the jurisdiction’s properties where they have jurisdictional responsibility and authority. The District did not participate in the previous reiteration of the Kittitas County Hazard Mitigation Plan; therefore, all mitigation actions are new. A summary of the District’s mitigation actions status is listed in **Table 14**.

Table 14. Kittitas Valley Fire & Rescue Mitigation Actions Summary

Status		Mitigation Action Total	
Ongoing		0	
In Progress/In Work		0	
Not Started		0	
Delayed/Deferred		0	
New		8	
TOTAL		8	
Completed		0	
Deleted/No Longer Needed		0	
Mitigation Actions per Hazard			
Avalanche	4	Landslide	5
Dam and Levee Failure	5	Severe Weather	4
Drought	4	Volcanic Activity	4
Earthquake	7	Wildfire	5
Flood	4	Winter Weather	4

These shared actions, some of which address all hazards, help to meet the following requirements:

- Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure?
- Does the Plan include one (1) or more action(s) per jurisdiction for each hazard identified within the risk assessment?

A detailed explanation of the Mitigation Strategy can be found in Chapter 5 of **Volume 1**.



Mitigation Action	Implement training for firefighters focusing on specialized rescue for collapsed buildings.				
Action Number	KVFR-1	Year Initiated / Anticipated Year of Initiation	2025	Prioritization Score	31/40
Goal(s) Addressed	1, 2, 3, 5		Hazard(s) Mitigated	Earthquake	
Project Status	New	If Deleted/No Longer Needed, provide reason.		n/a	
Benefits <i>(Loss Avoided)</i>	High				
Lead Agency / Organization	Kittitas Valley Fire & Rescue		Supporting Agency / Organization <i>(If applicable)</i>	Kittitas County Sheriff's Office	
Additional Participating Jurisdictions <i>(If applicable)</i>	n/a				
Project Duration	Long Term		Estimated Cost	Medium	
Potential Funding Source	Local Budgeted Funds		If Other, you must identify a funding source.	n/a	
			Please provide further detail on Potential Funding Source.	General Operating Budget (Staff Time)	
Implementation Priority	High	Changes in Priority <i>(If applicable)</i>			



Mitigation Action	Develop an inventory of public and commercial buildings that may be particularly vulnerable to earthquake damage, including pre-1940s homes and homes with cripple wall foundations.				
Action Number	KVFR-2	Year Initiated / Anticipated Year of Initiation	2025	Prioritization Score	40/40
Goal(s) Addressed	1, 2, 3, 4, 5		Hazard(s) Mitigated	Earthquake	
Project Status	New	If Deleted/No Longer Needed, provide reason.		n/a	
Benefits (Loss Avoided)	High				
Lead Agency / Organization	Kittitas Valley Fire & Rescue		Supporting Agency / Organization (If applicable)	Kittitas County Sheriff's Office	
Additional Participating Jurisdictions (If applicable)	n/a				
Project Duration	Long Term		Estimated Cost	Medium	
Potential Funding Source	Local Budgeted Funds, HMGP, BRIC		If Other, you must identify a funding source.	n/a	
			Please provide further detail on Potential Funding Source.	General Operating Budget (Staff Time)	
Implementation Priority	High	Changes in Priority (If applicable)			



Mitigation Action	Use GIS to map hazard areas, at-risk structures, and associated hazards to assess high-risk areas. This will help define existing vulnerabilities within the District to develop mitigation priorities.				
Action Number	KVFR-3	Year Initiated / Anticipated Year of Initiation	2025	Prioritization Score	40/40
Goal(s) Addressed	1, 2, 3, 4, 5		Hazard(s) Mitigated	Avalanche, Dam and Levee Failure, Drought, Earthquake, Flood, Landslide, Severe Weather, Volcanic Activity, Wildfire, Winter Weather	
Project Status	New	If Deleted/No Longer Needed, provide reason.		n/a	
Benefits <i>(Loss Avoided)</i>	High				
Lead Agency / Organization	Kittitas Valley Fire & Rescue		Supporting Agency / Organization <i>(If applicable)</i>	Kittitas County Sheriff's Office	
Additional Participating Jurisdictions <i>(If applicable)</i>	n/a				
Project Duration	Long Term		Estimated Cost	Medium	
Potential Funding Source	Local Budgeted Funds, HMGP, BRIC		If Other, you must identify a funding source.	n/a	
			Please provide further detail on Potential Funding Source.	General Operating Budget (Staff Time)	
Implementation Priority	High	Changes in Priority <i>(If applicable)</i>			



Mitigation Action	Require that development in high fire hazard areas provide adequate access roads, onsite fire protection systems, evacuation signage and fire breaks.				
Action Number	KVFR-4	Year Initiated / Anticipated Year of Initiation	2025	Prioritization Score	30/40
Goal(s) Addressed	1, 2		Hazard(s) Mitigated	Wildfire	
Project Status	New		<i>If Deleted/No Longer Needed, provide reason.</i>	n/a	
Benefits <i>(Loss Avoided)</i>	High				
Lead Agency / Organization	Kittitas Valley Fire & Rescue		Supporting Agency / Organization <i>(If applicable)</i>	Washington State Department of Natural Resources, Kittitas County Conservation District, Kittitas Fire Adapted Communities Coalition	
Additional Participating Jurisdictions <i>(If applicable)</i>	n/a				
Project Duration	Ongoing		Estimated Cost	Low	
Potential Funding Source	Local Budgeted Funds		<i>If Other, you must identify a funding source.</i>	n/a	
			Please provide further detail on Potential Funding Source.	General Operating Budget (Staff Time)	
Implementation Priority	High	Changes in Priority <i>(If applicable)</i>			

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Mitigation Action	Collect, and create and maintain a database with geologic information on seismic sources, soil conditions, and related potential hazards within the District.				
Action Number	KVFR-5	Year Initiated / Anticipated Year of Initiation	2025	Prioritization Score	38/40
Goal(s) Addressed	1, 2, 5		Hazard(s) Mitigated	Dam and Levee Failure, Earthquake, Landslide	
Project Status	New		<i>If Deleted/No Longer Needed, provide reason.</i>	n/a	
Benefits <i>(Loss Avoided)</i>	Medium				
Lead Agency / Organization	Kittitas Valley Fire & Rescue		Supporting Agency / Organization <i>(If applicable)</i>	n/a	
Additional Participating Jurisdictions <i>(If applicable)</i>	n/a				
Project Duration	Short Term		Estimated Cost	High	
Potential Funding Source	Local Budgeted Funds		<i>If Other, you must identify a funding source.</i>	n/a	
			Please provide further detail on Potential Funding Source.	General Operating Budget (Staff Time)	
Implementation Priority	High	Changes in Priority <i>(If applicable)</i>			



Mitigation Action	Retrofit the District's fire stations with a secondary power source (e.g., generator) to increase power system resilience and mitigate the impacts of natural hazards while increasing the resilience of critical functions.				
Action Number	KVFR-6	Year Initiated / Anticipated Year of Initiation	2025	Prioritization Score	37/40
Goal(s) Addressed		1, 2	Hazard(s) Mitigated	Avalanche, Dam and Levee Failure, Drought, Earthquake, Flood, Landslide, Severe Weather, Volcanic Activity, Wildfire, Winter Weather	
Project Status		New	<i>If Deleted/No Longer Needed, provide reason.</i>	n/a	
Benefits <i>(Loss Avoided)</i>	Medium				
Lead Agency / Organization	Kittitas Valley Fire Rescue		Supporting Agency / Organization <i>(If applicable)</i>	n/a	
Additional Participating Jurisdictions <i>(If applicable)</i>	n/a				
Project Duration	Short Term		Estimated Cost	Medium	
Potential Funding Source	Local Budgeted Funds, BRIC, HMGP, HMGP Post Fire		<i>If Other, you must identify a funding source.</i>	n/a	
			Please provide further detail on Potential Funding Source.	General Operating Budget (Staff Time)	
Implementation Priority	High	Changes in Priority <i>(If applicable)</i>			



Mitigation Action	Actively support and participate in the implementation, monitoring, maintenance, and updating of the Kittitas County Hazard Mitigation Plan, as outlined and defined in Volume 1.				
Action Number	KVFR-7	Year Initiated / Anticipated Year of Initiation	2019 or before	Prioritization Score	39/40
Goal(s) Addressed	1, 2, 3, 4, 5		Hazard(s) Mitigated	Avalanche, Dam and Levee Failure, Drought, Earthquake, Flood, Landslide, Severe Weather, Volcanic Activity, Wildfire, Winter Weather	
Project Status	New	If Deleted/No Longer Needed, provide reason.		n/a	
Benefits <i>(Loss Avoided)</i>	High				
Lead Agency / Organization	Kittitas Valley Fire & Rescue	Supporting Agency / Organization <i>(If applicable)</i>	n/a		
Additional Participating Jurisdictions <i>(If applicable)</i>	n/a				
Project Duration	Ongoing	Estimated Cost	Low		
Potential Funding Source	Local Budgeted Funds	If Other, you must identify a funding source.		n/a	
		Please provide further detail on Potential Funding Source.		General Operating Budget (Staff Time)	
Implementation Priority	High	Changes in Priority <i>(If applicable)</i>			



Mitigation Action	Continue to support through active participation the countywide initiatives identified in Volume 1 of the Kittitas County Hazard Mitigation Plan.				
Action Number	KVFR-8	Year Initiated / Anticipated Year of Initiation	2019 or before	Prioritization Score	39/40
Goal(s) Addressed	1, 2, 3, 4, 5		Hazard(s) Mitigated	Avalanche, Dam and Levee Failure, Drought, Earthquake, Flood, Landslide, Severe Weather, Volcanic Activity, Wildfire, Winter Weather	
Project Status	New	If Deleted/No Longer Needed, provide reason.		n/a	
Benefits <i>(Loss Avoided)</i>	High				
Lead Agency / Organization	Kittitas Valley Fire & Rescue	Supporting Agency / Organization <i>(If applicable)</i>	n/a		
Additional Participating Jurisdictions <i>(If applicable)</i>	n/a				
Project Duration	Ongoing	Estimated Cost	Low		
Potential Funding Source	Local Budgeted Funds	If Other, you must identify a funding source.		n/a	
		Please provide further detail on Potential Funding Source.		General Operating Budget (Staff Time)	
Implementation Priority	High	Changes in Priority <i>(If applicable)</i>			



APPENDIX A. HAZARD MAPS

Figure 1	Kittitas Valley Fire & Rescue Planning Area
Figure 2	Liquefaction Susceptibility (Earthquake) <i>Helps assess potential damage from earthquakes in the District.</i>
Figure 3	Special Flood Hazard Area (SFHA) <i>Includes each Flood Zone, and the 500-year floodplain. Flood Insurance Rate Maps (FIRMs) show the flood zones, floodplain boundaries, and Base Floor Elevation (BFE) and are used for floodplain management, flood insurance ratings, and to determine flood insurance requirements. FIRMs show areas with a 1% chance of flooding each year, commonly known as the 100-year floodplains, and are illustrated as the SFHA. The 500-year floodplains show areas with a 0.2% chance of flooding each year.</i>
Figure 4	Cle Elum Dam Inundation Area
Figure 5	Keechelus and Kachees Dam Inundation Area
Figure 6	Wildfire Likelihood Map <i>Wildfire likelihood is the annual probability of wildfire burning in a specific location.</i>
Figure 7	Wildfire Risk to Homes Map <i>Wildfire risk to homes measures the relative consequence of wildfire to residential structures everywhere on the landscape, whether a home actually exists there or not.</i>



Figure 1. Kittitas Valley Fire & Rescue Planning Area

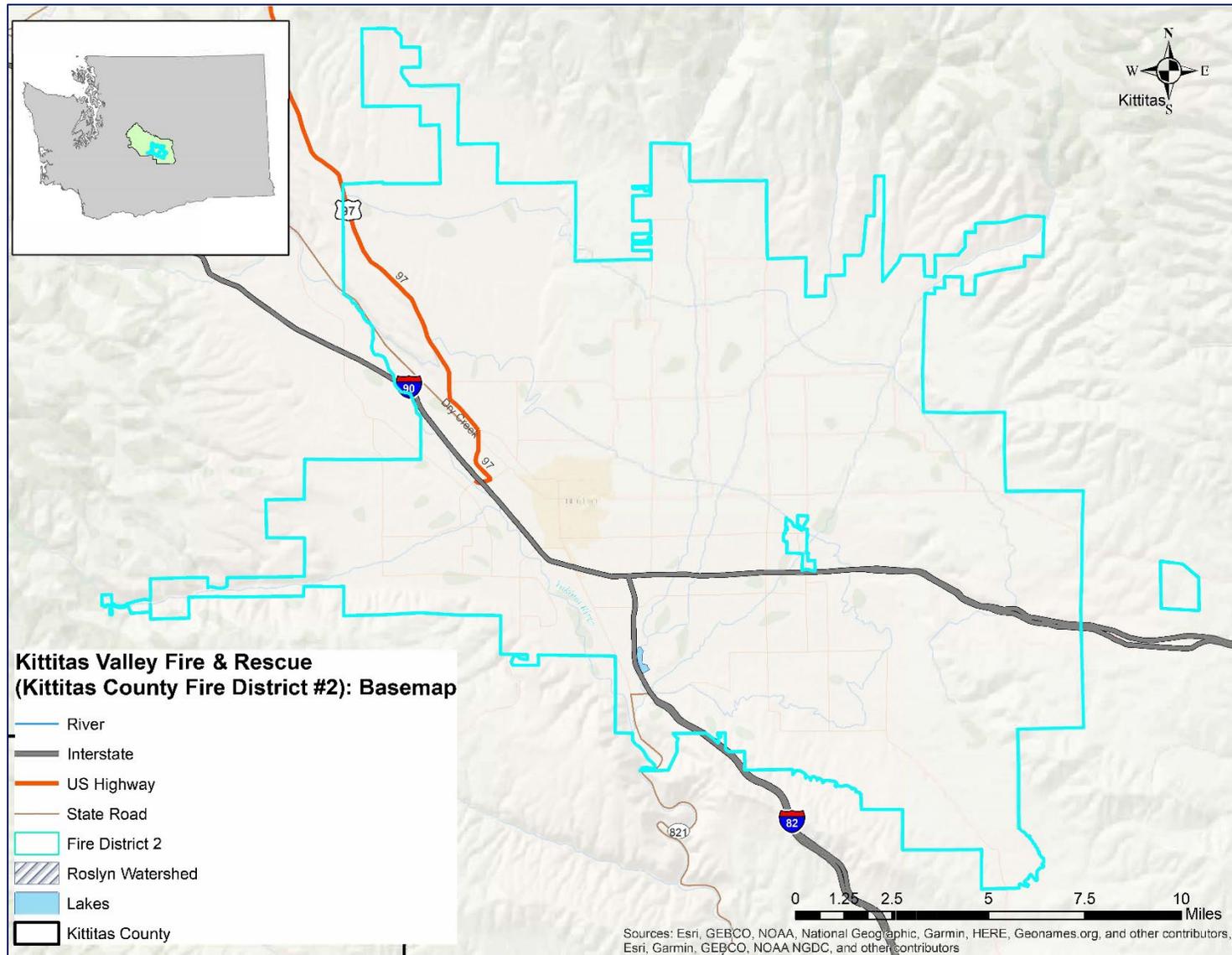




Figure 2. Liquefaction Susceptibility (Earthquake)

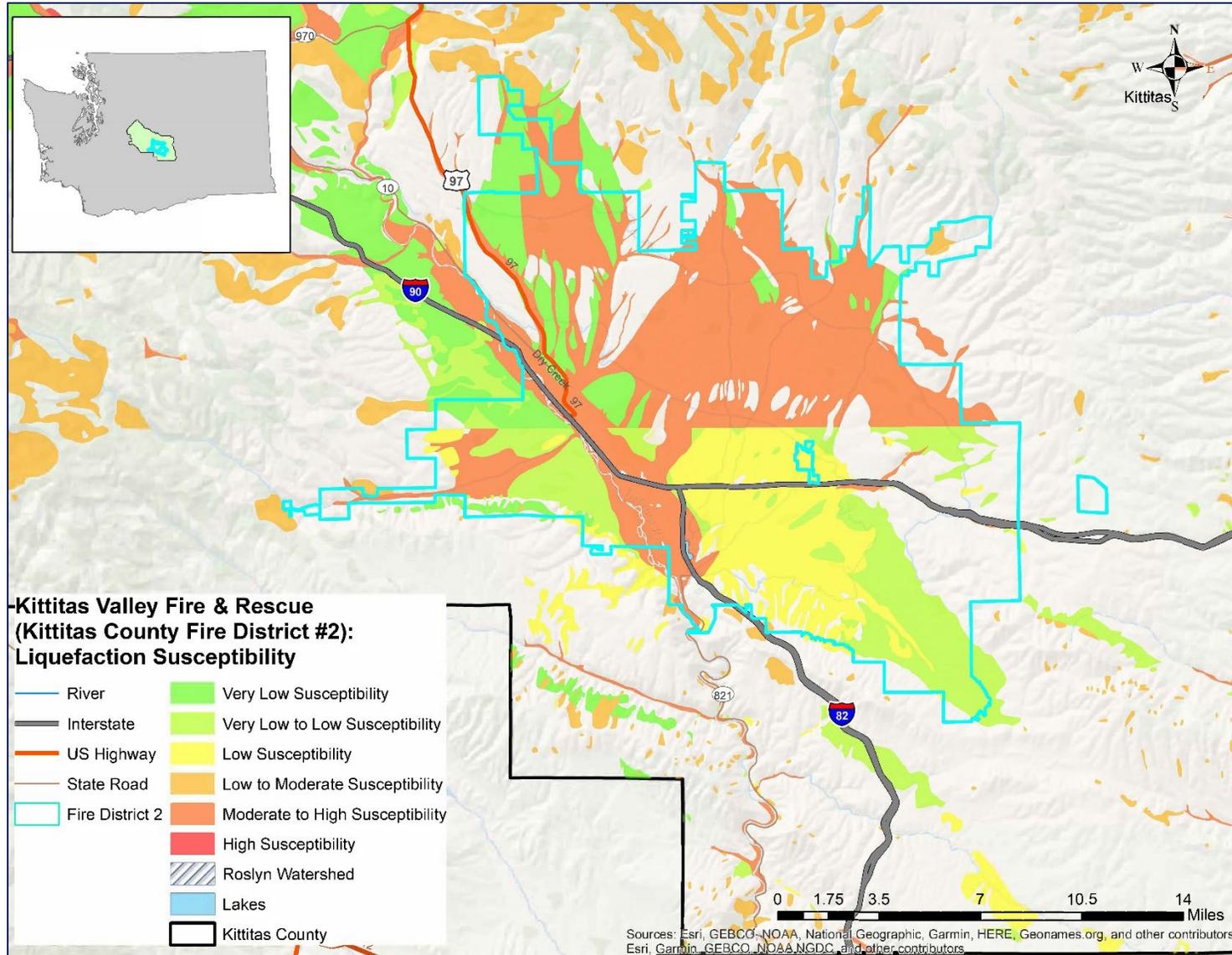




Figure 3. Special Flood Hazard Area

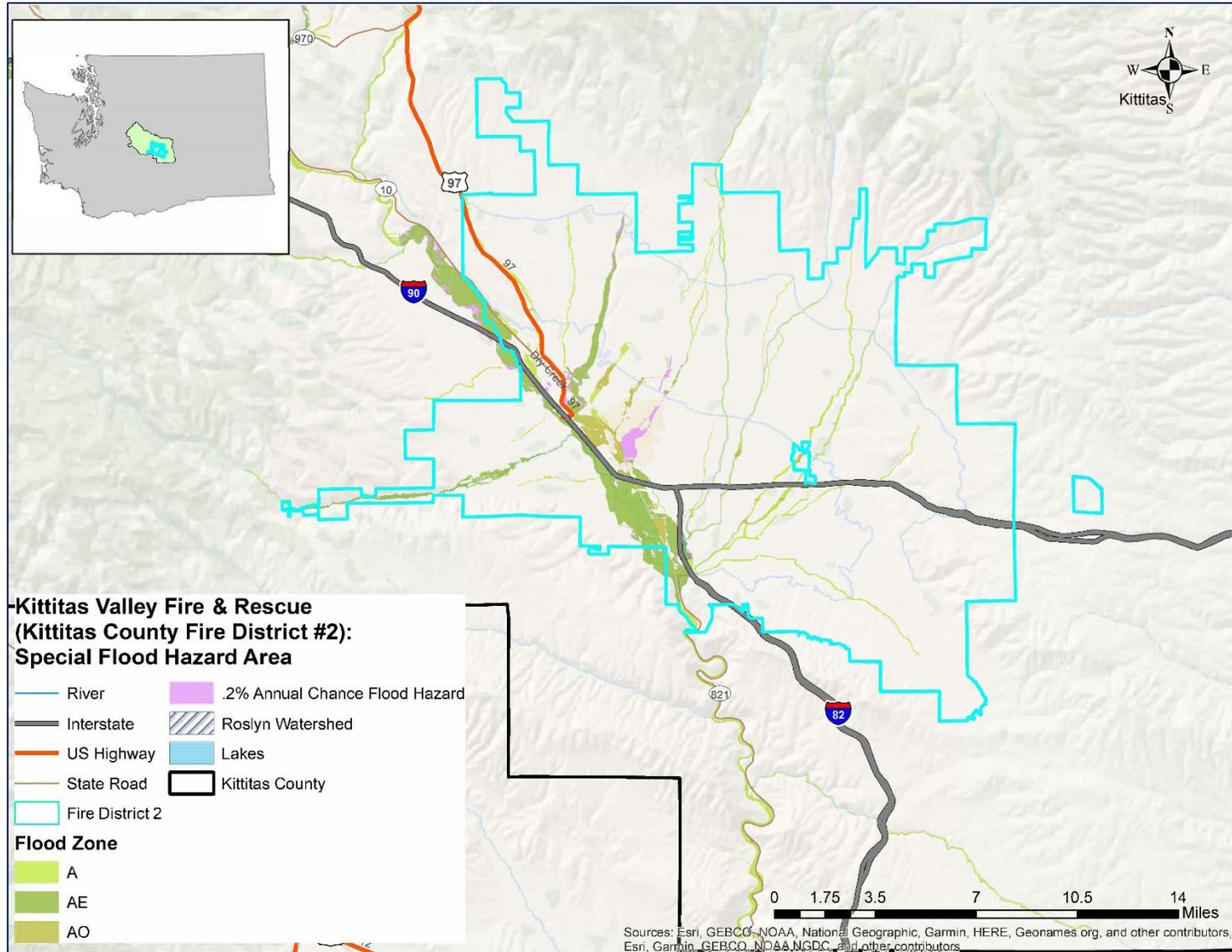




Figure 4. Cle Elum Dam Inundation Area

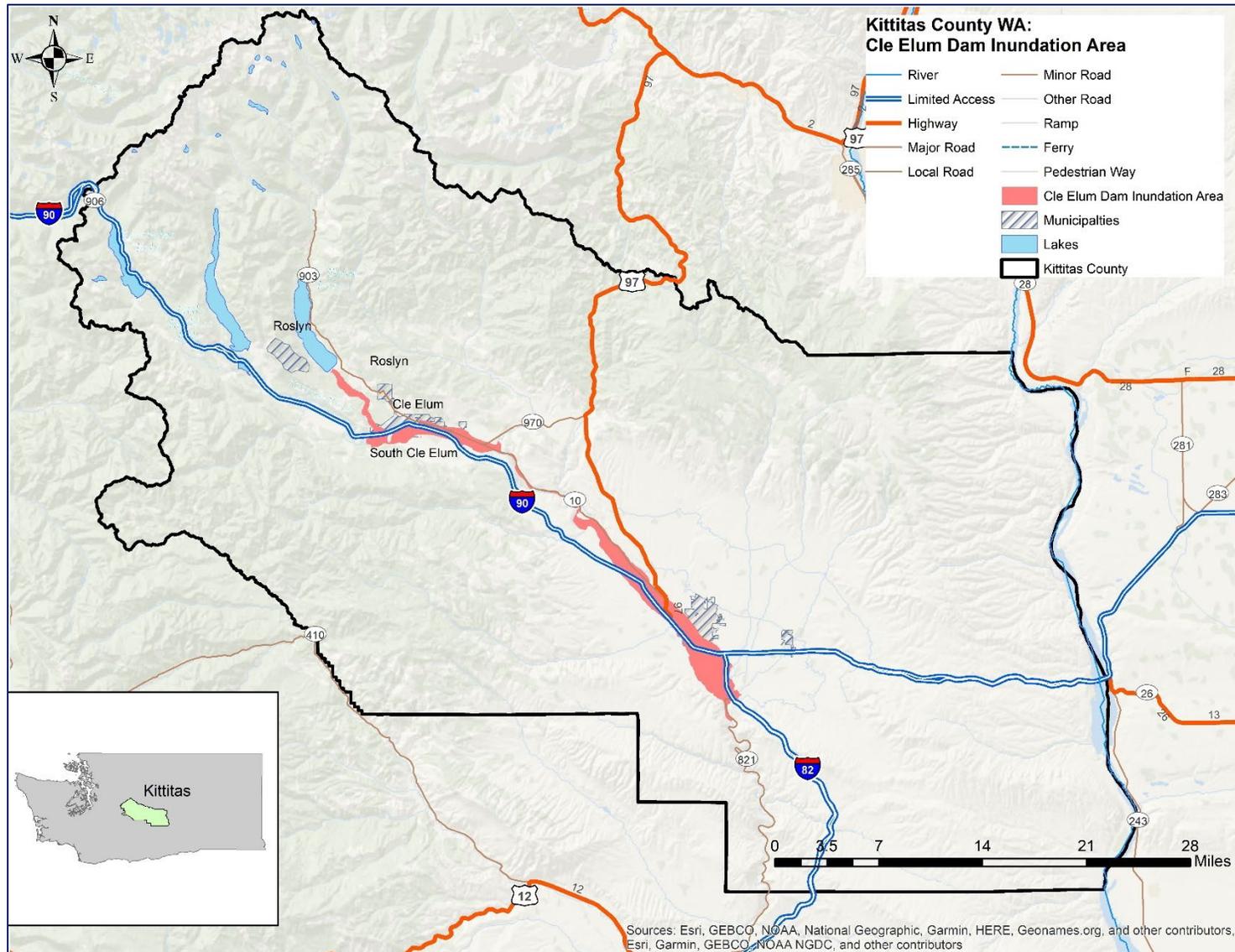




Figure 5. Keechelus and Kachees Dam Inundation Area

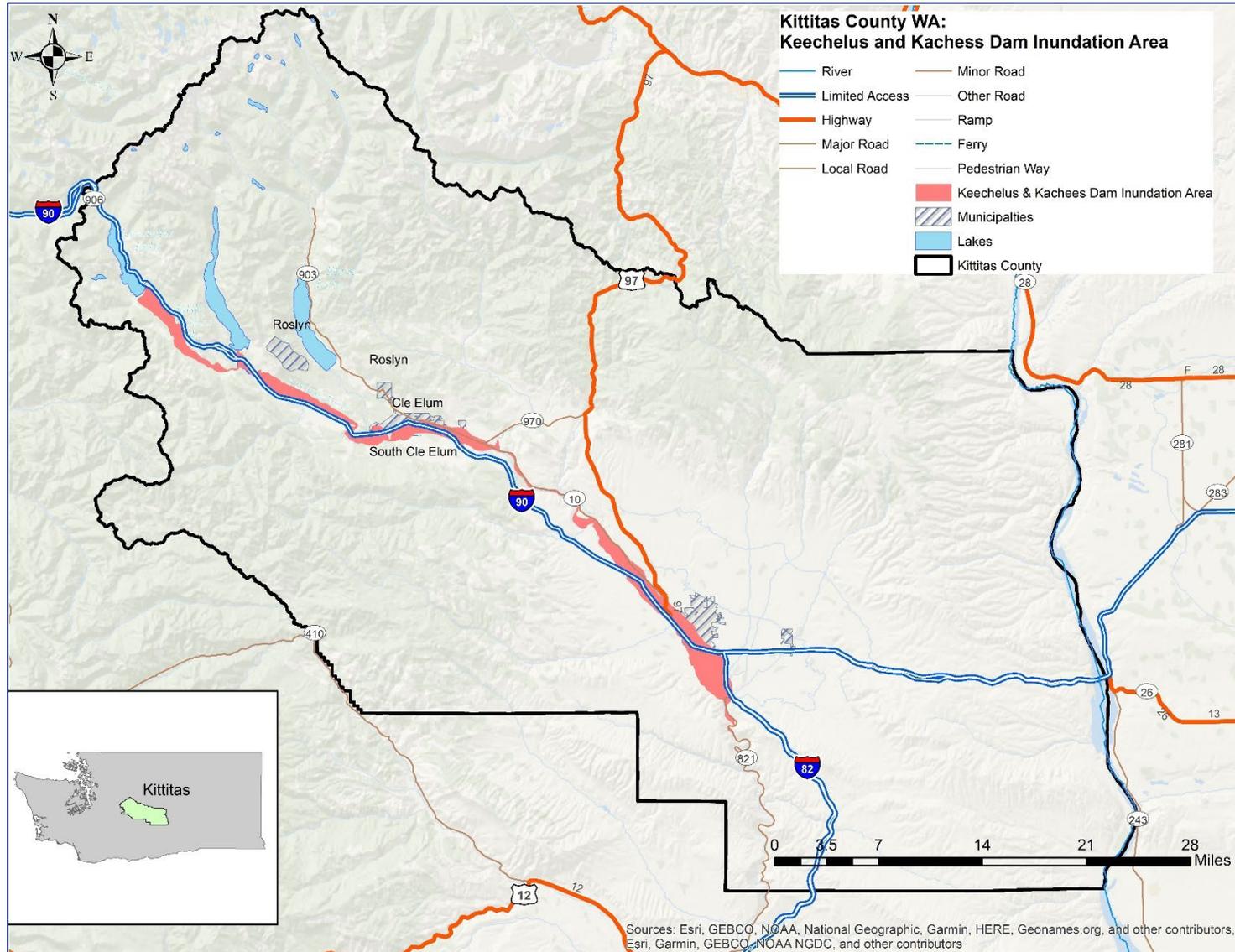




Figure 6. Wildfire Likelihood

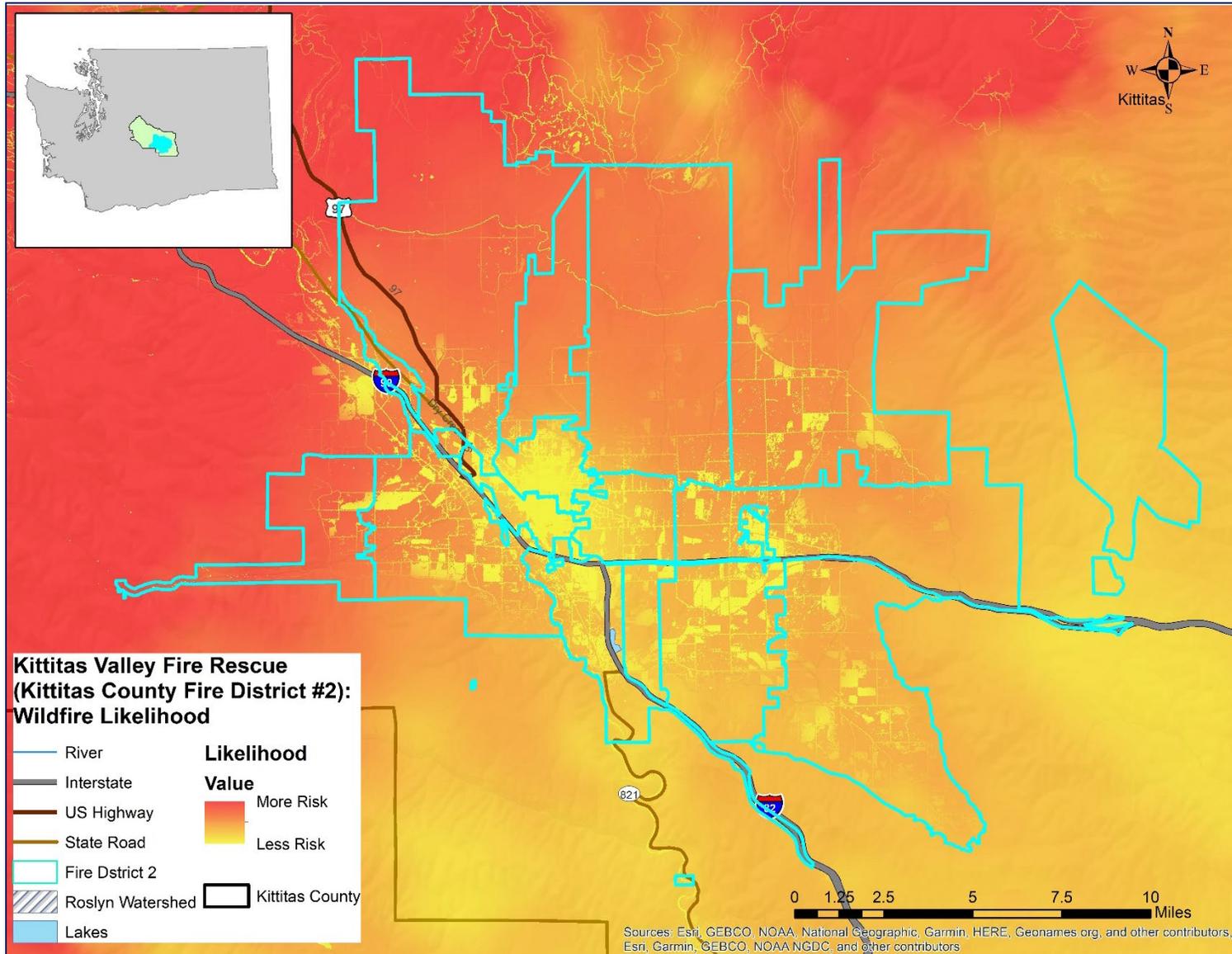
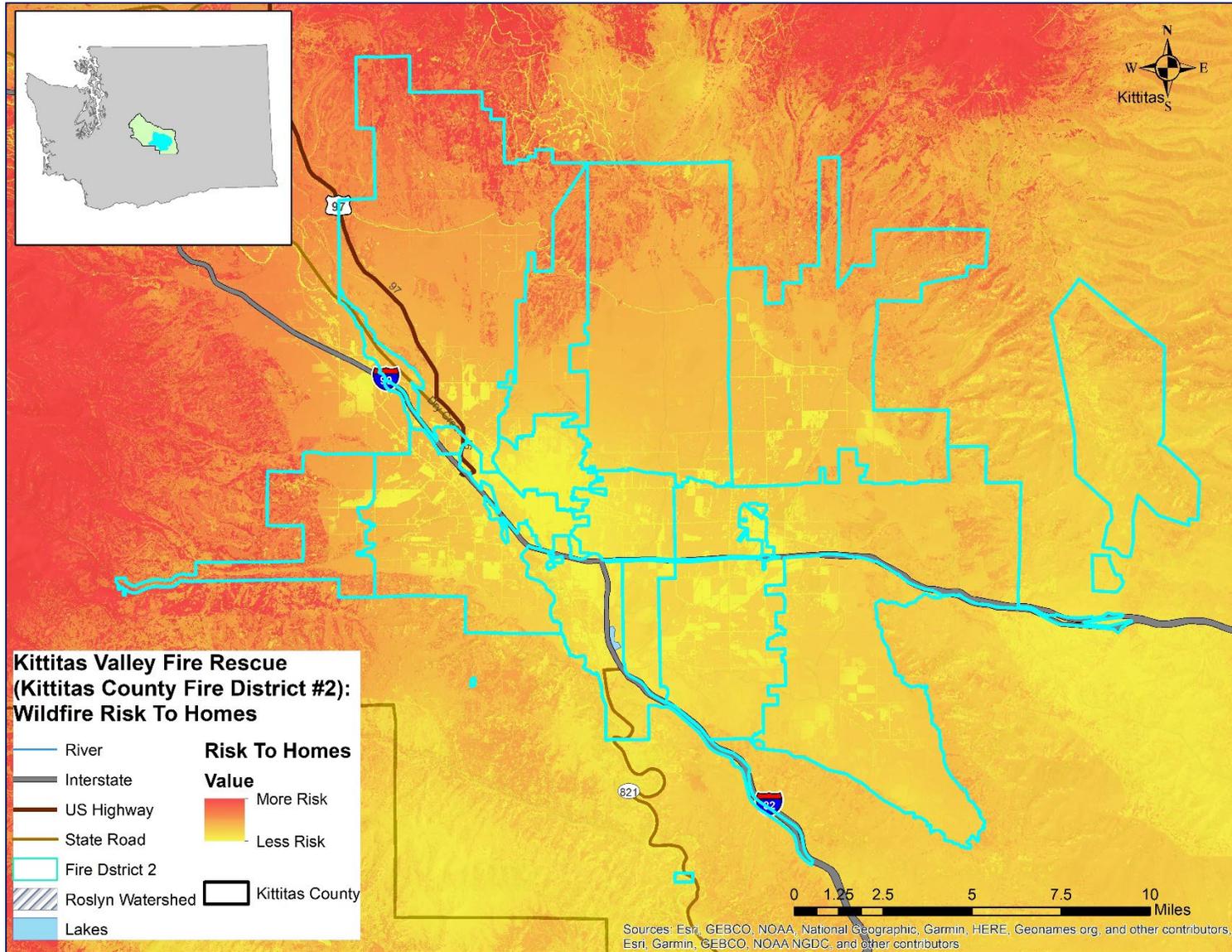




Figure 7. Wildfire Risk to Homes





APPENDIX B. PLAN ADOPTION

[Placeholder for adoption documentation after State and FEMA Approval]