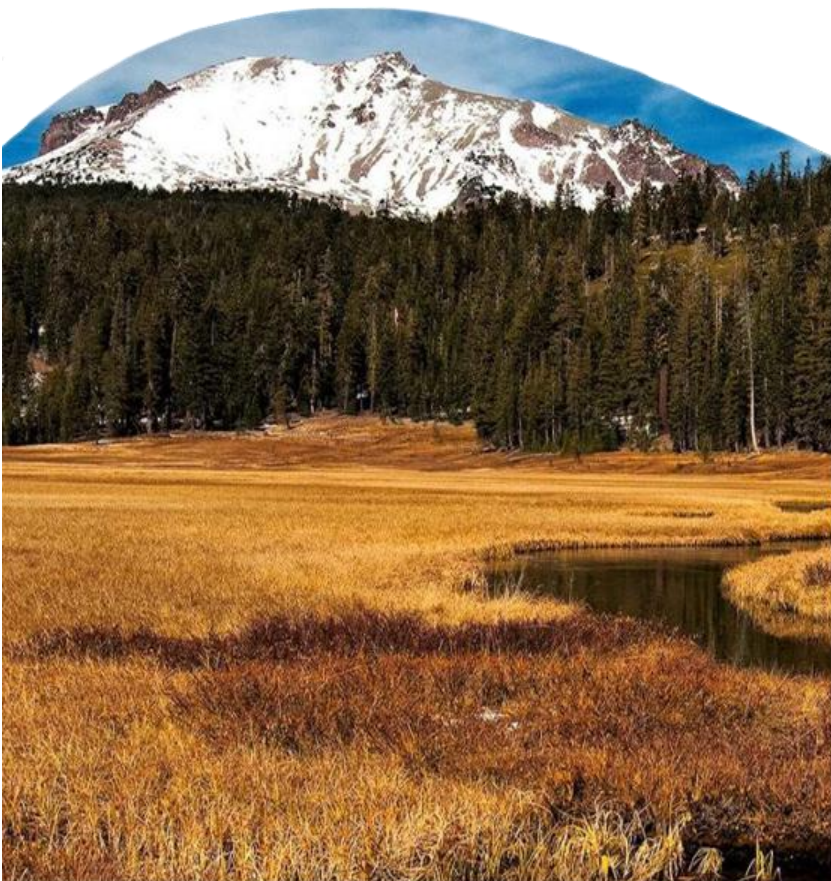


*Plumas County
Multi-Jurisdictional Hazard Mitigation Plan
Public Review Draft – November 2025*





Executive Summary

Plumas County, the City of Portola, and seven special districts prepared this Local Hazard Mitigation Plan (LHMP) Update to the Federal Emergency Management Agency (FEMA) approved single jurisdictional 2020 Plumas County LHMP and the single jurisdictional 2019 City of Portola LHMP. This 2026 Plumas County LHMP is a multi-jurisdictional plan that geographically covers the entire area within Plumas County's jurisdictional boundaries (hereinafter referred to as the Planning Area). It melds the two previous LHMPs from Plumas County and the City of Portola. The following jurisdictions participated in the planning process and are seeking FEMA approval of the LHMP Update:

- Plumas County*
- City of Portola**
- Chester Public Utility District
- Feather River Resource Conservation District
- Gold Mountain Community Services District
- Indian Valley Community Services District
- Plumas Corp/Plumas Fire Safe Council
- Plumas Eureka Community Services District
- South Feather Water and Power Agency

* Participated in 2020 Plumas County LHMP

**Participated in the 2019 City of Portola LHMP

The purpose of this 2026 Plumas County LHMP Update and hazard mitigation planning process is to reduce or eliminate long-term risk to people and property, critical facilities and infrastructure, natural and historic and cultural resources, and other community assets from future hazard events and natural disasters. This LHMP Update demonstrates the participating jurisdictions' commitment to reducing risks from hazards and serves as a tool to help decision makers direct mitigation activities and resources. This LHMP Update was also developed in order for the participating jurisdictions to be eligible for certain federal disaster assistance, specifically, the Federal Emergency Management Agency's (FEMA) Hazard Mitigation Grant Program (HMGP), Building Resilient Infrastructure and Communities (BRIC) program, and the Flood Mitigation Assistance (FMA) program.

Each year in the United States, natural disasters take the lives of hundreds of people and injure thousands more. Nationwide, taxpayers pay billions of dollars annually to help communities, organizations, businesses, and individuals recover from disasters. These monies only partially reflect the true cost of disasters, because additional expenses to insurance companies and nongovernmental organizations are not reimbursed by tax dollars. Many natural disasters are predictable, and much of the damage caused by these events can be alleviated or even eliminated through natural hazard mitigation.

2026 LHMP Update Plan Development Process

Hazard mitigation planning is the process through which hazards that threaten communities are identified, likely impacts determined, mitigation goals set, and appropriate mitigation strategies determined, prioritized, and implemented. This LHMP Update documents the 2026 hazard mitigation planning process

and identifies relevant hazards, community risk and vulnerabilities, and mitigation strategies the participating jurisdictions will use to decrease vulnerability and increase resiliency and sustainability in the Plumas County Planning Area.

This LHMP Update was prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 (Public Law 106-390), the implementing regulations set forth by the Interim Final Rule published in the Federal Register on February 26, 2002, (44 CFR §201.6) and finalized on October 31, 2007, and current FEMA guidance. Plumas County jurisdictions followed a planning process prescribed by FEMA as detailed in Table ES-1.

Table ES-1 Plumas County Local Hazard Mitigation Planning Process

| DMA Process | Modified CRS Process |
|---|---|
| 1) Organize Resources | |
| 201.6(c)(1) | 1) Organize the Planning Effort |
| 201.6(b)(1) | 2) Involve the Public |
| 201.6(b)(2) and (3) | 3) Coordinate with Other Departments and Agencies |
| 2) Assess Risks | |
| 201.6(c)(2)(i) | 4) Identify the Hazards |
| 201.6(c)(2)(ii) | 5) Assess the Risks |
| 3) Develop the Mitigation Plan | |
| 201.6(c)(3)(i) | 6) Set Goals |
| 201.6(c)(3)(ii) | 7) Review Possible Activities |
| 201.6(c)(3)(iii) | 8) Draft an Action Plan |
| 4) Implement the Plan and Monitor Progress | |
| 201.6(c)(5) | 9) Adopt the Plan |
| 201.6(c)(4) | 10) Implement, Evaluate, and Revise the Plan |

The planning process began with the organizational phase to establish the Hazard Mitigation Planning Committee (HMPC); comprised of key Plumas County, City of Portola, jurisdictional representatives, and other local and regional stakeholders; to involve the public; and to coordinate with other departments and agencies. A detailed risk assessment was then conducted followed by the development of a focused mitigation strategy for the Plumas County Planning Area and specific to each participating jurisdiction. Once approved by Cal OES and FEMA, this 2026 Plumas County LHMP Update will be adopted and implemented by the participating jurisdictions over the next five years.

Risk Assessment

A natural hazard risk assessment was conducted that identified and profiled hazards that pose a risk to the Plumas County Planning Area and to each participating jurisdiction, assessed the vulnerability of the Plumas County Planning Area and jurisdictions to these hazards, and examined the existing jurisdictional capabilities to mitigate identified hazards.

The Plumas County Planning Area is vulnerable to numerous hazards that are identified, profiled, and analyzed in this 2026 LHMP Update. Wildfires, floods, earthquakes, drought, dam failure, and other severe weather events are among the hazards that can have a significant impact on the Planning Area. Table ES-2 details the hazards identified for this 2026 LHMP Update.

Table ES-2 Plumas County Planning Area Hazard Identification Assessment

| Hazard | Geographic Extent | Likelihood of Future Occurrences | Magnitude/Severity | Significance | Climate Change Influence |
|--|-------------------|----------------------------------|--------------------|--------------|--------------------------|
| Ag Hazard: Severe Weather/Pests/Weeds | Extensive | Highly Likely | Critical | Medium | Medium |
| Climate Change | Extensive | Likely | Limited | Medium | -- |
| Dam Failure | Extensive | Unlikely | Critical | High | Medium |
| Drought & Water Shortage (w/tree mortality) | Extensive | Likely | Limited | Medium | High |
| Earthquake | Extensive | Unlikely/Occasional | Catastrophic | Medium | Low |
| Flood: 1%/0.2% annual chance (w/levee failure) | Significant | Occasional/Unlikely | Critical | High | Medium |
| Flood: Localized Stormwater | Significant | Highly Likely | Negligible | Medium | Medium |
| Hazardous Materials Transportation | Significant | Occasional | Critical | Medium | Low |
| Landslide, Mudslide, and Debris Flow | Significant | Likely | Negligible | Medium | Medium |
| Severe Weather: Extreme Cold, Freeze, and Snow (w/avalanche) | Extensive | Highly Likely | Negligible | Medium | Medium |
| Severe Weather: Extreme Heat | Extensive | Highly Likely | Negligible | Medium | High |
| Severe Weather: Heavy Rains and Storms | Extensive | Highly Likely | Limited | Medium | Medium |
| Severe Weather: High Winds and Tornadoes | Extensive | Highly Likely | Limited | Medium | Low |
| Volcano | Extensive | Unlikely | Critical | Low | Low |
| Wildfire (w/smoke and air quality) | Extensive | Highly Likely | Catastrophic | High | Medium |
| <p>Geographic Extent <i>Limited:</i> Less than 10% of planning area <i>Significant:</i> 10-50% of planning area <i>Extensive:</i> 50-100% of planning area</p> <p>Likelihood of Future Occurrences <i>Highly Likely:</i> Near 100% chance of occurrence in next year, or happens every year. <i>Likely:</i> Between 10 and 100% chance of occurrence in next year, or has a recurrence interval of 10 years or less. <i>Occasional:</i> Between 1 and 10% chance of occurrence in the next year, or has a recurrence interval of 11 to 100 years. <i>Unlikely:</i> Less than 1% chance of occurrence in next 100 years, or has a recurrence interval of greater than every 100 years.</p> <p>Magnitude/Severity <i>Catastrophic:</i> More than 50 percent of property severely damaged; shutdown of facilities for more than 30 days; and/or multiple deaths <i>Critical:</i> 25-50 percent of property severely damaged; shutdown of facilities for at least two weeks; and/or injuries and/or illnesses result in permanent disability <i>Limited:</i> 10-25 percent of property severely damaged; shutdown of facilities for more than a week; and/or injuries/illnesses treatable do not result in permanent disability <i>Negligible:</i> Less than 10 percent of property severely damaged, shutdown of facilities and services for less than 24 hours; and/or injuries/illnesses treatable with first aid</p> <p>Significance <i>Low:</i> Minimal potential impact <i>Medium:</i> Moderate potential impact <i>High:</i> Widespread potential impact</p> <p>Climate Change Influence <i>Low:</i> Minimal potential impact <i>Medium:</i> Moderate potential impact <i>High:</i> Widespread potential impact</p> | | | | | |

Mitigation Strategy

Plumas County and the City of Portola successfully implemented numerous mitigation actions identified in the 2020/2019 LHMPs' mitigation strategies, thus working diligently towards meeting their 2020/2019 Plumas County and City of Portola goals and objectives, as follows:

2020 Plumas County Goals

Goal #1: Minimize loss of life and injuries and protect property and the environment from natural hazards

- Minimize loss from priority natural hazards to include wildfire, flood, earthquake, dam failure, drought, landslides, and severe weather hazards
- Minimize impact to existing and future development
- Minimize economic and natural resource impact
- Promote resiliency strategies
- Support mitigation planning and implementation in all County departments and operations

Goal #2: Reduce losses and provide protection for critical facilities, infrastructure, and services from hazard impacts

- Implement critical facility upgrades and mitigation measures to ensure reliability of services
- Update and maintain a GIS database of critical facilities to include: Essential Services, At-Risk Populations, Hazardous Materials Facilities

Goal #3: Minimize the loss of agricultural and natural resource productivity (foundation of rural economy) from natural hazards

- Support education and training of private land managers on hazard mitigation and disaster preparedness
- Promote local research, education, and technical assistance on sustainable agriculture and forestry practices
- Foster agricultural and natural resource resilience to natural hazards through implementation of best management practices and restoration activities
- Provide training, technical assistance, outreach and education to private landowners on tree mortality, identification, management, and prevention strategies

Goal #4: Increase community awareness, education, preparedness, and self-reliance to natural hazards

- Enhance public and stakeholder outreach, education, and preparedness programs to include all hazards of concern
- Increase public and stakeholder knowledge about the risk and vulnerability to identified hazards and how to be more self-reliant in mitigating risks from natural hazards
- Provide public and stakeholder education and outreach specific to evacuation routes, various available emergency communication modes, and roles and responsibilities

Goal #5: Increase communities' ability to mitigate hazards and be prepared for, respond to, and recover from a disaster event in Plumas County

- Improve community capabilities to mitigate hazards and reduce losses
- Enhance community capabilities by improved coordination of local, state, and federal resources
- Increase capabilities to provide mitigation opportunities and assistance to Plumas County communities
- Increase the capacity to effectively respond to and recover from natural disaster events
- Enhance emergency communication capabilities (e.g., cell phones, radios, sirens, reverse 911, multi-media, etc.)
- Increase capabilities for continuity of government
- Improve community's ability to be competitive/successful with grant funding opportunities from application development to project delivery

Goal #6: Minimize life safety issues, property loss, environmental damages, and economic impacts associated with wildfires, the #1 natural hazard of concern in Plumas County

- Reduce the wildfire risk and vulnerability
- Update, maintain, and implement Community Wildfire Protection Plans
- Develop a Countywide fuels management implementation strategy
- Coordinate comprehensive fire protection strategies among all federal, state, and local agencies and across all property boundaries to implement a fire-adapted community concept approach at broader county-wide geographic and policy scales
- Increase community education, outreach, and awareness of wildfire mitigation strategies, including those to be undertaken by private property owners
- Continue to seek establishment of Firewise USA sites (communities)
- Promote and develop a tree mortality action plan for monitoring, prevention and mitigation activities
- Promote and enhance fire-fighting capabilities (e.g., access roads, water supply, etc.)
- Improve community infrastructure for wildfire preparedness and response including locating safety zones, augmenting community water supplies, and reducing fire hazard along transportation and power infrastructure
- Enhance the county wildfire hazard codes, including enforcement capabilities, within areas of high wildfire risk
- Continue land use planning efforts to ensure increased fire safety in new developments
- Develop and implement outreach, education, and technical assistance to encourage "home hardening" and retrofitting of older residences and structures to increase community resilience to wildfire

Goal #7: Minimize the effects of climate change on natural hazards in Plumas County

- Develop a Climate Action Plan for Plumas County
- Consider and integrate climate change information and issues in future General Plan updates

City of Portola 2019 Goals

- Increase public awareness of potential natural hazards and self-reliant mitigation actions.
- Reduce risk of loss of life/injuries due to natural hazards
- Reduce risk of loss to property, both public and private
- Maintain and increase funding for natural disaster preparedness, planning and response

Based on the risk assessment review and goal setting process, the HMPC identified mitigation actions (Table ES-3), which provide direction for reducing future hazard-related losses within the Plumas County Planning Area and specific to each participating jurisdiction.

THIS TABLE IS FROM CHAPTER 5 – ANY UPDATES WILL BE PLACED IN THAT TABLE AND BROUGHT BACK HERE.

Table ES-3 Plumas County Planning Area Mitigation Actions

| Action Title | New Action/ Previous Action | Address Current Development | Address Future Development | Continued NFIP Compliance | Mitigation Type |
|--|-----------------------------------|-----------------------------------|----------------------------------|---------------------------------|--|
| Plumas County | | | | | |
| Multi-Hazard Actions | | | | | |
| Action 1. Enhance Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness | Previous Action | X | X | | Prevention Public Education |
| Action 2. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan | Previous Action | X | X | | Prevention |
| Action 3. Back Up Power Redundancy Project – Resilient and Continued Outpatient Medical Services at Lake Almanor Clinic, and Continued Operation of a Cooling/Warming Station for the General Public during Electrical Power Disruptions as Needed. | New Action | X | X | | Property Protection Emergency Services |
| Action 4. Resilient Community Systems Initiative | New Action | X | X | X | Prevention Property Protection Structural Projects Natural Resource Protection Emergency Services Public Information |
| Action 5. Designation of Minor County Roads and Forest Service Roads to be used as Alternate Routes around Road Closures during Wildfire and other Hazard Events. Plumas and Lassen National Forests have Funding for new Road Connections to Form Alternate Routes. | New Action | X | X | | Property Protection Emergency Services |
| Action 6. Continue Bridge Replacement Program using Federal Funding Source for Evacuation and Emergency Services Access. | Previous Action | X | X | X | Property Protection Structural Projects Emergency Services |
| Agricultural Hazard Actions | | | | | |
| Action 7. NEED | | | | | |
| Climate Change Actions | | | | | |
| Action 8. NEED | | | | | |
| Dam Failure Actions | | | | | |
| Action 9. NEED | | | | | |
| Drought and Water Shortage Actions | | | | | |
| Action 10. NEED DIRECT DROUGHT ACTION | | | | | |

| Action Title | New Action/ Previous Action | Address Current Development | Address Future Development | Continued NFIP Compliance | Mitigation Type |
|--|-----------------------------------|-----------------------------------|----------------------------------|---------------------------------|---|
| Earthquake Actions | | | | | |
| Action 11. NEED | | | | | |
| Floods: 1%/0.2% Annual Chance, Floods: Localized Flooding, Landslide, Mudslide and Debris Flow, Severe Weather Heavy Rains and Storms Actions | | | | | |
| Action 12. Evaluate and implement Wolf Creek Channel Stabilization Projects through Greenville and Indian Valley Areas | Previous Action | X | X | X | Property Protection Natural Resource Protection |
| Action 13. Identify and Implement Bank Stabilization Projects. | Previous Action | X | X | X | Property Protection Natural Resource Protection |
| Action 14. Develop a Countywide Drainage Master Plan | Previous Action | X | X | X | Property Protection Structural Projects Natural Resource Protection |
| Action 15. FEMA Mapping Update | Previous Action | X | X | X | Prevention |
| Action 16. Evaluate Options to Repair and Maintain Levee Crown for Emergency Access Vehicles (Gates, Crown Repair, Vegetation Maintenance, etc.) | Previous Action | X | X | X | Property Protection Structural Projects Natural Resource Protection |
| Action 17. County Wide Stormwater Drainage and Grading Ordinance. | Previous Action | X | X | X | Prevention Property Protection Structural Projects Natural Resource Protection |
| Action 18. Ongoing Implementation of Stream Clearing and Culvert Maintenance Programs | Previous Action | X | X | X | Prevention Property Protection Natural Resource Protection |
| Hazardous Materials Transportation Actions | | | | | |
| Action 19. NEED | | | | | |
| Landslide Actions | | | | | |
| Action 20. Identify and Implement Projects to Address Areas of Landslides Affecting Roadway and Railroad | Previous Action | X | X | | Property Protection Structural Projects Natural Resource Protection |
| Severe Weather: Extreme Cold, Freeze, and Snow (w/avalanche) Cold Actions | | | | | |
| Action 21. NEED | | | | | |
| Wildfire, Drought, Severe Weather: Extreme Heat, Severe Weather: High Winds and Tornadoes Actions | | | | | |
| Action 22. Promote and Implement Compliant Street/Address Reflective Signage for Public and Private Roads and Structures | Previous Action | X | X | | Property Protection Structural Projects Emergency Services |

| Action Title | New Action/ Previous Action | Address Current Development | Address Future Development | Continued NFIP Compliance | Mitigation Type |
|---|-----------------------------------|-----------------------------------|----------------------------------|---------------------------------|---|
| Action 23. Ingress/Egress Road Projects to Widen and Improve Roads for Evacuation and Emergency Services Access | Previous Action | X | X | | Property Protection Structural Projects Emergency Services |
| City of Portola | | | | | |
| Action 1. Public Education on Hazards in the City of Portola | Previous Action | X | X | | Public Education |
| Action 2. Essential Facilities Retrofit and Redundant Power Sources | Previous Action | X | X | X | Property Protection Structural Projects Emergency Services |
| Action 3. Wildfire Risk and Impact Reduction | Previous Action | X | X | | Prevention Property Protection Natural Resource Protection Public Information |
| Action 4. Gulling Street Bridge Structural Rehabilitation | New Action | X | X | X | Structural Project Emergency Services |
| Action 5. Fire Suppression Enhancements | New Action | X | X | | Property Protection Natural Resource Protection Emergency Services |
| Chester Public Utility District | | | | | |
| Action 1. Asbestos Water Line Natural Disaster Hazard | New Action | X | X | | Property Protection Structural Projects |
| Action 2. Backup Power | New Action | X | X | | Property Protection Emergency Services |
| Action 3. Public Outreach Program | New Action | X | X | | Public Information |
| Action 4. Tree and Brush Removal | New Action | X | X | | Property Protection Natural Resource Protection |
| Action 5. Wastewater Infrastructure | New Action | X | X | | Property Protection Structural Projects Natural Resource Protection |
| Action 6. Wireless Radio Meters | New Action | X | X | | Emergency Services Property Protection |
| Feather River Resource Conservation District* | | | | | |
| Action 1. Ecological Restoration | New Action | X | X | | Natural Resource Protection |
| Action 2. Plumas Public Emergency Outreach Program | New Action | X | X | | Public Information |
| Action 3. Fuels and Vegetation Management | New Action | X | X | | Property Protection Natural Resource Protection |

| Action Title | New Action/ Previous Action | Address Current Development | Address Future Development | Continued NFIP Compliance | Mitigation Type |
|---|-----------------------------------|-----------------------------------|----------------------------------|---------------------------------|--|
| Action 4. Plumas Backup Generator and Air Purifier Loan Program | New Action | X | X | | Property Protection Emergency Services |
| Action 5. Tree Mortality Tracking and Removal | New Action | X | X | | Property Protection Natural Resource Protection |
| Gold Mountain Community Services District | | | | | |
| Action 1. Drought Impact on CSD Service | New Action | X | X | | Property Protection Structural Project Natural Resource Protection |
| Action 2. Flood/Landslide/High Wind Mitigation | New Action | X | X | X | Property Protection Structural Project Natural Resource Protection |
| Action 3. Fire Prevention Hazard and Impact on CSD Services | New Action | X | X | | Property Protection Natural Resource Protection |
| Action 4. ADDITIONAL ACTIONS | | | | | |
| Indian Valley Community Services District | | | | | |
| Action 1. Public Outreach Project | New Action | X | X | | Public Information |
| Action 2. Dam Failure Mitigation and/or Replacement | New Action | X | X | X | Property Protection Structural Projects Natural Resource Protection |
| Action 3. IVCSD Secondary Water Source Project and Storage | New Action | X | X | | Property Protection Structural Projects Natural Resource Protection |
| Action 4. Earthquake Mitigation | New Action | X | X | | Property Protection Structural Projects |
| Action 5. Landslide, Mudslide, and Debris Flow Mitigation | New Action | X | X | | Property Protection Structural Projects |
| Action 6. Severe Weather Mitigation | New Action | X | X | X | Property Protection Natural Resource Protection |
| Action 7. Wildfire Mitigation | New Action | X | X | | Prevention Property Protection Natural Resource Protection |

| Action Title | New Action/ Previous Action | Address Current Development | Address Future Development | Continued NFIP Compliance | Mitigation Type |
|--|-----------------------------------|-----------------------------------|----------------------------------|---------------------------------|--|
| Plumas Corp/Plumas County Fire Safe Council* | | | | | |
| Action 1. Update the Plumas County Communities Wildfire Protection Plan | New Action | X | X | | Prevention Property Protection Structural Projects Natural Resource Protection |
| Action 2. Firewise Program Promotion and Public Education | Previous Action | X | X | | Prevention Public Education |
| Action 3. WUI Map Project: Implementation of Fire Hazard Severity Zone, Insurance Rating, and Other Classification Systems for Wildfire Risk Management and Identification of Wildland Urban Interface Areas | New Action | X | X | | Prevention |
| Action 4. | | | | | |
| Action 5. Biomass Management and Utilization Program | New Action | X | X | | Property Protection Natural Resource Protection |
| Action 6. Community Encompassing Firelines and Shaded Fuel Breaks | New Action | X | X | | Property Protection Natural Resource Protection |
| Action 7. Continue and Promote Defensible Space (PRC 4291) Projects including Assistance Efforts for Senior and Disabled Residents. | New Action | X | X | | Property Protection Natural Resource Protection Public Information |
| Action 8. Improve Local Plumas County Fire Department Capacity and Response Capabilities | New Action | X | X | | Emergency Services Property Protection Natural Resource Protection |
| Action 9. Countywide Green Waste Disposal and Utilization Program | New Action | X | X | | Property Protection Natural Resource Protection |
| Action 10. Hazardous Fuels Reduction – Implementation, Monitoring, and Maintenance | New Action | X | X | | Property Protection Natural Resource Protection |
| Action 11. Develop a Program to Promote and/or Incentivize Home Hardening Retrofitting including: Roofs, Vents, Siding, Windows, etc. | New Action | X | X | | Property Protection Natural Resource Protection Public Information |
| Action 12. Last Chance Creek Watershed Floodplain Restoration Project | New Action | X | X | X | Property Protection Natural Resource Protection |
| Action 13. Mountain Meadows Watershed Floodplain Restoration Project | New Action | X | X | X | Property Protection Natural Resource Protection |

| Action Title | New Action/ Previous Action | Address Current Development | Address Future Development | Continued NFIP Compliance | Mitigation Type |
|---|-----------------------------------|-----------------------------------|----------------------------------|---------------------------------|--|
| Action 14. Upper Feather River Watershed Post-Fire Water Quality Monitoring Project | New Action | X | X | X | Property Protection Natural Resource Protection |
| Action 15. Red Clover Creek Watershed Floodplain Restoration Project | New Action | X | X | X | Property Protection Natural Resource Protection |
| Action 16. Tree Mortality Action Plan – Monitoring, Prevention, and Mitigation | New Action | X | X | | Property Protection Natural Resource Protection |
| Action 17. Tributaries Forest Recovery Project | New Action | X | X | X | Property Protection Natural Resource Protection |
| Plumas Eureka Community Services District | | | | | |
| Action 18. Establishment of Evacuation Routes and Resident Notification System | New Action | X | X | | Emergency Services |
| Action 19. Flood Risk Reduction for Wastewater Treatment Plant 6 (WWTP6) | New Action | X | X | X | Property Protection Structural Projects Natural Resource Protection |
| Action 20. Recycled Water Use | New Action | X | X | | Property Protection Natural Resource Protection |
| Action 21. Water Storage Tank Retrofit or Replacement | New Action | X | X | | Property Protection Structural Projects Natural Resource Protection |
| South Feather Water and Power Agency | | | | | |
| Action 1. Little Grass Valley Dam Spillway Northern Slope Stabilization and Rockfall Protection Project | New Action | X | X | | Property Protection Structural Projects Natural Resource Protection |



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Annex C: Feather River Resource Conservation District

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Annex E: Indian Valley Community Services District

Annex F: Plumas Corp/Plumas Fire Safe Council

Annex G: Plumas Eureka Community Services District

Annex H: South Feather Water and Power

Appendices

Appendix A: Planning Process

Appendix B: References

Appendix C: Mitigation Strategy

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Appendix E: Threatened and Endangered Species

Appendix F: Plumas County Historic Buildings and Places

Appendix G: Critical Facilities

Appendix H: FEMA National Risk Index

Appendix I: Hazus Reports

Abbreviations and Acronyms **TO BE FINALIZED**

| Acronym | Definition |
|---------|--|
| AB | Assembly Bill |
| AF | Acre-feet |
| ALERT | Automated Local Evaluation in Real Time |
| APG | California Adaptation Planning Guide |
| AQI | Air Quality Index |
| ASTDR | Agency for Toxic Substances and Disease Registry's |
| BAM | Best Available Map |
| BCA | Benefit Cost Analysis |
| BCEGS | Building Code Effectiveness Grading Schedule |
| BFE | Base Flood Elevation |
| BLM | Bureau of Land Management |
| BRIC | Building Resilient Infrastructure and Communities |
| CA-DWR | California Department of Water Resources |
| CAISO | California Independent System Operator |
| Cal EPA | Environmental Protection Agency |
| Cal OES | California Office of Emergency Services |
| CAP | Climate Adaptation Plan |
| CAS | Climate Adaptation Strategy |
| CAV | Community Assistance Visit |
| CBC | California Building Code |
| CCHPR | Climate Change and Health Profile Report |
| CCSM | Community Climate System Model |
| CDAA | California Disaster Assistance Act |
| CDBG | Community Development Block Grant |
| CDC | Center for Disease Control |
| CDFW | California Department of Fish and Wildlife |
| CEMP | Comprehensive Emergency Management Program |
| CEQA | California Environmental Quality Act |
| CERT | Community Emergency Response Team |
| CFR | Code of Federal Regulations |
| CGS | California Geological Survey |
| CIP | Capital Improvements Plan |
| CLOMR | Conditional Letter of Map Revision |
| CNPS | California Native Plant Society |
| CNRA | California Natural Resource Agency |
| COG | Continuity of Government |
| COO | Continuity of Operations |

| Acronym | Definition |
|---------|--|
| CPUC | California Public Utilities Commission |
| CRS | (National Flood Insurance Program's) Community Rating System |
| CRV | Contents Replacement Value |
| CVP | Central Valley Project |
| CWPP | Community Wildfire Protection Plan |
| DAC | Disadvantaged Community |
| DFIRM | Digital Flood Insurance Rate Map |
| DMA | Disaster Mitigation Act of 2000 |
| DOF | Department of Finance |
| DSOD | Division of Safety of Dams |
| EF | Enhanced Fujita |
| EOC | Emergency Operations Center |
| EPSS | Enhanced Powerline Safety Settings |
| ESPM | University of California, Berkeley's Department of Environmental Science, Policy, and Management |
| ETSU | Enhanced Treatment and Site Upgrade |
| F | Fujita |
| FEMA | Federal Emergency Management Agency |
| FHSZ | Fire Hazard Severity Zone |
| FIRM | Flood Insurance Rate Map |
| FIS | Flood Insurance Study |
| FMA | Flood Mitigation Assistance Program |
| FPA | Floodplain Administrator |
| FRA | Federal Responsibility Area |
| FRAP | Fire and Resource Assessment Program |
| FWS | US Fish and Wildlife Service |
| GFDL | Geophysical Fluid Dynamics Laboratory |
| GHG | Greenhouse Gases |
| GIS | Geographic Information Systems |
| GPH | Gallons per Hour |
| GRASP | Geospatial Research, Analysis & Services Program |
| HHPD | High Hazard Potential Dam |
| HI | Heat Index |
| HMGP | Hazard Mitigation Grant Program |
| HMPC | Hazard Mitigation Planning Committee |
| ICS | Incident Command System |
| IPCC | Intergovernmental Panel on Climate Change |
| IRWM | Integrated Regional Water Management |
| LHMP | Local Hazard Mitigation Plan |
| LOMA | Letter of Map Amendment |

| Acronym | Definition |
|---------|---|
| LOMC | Letters of Map Change |
| LOMR | Letter of Map Revision |
| LRA | Local Responsibility Area |
| MHI | Median Household Income |
| MMI | Modified Mercalli Intensity Scale |
| MSL | Mean Sea Level |
| MW | Megawatt |
| NASA | National Aerospace and Science Agency |
| NAVD | North American Vertical Datum |
| NCDC | National Climactic Data Center |
| NDMC | National Drought Mitigation Center |
| NEHRP | National Earthquake Hazards Reduction Program |
| NEPA | National Environmental Policy Act |
| NFIP | National Flood Insurance Program |
| NGVD | National Geodetic Vertical Datum |
| NIDIS | National Integrated Drought Information System |
| NOAA | National Oceanic and Atmospheric Administration |
| NPS | National Park Service |
| NWS | National Weather Service |
| OHP | Office of Historic Preservation |
| PDM | Pre-Disaster Mitigation Program |
| PIT | Point-in-time Homeless Count |
| PM | Particulate Matter |
| PNAS | Proceedings of the National Academy of Sciences |
| PSPS | Public Safety Power Shutoff |
| RCP | Representative Concentration Pathway |
| RHNA | Regional Housing Need Allocation |
| SAC-SJ | Sacramento-San Joaquin Valley |
| SB | Senate Bill |
| SBA | Small Business Administration |
| SEMS | Standard Emergency Management System |
| SFHA | Special Flood Hazard Area |
| SGMA | Sustainable Groundwater Management Act |
| SHBC | State Historical Building Code |
| SRA | State Responsibility Area |
| SVI | Social Vulnerability Index |
| SWP | State Water Project |
| UAV | Unmanned Aerial Vehicle |
| UBC | Uniform Building Code |

| Acronym | Definition |
|---------|---|
| UCERF | Uniform California Earthquake Rupture Forecast |
| UFMP | Urban Forest Management Plan |
| UHF | Ultra High Frequency |
| UNFCCC | United Nations Framework Convention on Climate Change |
| UPRR | Union Pacific Railroad |
| URM | Unreinforced Masonry |
| USACE | US Army Corp of Engineers |
| USDA | United States Department of Agriculture |
| USGS | United States Geologic Survey |
| UWMP | Urban Water Management Plan |
| VHFHSZ | Very High Fire Hazard Severity Zone |
| WCD | Water Control District |
| WRCC | Western Regional Climate Center |
| WSOC | Wildfire Safety Operations Center |
| WUI | Wildland Urban Interface |
| WWTP | Wastewater Treatment Plant |



Chapter 1 Introduction

1.1 Purpose






Plumas County, the City of Portola, and seven special districts prepared this 2026 Local Hazard Mitigation Plan (LHMP) Update to the Federal Emergency Management Agency (FEMA) approved single jurisdictional, 2020 Plumas County LHMP and the single jurisdictional 2019 City of Portola LHMP. The purpose of this LHMP Update is to guide hazard mitigation planning to better protect the people and property of the County from the effects of hazard events and natural disasters. This LHMP Update demonstrates the communities' commitment to reducing risks from hazards and serves as a tool to help decision makers direct mitigation activities and resources. This LHMP Update was also developed, among other things, to ensure Plumas County and participating jurisdictions' continued eligibility for certain federal disaster assistance: specifically, the Federal Emergency Management Agency's (FEMA) Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM) program, Building Resilient Infrastructure and Communities (BRIC) program, and the Flood Mitigation Assistance (FMA) program.

1.2 Background and Scope

Each year in the United States, natural disasters take the lives of hundreds of people and injure thousands more. Nationwide, taxpayers pay billions of dollars annually to help communities, organizations, businesses, and individuals recover from disasters. These monies only partially reflect the true cost of disasters, because most expenses to insurance companies and nongovernmental organizations are not reimbursed by tax dollars. Although the timing of natural disasters is unpredictable, their occurrence is largely predictable over time, and much of the damage caused by these events can be significantly reduced through hazard mitigation.

Hazard mitigation is defined by FEMA as "any sustained action taken to reduce or eliminate long-term risk to human life and property from a hazard event." The results of a three-year, congressionally mandated independent study to assess future savings from mitigation activities provide evidence that, overall, mitigation activities are highly cost-effective investments. On average, each dollar spent on mitigation saves society an average of \$6 in avoided future losses in addition to saving lives and preventing injuries (National Institute of Building Science Multi-Hazard Mitigation Council 2019 Interim Report) (see Figure 1-1).

Figure 1-1 Natural Hazard Mitigation Savings by Hazard Type and Mitigation Type

| National Institute of BUILDING SCIENCES™ | | ADOPT CODE | ABOVE CODE | BUILDING RETROFIT | LIFELINE RETROFIT | FEDERAL GRANTS |
|---|--|----------------|------------|-------------------|-------------------|----------------|
| Overall Benefit-Cost Ratio | | 11:1 | 4:1 | 4:1 | 4:1 | 6:1 |
| Cost (\$ billion) | | \$1/year | \$4/year | \$520 | \$0.6 | \$27 |
| Benefit (\$ billion) | | \$13/year | \$16/year | \$2200 | \$2.5 | \$160 |
|  Riverine Flood | | 6:1 | 5:1 | 6:1 | 8:1 | 7:1 |
|  Hurricane Surge | | not applicable | 7:1 | not applicable | not applicable | not applicable |
|  Wind | | 10:1 | 5:1 | 6:1 | 7:1 | 5:1 |
|  Earthquake | | 12:1 | 4:1 | 13:1 | 3:1 | 3:1 |
|  Wildland-Urban Interface Fire | | not applicable | 4:1 | 2:1 | not applicable | 3:1 |

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Source: National Institute of Building Science Multi-Hazard Mitigation Council 2019 Interim Report

Hazard mitigation planning is the process through which hazards are identified, likely impacts determined, mitigation goals set, and appropriate mitigation strategies determined, prioritized, and implemented. This plan documents Plumas County’s hazard mitigation planning process and identifies relevant hazards and vulnerabilities and strategies the County and participating jurisdictions will use to decrease vulnerability and increase resiliency and sustainability in the community.

This Plumas County 2026 LHMP is a multi-jurisdictional plan that geographically covers the entire area within Plumas County’s jurisdictional boundaries (hereinafter referred to as the Planning Area). The following jurisdictions participated in the planning process and are seeking FEMA approval of the LHMP Update:

- Plumas County*
- City of Portola**
- Chester Public Utility District
- Feather River Resource Conservation District
- Gold Mountain Community Services District
- Indian Valley Community Services District
- Plumas Corp/Plumas Fire Safe Council
- Plumas Eureka Community Services District
- South Feather Water and Power Agency

* Participated in 2020 Plumas County LHMP

**Participated in the 2019 City of Portola LHMP

This LHMP Update was prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 (Public Law 106-390) and the implementing regulations set forth by the Interim Final Rule published in the Federal Register on February 26, 2002, (44 CFR §201.6) and finalized on October 31, 2007. (Hereafter, these requirements and regulations will be referred to collectively as the Disaster Mitigation Act (DMA) or DMA 2000.) This planning effort also follows FEMA’s most current effective LHMP Preparation and Review Guidance, LHMP Policy Guide FP 206-21-0002 effective April 11, 2025. While DMA 2000 emphasized the need for mitigation plans and more coordinated mitigation planning and implementation

efforts, the regulations establish the requirements that local hazard mitigation plans must meet in order for a local jurisdiction to be eligible for certain federal disaster assistance and hazard mitigation funding under the Robert T. Stafford Disaster Relief and Emergency Act (Public Law 93-288). Because the Plumas County Planning Area is subject to many kinds of hazards, access to these programs is vital.

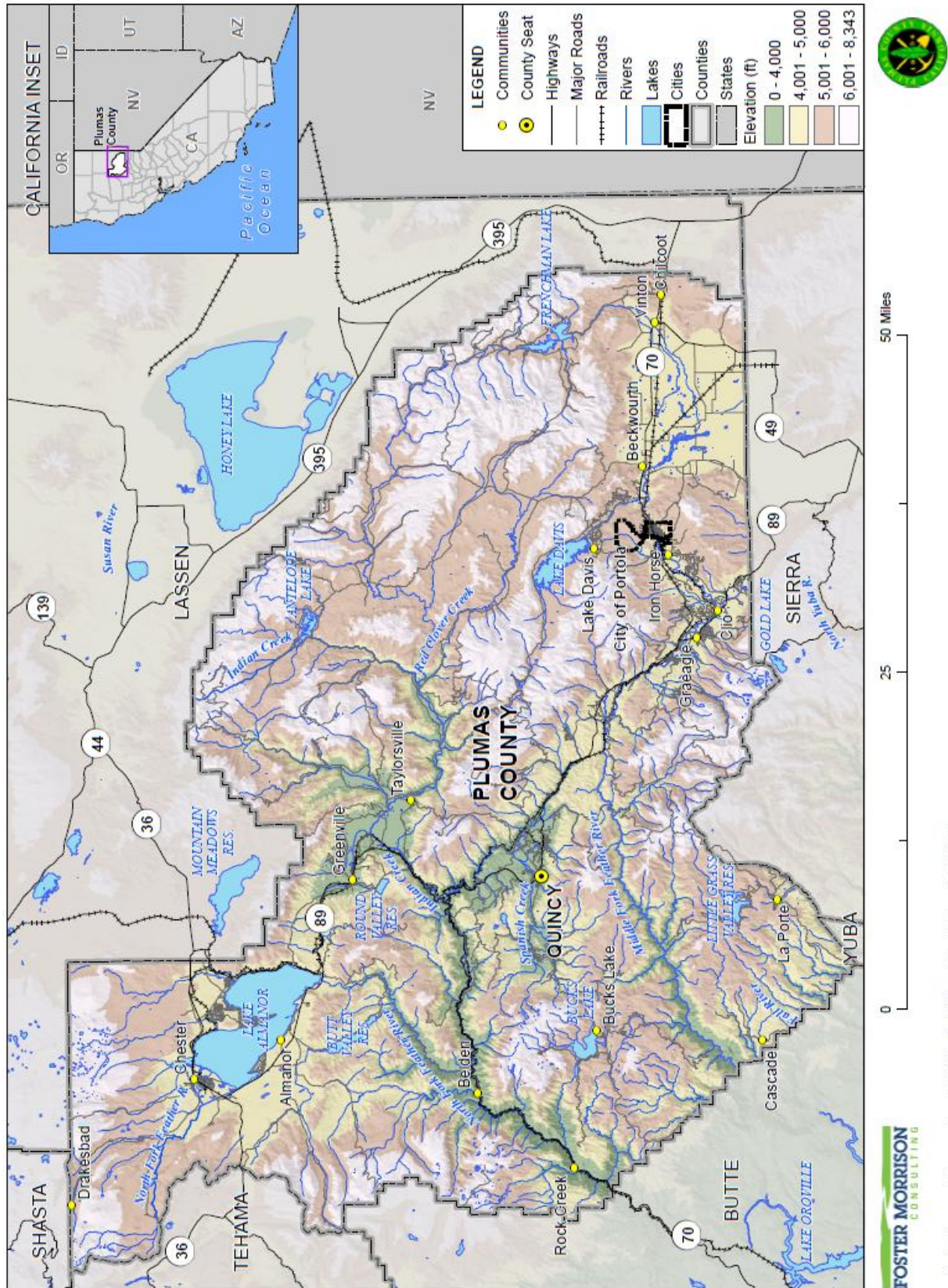
Information in this LHMP Update will be used to help guide and coordinate mitigation activities and decisions for local land use policy in the future. Proactive mitigation planning will help reduce the cost of disaster response and recovery to communities and their residents by protecting public health and safety and critical community facilities; reducing liability exposure; and minimizing overall community impacts and disruptions. In the past, the Plumas County Planning Area has been affected by numerous hazards on multiple occasions. Plumas County, the City of Portola, and the seven participating jurisdictions are thus committed to reducing future impacts from hazard events and maintaining eligibility for mitigation-related federal funding.

1.3 Plumas County Profile

Plumas County is located in northern California, where the Sierra Nevada meets the Cascade Range. The County comprises 2,618 sq. mi., of which over 1 million acres (65 percent) is national forest land. There are approximately 1,000 miles of streams and 100 lakes, the 5,000-acre Plumas Eureka State Park, Lassen Volcanic National Park (southern part of Plumas County), ski areas, motels, and resorts throughout the County. Nearly 80 miles of the Pacific Crest National Scenic Trail passes through Plumas County. The City of Portola is located in the County. The nearest communities to Portola are Beckwourth, about 5 miles to the east and Blairsden/Graeagle, about 10 miles to the west. The Town of Quincy, the County seat, is about 35 miles to the west, and the City of Reno, Nevada, is about 50 miles to the southeast.

A map of Plumas County is shown on Figure 1-2. Multiple entities own land in Plumas County. Approximately 90.2% of the County is federal lands. A land ownership map can be seen on Figure 1-3 and is detailed in Table 1-1.

Figure 1-2 Plumas County Planning Area



Data Source: Plumas County GIS, Cal-Atlas; Map Date: 4/18/2025.

Figure 1-3 Plumas County Planning Area – Land Ownership

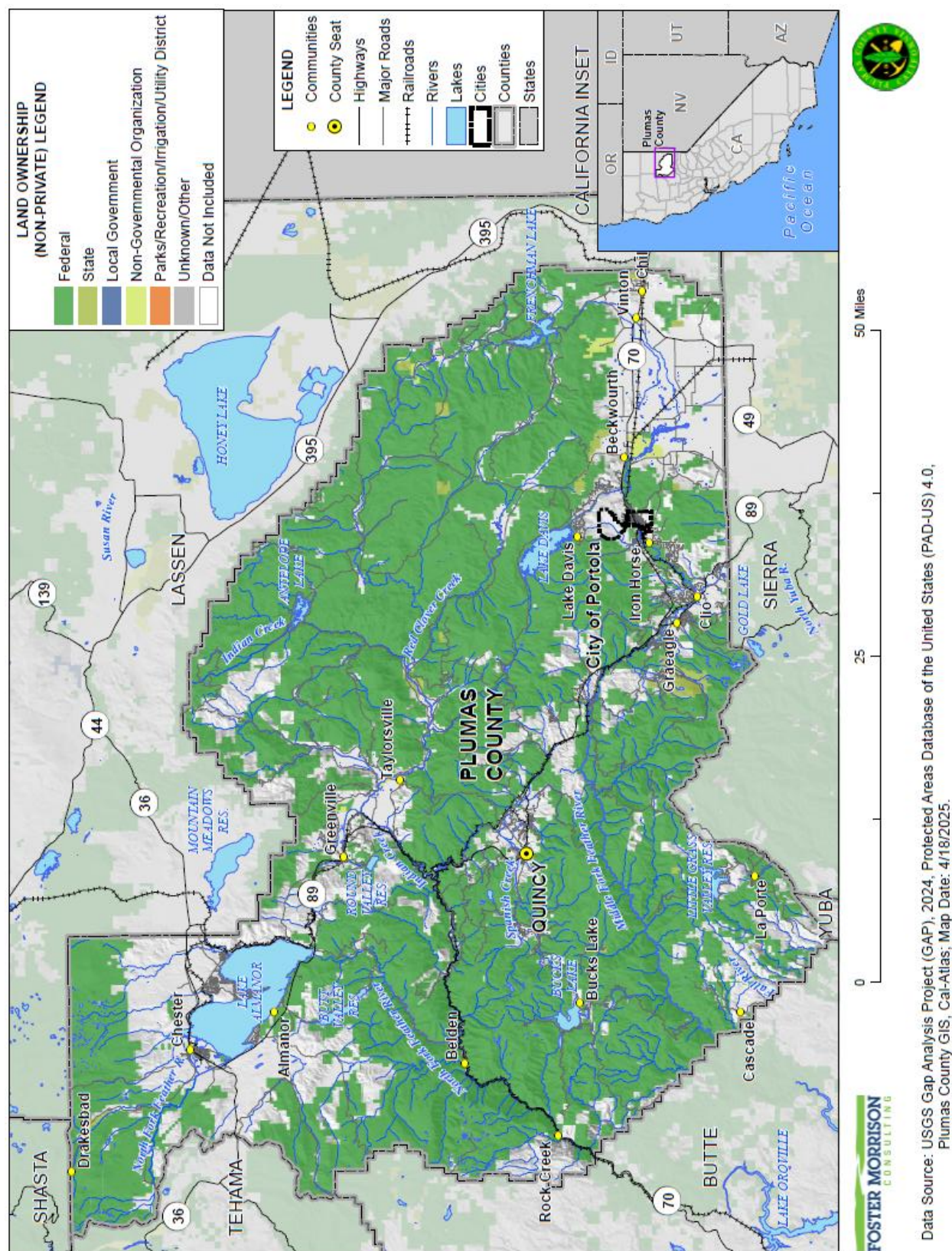


Table 1-1 Plumas County– Land Ownership

| Jurisdiction / Land Ownership | Total Acres | % of Total Acres (by Jurisdiction) |
|--|------------------|------------------------------------|
| City of Portola | | |
| Federal | 165 | 4.72% |
| Local Government | 9 | 0.24% |
| Data Not Included* | 3,323 | 95.04% |
| City of Portola Total | 3,497 | 100.00% |
| Unincorporated Plumas County | | |
| Federal | 1,336,282 | 73.84% |
| State | 11,965 | 0.66% |
| Local Government | 67 | 0.00% |
| Non-Governmental Organization | 6,811 | 0.38% |
| Parks/Recreation/Irrigation/Utility District | 6 | 0.00% |
| Unknown/Other | 70 | 0.00% |
| Data Not Included | 454,382 | 25.11% |
| Unincorporated Plumas County Total | 1,809,583 | 100.00% |
| | | |
| Grand Total | 1,813,080 | 100.00% |

Source: USGS

*indicates privately held land

1.3.1. History

The area currently known as Plumas County has been a site for human activity since the Stone Ages approximately 8,000 to 10,000 years ago. As glaciers receded from the Sierra Nevada and the Cascades, humans migrated to the foothills and valleys protected by higher elevation. Since then, humans have become an integral part of the ecology in Plumas County. This is particularly apparent through documented use of fire to facilitate the propagation and gathering of plant species used for medicinal purposes, food, and other needs. Native peoples harvested or extracted and then processed stone, acorn, pine nut, basketry fiber, and other resources for their sustenance. This activity also resulted in visible alterations to the land and natural resources across Plumas County.

The Mountain Maidu were the last tribal group present in Plumas County when European migrants began to settle in the area. Some sources say the Mountain Maidu people have lived in various locations in Plumas County from hundreds to thousands of years ago and still do today. Other tribes, such as the Washoe and the Paiute, have also utilized the area but did not settle permanently. The existence of the Mountain Maidu people was disrupted in the 1850s by the gold-seeking miners, who, overnight, transformed Plumas County into a gold mining region. Rivers were diverted and ditches were dug to bring water from distant sources for mining purposes.

The North, Middle, and South forks of the Feather River were named in 1821 by Captain Luis Arguello as the Rio de las Plumas (“River of Feathers”) after the Spanish explorer saw what looked like bird feathers floating in the water. “Plumas,” the Spanish word for “feathers,” later became the name for the county. The river and its forks were the primary sites of early mining activity, with many smaller camps located on their tributaries. Gold mining remained the main industry in the area for the next five decades. In March of 1854, Plumas County was formed from the eastern and largest portion of Butte County with the town of Quincy chosen as the county seat. A large part of Plumas County was carved off to form present day Lassen County in 1864, shortly after Plumas County annexed a small portion of Sierra County, which included the town of La Porte.

1.3.2. Geography and Climate

Plumas County is east of Interstate 5 and north of Interstate 80. U.S. Highway 395 passes to the east. State Highway (SH) 36 passes near Lake Almanor on its way from the coast to Susanville. The Feather River National Scenic Byway begins 10 miles north of Oroville at SH 70 and winds through the Feather River Canyon and along the North Fork of the Feather River.

Plumas County is uniquely located at the northern end of the granitic Sierra Nevada where the range intersects with the volcanic Cascade Range. It is this geology that has laid the foundation for the diverse mineral resources and forest lands that are second only to the North Coast forests in production. Plumas County is also home to the largest high elevation valley-meadow complex in California, and is characterized by a large network of streams and rivers that are all part of the greater Feather River Watershed. The Feather River Watershed is the largest watershed in the Sierra Nevada and includes almost all of Plumas County. This watershed contributes to the water supply of over 25 million Californians (60 percent of California’s population).

The County has a total area of 2,613 square miles, of which 2,554 square miles is land and 59.8 square miles is water. It is bounded by Shasta County to the northwest; Lassen County to the north and east; Sierra County, Yuba County to the south, Butte County to the south and west; and Tehama County to the west. 65 percent of the County’s land area is public lands managed by the United States Forest Service, the majority of which falls within the Plumas National Forest and other areas within the Lassen, Toiyabe, and Tahoe National Forests. Additionally, the County contains a portion of the Lassen Volcanic National Park and is home to the Plumas Eureka State Park.

Plumas County is topographically diverse. The elevation ranges from 1,180 feet in the Sierra Valley, to 8,376 feet in the Sierra Nevada range. The western portion of the County lies in the Sierra Nevada and is characterized by steep slopes, which become valleys and gentler rolling hills in the eastern portion of the County. This variation in topography drives the County’s weather patterns, amount and type of precipitation, and overall vulnerabilities to natural hazards.

Plumas County has a Mediterranean climate, with a mean annual temperature of 49°F to 57°F. Temperature extremes in the County can be below 0°F to over 110°F, precipitation varies from 70 inches on the western slope to 12 inches on the eastern slope of the Sierra Nevada. Mean annual precipitation is 43 inches, which falls mostly as rain below 4,000 feet and as snow above 4,000 feet in elevation.

1.3.3. Population and Demographics

The California Department of Finance 2024 estimates for population of Plumas County and its jurisdictions are shown in Table 1-2.

Table 1-2 Plumas County Population by Jurisdiction, 2024

| Jurisdiction | Total Population |
|-----------------------|------------------|
| City of Portola | 2,099 |
| Unincorporated County | 16,894 |
| Total | 18,993 |

Source: California Department of Finance, 2024 E-1 Report

Select social and economic information for the unincorporated Plumas County are shown in Table 1-3.

Table 1-3 Unincorporated Plumas County – Select Social and Economic Statistics

| Statistic | Number |
|-------------------------------------|----------|
| Populations | |
| Population under 5 | 4.3% |
| Population over 65 | 29.8% |
| Median Age | 52.1 |
| | |
| White | 87.1% |
| Black or African American | 1.4% |
| American Indian or Alaska Native | 1.7% |
| Asian | 0.9% |
| Native Hawaiian or Pacific Islander | 0.3% |
| Some Other Race | 1.1% |
| Two or more races | 7.6% |
| | |
| Median income | \$64,946 |
| Mean Income | \$94,296 |
| Poverty rate – All families | 6.0% |
| Poverty rate – All people | 10.7% |
| Unemployment Rate (February 2024) | 8.1% |

Source: 2020 US Census, 2023 US Census Bureau American Community Survey, California Employment Development Department

1.3.4. Economy and Tax Base

Plumas County has a diverse economy. US Census estimate show economic characteristics for the unincorporated County. These are shown in Table 1-4 and Table 1-5.

Table 1-4 Unincorporated Plumas County Civilian Employed Population 16 years and Over by Industry

| Industry | Estimated Employment | Percent |
|--|----------------------|---------|
| Agriculture, forestry, fishing and hunting, and mining | 554 | 7.8% |
| Construction | 607 | 8.5% |
| Manufacturing | 711 | 10.0% |
| Wholesale trade | 78 | 1.1% |
| Retail trade | 677 | 9.5% |
| Transportation and warehousing, and utilities | 486 | 6.8% |
| Information | 96 | 1.3% |
| Finance and insurance, and real estate and rental and leasing | 206 | 2.9% |
| Professional, scientific, and management, and administrative and waste management services | 385 | 5.4% |
| Educational services, and health care and social assistance | 1,812 | 25.4% |
| Arts, entertainment, and recreation, and accommodation and food services | 684 | 9.6% |
| Other services, except public administration | 214 | 3.0% |
| Public administration | 630 | 8.8% |

Source: US Census Bureau American Community Survey 2023 Estimates

Table 1-5 Unincorporated Plumas County – Income and Benefits

| Income Bracket | Percent |
|-----------------------|---------|
| <\$10,000 | 2.1% |
| \$10,000 – \$14,999 | 0.7% |
| \$15,000 - \$24,999 | 4.2% |
| \$25,000 – \$34,999 | 4.7% |
| \$35,000 – \$49,999 | 11.3% |
| \$50,000 – \$74,999 | 18.2% |
| \$75,000 – \$99,999 | 14.7% |
| \$100,000 – \$149,999 | 23.4% |
| \$150,000 – \$199,999 | 8.6% |
| \$200,000 or more | 12.0% |

Source: US Census Bureau American Community Survey 2023 Estimates

Major employers in the County are shown in Table 1-6.

Table 1-6 Major Employers in Plumas County Planning Area

| Employer Name | Location | Industry |
|-----------------------------|-----------|------------------|
| Beckwourth Ranger District | Blairsden | Ranger Services |
| C Roy Carmichael Elementary | Portola | Schools |
| Collins Co | Chester | Lumber-Wholesale |

| Employer Name | Location | Industry |
|--------------------------------|--------------------|---|
| Environmental Alternatives | Quincy | Foster Care |
| Feather River Family Dentistry | Quincy | Dentists |
| Graeagle Meadows Golf Course | Blairsden Graeagle | Golf Courses |
| P C SOS | Quincy | Attorneys |
| Plumas Bank | Chester | Banks |
| Plumas Bank | Quincy | Banks |
| Plumas Co Sheriff's Office | Quincy | Sheriff |
| Plumas County Board-Supervisor | Quincy | Government Offices-County |
| Plumas County Pubc Health Agcy | Quincy | Clinics |
| Plumas County Pubc Health Agcy | Quincy | Government Offices-County |
| Plumas County Public Works | Quincy | Government Offices-County |
| Plumas County Sheriff | Quincy | Government Offices-County |
| Plumas District Hospital | Quincy | Hospitals |
| Plumas Pines Golf Course | Blairsden | Clubs |
| Plumas Unified School District | Quincy | School Districts |
| Safeway | Quincy | Grocers-Retail |
| Seneca Health Care | Chester | Physicians & Surgeons |
| Seneca Healthcare District | Chester | Health Care Management |
| Sierra Pacific Industries | Quincy | Lumber-Manufacturers |
| US Forest Svc Ranger Station | Quincy | Ranger Services |
| USDA Forest Svc | Chester | Federal Government-Land/Mineral/Wildlife/Fore |
| Walton's Grizzly Lodge | Portola | Camps |

Source: America's Labor Market Information System (ALMIS) Employer Database, 2025 1st Edition.

1.4 Plan Organization

The Plumas County 2026 LHMP Update is a multi-jurisdictional plan that geographically covers the entire Plumas County Planning Area, as previously described, and encompasses all participating jurisdictions. The 2026 Plumas County LHMP Update is organized as follows:

- Base Plan Chapters
 - ✓ Chapter 1: Introduction
 - ✓ Chapter 2: Community Profile
 - ✓ Chapter 3: Planning Process
 - ✓ Chapter 4: Risk Assessment
 - ✓ Chapter 5: Mitigation Strategy
 - ✓ Chapter 6: Plan Adoption
 - ✓ Chapter 7: Plan Implementation and Maintenance
- Jurisdictional Annexes
 - ✓ Annex A: City of Portola

- ✓ Annex B: Chester Public Utility District
- ✓ Annex C: Feather River Resource Conservation District
- ✓ Annex D: Gold Mountain Community Services District
- ✓ Annex E: Indian Valley Community Services District
- ✓ Annex F: Plumas Corp/Plumas Fire Safe Council
- ✓ Annex G: Plumas Eureka Community Services District
- ✓ Annex H: South Feather Water and Power

➤ **Appendices**

- ✓ Appendix A: Planning Process
- ✓ Appendix B: References
- ✓ Appendix C: Mitigation Strategy
- ✓ Appendix D: Adoption Resolution
- ✓ Appendix E: Threatened and Endangered Species
- ✓ Appendix F: Plumas County Historic Buildings and Places
- ✓ Appendix G: Critical Facilities
- ✓ Appendix H: FEMA National Risk Index
- ✓ Appendix I: Hazus Reports

The **Base Plan** provides the overall framework for this multi-jurisdictional LHMP. It is the umbrella document that includes the planning process, methodologies, and process requirements for all participating jurisdictions (i.e., unincorporated County and all Jurisdictional Annexes). As such, Chapters 1-7 of the Base Plan apply to the unincorporated County, the City, and the seven special Districts as participants to this LHMP Update seeking FEMA approval of the Plan. Because this is a multi-jurisdictional plan, the Base Plan addresses the LHMP hazard mitigation planning elements specific to the Plumas County Planning Area which includes data, information and analysis specific to all participating jurisdictions and also includes data, information, and analysis specific to unincorporated Plumas County.

The **Jurisdictional Annexes** detail the hazard mitigation planning elements specific to each additional participating jurisdiction to this Plumas County LHMP Update. Each annex is not intended to be a standalone document, but appends to, supplements, and incorporates by reference the information contained in the Base Plan document. As such, all Chapters 1-7 of the Base Plan, including the planning process and other procedural requirements and planning elements apply to and were met by each participating jurisdiction. The annexes provide additional information specific to each participating jurisdiction, with a focus on providing additional details on the risk assessment and mitigation strategy.

The **Appendices** provide additional information, data, and planning process documentation that applies to all participating jurisdictions (i.e., unincorporated County and all jurisdictional annexes) to this Plumas County LHMP Update.



Chapter 2 What's New

44 CFR §201.6(d)(3) and §201.7(d)(3): A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval within 5 years in order to continue to be eligible for mitigation project grant funding.

The previous 2020/2019 Local Hazard Mitigation Plans (LHMP), being updated as part of this 2026 Plumas County LHMP Update, contained descriptions of planning processes, the risk assessments of identified hazards, and mitigation strategies for reducing the risk and vulnerability from these hazards. Since approval of the 2020/2019 Plumas County/City of Portola LHMPs by FEMA, progress has been made on implementation of the 2020/2019 mitigation strategies, by the County and City. As part of this LHMP Update, a thorough review and update of the 2020/2019 LHMPs was conducted to ensure that this 2026 Plumas County LHMP Update reflects current conditions and priorities in order to realign the updated mitigation strategy for the forthcoming five-year planning period. This chapter of the 2026 LHMP Update includes the following:

- **What's New in the LHMP Update.** Section 2.1 provides an overview of the approach to updating the previous LHMPs and identifies new analyses, data and information included in this LHMP Update to reflect current community conditions. This includes a summary of new hazard and risk assessment data as it relates to the Plumas County Planning Area and participating jurisdictions as well as information on current and future development trends affecting hazard vulnerability and related issues. The actual updated data, discussions, and associated analyses are contained in their respective sections within this LHMP Update.
- **Summary of Significant Changes to Current Conditions, Planning Area Vulnerability, and Hazard Mitigation Program Priorities.** Section 2.2 provides a summary of significant changes in current conditions, changes in hazard vulnerability, and resulting modifications to the Plumas County and City of Portola hazard mitigation program priorities.
- **2020/2019 Mitigation Strategy Status and Successes.** Section 2.3.2 provides a description of the status of mitigation actions from the 2020/2019 LHMPs and also indicates whether a project is no longer relevant or is recommended for inclusion in the updated mitigation strategy. This section also highlights key mitigation success stories since the 2020/2019 LHMPs.

This What's New chapter provides documentation of Plumas County's and the City of Portola's, progress or changes in risk and vulnerability to hazards and overall hazard mitigation programs since their previous plans. Completion of this 2026 Plumas County LHMP Update further provides documentation of the County's, the City's and all participating jurisdictions' continued commitment and engagement in the hazard mitigation planning process.

2.1 What's New in the Plan Update

Preparing the 2026 LHMP Update involved a comprehensive review and update of each section of the 2020/2019 LHMPs and includes an assessment of the success of Plumas County and the City of Portola in

evaluating, monitoring, and implementing the mitigation strategy outlined in their 2020/2019 LHMPs. Only the information and data still valid from the 2020/2019 LHMPs was carried forward as applicable into this LHMP Update. In addition, new information obtained from the County, the City, and seven special districts to this LHMP Update were also integrated as appropriate.

Also to be noted, Chapter 7 Implementation and Maintenance of this LHMP Update identifies key requirements for updating future plans:

- Consider changes in vulnerability due to action implementation of mitigation actions;
- Document success stories where mitigation actions have proven effective;
- Document areas where mitigation actions were not effective;
- Document any new hazards that may arise or were previously overlooked;
- Incorporate new data or studies on hazards and risks;
- Incorporate new capabilities or changes in capabilities;
- Incorporate growth and development-related changes to inventories; and
- Incorporate new recommended mitigation actions or changes in the prioritization of mitigation actions.

These requirements and others as detailed throughout this Plan were addressed during this LHMP Update process.

As part of the comprehensive review and update of each section for this 2026 LHMP Update, the County, City, and all participating jurisdictions recognized that updated data, if available, would enhance the analysis presented in the risk assessment and utilized in the development of the updated mitigation strategy. Highlights of new data used for this LHMP Update are identified below and also sourced in context within both the Chapter 4 Risk Assessment and the jurisdictional annexes. Sources of specific data used are also provided throughout this LHMP Update and included in Appendix D References. This new data and associated analyses contributed to the development of the updated risk assessment and mitigation strategy presented in Chapter 4 and Chapter 5 of this LHMP Update, as well as within the jurisdictional annexes to this Plan.

Highlights of new information and analyses contained in this LHMP Update includes the following:

- A thorough countywide planning process was conducted for this multi-jurisdictional LHMP Update including outreach and inviting a broad range of agency, public, and private stakeholders for all participating jurisdictions, including those supporting underserved and vulnerable populations in the Plumas County Planning Area.
- Disaster declarations were updated, including federal, state, and USDA disaster declarations. NCEM Storm Events and past historic hazard occurrences since the previous plans were added for each jurisdiction.
- A Local Concerns section was added to each jurisdiction's vulnerability assessment to capture local issues and to support the resulting mitigation strategy.
- Incorporation and analysis of the updated California Department of Finance population data was utilized for this LHMP Update.

- A detailed discussion of socially vulnerable and underserved populations were added to the Base Plan and to each jurisdictional annex and included a discussion of how these populations could be affected by each hazard.
- An updated critical facility GIS layer was provided by the County and jurisdictions for the Plumas County Planning Area. This allowed for an updated analysis of critical facilities for each mapped hazard in the Plumas County Planning Area.
- Community lifelines were added to the overall asset inventory.
- Economic assets and community activities of value were added to the overall asset inventory.
- Development since the last plan was analyzed in detail for each jurisdiction.
- Future development was gathered from each jurisdiction and analyzed using the most recent hazard data. This was included in each participating jurisdiction's annex.
- A new section on Power Shortage/Failure was added. Public Safety Power Shutoff events were also added.
- Impacts of climate change, changes in population patterns, and changes in land use and development was reviewed and discussed for each hazard and for each jurisdiction.
- Cal-Adapt and other state and local climate change data was added to the climate change section, as well as to other hazards that are exacerbated by climate change.
- Most hazards from the 2019/2020 LHMPs were profiled in this LHMP Update, with the exception of pandemic. Levee failure was placed inside the flood hazard. No new hazards were added.
- An updated and enhanced assessment of each participating jurisdictions' continued compliance with the NFIP was conducted and used to support additional flood risk reduction measures.
- FEMA National Risk Index data for the County was added to all of the natural hazards in the Base Plan.
- New dam data provided by Cal OES and CA DSOD was used for the dam inventory and analysis. This data included an updated hazard classification for identified dams and updated inundation mapping. Assets at risk to dam inundation was analyzed. Critical facilities at risk to dams were tabulated.
- Additional Hazus runs were performed on four separate earthquake shake scenarios for the Plumas County Planning Area.
- Deep seated landslide data was added to the landslide hazard profile and vulnerability analysis. An analysis was performed on values at risk (including populations, structures, critical facilities, and future development).
- New CAL FIRE mapping and analyses were conducted using the 2024 State Responsibility Area and the 2025 Local Responsibility Area Fire Hazard Severity Zones data.
- To better meet the revised FEMA plan review tool, a more extensive analysis of the extents to identified hazards was conducted and included in this LHMP Update for all jurisdictions.
- Special Districts' annexes include hazard maps and hazard extent tables for all mapped hazards of concern.
- A greater study of all jurisdiction's mitigation capabilities was added.
- All previous mitigation actions were updated, and many new actions were added to this LHMP Update, including mitigation actions to address issues related to mitigation planning for vulnerable and underserved populations.

2.2 Summary of Significant Changes to Current Conditions, Planning Area Vulnerability, and Hazard Mitigation Priorities

This section provides a summary by hazard of significant changes in current conditions, Plumas County and the City of Portola's hazard vulnerabilities, and resulting modifications to the Plumas County's and the City of Portola's mitigation program priorities since the 2020/2019 LHMPs. As well, current mitigation program priorities of the additional seven participating jurisdictions to this 2026 LHMP Update are also reflected in this section. As a result of this analysis of factors resulting in changes in community vulnerability since the last Plan, mitigation planning priorities were modified by the County and City and seven participating districts as reflected in each jurisdictions' 2026 lists of priority hazards of concern, LHMP goals and objectives, and the new list and prioritization of mitigation actions and projects for this 2026 LHMP Update.

PLACE AFTER FINAL MEETINGS

2.3 2020/2019 LHMP Mitigation Strategy Successes and Status

Plumas County and the City of Portola successfully implemented numerous mitigation actions identified in the 2020/2019 LHMPs' mitigation strategies, thus working diligently towards meeting their 2020/2019 Plumas County and City of Portola goals and objectives, as follows:

2020 Plumas County Goals

Goal #1: Minimize loss of life and injuries and protect property and the environment from natural hazards

- Minimize loss from priority natural hazards to include wildfire, flood, earthquake, dam failure, drought, landslides, and severe weather hazards
- Minimize impact to existing and future development
- Minimize economic and natural resource impact
- Promote resiliency strategies
- Support mitigation planning and implementation in all County departments and operations

Goal #2: Reduce losses and provide protection for critical facilities, infrastructure, and services from hazard impacts

- Implement critical facility upgrades and mitigation measures to ensure reliability of services
- Update and maintain a GIS database of critical facilities to include: Essential Services, At-Risk Populations, Hazardous Materials Facilities

Goal #3: Minimize the loss of agricultural and natural resource productivity (foundation of rural economy) from natural hazards

- Support education and training of private land managers on hazard mitigation and disaster preparedness
- Promote local research, education, and technical assistance on sustainable agriculture and forestry practices

- Foster agricultural and natural resource resilience to natural hazards through implementation of best management practices and restoration activities
- Provide training, technical assistance, outreach and education to private landowners on tree mortality, identification, management, and prevention strategies

Goal #4: Increase community awareness, education, preparedness, and self-reliance to natural hazards

- Enhance public and stakeholder outreach, education, and preparedness programs to include all hazards of concern
- Increase public and stakeholder knowledge about the risk and vulnerability to identified hazards and how to be more self-reliant in mitigating risks from natural hazards
- Provide public and stakeholder education and outreach specific to evacuation routes, various available emergency communication modes, and roles and responsibilities

Goal #5: Increase communities' ability to mitigate hazards and be prepared for, respond to, and recover from a disaster event in Plumas County

- Improve community capabilities to mitigate hazards and reduce losses
- Enhance community capabilities by improved coordination of local, state, and federal resources
- Increase capabilities to provide mitigation opportunities and assistance to Plumas County communities
- Increase the capacity to effectively respond to and recover from natural disaster events
- Enhance emergency communication capabilities (e.g., cell phones, radios, sirens, reverse 911, multi-media, etc.)
- Increase capabilities for continuity of government
- Improve community's ability to be competitive/successful with grant funding opportunities from application development to project delivery

Goal #6: Minimize life safety issues, property loss, environmental damages, and economic impacts associated with wildfires, the #1 natural hazard of concern in Plumas County

- Reduce the wildfire risk and vulnerability
- Update, maintain, and implement Community Wildfire Protection Plans
- Develop a Countywide fuels management implementation strategy
- Coordinate comprehensive fire protection strategies among all federal, state, and local agencies and across all property boundaries to implement a fire-adapted community concept approach at broader county-wide geographic and policy scales
- Increase community education, outreach, and awareness of wildfire mitigation strategies, including those to be undertaken by private property owners
- Continue to seek establishment of Firewise USA sites (communities)
- Promote and develop a tree mortality action plan for monitoring, prevention and mitigation activities
- Promote and enhance fire-fighting capabilities (e.g., access roads, water supply, etc.)
- Improve community infrastructure for wildfire preparedness and response including locating safety zones, augmenting community water supplies, and reducing fire hazard along transportation and power infrastructure
- Enhance the county wildfire hazard codes, including enforcement capabilities, within areas of high wildfire risk
- Continue land use planning efforts to ensure increased fire safety in new developments

- Develop and implement outreach, education, and technical assistance to encourage “home hardening” and retrofitting of older residences and structures to increase community resilience to wildfire

Goal #7: Minimize the effects of climate change on natural hazards in Plumas County

- Develop a Climate Action Plan for Plumas County
- Consider and integrate climate change information and issues in future General Plan updates

City of Portola 2019 Goals

- Increase public awareness of potential natural hazards and self-reliant mitigation actions.
- Reduce risk of loss of life/injuries due to natural hazards
- Reduce risk of loss to property, both public and private
- Maintain and increase funding for natural disaster preparedness, planning and response

2.3.1. Success Stories

Since the 2020/2019 LHMPs, progress has been made on the implementation of the mitigation strategies contained within these previous Plans. Beyond the mitigation strategy implementation from the 2020/2019 LHMPs, Plumas County, the City of Portola and the seven participating special districts also continue to implement additional hazard mitigation measures not contained within the previous Plans. This section highlights key mitigation success since the 2020/2019 LHMPs.

OTHER SUCCESS STORIES

City of Portola Success Stories

Fire Wise community certification, general education and outreach, and incorporation into the Countrywide plan so that all jurisdictions are working together.

2.3.2. 2020/2019 Mitigation Strategy Update

The 2020/2019 LHMPs contained separate mitigation strategies for each participating jurisdiction. These have been combined below. The 2019/2020 LHMPs contained 80 separate mitigation actions for the jurisdictions.

45 of these were County actions. Of these, 4 are complete, 22 are ongoing, and 19 have not been started. 24 actions have been identified for inclusion in this LHMP Update and have been carried forward in Chapter 5.

35 of these were City of Portola actions. Of these, 3 are complete, 24 are ongoing, and 8 have not been started. 12 actions have been identified for inclusion in this LHMP Update and have been carried forward in Chapter 5.

Table 2-1 and Table 2-2 provides a status summary of the mitigation action projects from the 2020/2019 LHMPs.

Table 2-1 Plumas County Planning Area 2020 LHMP: Mitigation Action Status Summary

| Action Title | Complete | Ongoing | Not Yet Started | In 2026 Update* |
|---|----------|---------|-----------------|-----------------|
| Plumas County | | | | |
| All Hazard Actions | | | | |
| Action 1. Integrate Local Hazard Mitigation Plan into Public Health & Safety Element of General Plan | X | | | Y |
| Action 2. Enhance Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness | | X | | Y |
| Action 3. Continue Bridge Replacement Program using Federal Funding Source for Evacuation and Emergency Services Access | | X | | Y |
| Action 4. Companion Animal/Livestock/Horse/Equipment Trailer | X | | | Y |
| Action 5. Plumas County General Plan Public Health & Safety Element update to incorporate Senate Bill (SB) 379 requirements | | X | | Y |
| Action 6. Continue Telephone Emergency Notification System (TENS) Capability Enhancements Countywide | | X | | Y |
| Action 7. Evacuation Planning, Mapping, and Exercising, to Include Considerations for Shelters, Refuge Areas, Safety Zones, Evacuation Signage, etc. | | X | | Y |
| Action 8. Evaluate Coverage and Expansion for Broadband Services. Advance Grants and Projects Accordingly | | X | | N |
| Action 9. Harden Cell Tower Sites. Increase Cell Service Coverage by Increasing the Number of Cell Towers. Increase the Number of Repeater Sites. Install Backup Generators in Case of Power Failure. | | | X | Y |
| Action 10. Identify Critical Facilities Requiring Backup Generators | | X | | Y |
| Action 11. Prepare Emergency Food Access Plan as a Complement to the Plumas County EOP Annex B: Mass Care & Shelter | X | | | N |
| Action 12. Explore establishing a Community Emergency Response Team (CERT) | | | X | Y |
| Action 13. Ingress/Egress Road Projects to Widen and Improve Roads for Evacuation and Emergency Services Access | | | X | Y |
| Action 14. PRC 4290 – Plumas County Code Title 9, Chapter 8. Street Address System. Promote and continue to implement compliant street/address reflective signage for public and private roads and structures | | X | | Y |
| Action 15. Designation of minor County roads and forest service roads to be used as alternate routes around road closures during wildfire and other hazard events. Plumas and Lassen National Forests have funding for new road connections to form alternate routes. | | | X | Y |
| Climate Change, Drought and Water Shortage Actions | | | | |
| Action 16. Develop a Climate Action Plan | | | X | Y |
| Action 17. Water Shortage Preparedness and Contingency Planning Pilot Project | | X | | Y |
| Action 18. Water Supply Infrastructure Improvements | | | X | N |
| Dam Failure, Flood, Localized Flood, Levee Failure, Landslide, Mudslide, and Debris Flow, and Severe Weather Actions | | | | |
| Action 19. Countywide Stormwater Drainage and Grading Ordinance | | X | | Y |

| Action Title | Complete | Ongoing | Not Yet Started | In 2026 Update* |
|--|----------|---------|-----------------|-----------------|
| Action 20. Develop a Countywide Drainage Master Plan | | X | | Y |
| Action 21. FEMA Mapping Update | | | X | Y |
| Action 22. Evaluate Options to Repair and Maintain Levee Crown for Emergency Access Vehicles (Gates, Crown Repair, Vegetation Maintenance, etc.) | | | X | Y |
| Action 23. Ongoing Implementation of Stream Clearing and Maintenance Programs | | X | | Y |
| Action 24. Plumas Eureka CSD stream bank flood mitigation | | | X | N |
| Action 25. Evaluate and Implement Projects to Reduce Flooding in Plumas Eureka CSD | | | X | N |
| Action 26. Plumas Eureka CSD Sewer Plant Flood Mitigation | | | X | N |
| Action 27. Evaluate Options for Obtaining 100-year Level of Certification for the Diversion Dam (East and West Chester Levees) | | | X | N |
| Action 28. Review and Update, as Needed, Title 8 (Building Regulations), Chapter 17 (Flood) of the Plumas County Code re: Floodplain Ordinance and Applicable Title 9 (Planning and Zoning) Sections | | | X | Y |
| Action 29. Identify and Implement Bank Stabilization Projects | | X | | Y |
| Action 30. Identify and Implement Projects to Address Areas of Landslides Affecting Roadway and Railroad | | | X | Y |
| Action 31. Evaluate and Implement Wolf Creek Channel Stabilization Projects through Greenville and Indian Valley Areas | | | X | Y |
| Earthquake Actions | | | | |
| Action 32. Conduct a Seismic Risk Evaluation of Critical Facilities and Public Buildings; Prioritize and Implement Seismic Retrofits: PECSD Water Storage Tank Replacement | | | X | Y |
| Action 33. Seismic Risk Evaluations to Prioritize and Implement Seismic Retrofits | | | X | Y |
| Pandemic Actions | | | | |
| Action 34. Update and Refine Pandemic Plan | | | X | N |
| Wildfire, Drought and Water Shortage, and Tree Mortality Actions | | | | |
| Action 35. Plumas County Agriculture, Forestry, and Natural Resources Resilience | | X | | Y |
| Action 36. Invasive Species Control and Eradication | | X | | Y |
| Action 37. Continue and Promote Defensible space (PRC 4291) Projects Including Assistance Efforts for Senior and Disabled Residents | | X | | N |
| Action 38. Establish Additional Firewise USA Sites (communities) and Promote Existing Ones | | X | | Y |
| Action 39. Continue to Evaluate and Track Available Funding Sources for Wildfire Mitigation Projects | | X | | N |
| Action 40. Develop a Program to Promote and/or Incentivize Home Hardening Retrofitting including: Roofs, Vents, Siding, Windows, etc. | | X | | N |
| Action 41. Identify and Implement Priority Wildfire Risk Reduction Projects from the Plumas County CWPP to Enhance Forest Health Including Detection, Prevention, and Mitigation of Tree Mortality | | X | | N |

| Action Title | Complete | Ongoing | Not Yet Started | In 2026 Update* |
|--|----------|---------|-----------------|-----------------|
| Action 42. Plumas County General Plan Public Health & Safety Element update to address state law requirements for land classified as State Responsibility Areas (SRAs) and within Very High Fire Hazard Severity Zones (VHFHSZs) | | X | | N |
| Action 43. Local Adoption of State Responsibility Area Fire Safe Regulations | X | | | N |
| Action 44. Improve Funding and Response Capabilities of Local Fire Protection Districts and Expand Districts in Areas not Covered | | X | | Y |
| Action 45. Review and Update, as Needed, Plumas County Code to Address Defensible Space and Vegetation Management | | | X | N |

* Actions not carried forward were determined by the jurisdictions to be no longer feasible, relevant, lacked funding and local resources to implement, and/or no longer considered a priority.

Table 2-2 City of Portola Planning Area 2019 LHMP: Mitigation Action Status Summary

| Action Title | Complete | Ongoing | Not Yet Started | In 2026 Update* |
|--|----------|---------|-----------------|-----------------|
| City of Portola | | | | |
| Action 1. Educate public about potential hazards and high hazard areas within the community in the event of a natural disaster. (1.1.1) | | X | | Y** |
| Action 2. Encourage property owners to actively participate in education programs, access resources, and develop personal mitigation measures as they relate to natural hazards specific to the community and personal property. (1.1.2) | | X | | Y** |
| Action 3. Provide online access to awareness/ protection materials relevant to City of Portola residents. (1.1.3) | | X | | N |
| Action 4. Educate the public on the Citywide Emergency Evacuation Plan and Emergency Action Plan. (1.1.4) | | X | | Y** |
| Action 5. Educate the public about living with fire and fire safe requirements in the General Plan Safety Element. (1.1.5) | | X | | Y** |
| Action 6. Create a public notification plan to provide a means to educate, inform, and alert the community regarding changes in hazard identification, occurrence, and mitigation processes and options. (1.1.6) | | X | | Y** |
| Action 7. Provide hazard warning and forecasting information to City residents & establish a rapid communication system for the community. (2.1.1, 2.1.2, 3.1.1, 3.1.2) | | X | | Y** |
| Action 8. Actively participate in the development of Plumas County's Safety Element to ascertain Portola's concerns are addressed. (2.1.3, 3.1.3) | X | | | N |
| Action 9. Coordinate with the California Department of Water Resources (Dam Safety Division) for mitigation measures within the community as a result of a dam failure inundation. (2.2.1) | | | X | N |
| Action 10. All Development within floodway shall meet FEMA Standards. (2.2.2) | | X | | N |
| Action 11. Mitigate the potential impacts to new structures by mandating compliance with California Building Code (CBC). (2.3.1, 3.5.1) | | X | | N |
| Action 12. Prioritize and evaluate essential facilities for seismic conditions and potential retrofit. (2.3.2, 3.5.2) | | X | | Y*** |

| Action Title | Complete | Ongoing | Not Yet Started | In 2026 Update* |
|--|----------|---------|-----------------|-----------------|
| Action 13. Monitor and continue to regulate grading and slope development standards to reduce potential landslide and slope movement impacts. (2.3.3, 3.5.3) | | X | | N |
| Action 14. Enforce compliance with open space and fuel break requirements set forth in the City of Portola General Plan Safety Element Wildland Fire section. (2.4.1) | | X | | N |
| Action 15. Review and update mutual aid agreements with Forest Service, CAL FIRE, and other surrounding fire departments and volunteer agencies. (2.4.2) | | | X | N |
| Action 16. Adopt California PRC 4290 and PRC 4291 code. (2.4.3) | | X | | N |
| Action 17. Adopt and complete steps to become a NFPA Fire-Adapted Community or a 'Fire Wise Community.' (2.4.5) | X | | | N |
| Action 18. Seek opportunities to reduce high fuel hazards and create fuel breaks. (2.4.6) | | X | | Y |
| Action 19. Evaluate potential impacts of identified hazards on existing utilities and facilities (water, sewer, power, public transportation routes & structures). Prioritize those utilities for mitigation based on risk level and criticality to community and/or criticality to emergency evacuation routes. (3.2.1) | | X | | N |
| Action 20. Continue to combine water quality, open space, and recreation projects within flood measures where feasible. (3.3.1) | | X | | N |
| Action 21. Maintain natural stream courses and adjacent habitat, where feasible during flood control improvements. (3.3.2) | X | | | N |
| Action 22. Establish zoning and land use ordinances that limit development in flood prone areas. (3.4.1) | | X | | N |
| Action 23. Ensure the impacts of flooding are adequately analyzed when considering areas for future urban development or significant improvements to existing facilities or structures. (3.4.2) | | X | | N |
| Action 24. Ensure that flood mitigation measures are incorporated into repairs, new development, major alterations, and new redevelopment applications. (3.4.3) | | X | | N |
| Action 25. Enforce compliance with the City of Portola Master Drainage Plan and Floodplain Management Ordinance. (3.4.4) | | X | | N |
| Action 26. Educate and encourage homeowners residents to adopt seismic safety protocols as their time and resources allow. (3.5.4) | | X | | Y** |
| Action 27. Secure a grant that would provide support staff to aid in the implementation and execution of the LHMP. (4.1.1) | | | X | N |
| Action 28. Apply for grants specific to identified action items, including scientific studies and evaluation of existing improvements. (4.1.2) | | | X | N |
| Action 29. Cross train staff with Plumas County personnel and adopt uniform protocols where applicable. (4.1.3) | | X | | Y |
| Action 30. Work toward securing multi-jurisdiction grants and funding for disaster planning and response. (4.1.4) | | | X | N |
| Action 31. Create a community network for emergency response alternatives including churches, and civic meeting halls. (4.1.5) | | X | | Y** |

| Action Title | Complete | Ongoing | Not Yet Started | In 2026 Update* |
|---|----------|---------|-----------------|-----------------|
| Action 32. Apply for grants that may help fund improvements beyond the City limits; e.g. fire safety and wildfire hazard mitigation, channel and water quality improvements to the Middle Fork of the Feather River, etc. (4.2.2) | | X | | Y |
| Action 33. Review existing hazard response training protocol and update/upgrade as necessary. (4.3.1) | | | X | N |
| Action 34. Begin to search for grant/funding opportunities for upgrade of fire equipment & training opportunities. (4.3.2) | | | X | N |
| Action 35. Utilize County, State, and other regulatory agency opportunities for cross and specialty training modules. (4.3.3) | | | X | N |

* Actions not carried forward were determined by the jurisdictions to be no longer feasible, relevant, lacked funding and local resources to implement, and/or no longer considered a priority.

** These have all been combined into one action being carried forward in this LHMP Update.

*** These have all been combined into one action being carried forward in this LHMP Update.



Chapter 3 Planning Process

44 CFR §201.6(b) and §201.6(c)(1): An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:

- 1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;**
- 2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia, and other private and nonprofit interests to be involved in the planning process; and**
- 3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.**

[The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

Plumas County, as the project lead for this 2026 Plumas County LHMP Update, recognized the importance and need of the update process for their single-jurisdictional 2020 LHMP and initiated the development of a Multi-Jurisdictional LHMP that included the City of Portola and seven participating special districts. As such, this 2026 LHMP Update is also an update to the City of Portola's single-jurisdictional 2019 LHMP; this is the first LHMP for the seven participating special districts.

After securing funding for this LHMP Update, Plumas County contracted with Foster Morrison Consulting, Ltd. (Foster Morrison) to facilitate and develop the Plan. Jeanine Foster, a professional planner with Foster Morrison, was the project manager in charge of overseeing the planning process and the development of this LHMP Update. Chris Morrison, also a professional planner with Foster Morrison, was the lead planner for the development of this LHMP Update. The Foster Morrison's team's role was to:

- Assist in establishing the Hazard Mitigation Planning Committee (HMPC) as defined by the Disaster Mitigation Act (DMA);
- Meet the DMA requirements as established by federal regulations and following FEMA's planning guidance;
- Support objectives under the National Flood Insurance Program (NFIP) and the Flood Mitigation Assistance (FMA) program;
- Facilitate the entire planning process;
- Identify the data requirements that HMPC participants could provide and conduct the research and documentation necessary to augment that data;
- Assist in facilitating the public input process;
- Produce the draft and final plan documents; and
- Coordinate with the California Office of Emergency Services (Cal OES) and FEMA Region IX plan reviews.

3.1 Local Government Participation

Plumas County and the other participating jurisdictions made a commitment to this 2026 Plumas County Multi-Jurisdictional LHMP Update. The DMA planning regulations and guidance stress that each local government (participating jurisdiction) seeking FEMA approval of their mitigation plan must participate in the planning effort in the following ways:

- Participate in the process as part of the HMPC;
- Detail where within the Plumas County Planning Area the risk differs from that facing the entire area;
- Identify potential mitigation actions; and
- Formally adopt the Plan.

For all participating jurisdictions, “participation” meant the following:

- Attending and participating in the HMPC meetings;
- Completing and returning the Data Collection Worksheets;
- Collecting and providing other requested data (as available);
- Coordinating information sharing between internal and external agencies;
- Managing administrative details;
- Making decisions on LHMP process and content;
- Discussing their participation in the NFIP and any identified repetitive loss properties;
- Addressing changes in development since the 2020/2019 LHMPs and new development considerations;
- Providing status of 2020/2019 actions and identifying mitigation actions for the Plan;
- Identifying opportunities for integrating the completed Plan into other planning mechanisms;
- Identifying jurisdictional capabilities to support mitigation strategy implementation;
- Making decisions on LHMP process and content;
- Identifying mitigation actions for the Plan;
- Reviewing and providing comments on Plan drafts;
- Providing Draft documents of the LHMP for public review;
- Informing the public, local officials, and other interested stakeholders about the planning process and providing opportunity for them to comment on the draft Plan; and
- Coordinating the formal adoption of the Plan by the governing boards for each jurisdiction.

The participating jurisdictions seeking FEMA approval of this LHMP Update met all of these participation requirements. Multiple representatives from participating jurisdictions attended the HMPC meetings described in Table 3-3 and also brought together an internal planning team to help collect data, identify mitigation actions and implementation strategies, and review and provide data on Plan drafts. Appendix A provides additional information and documentation of the planning process.

Individuals representing various departments and other representatives from the participating jurisdictions to this Plumas County LHMP Update were actively involved throughout the Plan Update process as identified in Appendix A in the sign-in sheets for the meetings and as evident through the data, information and input provided by HMPC representatives for the development of this LHMP Update. This Chapter 3 and Appendix A provide additional information and documentation of the planning process and participants to this LHMP Update, including members of the HMPC.

3.2 The 10-Step Planning Process

Foster Morrison established the planning process for updating the Plumas County and City of Portola LHMPs using the DMA planning requirements and FEMA’s associated guidance. Specifically, the LHMP was developed pursuant to the requirements of DMA 2000, published at 44 CFR 201.6 and new FEMA LHMP guidance, LHMP Policy Guide FP 206-21-0002 effective April 11, 2025, as well as applicable California laws and mitigation requirements. This guidance is structured around a four-phase process:

1. Organize Resources;
2. Assess Risks;
3. Develop the Mitigation Plan; and
4. Implement the Plan and Monitor Progress.

Into this process, Foster Morrison integrated a more detailed 10-step planning process used for FEMA’s CRS and FMA programs. The modified 10-step process used for this Plan meets the requirements of six major programs: FEMA’s Hazard Mitigation Grant Program (HMGP); Pre-Disaster Mitigation (PDM) program; CRS program; Flood Mitigation Assistance (FMA) Program; Severe Repetitive Loss (SRL) program; and new flood control projects authorized by the U.S. Army Corps of Engineers (USACE).

Table 3-1 shows how the modified 10-step process fits into FEMA’s four-phase process. The sections that follow describe each planning step in more detail.

Table 3-1 Mitigation Planning Processes Used to Develop the 2026 Plumas County Local Hazard Mitigation Plan Update

| DMA Process | Modified CRS Process |
|---|---|
| 1) Organize Resources | |
| 201.6(c)(1) | 1) Organize the Planning Effort |
| 201.6(b)(1) | 2) Involve the Public |
| 201.6(b)(2) and (3) | 3) Coordinate with Other Departments and Agencies |
| 2) Assess Risks | |
| 201.6(c)(2)(i) | 4) Identify the Hazards |
| 201.6(c)(2)(ii) | 5) Assess the Risks |
| 3) Develop the Mitigation Plan | |
| 201.6(c)(3)(i) | 6) Set Goals |
| 201.6(c)(3)(ii) | 7) Review Possible Activities |
| 201.6(c)(3)(iii) | 8) Draft an Action Plan |
| 4) Implement the Plan and Monitor Progress | |
| 201.6(c)(5) | 9) Adopt the Plan |
| 201.6(c)(4) | 10) Implement, Evaluate, and Revise the Plan |

As part of this LHMP Update, all sections of the 2020/2019 LHMPs were reviewed and updated to reflect new data, processes, and resulting mitigation strategies. Only the information and data still valid from the 2020/2019 LHMPs were carried forward as applicable into this 2026 LHMP Update.

3.2.1. Phase 1: Organize Resources

Planning Step 1: Organize the Planning Effort

With each participating jurisdiction’s commitment to participate in the DMA planning process, Foster Morrison worked with Plumas County’s Office of Emergency Services (County OES), as overall project lead, to establish the framework and organization for development of this LHMP. An initial meeting was held with County OES to discuss the organizational and process aspects of this 2026 LHMP Update.

An initial project kickoff meeting was held with participating jurisdictions on December 13, 2024, followed by the primary kickoff meeting with all participating jurisdictions and stakeholders on January 14, 2025. Invitations to the kickoff meeting were extended to key county and city departments and special districts, as well as to other federal, state, and local stakeholders, including representatives from the public, which might have an interest in participating in the planning process. Representatives from the HMPC members to the 2020/2019 LHMPs and other identified stakeholders were used as a starting point for the invite list, with additional invitations extended as appropriate throughout the planning process. The list of invites is included in Appendix A.

Hazard Mitigation Planning Committee

The HMPC was established as a result of these initial meetings, as well as through interest generated through the initial public meeting and outreach conducted for this project as detailed later in this chapter. The HMPC, comprised of county, city, special district, and other government and stakeholder representatives and the public, developed the Plan with leadership from County OES and facilitation by Foster Morrison. This list includes all HMPC members that were active participants in the Plan development process as evidenced through their attendance at one or more HMPC meetings, as well as those who provided key input into the Plan development process. The following individuals participated on the HMPC:

Table 3-2 Plumas County Hazard Mitigation Planning Committee **TO BE PLACED**

| Agency | Name |
|--|------|
| Participating Jurisdictions and Agencies | |
| | |
| | |

Utilizing a Common Planning Process

The County and all participating jurisdictions developed this LHMP Update utilizing a common Plan development process utilizing the “whole community” approach. This included establishing an HMPC that

included key stakeholders for all jurisdictions ensuring that the five required categories of stakeholders, specific to each jurisdiction, were identified and included. Utilizing a common planning process involving all jurisdictional stakeholders promoted better stakeholder participation for all jurisdictions. This approach respected the time and availability of stakeholders, while maximizing participation of a common group of jurisdictional stakeholders by not requiring them to come to duplicate (or really 9 separate meetings) on the same Plan development element(s), which for this Plan would have resulted in 45 separate meetings to cover the 5 primary HMPC topics and meetings. It also spurred conversations between jurisdictions, as well as their public stakeholders, who were invited to come to these meetings. Additional considerations and benefits for utilizing a common planning process for the development of the LHMP Update include:

- The small rural nature of Plumas County, the City of Portola, and participating special districts was best suited for a common plan development process.
- Common group of stakeholders to all participating jurisdictions necessitated a common plan development process.
- Several of the jurisdictions have shared or overlapping boundaries and economic ties, often work under the same authorities, and have similar needs and capabilities.
- A common plan development process brings key stakeholders together in the same meetings instead of siloing them to specific jurisdictional meetings. This adds value by getting different groups discussing key issues collectively with different experiences and perspectives to bring to the table.
- Improves stakeholder communication and coordination by increasing stakeholder attendance in support of all jurisdictions and not diluting their participation by requiring attendance at multiple, duplicate meetings that they won't be able to attend.
- Key public stakeholders invited to be part of the HMPC were better able to attend a limited set of meetings.
- All participating jurisdictions face similar threats and hazards which drive the resulting mitigation strategy that benefits the Plumas County Planning Area as a whole by promoting a comprehensive and regional approach to mitigation.

Utilizing this common planning process resulted in multiple entities being engaged and in the room at the same time. All of this is shown in detail throughout this chapter and in Appendix A.

Meetings

The planning process officially began with a project planning call with Plumas County OES on December 10, 2024, with an initial project kickoff meeting of participating jurisdictions on December 13, 2024. The primary HMPC kickoff meeting for all participating jurisdictions and project stakeholders was held on January 14, 2025, followed by a public kickoff meeting held the same day at 5:30 pm. The meetings covered the scope of work and an introduction to the DMA requirements. During the HMPC meetings, participants were provided with data collection worksheets to facilitate the collection of information necessary to support development of the Plan. Using FEMA guidance, these worksheets were designed to capture information on past hazard events, identify hazards of concern to each of the participating jurisdictions, identify values at risk to identified hazards, inventory existing capabilities, record possible mitigation actions, and to capture information on the status of mitigation action items from the 2020/2019 LHMPs. A copy of the worksheets for this project are included in Appendix A. Each participating jurisdiction seeking FEMA approval of this LHMP Update completed and returned the worksheets to Foster Morrison for incorporation into this 2026 LHMP Update.

During the planning process, the HMPC communicated through virtual Team and Zoom meetings, email, telephone conversations, Dropbox websites, and through a County developed webpage dedicated to the Plan development process. This later website was developed to provide information to the HMPC, the public and all other stakeholders on the LHMP process. Draft documents were also posted on these websites so that the HMPC members, stakeholders, and the public could easily access and review them.

The Plumas County LHMP website (as shown on Figure 3-1) can be accessed online at: <https://www.plumascounty.us/2214/Multi-Hazard-Mitigation-Plan>.

Figure 3-1 Plumas County Local Hazard Mitigation Plan Update Website



Source: Plumas County

The HMPC met formally five times during the planning period (December 2024 – January 2026) which adequately covers the four phases of DMA and the 10-Step CRS planning process. Internal jurisdictional meetings were held throughout the planning process to further support Plan development. The key meetings and topics discussed are described in Table 3-3. Invitations, agendas and sign-in sheets for each of the meetings are included in Appendix A.

Table 3-3 Plumas County Internal and HMPC Meetings

| Meeting Type | Meeting Topic | Meeting Date | Meeting Location(s) |
|-----------------------------------|--|-------------------|----------------------|
| Internal Project Planning Meeting | 1) Overview of LHMP plan development process 2) Initial identification of participating jurisdictions and HMPC members 3) Discussion of GIS and other data needs | December 10, 2024 | Virtual Zoom Meeting |

| Meeting Type | Meeting Topic | Meeting Date | Meeting Location(s) |
|--|---|-------------------|--|
| Project Kickoff Meeting of Participating Jurisdictions | 1) Overview of LHMP plan development process 2) LHMP requirements and resource overview 2) Jurisdictional participation requirements 3) Project schedule | December 13, 2024 | Virtual Teams Meeting |
| HMPC #1 Kickoff Meeting | 1) Introduction to DMA and the LHMP planning process 2) Organize Resources (CRS Steps 1,2&3): the role of the Planning Committee, planning for public involvement, coordinating with other agencies/stakeholders 3) Introduction to Hazard Identification | January 14, 2025 | Quincy Branch Library, Quincy, CA |
| Risk Assessment Worksheet Meeting of Participating Jurisdictions | 1) Review and discussion of Risk Assessment data needs | March 17, 2025 | Virtual Zoom Meeting |
| HMPC #2 | 1) Risk assessment overview and work session -CRS Step 4: Assess the Hazard -CRS Step 5: Assess the Problem | May 8, 2025 | Quincy Branch Library, Quincy, CA |
| HMPC #3 | 1) Review of risk assessment summary 2) Review and update of mitigation goals 3) Intro to Mitigation Action Strategy -CRS Step 6: Set Goals -CRS Step 7: Review possible activities | August 6, 2025 | Quincy Branch Library, Quincy, CA |
| HMPC #4 | 1) Review of mitigation alternatives 2) Review and update of mitigation actions from the 2020/2019 LHMPs 3) Identify updated list of mitigation actions by hazard 4) Review of mitigation selection criteria 5) Update and prioritize mitigation actions 6) Mitigation Action Strategy Implementation and Draft Action Development -CRS Step 7: Review possible activities -CRS Step 8: Draft an Action Plan | August 7, 2025 | Plumas-Sierra Co. Fairgrounds, Mineral Building, Quincy CA |
| HMPC #5 | 1) Review of final HMPC, jurisdictional and public comments and input to Plan 2) Review and documentation of changed conditions, vulnerabilities, and mitigation priorities 3) CRS Step 8: Draft an Action Plan 4) CRS Step 9 & 10: Plan Maintenance and Implementation Procedures | December 11, 2025 | Quincy Branch Library, Quincy, CA |

Planning Step 2: Involve the Public

Public stakeholders for all participating jurisdictions are generally defined as any stakeholder not attached to local government in the Plumas County Planning Area. Up-front coordination discussions with Plumas County established the initial plan for public involvement. Public involvement activities for this LHMP Update included press releases, social media communications, stakeholder and public meetings,

development of an LHMP webpage and associated website postings, and the collection of public and stakeholder comments on the draft Plan through a variety of mechanisms. This included other public outreach activities as further described below and targeted outreach to different groups of people and other agencies throughout the Plan development process. At the internal kickoff meeting, the HMPC discussed additional strategies for public involvement and agreed to an approach using established public information mechanisms and resources within the County.

Early Public Outreach Activities

Public outreach for this LHMP Update began at the beginning of the Plan development process with the development of an LHMP webpage and outreach on the LHMP development and continued throughout the process at key plan development phases through a variety of mechanisms as described below:

Project Kickoff

- Development of a Plumas County 2026 LHMP Update webpage
- Post on Plumas County Office of Emergency Services (OES) Facebook page, 12/20/2024 (estimated viewership of 1,865)
- Plumas County Firewise Leads email forward, 1/1/2025 (estimated viewership of 83)
- Plumas County VOAD email newsletter, 1/5/2025 (estimated viewership of 205)
- Plumas County News and Public Notices email newsletter, 1/6/2025 (estimated viewership of 224)
- Post on Plumas County OES Facebook page, 1/7/2025 and 1/10/2025 (estimated viewership of 1,119)
- Plumas Sun news article, 1/7/2025
- 20,000 Lives email newsletter, 1/8/2025
- Plumas County Fire Safe Council meeting announcement, 1/9/2025 (estimated viewership of 30)
- Plumas County Fire Chief's Association meeting announcement, 1/11/2025 (estimated viewership of 20)
- 20,000 Lives email newsletter, 1/14/2025
- Posting of LHMP Public Information Poster/Flyer on community bulletin boards:
 - ✓ Chester Post Office
 - ✓ Canyon Dam Post Office
 - ✓ Greenville Post Office
 - ✓ Crescent Mills Post Office
 - ✓ Taylorsville Post Office
 - ✓ Chilcoot-Vinton Post Office
 - ✓ Feather River Food Co-Op, Portola
 - ✓ Portola Post Office
 - ✓ Clio Post Office
 - ✓ Graeagle Store
 - ✓ Blairsden/Graeagle Post Office
 - ✓ Feather River Food Co-Op, Quincy
 - ✓ Quincy Post Office
 - ✓ Forest Stationers, Quincy
 - ✓ Rhythm and Grace Dance Studio, Quincy
 - ✓ Quincy Branch Library

Hazard Risk Assessment

- Plumas County OES Facebook Post, 4/25/2025 (estimated viewership of 7,002)
- Plumas County VOAD email newsletter, 4/29/2025 (estimated viewership of 223)
- Plumas County News and Public Notices email (estimated viewership of 238)
- Plumas County OES Facebook Post, 5/5/2025 (estimated viewership of 4,249)
- Plumas Sun news announcement, 1/7/2025
- Shared in Facebook Groups
 - ✓ Plumas and Lassen County Crime Concerns and Info
 - ✓ Plumas-Sierra County Fire Weather/Updates
 - ✓ Plumas, Lassen, Sierra Classified and open forum complaints
 - ✓ Portola Portal
 - ✓ 530 Fire
 - ✓ The Sierra Valley
 - ✓ GRAEAGLE California
 - ✓ Plumas County Hazard Watch
 - ✓ Sierra Plumas Community Events
 - ✓ Plumas County Volunteers
 - ✓ PLUMAS COUNTY EVENTS
 - ✓ Plumas County Hazard Watch
 - ✓ Dixie Fire Recovery Voices
 - ✓ The Sierra Valley
- Posting of LHMP Public Information Poster/Flyer on community bulletin boards:
 - ✓ Blairsden Sierra Suds Laundromat
 - ✓ Blairsden-Graeagle Post Office
 - ✓ Canyon Dam Post Office
 - ✓ Chester Laundromat
 - ✓ Chester Library
 - ✓ Chester Plumas Bank
 - ✓ Chester Post Office
 - ✓ Chilcoot-Vinton Post Office
 - ✓ Clio Post Office
 - ✓ Crescent Mills Crescent Country Antiques and Gifts
 - ✓ Crescent Mills Post Office
 - ✓ East Quincy East Side Laundromat
 - ✓ Graeagle Store
 - ✓ Greenville Evergreen Market
 - ✓ Greenville Plumas Bank
 - ✓ Greenville Post Office
 - ✓ Meadow Valley Post Office
 - ✓ Portola Feather River Food Coop
 - ✓ Portola City Hall
 - ✓ Portola Leonard's Market
 - ✓ Portola Library

- ✓ Portola Plaza Laundromat
- ✓ Quincy Plumas Bank
- ✓ Quincy Post Office
- ✓ Taylorsville Post Office
- ✓ Twain Post Office
- ✓ Twain Store

The purpose of this outreach was to inform the public and other stakeholders of the Plumas County LHMP Update project, how they could get involved, and how to provide comments on the draft LHMP prior to submittal to Cal OES/FEMA. The outreach also invited the public stakeholders to the HMPC meetings for the project. Information on these outreach efforts can be seen in Appendix A to this LHMP.

Public Meetings

Three public meetings were planned for this LHMP Update project, during key phases of the LHMP development process. Public outreach efforts for these public meetings are described above for the first two public meetings and detailed below for the final public meeting on the Draft Plan. The three public meetings include:

Public Meeting #1: LHMP Kickoff

Public outreach for this LHMP Update began at the beginning of the Plan development process with the early public outreach activities to inform the public of the purpose of the LHMP and the hazard mitigation planning process for Plumas County and all participating jurisdictions. A press release was also issued at the beginning of the project to invite the public to attend either the public meeting or HMPC meetings. Figure 3-2 captures the Plumas County (OES) Facebook page January 10, 2025 post.

Figure 3-2 Plumas County Office of Emergency Services, Facebook Page, January 10, 2025



Source: Plumas County

Public Meeting #2: Hazard Risk Assessment

A second public meeting was held to provide an overview of the hazard risk assessment portion of the LHMP Update. This meeting was held in Plumas County the evening of the HMPC risk assessment meeting. This meeting was advertised through the Plumas County website and through other public outreach efforts mechanisms as previously described.

Public Meeting #3: On the Draft LHMP

The first draft of the LHMP Update was provided to the HMPC in October 2025, with a public review draft provided in November 2025. A public meeting was held on the evening of December 10, 2025, to present the draft LHMP and to collect public comments on the public review draft prior to finalization and submittal to Cal OES/FEMA. The public meeting was advertised in a variety of ways to maximize outreach efforts to both targeted groups and to the public at large and included an article in a local newspaper inviting the public to attend either the formal public meetings or the HMPC meeting at their convenience. The advertisement in the local newspaper included information on the date, location, and time of the meeting; where the draft Plan could be accessed in the community; and how to provide comments on the draft LHMP Update. In addition to a copy of the public review draft being placed on the Plumas County LHMP website in advance of these meetings, a hard copy of the draft Plan was made available in the Plumas County **INSERT LOCATION**. Documentation to support the final public meeting, including meeting outreach, can be found in Appendix A.

In addition to the advertisement for public participation, notices of meetings were sent directly to all persons on the HMPC contact list and also to other agency and key stakeholders (including the public) with an interest in the Plumas County Planning Area. The majority of these people reside in the Plumas County Planning Area or in surrounding communities. Because this is a multi-jurisdictional planning effort, all public outreach activities for this LHMP Update were conducted in collaboration with and on behalf of the Plumas County and all participating jurisdictions to this 2026 LHMP Update. Additional outreach for review of the Draft LHMP and final meetings included:

- Issuing of a Press Release on the Final Meetings and how to provide comments on the Draft LHMP
- Website additions announcing the final HMPC and Public meetings and how to provide comments on the Draft LHMP
- An advertisement in the local Newspaper on the final meetings and how to provide comments on the Draft LHMP
- Posting of LHMP Public Information Flyer at the following locations:

The formal public meetings for this project are summarized in Table 3-4.

Table 3-4 Schedule of Public and Stakeholder Meetings

| Meeting Type | Meeting Topic | Meeting Date | Meeting Locations |
|---------------------------------|---|------------------|-----------------------------------|
| Early Public Kickoff Meeting #1 | 1) Intro to DMA, CRS and mitigation planning 2) 2026 LHMP Update Process | January 14, 2024 | Quincy Branch Library, Quincy, CA |

| Meeting Type | Meeting Topic | Meeting Date | Meeting Locations |
|---|---|-------------------|-----------------------------------|
| Public Risk Assessment Meeting #2 | 1) Risk Assessment Overview | May 8, 2025 | Quincy Branch Library, Quincy, CA |
| Final Public Meeting #3 on the Draft LHMP | 1) Presentation of Draft LHMP and solicitation of public and stakeholder comments | December 10, 2025 | Quincy Branch Library, Quincy, CA |

Where appropriate, stakeholder and public comments and recommendations were incorporated into the final LHMP throughout the Plan development process, including the sections that address the risk assessment and mitigation goals and strategies. Public comments were solicited throughout the planning process and prior to LHMP submittal to Cal OES and FEMA. Public comments were received as part of the 2026 LHMP Update project and were incorporated as applicable into the final Plan documents as detailed in Appendix A. All press releases, newspaper advertisements and articles, website postings, and public outreach efforts are on file with County OES and are included in Appendix A. The draft Plan is currently available online on the Plumas County website at: <https://www.plumascounty.us/2214/Multi-Hazard-Mitigation-Plan>.

Planning Step 3: Coordinate with Other Departments and Agencies

Early in the planning process, the HMPC determined that data collection, mitigation strategy development, and LHMP review and approval would be greatly enhanced by inviting other local, state and federal agencies and organizations to participate in the Plan development process. Based on their involvement in hazard mitigation planning, their landowner status in the Plumas County Planning Area, and/or their interest as a neighboring or involved jurisdiction, representatives from the following agencies were invited to participate on the HMPC:

➤ TO BE INSERTED

In addition, coordination with other key agencies, organizations, and advisory groups occurred throughout the planning process as needed to inform them on how to participate in the LHMP Update process and if they had any expertise or assistance, they could lend to the LHMP Update, including information on hazards, risks and vulnerability of the Plumas County Planning Area, and any input on possible risk reduction measures. As part of the overall stakeholder and agency coordination effort, the HMPC coordinated with and utilized input to the LHMP Update from the following agencies:

- Cal-Adapt
- Cal Atlas
- Cal OES
- CAL FIRE
- Cal Trans
- California Department of Conservation
- California Department of Finance
- California Department of Fish and Wildlife
- California Department of Food and Agriculture
- California Department of Parks and Recreation

- California Department of Water Resources
- California Division of Mines and Geology
- California Employment Development Department
- California Geological Survey
- California Invasive Plant Council
- California Natural Resources Agency
- FEMA Region IX
- Library of Congress
- National Drought Mitigation Center
- National Levee Database
- National Oceanic and Atmospheric Association
- National Performance of Dams Program
- National Register of Historic Places
- National Resource Conservation Service
- National Response Center
- National Weather Service
- Pacific Gas and Electric
- Public Policy Institute of California
- United States Army Corps of Engineers
- United States Bureau of Land Management
- United States Bureau of Reclamation
- United States Department of Agriculture
- US Department of Transportation
- United States Forest Service
- United States Geological Survey
- Western Regional Climate Center

Several opportunities were provided for the groups listed above to participate in the planning process. At the beginning of the planning process, invitations were extended to many of these groups to actively participate on the HMPC. Specific participants from these groups are detailed in Appendix A. Others assisted in the process by providing data directly as requested in the Data Worksheets or through data contained on their websites or as maintained by their offices. Further as part of the public outreach process, all groups were invited to attend the public and HMPC meetings and to review and comment on the draft LHMP prior to submittal to CAL OES and FEMA.

Other Community Planning Efforts and Hazard Mitigation Activities

Coordination with other community planning efforts is also paramount to the success of this LHMP Update. Hazard mitigation planning involves identifying existing policies, tools, and actions that will reduce a community's risk and vulnerability to hazards. Plumas County and the participating jurisdictions to this Plan use a variety of comprehensive planning mechanisms, such as general and master plans and ordinances, to guide growth and development. Integrating existing planning efforts and mitigation policies and action strategies into this LHMP Update establishes a credible and comprehensive Plan that ties into and supports other community programs. The development of this LHMP Update incorporated information from the following existing plans, studies, reports, and initiatives as well as other relevant data from

neighboring communities and other jurisdictions. This gives a general overall list of plans, studies, and reports. More can be found in Appendix B to this Plan Update.

- 2023 State of California Hazard Mitigation Plan
- CAL FIRE Plans and data
- CAL OES plans and data
- Cal-Adapt reports and data
- California Department of Finance demographic documents
- California Department of Public Health
- California Department of Water Resources plans and information
- California DWR Division of Safety of Dams plans and information
- California Geological Survey Plans
- Capital Improvement Plans for each jurisdiction
- Climate Change and Health Profile Report – Plumas County
- CWPPs
- Dam Emergency Action Plans
- Emergency Operations Plans
- Evacuation Plans
- FEMA mitigation planning documents
- Flood Insurance Studies
- General Plans for the County and City
- General Plan Background Reports
- Housing Elements for the County and City
- National Weather Service documents
- Stormwater Master Plans
- US Department of Agriculture Reports
- US Department of Interior Plans
- US Fish and Wildlife reports
- USDA reports
- USGS Reports

Specific source documents are referenced at the beginning of each section of Chapter 4 and in Appendix B. These and other documents were reviewed and considered, as appropriate, during the collection of data to support Planning Steps 4 and 5, which include the hazard identification, vulnerability assessment, and capability assessment. Data from these plans and documents were incorporated into the hazard risk assessment sections of the LHMP. Where data and information from the existing studies and reports is used in this LHMP Update, the source document is referenced throughout this Plan. The information was also used to identify potential hazard mitigation strategies for inclusion in this LHMP Update and in assessing the capabilities of the participating jurisdictions in implementing the resulting mitigation strategy. Appendix B, References, provides a detailed list of references used in the preparation of this LHMP Update.

Coordination with Underserved Communities and Socially Vulnerable Populations

As detailed in FEMA’s new 2025 LHMP guidance, the LHMP development process should utilize the Whole Community approach to hazard mitigation planning. New 2025 FEMA guidance defines planning for the “Whole Community” as a focus on enabling the participation in national preparedness activities of

a wider range of players from the private and nonprofit sectors, including nongovernmental organizations and the general public, in conjunction with the participation of all levels of government in order to foster better coordination and working relationships.

In consideration of these new FEMA requirements as well as applicable California state laws and LHMP requirements, the plan development process focused on key sectors of public and private entities that would enhance hazard mitigation planning for Plumas County. Engagement and coordination with a variety of community-based organizations that work directly with or provide support to underserved communities and socially vulnerable populations was a critical component to Plumas County in addressing equity in mitigation planning and implementation.

For this LHMP project, significant efforts were made to identify and engage appropriate community members and groups to support the Plan development process. In Plumas County, vulnerable populations groups primarily include seniors, children and students, large households, low income, homeless populations, people with disabilities, those with lack of or limited mobility, and those with limited access to public transportation services in the more rural areas for evacuations and other hazard response needs. There is also a seasonal farmworker and local student population which can create challenges during hazard events. The concept of Plumas County being vulnerable due to its location and status as a small, rural, and remote community was determined to be a major descriptor of the County's underserved and vulnerable populations.

Given the small, rural nature of Plumas County, much of the support for these groups fell to applicable local government agencies, primarily the County. Thus, reaching out to the County departments providing these types of services was the initial step to meeting this element. These efforts were augmented by extensive coordination with the recently formed Voluntary Organizations Active in Disasters (VOAD) group in Plumas County as well as coordination with numerous other service oriented agencies supporting vulnerable populations in Plumas County. As part of the planning process, efforts made to identify and engage these groups in the Plumas County 2026 LHMP Update project included the following:

- **Plumas County Behavioral Health** – The mission of the Plumas County Behavioral Health Department is to provide respectful, culturally sensitive, and strength-based behavioral health services that promote wellness, self-sufficiency, and recovery from mental illness and/or addiction. The Department provides a wide range of services, from short-term to intensive, based on needs. These time-limited services are designed to foster resiliency in individuals and families and to promote wellness. Representatives from the Behavioral Health department were invited to be on the HMPC and provide input into the Plan development process, including input on the Draft LHMP.
- **Plumas County Environmental Health** – The mission of the Plumas County Environmental Health Department is to preserve the environment and enhance public health through outreach, education, collaborative planning, and sensible applications of environmental health principles, laws, and statutes. Representatives from the Environmental Health department were invited to be on the HMPC and provide input into the Plan development process, including input on the Draft LHMP.
- **Plumas County Animal Services** – The mission of the Animal Services Department is to Enforce Animal Control laws and regulations and to work cooperatively with other organizations to increase pet adoptions and reduce unwanted pet populations. As part of their mission, the Department also provides an Animal Preparedness Guide for Disasters. Representatives from the Animal Services

department were invited to be on the HMPC and provide input into the Plan development process, including input on the Draft LHMP.

- **Plumas County VOAD** - Plumas County Voluntary Organizations Active in Disaster, part of the broader VOAD movement, is a coalition of nongovernmental organizations with the aim of preparing for and alleviating disasters in Plumas County. VOAD representatives were invited to be on the HMPC and provide input into the Plan development process, including input on the Draft LHMP. In addition, the VOAD platform, including member lists/meetings and newsletters, were utilized extensively to provide public information and outreach specific to the Plumas County 2026 LHMP Update project.
- **Plumas District Hospital** – Plumas District Hospital is located in Quincy and is owned and operated by a Plumas Hospital District. Representatives from PDH were invited to be on the HMPC and provide input into the Plan development process, including input on the Draft LHMP.
- **Seneca Healthcare District Hospital** – Formed in 1947, Seneca Healthcare District Hospital is a community-oriented critical access hospital and clinic, located in the Lake Almanor area with a full range of inpatient and outpatient care. Representatives from Seneca Healthcare were invited to be on the HMPC and provide input into the Plan development process, including input on the Draft LHMP.
- **Eastern Plumas Health Care** – Eastern Plumas Health Care is a small, non-profit, critical access hospital district formed in 1971 which emphasizes access to care for all, and provides services focused on the particular needs of the rural community it serves. Representatives from Eastern Plumas Health Care were invited to be on the HMPC and provide input into the Plan development process, including input on the Draft LHMP.
- **REMSA** - REMSA is a private nonprofit community-based service. Since 1986, REMSA has provided nationally recognized ground ambulance service within Washoe County, Nevada. Care Flight, a REMSA program, operates the ground 9-1-1 ambulance service for Plumas District Hospital in Quincy, California. Representatives from REMSA were invited to be on the HMPC and provide input into the Plan development process, including input on the Draft LHMP.
- **NOR CAL EMS** – NOR CAL EMS provides services to Lassen, Modoc, Plumas, Sierra, and Trinity counties. Representatives from NOR CAL EMS were invited to be on the HMPC and provide input into the Plan development process, including input on the Draft LHMP.
- **Rural Community Assistance Corporation** – Rural Community Assistance Corporation’s (RCAC) Building Rural Economies (BRE) Program supports rural and Indigenous communities across the western United States by fostering local entrepreneurship and strengthening small-town economies. Through training, technical assistance, and coaching, BRE empowers local leaders, aspiring entrepreneurs, and community-based organizations to develop and grow locally driven economic strategies. The program emphasizes asset-based economic development—leveraging local strengths, cultural heritage, and natural resources to create sustainable and resilient communities. BRE also helps build capacity by supporting business planning, facilitating access to capital, and encouraging collaboration among stakeholders. Ultimately, RCAC’s BRE program is about more than just economic growth—it’s about cultivating thriving, self-determined communities from the ground up. Representatives from RCAC were invited to be on the HMPC and provide input into the Plan development process, including input on the Draft LHMP.
- **Plumas Crisis Intervention and Resource Center (PCIRC)** – PCIRC is a 501 (c)(3) non-profit organization operating in the rural, frontier counties of Plumas & Sierra located in the Sierra Nevada Mountains of Northern California. The mission of the organization is to function as a safety net provider of countywide services that offers individuals and families the opportunity to live to their own potential and be treated with dignity and respect. The agency is now in its 40th year of providing services to the area’s most vulnerable populations. PCIRC offers homeless prevention and rapid re-

housing programs to those experiencing homelessness in Plumas County. Representatives from PCIRC were invited to be on the HMPC and provide input into the Plan development process, including input on the Draft LHMP.

- **Connecting Point, community services central** - Connecting Point is a public agency dedicated to providing programs and services that promote the health and independence of the people of our community. Since 2003, Connecting Point (originally the Nevada-Sierra Regional IHSS Public Authority) has been connecting people to In-Home-Support-Services and IHSS employment in Nevada, Sierra, and Plumas Counties. Representatives from Connecting Point were invited to be on the HMPC and provide input into the Plan development process, including input on the Draft LHMP.
- **Red Cross** - Red Cross, Gold Country Region, covers multiple counties including Plumas. The Red Cross mission is to prevent and alleviate human suffering in the face of emergencies. This involves providing relief to individuals and communities impacted by disasters, teaching life-saving skills, and supporting those in need through various services. These services include disaster relief, including providing shelter, food, and health services during emergencies. They also offer training in first aid, CPR, and other life-saving skills. Local Red Cross representatives were invited to be on the HMPC and review and provide comments on the Public Review Draft LHMP.
- **Feather River College** – Established in 1968, Feather River College is a small community college located in Quincy, California. Covering 256 acres, it serves as estimated 1,500 full time students. Feather River College makes every effort to provide a safe and secure environment for all members of the college community, including providing students with information on hazard issues and disasters. Representatives from Feather River College were invited to be on the HMPC and provide input into the Plan development process, including input on the Draft LHMP.
- **Plumas County Unified School District** - Plumas Unified School District, covering 2,613 square miles, serves the student and families in four distinct communities in rural Plumas County. PUSD serves over 1600 students in the 2,613 square miles through four elementary schools, three comprehensive high schools, and eight alternative education sites. The school locations range from Chester in the Lake Almanor north-west region, to Greenville in Indian Valley, to the county seat in Quincy in American Valley and to Portola in the East in Sierra Valley. The student population includes approximately: 78% Caucasian, 12.6% Hispanic, 1.2% Asian, 1.9% African American, and 6.3% other students. Representatives from PCUSD were invited to be on the HMPC and provide input into the Plan development process, including input on the Draft LHMP.

In addition to inviting the above groups to be part of the HMPC and LHMP development process, numerous other individuals, organizations, and agencies were included in the extensive outreach efforts conducted for the 2026 LHMP Update as described above. This includes news articles, newsletters, numerous Facebook Group postings and posting of LHMP posters and flyers in key locations throughout the County. All of these combined efforts provided notice of and an opportunity for participation by all groups in the 2026 Plumas County LHMP Update development process.

3.2.2. Phase 2: Assess Risks

Planning Steps 4 and 5: Identify the Hazards and Assess the Risks

Foster Morrison led the HMPC in a research effort to identify, document, and profile all the hazards that have, or could have, an impact to the Plumas County Planning Area. Starting with the 2020/2019 LHMPs, natural hazards of concern were added, deleted, and modified for this LHMP Update. Data collection

worksheets were developed and used in this effort to aid in determining hazards and vulnerabilities and where the risk varies across the Plumas County Planning Area. Geographic information systems (GIS) were used to display, analyze, and quantify hazards and vulnerabilities.

The HMPC also conducted a capability assessment to review and document Plumas County's and each participating jurisdictions' current capabilities to mitigate risk and vulnerability to identified hazards. By collecting information about existing County/City/District programs, policies, regulations, ordinances, and emergency plans, the HMPC could assess those activities and measures already in place that contribute to mitigating some of the hazard risks and vulnerabilities. A more detailed description of the risk assessment process, methodologies, and results are included in Chapter 4 Risk Assessment.

NFIP Participation

Also addressed in the risk assessment and mitigation strategy of this 2026 LHMP is an assessment of the County's and City of Portola's floodplain management programs and participation in the NFIP, including a discussion of their continued compliance with NFIP requirements. However, it should be noted that this applies only to eligible NFIP communities. Participating special districts to this LHMP Update do not address their compliance with the NFIP as they are not eligible jurisdictions for purposes of the NFIP.

3.2.3. Phase 3: Develop the Mitigation Plan

Planning Steps 6 and 7: Set Goals and Review Possible Activities

Foster Morrison facilitated brainstorming and discussion sessions with the HMPC that described the purpose and process of developing planning goals and objectives, a comprehensive range of mitigation alternatives, and a method of selecting and defending recommended mitigation actions using a series of selection criteria. This information is included in Chapter 5 Mitigation Strategy. Additional documentation on the process the HMPC used to develop the goals and mitigation strategy is in Appendix C.

Planning Step 8: Draft an Action Plan

Based on input from the HMPC regarding the draft risk assessment and the goals and activities identified in Planning Steps 6 and 7, a complete first draft of the LHMP Update was developed. This complete draft was provided for HMPC review and comment via a Dropbox web link. HMPC comments were integrated into the second public review draft, which was advertised and distributed to collect public input and comments. The HMPC integrated comments and issues from the public, as appropriate, along with additional internal review comments and produced a final draft for CAL OES and FEMA Region IX to review and approve, contingent upon final adoption by governing boards of all participating jurisdictions.

3.2.4. Phase 4: Implement the Plan and Monitor Progress

Planning Step 9: Adopt the Plan

In order to secure buy-in and officially implement the LHMP Update, the Plan was adopted by the governing boards of each participating jurisdiction using the sample resolutions contained in Appendix D.

Planning Step 10: Implement, Evaluate, and Revise the Plan

The true worth of any mitigation plan is in the effectiveness of its implementation. Up to this point in the planning process, all of the HMPC's efforts have been directed at researching data, coordinating input from participating entities, and developing appropriate mitigation actions and projects. Each recommended action includes key descriptors, such as a lead manager and possible funding sources, to help initiate implementation. An overall implementation strategy is described in Chapter 7 Plan Implementation and Maintenance.

Finally, there are numerous organizations within the Plumas County Planning Area whose goals and interests interface with hazard mitigation. Coordination with these other planning efforts, as addressed in Planning Step 3, is paramount to the implementation and ongoing success of this plan and mitigation in the Plumas County Planning Area and is addressed further in Chapter 7.

Implementation and Maintenance Process: 2020/2019 Plumas County/City of Portola LHMPs

The previous 2020 Plumas County and 2019 City of Portola LHMPs included a process for Plan maintenance and implementation of the mitigation strategy as well as formal updates to the LHMP. The 2020/2019 maintenance processes called for annual reviews, including a review of the status of mitigation strategy implementation and reviews after disasters. In addition, the 2020/2019 processes called for a formal plan update as required by DMA regulations every 5 years. With respect to the 2020/2019 LHMPs, Plumas County held an annual review in April of 2024 on their 2020 LHMP as part of the Plumas County Disaster Council agenda. This annual review focused on assessing and documenting progress on meeting LHMP goals and the status of mitigation action implementation. No other formal annual reviews were conducted on the 2020/2019 LHMPs ; although, both the County and City checked in on their LHMPs and potential mitigation actions post disaster to determine what funding might be available to implement priority projects. This 2026 LHMP Update, once approved and adopted, will meet the DMA formal 5-year update requirement for Plumas County and the City of Portola, as the previous participating jurisdictions.

In addition, the 2020 Plumas County LHMP was relied on and integrated into other planning mechanisms in the Plumas County Planning Area. Table 3-5 lists the planning mechanism the 2020 Plumas County LHMP was integrated into by unincorporated Plumas County. Specific to City of Portola, their jurisdictional annex addresses integration of their 2019 LHMP with other planning mechanisms.

Table 3-5 Unincorporated Plumas County - Incorporation of 2020 Plumas County LHMP into Other Planning Mechanisms

| Planning Mechanism 2020 LHMP Was Incorporated or Implemented Through | Details |
|--|---|
| General Plan Annual Progress Report | https://www.plumascounty.us/DocumentCenter/View/50845/PlumasCounty_2035_GP_2024-AnnualReport_4125 |
| 2021 Plumas County Wildfires Long Term Recovery Plan | https://plumascounty.us/2964/2021-PLUMAS-COUNTY-WILDFIRES-DIXIE-FIRE- |

| Planning Mechanism 2020 LHMP Was Incorporated or Implemented Through | Details |
|--|---|
| Plumas County Regional Transportation Plan | https://plumascounty.us/1900/Regional-Transportation-Plan |
| Plumas County Community Health Assessment | Oct 2020 https://plumascounty.us/DocumentCenter/View/44000/PCPHA-Strategic-Plan-Update-2022-PUBLIC-VERSION_121322?bidId= |
| Plumas & Sierra Counties Plan to address Homelessness | June 2020 https://www.plumascounty.us/DocumentCenter/View/28278/Plumas-Sierra-Final-Plan-to-Address-Homelessness-061620_ADOPTED?bidId= |
| Plumas County Housing Study | June 2020 https://chpc.net/wp-content/uploads/2024/05/Plumas_Housing_Report.pdf |
| Sierra Valley Subbasin Groundwater Sustainability Plan Adoption | https://www.sierravalleygmd.org/gsp-documents |

The plan implementation and maintenance process as set forth in the 2020/2019 LHMPs have been updated for this LHMP Update. The revised update implementation and maintenance process for the Plumas County 2026 LHMP Update is set forth in Section 7 of this Plan document. A strategy for continued public involvement for this update process is also included in Chapter 7.



Chapter 4 Risk Assessment

44 CFR Requirement §201.6(c)(2): [The plan shall include] A risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.

As defined by the Federal Emergency Management Agency (FEMA), risk is a combination of hazard, vulnerability, and exposure. “It is the impact that a hazard would have on people, services, facilities, and structures in a community and refers to the likelihood of a hazard event resulting in an adverse condition that causes injury or damage.”

The risk assessment process identifies and profiles relevant hazards and assesses the exposure of lives, property, and infrastructure to these hazards. The process allows for a better understanding of a community’s potential risk to natural hazards and provides a framework for developing and prioritizing mitigation actions to reduce risk from future hazard events.

This risk assessment followed the methodology described in the FEMA publication Understanding Your Risks—Identifying Hazards and Estimating Losses (FEMA 386-2, 2002), which breaks the assessment down into a four-step process:

1. Identify Hazards;
2. Profile Hazard Events;
3. Inventory Assets; and
4. Estimate Losses.

Data collected through this process has been incorporated into the following sections of this chapter:

- **Section 4.1 Hazard Identification** identifies the natural hazards that threaten the Plumas County Planning Area and unincorporated Plumas County and describes why some hazards have been omitted from further consideration.
- **Section 4.2 Plumas County Planning Area Assets Inventory and Growth and Development Trends** identifies the populations; structures and values; critical facilities and community lifelines; cultural, historical, and natural resources; and economic and community activities of value. It also identifies past growth in the Plumas County Planning Area and reviews future development trends. This information is not hazard specific and covers the entire Plumas County Planning Area and unincorporated Plumas County.
- **Section 4.3 Hazard Profiles and Vulnerability Assessment** provides an overview of each hazard, its location and extent, and discusses the risk, vulnerability, and impacts of each natural hazard to the Plumas County Planning Area and unincorporated Plumas County. The hazard profile also describes previous occurrences of hazard events and the likelihood of future occurrences. The vulnerability assessment evaluates the Plumas County’s exposure to natural hazards considering: populations;

structures and values; critical facilities and infrastructure; natural, historic, and cultural resources; and future development trends, and where possible, estimates potential hazard losses.

- **Section 4.4 Capability Assessment** inventories existing mitigation activities and policies, regulations, plans, and programs that pertain to hazards and mitigation in the Plumas County Planning Area and unincorporated Plumas County and can affect net vulnerability.
- **Section 4.5 Natural Hazard Summary** summarizes the results of the risk assessment and whether a hazard is considered a priority for mitigation strategy planning.

This risk assessment covers the entire geographical extent of Plumas County (i.e., the Plumas County Planning Area) and unincorporated Plumas County. And as required by FEMA, this risk assessment for the Plumas County Planning Area also includes an evaluation of how the hazards and risks vary across the Planning Area.

This LHMP Update involved a comprehensive review and update of each section of the 2020 LHMP, as well as the relevant portions of the 2019 City of Portola LHMP. Information from the 2019 and 2020 LHMPs was used in this Update where valid and applicable. As part of the risk assessment update, new data was used, where available, and new analyses were conducted. Where data from existing studies and reports was used, the source is referenced throughout this risk assessment. Refinements, changes, and new methodologies used in the development of this risk assessment update are summarized in Chapter 2 What's New and are also detailed in this risk assessment portion of the Plan Update.

4.1 Hazard Identification

44 CFR Requirement §201.6(c)(2)(i): [The risk assessment shall include a] description of the type...of all natural hazards that can affect the jurisdiction.

The Plumas County Hazard Mitigation Planning Committee (HMPC) conducted a hazard identification study to determine the hazards that threaten the Planning Area. This section details the methodology and results of this effort.

Data Sources

The following data sources were used for this Hazard Identification portion of the plan:

- National Climatic Data Center Storm Events Database
- 2020 Plumas County Hazard Mitigation Plan
- 2013 Plumas County General Plan
- 2019 City of Portola Hazard Mitigation Plan
- 2023 State of California Hazard Mitigation Plan
- FEMA Disaster Declaration Database
- HMPC input

4.1.1. Results and Methodology

Using existing hazards data and input gained through planning meetings, the HMPC agreed upon a list of hazards that could affect the Plumas County Planning Area. Hazards data from the California Office of

Emergency Services (Cal OES), FEMA, California Department of Water Resources, the National Oceanic and Atmospheric Administration (NOAA), and many other sources were examined to assess the significance of these hazards to the Planning Area.

The following hazards in Table 4-1, listed alphabetically, were identified and investigated for this LHMP Update. As a starting point, the 2020 Plumas County LHMP Update, the 2019 City of Portola LHMP, and the 2023 California State Hazard Mitigation Plan were consulted to evaluate the applicability of new hazards of concern to the State to the Plumas County Planning Area. Building upon this effort, hazards from the past plans were identified, and comments explain how hazards were updated from the previous plans. Most hazards from the 2020 and 2019 plans were profiled in this LHMP Update, with the exception of pandemic. Compared to the 2020 Plumas County LHMP, avalanche was added to the Severe Weather: extreme cold, freeze, and snow hazard, levee failure was placed inside the flood hazard, and agricultural hazards were added. Multiple hazards that were not profiled in the 2019 Portola LHMP were added, while none were dropped from consideration for this LHMP Update.

Table 4-1 Plumas County Hazard Identification and Comparison between 2020, 2019, and 2026 LHMPs

| 2026 Hazards | 2020 Plumas County Hazards | City of Portola 2019 LHMP | Comment |
|--|--|---------------------------|---|
| Ag Hazard: Severe Weather/ Pests/Weeds | — | — | New hazard. |
| — | Avalanche | — | This was added to a Severe Weather hazard. |
| Climate Change | Climate Change | — | This hazard was kept. |
| Dam Failure | Dam Failure | Dam Failure | This hazard was kept. |
| Drought & Water Shortage (w/tree mortality) | Drought and Water Shortage | — | This hazard was kept. |
| Earthquake | Earthquake | Earthquake | This hazard was kept. |
| Flood: 1%/0.2% annual chance (w/levee failure) | Flood: 100/500-year | Flood | This hazard was kept and levee failure was added. |
| Flood: Localized Stormwater | Flood: Localized/Stormwater | — | This hazard was kept. |
| Haz Mat Transportation | — | — | This is a new hazard. |
| Landslide, Mudslide, and Debris Flow | Landslide, Mudslide, and Debris Flows | — | This hazard was kept. |
| — | Levee failure | — | This was put into the flood hazard. |
| — | Pandemic | — | This hazard was dropped. |
| Severe Weather: Extreme Cold, Freeze, and Snow (w/avalanche) | Severe Weather: Winter Storms and Freeze | Winter and Extreme Cold | This hazard was renamed and avalanche was added. |
| Severe Weather: Extreme Heat | Severe Weather: Extreme Heat | Extreme Heat | This hazard was kept. |

| 2026 Hazards | 2020 Plumas County Hazards | City of Portola 2019 LHMP | Comment |
|--|---|---------------------------|--|
| Severe Weather: Heavy Rains and Storms | Severe Weather: Heavy Rains and Storms (winds, hail, lightning) | Severe Weather | This hazard was kept. |
| Severe Weather: High Winds and Tornadoes | Severe Weather: High Winds/Tornadoes | Severe Weather | This hazard was kept. |
| Volcano | Volcano | - | This hazard was kept. |
| Wildfire (w/smoke and air quality) | Wildfire | Wildfire | This hazard was kept, and smoke and air quality subhazards were added. |

Certain other hazards were excluded from consideration for this Plan Update. They are shown in Table 4-2.

Table 4-2 Plumas County – Excluded Hazards

| Hazard Excluded | Why Excluded |
|---|---------------------------------|
| Coastal Flooding, Erosion, and Sea Level Rise | The County is not on the coast. |
| Hurricane | The County is not on the coast. |
| Tsunami | The County is not on the coast. |

Table 4-3 was completed by the County and HMPC to identify, profile, and rate the significance of identified hazards. Those hazards identified as a high or medium significance in Table 4-3 are considered priority hazards for mitigation planning. Those hazards that occur infrequently or have little or no impact in Plumas County were determined to be of low significance and not considered a priority hazard. Significance was determined based on the hazard profile, focusing on key criteria such as frequency, extent, and resulting damage, including deaths/injuries and property, natural and cultural resources, and economic damage.

Table 4-3 Plumas County Hazard Identification Assessment

| Hazard | Geographic Extent | Likelihood of Future Occurrences | Magnitude/Severity | Significance | Climate Change Influence |
|--|-------------------|----------------------------------|--------------------|--------------|--------------------------|
| Ag Hazard: Severe Weather/Pests/Weeds | Extensive | Highly Likely | Critical | Medium | Medium |
| Climate Change | Extensive | Likely | Limited | Medium | -- |
| Dam Failure | Extensive | Unlikely | Critical | High | Medium |
| Drought & Water Shortage (w/tree mortality) | Extensive | Likely | Limited | Medium | High |
| Earthquake | Extensive | Unlikely/Occasional | Catastrophic | Medium | Low |
| Flood: 1%/0.2% annual chance (w/levee failure) | Significant | Occasional/Unlikely | Critical | High | Medium |
| Flood: Localized Stormwater | Significant | Highly Likely | Negligible | Medium | Medium |
| Hazardous Materials Transportation | Significant | Occasional | Critical | Medium | Low |
| Landslide, Mudslide, and Debris Flow | Significant | Likely | Negligible | Medium | Medium |
| Severe Weather: Extreme Cold, Freeze, and Snow (w/avalanche) | Extensive | Highly Likely | Negligible | Medium | Medium |
| Severe Weather: Extreme Heat | Extensive | Highly Likely | Negligible | Medium | High |
| Severe Weather: Heavy Rains and Storms | Extensive | Highly Likely | Limited | Medium | Medium |
| Severe Weather: High Winds and Tornadoes | Extensive | Highly Likely | Limited | Medium | Low |
| Volcano | Extensive | Unlikely | Critical | Low | Low |
| Wildfire (w/smoke and air quality) | Extensive | Highly Likely | Catastrophic | High | Medium |
| <p>Geographic Extent <i>Limited:</i> Less than 10% of planning area <i>Significant:</i> 10-50% of planning area <i>Extensive:</i> 50-100% of planning area</p> <p>Likelihood of Future Occurrences <i>Highly Likely:</i> Near 100% chance of occurrence in next year, or happens every year. <i>Likely:</i> Between 10 and 100% chance of occurrence in next year, or has a recurrence interval of 10 years or less. <i>Occasional:</i> Between 1 and 10% chance of occurrence in the next year, or has a recurrence interval of 11 to 100 years. <i>Unlikely:</i> Less than 1% chance of occurrence in next 100 years, or has a recurrence interval of greater than every 100 years.</p> <p>Magnitude/Severity <i>Catastrophic:</i> More than 50 percent of property severely damaged; shutdown of facilities for more than 30 days; and/or multiple deaths <i>Critical:</i> 25-50 percent of property severely damaged; shutdown of facilities for at least two weeks; and/or injuries and/or illnesses result in permanent disability <i>Limited:</i> 10-25 percent of property severely damaged; shutdown of facilities for more than a week; and/or injuries/illnesses treatable do not result in permanent disability <i>Negligible:</i> Less than 10 percent of property severely damaged, shutdown of facilities and services for less than 24 hours; and/or injuries/illnesses treatable with first aid</p> <p>Significance <i>Low:</i> Minimal potential impact <i>Medium:</i> Moderate potential impact <i>High:</i> Widespread potential impact</p> <p>Climate Change Influence <i>Low:</i> Minimal potential impact <i>Medium:</i> Moderate potential impact <i>High:</i> Widespread potential impact</p> | | | | | |

4.1.2. Disaster Declaration History

One method used to identify hazards was the researching of past events that triggered federal and/or state emergency or disaster declarations in the Plumas County Planning Area. Federal and/or state disaster declarations may be granted when the severity and magnitude of an event surpasses the ability of the local government to respond and recover. Disaster assistance is supplemental and sequential. When the local government's capacity has been surpassed, a state disaster declaration may be issued, allowing for the provision of state assistance. Should the disaster be so severe that both the local and state governments' capacities are exceeded, a federal emergency or disaster declaration may be issued allowing for the provision of federal assistance.

The federal government may issue a disaster declaration through FEMA, the U.S. Department of Agriculture (USDA), and/or the Small Business Administration (SBA). FEMA also issues emergency declarations, which are more limited in scope and without the long-term federal recovery programs of major disaster declarations. The quantity and types of damage are the determining factors.

A USDA declaration will result in the implementation of the Emergency Loan Program through the Farm Services Agency. This program enables eligible farmers and ranchers in the affected county as well as contiguous counties to apply for low interest loans. A USDA declaration will automatically follow a major disaster declaration for counties designated major disaster areas and those that are contiguous to declared counties, including those that are across state lines. As part of an agreement with the USDA, the SBA offers low interest loans for eligible businesses that suffer economic losses in declared and contiguous counties that have been declared by the USDA. These loans are referred to as Economic Injury Disaster Loans. Disaster declarations for these programs are discussed in Section 4.3.6.

Based on the disaster declaration history provided in Table 4-4, Plumas County is among the many counties in California susceptible to disaster. Details on federal and state disaster declarations were obtained from FEMA and Cal OES and compiled in chronological order in Table 4-4. A review of state declared disasters indicates that Plumas County received 35 state declarations between 1950 and 2025. Of the 35 state declarations: 22 were associated with severe winter storms, heavy rains, or flooding; 8 were for fire; 2 were from pandemic, 1 was for drought; 1 was for freeze and severe weather conditions; and 1 was from economic disaster. A review of federal disasters shows 30 federal disaster declarations. Of these 30 federal declarations: 19 were associated with severe winter storms, heavy rains, or flooding; 6 for fire; 2 were from pandemic, 1 for drought; 1 was for seismic sea wave (which was declared for the entire State of California); and 1 was for hurricane (a nationwide declaration for Katrina evacuations). A summary of these events by disaster type is shown in Table 4-5.

Table 4-4 Plumas County Federal and State Disaster Declarations, 1950-2025

| Year | Disaster Name | Disaster Type | Disaster Cause | State Declaration # and Date | Federal Declaration # and Date |
|------|---|---------------|----------------|--|--------------------------------|
| 2023 | California Severe Winter Storms, Straight-line Winds, Flooding, Landslides, and Mudslides | Storms | Storms | 3/1/2023-3/8/2023 | DR-4699 4/3/2023 |
| 2023 | California Severe Winter Storms, Straight-line Winds, Flooding, Landslides, and Mudslides | Flood | Storms | 3/1/2023-3/8/2023 | EM-3592 3/10/2023 |
| 2021 | California Wildfires | Fire | Fire | 2021-04 7/16/2021 (Lava Fire) 7/16/2021 (Beckwourth Complex) 8/6/2021 | DR-4610 8/24/2021 |
| 2021 | Dixie Fire | Fire | Fire | 2021-03 7/23/2021 | FM-5400 7/20/2021 |
| 2021 | 2021 Northeast Wildfires | Fire | Fire | 2021-04 2021-03 8/6/2021 8/10/2021 (Monument Fire) | — |
| 2020 | Bear Fire | Fire | Fire | 2020-06 8/18/2020 | FM-5363 9/9/2020 |
| 2020 | California Wildfires | Fire | Fire | — | DR-4558 8/22/2020 |
| 2020 | Covid-19 | Pandemic | Pandemic | 2020-01 3/4/2020 | DR-4482 3/22/2020 |
| 2020 | Covid-19 | Pandemic | Pandemic | 2020-01 3/4/2020 | EM-3428 3/13/2020 |
| 2017 | Severe Winter Storms, Flooding, Mudslides in California | Flood | Storms | 2017-03 3/7/2017 | DR-4308 4/1/2017 |
| 2017 | Severe Winter Storms, Flooding, Mudslides in California | Flood | Storms | 2017-01 1/23/2017 | DR-4301 2/14/2017 |
| 2014 | California Drought | Drought | Drought | 2014-03 9/18/2014 | — |

| Year | Disaster Name | Disaster Type | Disaster Cause | State Declaration # and Date | Federal Declaration # and Date |
|-----------|--|---------------|----------------|---|--------------------------------|
| 2008 | California Wildfires | Fire | Fire | – | EM-3287 6/28/2008 |
| 2007 | Severe Freeze | Freeze | Freeze | 2007-02 01/12/2007- 1/26/2007 | – |
| 2005/2006 | Severe Storms, Flooding, Mudslides, and Landslides in California | Flood | Storms | 2006-01 1/12/2006 | DR-1628 2/3/2006 |
| 2005 | Hurricane Katrina Evacuations | Hurricane | Hurricane | – | EM-3248 9/13/2005 |
| 2001 | Energy Emergency | Economic | Greed | 1/1/2001 | – |
| 1999 | California Extreme Fire Hazards | Fire | Fire | 99-05 8/26/1999 | EM-3140 9/1/1999 |
| 1997 | California Severe Storms/flooding | Flood | Storms | 97-01 1/2/97-1/31/97 | DR-1155 1/4/1997 |
| 1996 | Torrential Wind and Rains | Flood | Storms | GP 96-01 1/2/1996 | – |
| 1995 | California Severe Winter Storms, Flooding, Landslides, Mud Flows | Flood | Storms | 95-03 03/12/95 – 03/24/95 | DR-1046 3/12/1995 |
| 1995 | 1995 Severe Winter Storms | Flood | Storms | 95-01, 95-02, 95-03, 95-04 1/6/95-3/14/95 | DR-1044 1/13/1995 |
| 1993 | California Severe Storm, Winter Storm, Mud & Landslides, Flooding | Flood | Storms | – | DR-979 2/3/1993 |
| 1992 | Late California Severe Storm, Winter Storm, Mud & Landslides, Flooding | Flood | Storms | 93-01 2/12/92, 2/19/92 | DR-979 2/25/1992 |
| 1992 | 1992 Late Winter Storms | Flood | Storms | 93-01 1/7/93 - 2/19/93 | DR-979 1/15/1992 |
| 1987 | 1987 Wildland Fires | Fire | Fire | 9/10/1987, 9/3/1987 | – |
| 1986 | California Severe Storms, Flooding | Flood | Storms | 86-01 2/18-86-3/12/86 | DR-758 2/21/1986 |

| Year | Disaster Name | Disaster Type | Disaster Cause | State Declaration # and Date | Federal Declaration # and Date |
|------|------------------------------------|---------------|----------------|--|--------------------------------|
| 1980 | April Storms | Flood | Storms | 80-01–80-25 4/1/1980 | – |
| 1977 | California Drought | Drought | Drought | – | EM-3023 1/20/1977 |
| 1970 | California Severe Storms, Flooding | Flood | Flood | 1/27/1970 - 3/2/1970 | DR 283 2/16/1970 |
| 1969 | California Severe Storms, Flooding | Flood | Storms | 1/23/69, 1/25/69, 1/28/69, 1/29/69, 2/8/69, 2/10/69, 2/16/69, 3/12/69 | DR-253 1/26/1969 |
| 1964 | California Heavy Rains & Flooding | Flood | Storms | 12/22/64, 12/23/64, 12/28/64, 1/5/65, & 1/14/65 | DR-183 12/24/1964 |
| 1964 | Seismic Wave | Other | Other | – | DR-169 4/1/1964 |
| 1963 | 1963 Floods and Rains | Flood | Storms | 2/7/63, 2/26/63, 2/29/63, & 4/22/63 | DR-145 2/25/1963 |
| 1963 | 1963 Floods | Flood | Storms | 2/14/1964 | – |
| 1960 | 1960 Widespread Wildfires | Fire | Fire | 8/16/1960 | – |
| 1958 | 1958 April Storms and Floods | Flood | Storms | 4/2/1958 | DR-52 4/4/1958 |
| 1958 | 1958 February Storms and Floods | Flood | Storms | 2/26/1958 | CDO 58-03 |
| 1955 | 1955 Floods | Flood | Flood | 12/22/1955 | DR-47 12/23/1955 |
| 1950 | 1950 Floods | Flood | Flood | 11/21/1950 | OCD 50-01 |

Source: Cal OES, FEMA. Retrieved April 2025.

Table 4-5 Plumas County – Federal and State Disaster Declarations Summary 1950-2025

| Disaster Type | State Declarations | | Federal Declarations | |
|---------------|--------------------|--|----------------------|--|
| | Count | Years | Count | Years |
| Drought | 1 | 2014 | 1 | 1997 |
| Economic | 1 | 2001 | 0 | – |
| Fire | 8 | 1960, 1987, 1999, 2020 (twice), 2021 (three) | 6 | 1999, 2008, 2020 (twice), 2021 (twice) |

| Disaster Type | State Declarations | | Federal Declarations | |
|----------------------------|--------------------|---|----------------------|---|
| | Count | Years | Count | Years |
| Flood | 22 | 1950, 1955, 1958 (twice), 1964, 1963, 1964, 1969, 1970 1980, 1986, 1993, 1992*, 1995 (twice*), 1996, 1997, 2006, 2017 (twice*), 2023 (twice*) | 19 | 1950, 1955, 1958 (twice), 1963, 1964, 1969, 1970, 1986, 1992 (twice), 1995 (twice), 1997, 2006*, 2017 (twice*), 2023 (twice*) |
| Freeze | 1 | 2007 | 0 | — |
| Hurricane | 0 | — | 1 | 2005 |
| Pandemic | 2 | 2020 (twice) | 2 | 2020 (twice) |
| Seismic Sea Wave (Tsunami) | 0 | — | 1 | 1964 |
| Totals | 35 | | 30 | |

Source: Cal OES, FEMA. Retrieved April 2025.

Plumas County Disasters since 2019 City of Portola and 2020 Plumas County LHMP

- 2020 California Covid-19 Pandemic (2 state and 2 federal declarations)
- 2020 California Wildfires (federal declaration)
- 2020 Bear Fire (state and federal declaration)
- 2021 Northeast Wildfires (state declaration)
- 2021 Dixie Fire (state and federal declaration)
- 2021 California Wildfires (state and federal declaration)
- 2023 California Severe Winter Storms, Flooding, Landslides, and Mudslides (2 federal and 2 state declarations)

EOC Activations

It was noted that the County EOC has been activated since the 2020 LHMP. This occurred during the following events:

- North Complex (Claremont, Bear, Sheep) – 8/14-9/26/2020
- Dixie Fire – 7/14-8/30/2021
- Winter Storms – 2/21-7/10/2023
- COVID – 1/20/2020-5/11/2023

4.2 Plumas County Asset Inventory and Growth and Development Trends

As a starting point for analyzing the Plumas County Planning Area’s vulnerability to identified hazards, a variety of data was used to define a baseline against which all disaster impacts could be compared. If a catastrophic disaster was to occur in the Plumas County Planning Area, this section describes significant lands, assets, and other resources at risk. This section is broken into two parts:

- **Asset Inventory** – The assets inventory identifies the Plumas County Planning Area’s and unincorporated Plumas County’s total assets, including the people and populations: structures; critical

facilities and infrastructure, and community lifelines; natural, historic, and cultural resources; and economic assets and community activities of value. This data is not hazard specific, but is representative of total assets within the Plumas County Planning Area and unincorporated Plumas County, potentially at risk to identified hazards as discussed in Section 4.3 Hazard Profiles and Vulnerability Assessment.

- **Growth and Development Trends** – A discussion of growth and development trends in the Plumas County Planning Area with a focus on unincorporated Plumas County, both current and future, is presented.

Data Sources

➤ ADD OTHERS

- CalAtlas
- California Department of Conservation
- California Department of Finance
- California Department of Fish and Wildlife Service
- California Department of Parks and Recreation Office of Historic Preservation
- California Department of Water Resources (CA DWR) Special Populations and Disadvantaged Community Mapping
- California Environmental Protection Agency (Cal EPA) Disadvantaged Communities
- California Environmental Quality Act (CEQA)
- California Natural Diversity Database
- Center for Disease Control (CDC) Social Vulnerability Index
- Plumas County Building Department and Planning Department
- Plumas County GIS
- FEMA National Risk Index
- Hazus-MH 6.1
- National Environmental Policy Act (NEPA)
- State of California Department of Conservation
- US Census Bureau

4.2.1. Assets Inventory

If a catastrophic disaster was to occur in the Plumas County Planning Area, this section describes populations, structures, critical facilities and infrastructure, and other key assets and resources at risk that comprise the existing built environment. Assets inventoried in this baseline assessment include:

- People and Populations
- Structures
- Critical Facilities and Infrastructure,
- Community Lifelines
- Natural, Historic, and Cultural Resources
- Economic Assets and Community Activities of Value

Populations

Life safety is a priority issue for hazard mitigation planning. The people that work and recreate in the Plumas County Planning Area, and those that live and work in surrounding communities are also potentially at risk during a natural hazard event.

The estimated population of Plumas County (both incorporated communities and the unincorporated County) for January 1, 2024, was 18,841. Populations potentially at risk are described in the Table 4-6 based on California Department of Finance estimates. The most recent estimates are dated 1/1/2024, which are shown in the table below.

Table 4-6 Plumas County Planning Area – Populations

| Jurisdiction | Population |
|------------------------------|---------------|
| City of Portola | 2,098 |
| Unincorporated Plumas County | 16,787 |
| Total | 18,885 |

Source: Cal DOF E-1. 1/1/2024

Table 4-7 illustrates the pace of population growth in Plumas County dating back to 1940. Major growth in the County occurred in the 1970s, with other decades seeing small growth and small losses. There has been a recent downturn in population size since 2000. Details on population growth in the City of Portola is included in its respective annex to this LHMP Update.

Table 4-7 Plumas County Planning Area – Population Growth 1940-2024

| Year | Population | Percent Increase |
|------|------------|------------------|
| 1940 | 11,548 | – |
| 1950 | 13,519 | 17.1% |
| 1960 | 11,620 | -14.0% |
| 1970 | 11,707 | 0.7% |
| 1980 | 17,340 | 48.1% |
| 1990 | 19,739 | 13.8% |
| 2000 | 20,824 | 5.5% |
| 2010 | 20,007 | -3.9% |
| 2020 | 19,790 | -1.1% |
| 2024 | 18,885 | -0.4% |

Sources: 2019-2024 Plumas County Housing Element Background Report, California Department of Finance, US Census Bureau

Vulnerable and Underserved Populations

Vulnerable populations include those who may be disproportionately affected by hazards or may need additional help or accommodation during a hazard event or disaster. The vulnerable and underserved populations discussion for the Plumas County Planning Area is based on the following sources:

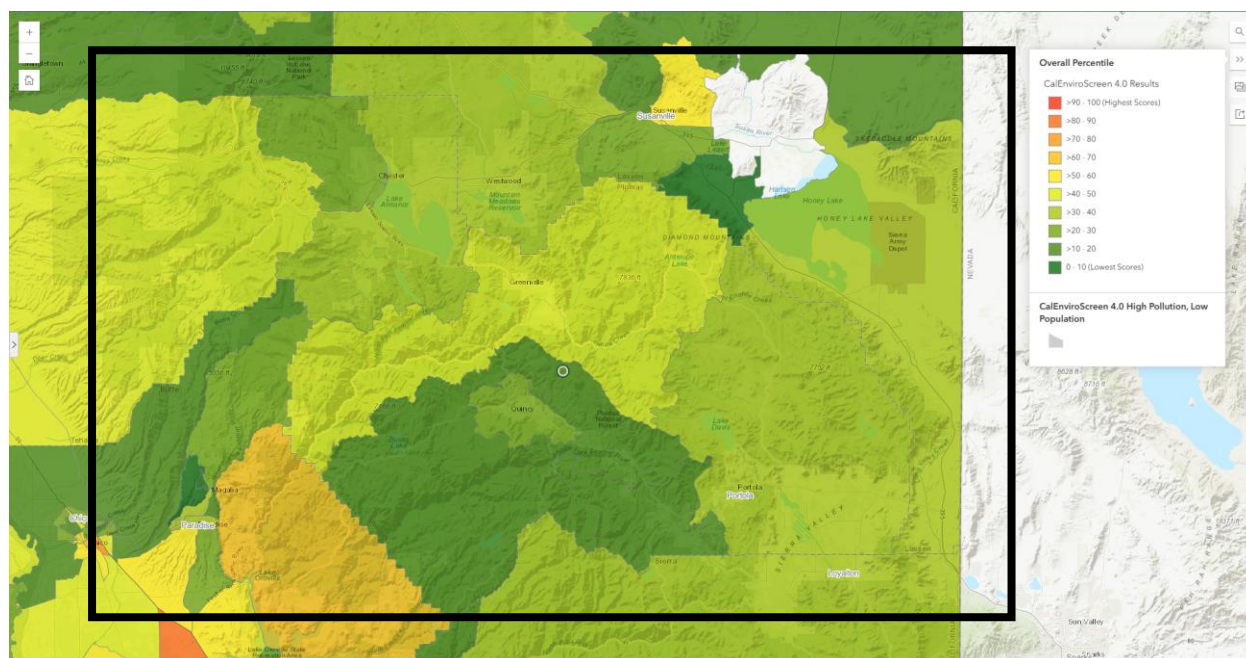
- California Environmental Protection Agency (Cal EPA) Disadvantaged Communities
- Center for Disease Control (CDC) Social Vulnerability Index
- California Department of Water Resources (CA DWR) Special Populations and Disadvantaged Community Mapping
- FEMA National Risk Index
- Local Input

Note: These sources below show information for the Plumas County Planning Area and unincorporated Plumas County. Information on specific data for the incorporated jurisdictions can be found in their respective annexes to this Plan Update.

Cal EPA Disadvantaged Communities

Disadvantaged communities are defined by CalEPA as the top 25 percent of communities experiencing disproportionate amounts of pollution, environmental degradation, and socioeconomic and public health conditions according to the Office of Environmental Health Hazard Assessment’s CalEnviroScreen tool. CalEPA is responsible for identifying disadvantaged communities for the purposes of the Cap-and-Trade funding program. This uses the CalEnviroScreen 4.0 Tool. Maps showing these areas in the Planning Area are shown on Figure 4-1.

Figure 4-1 Plumas County Planning Area – Cal EPA Disadvantaged Communities

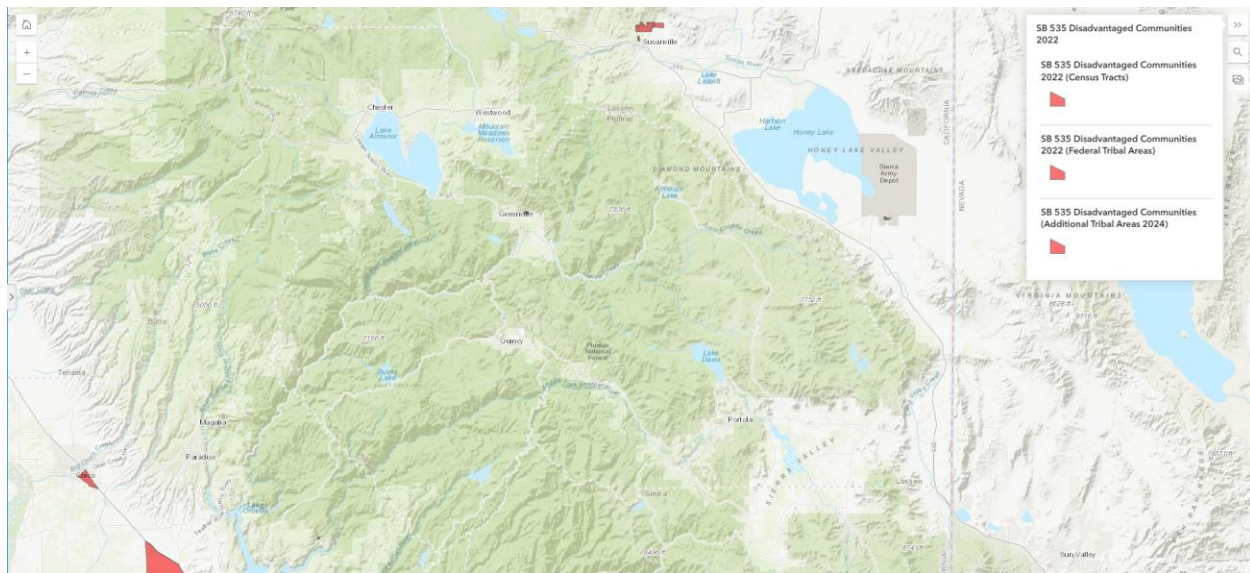


Source: Cal EPA, map retrieved 01/29/2025.

Cal EPA has another way to track disadvantaged communities. California Climate Investments are funds (Greenhouse Gas Reduction Fund and appropriated by the Legislature) from the proceeds of the State’s Cap-and-Trade Program specifically targeted for investment in disadvantaged communities in California. These funds must be used for programs that further reduce emissions of greenhouse gases. Senate Bill 535 directed that at least a quarter of the proceeds go to projects that provide benefit to disadvantaged

communities and at least 10 percent of the funds go to projects located within those communities. Cal EPA has also mapped these communities. Those communities that fall inside this program in Plumas County are shown on Figure 4-2. As shown, these areas are very limited in Plumas County.

Figure 4-2 Plumas County SB 535 Disadvantaged Communities (2022)



Source: Cal EPA, map retrieved 01/29/2025.

CDC Social Vulnerability Index

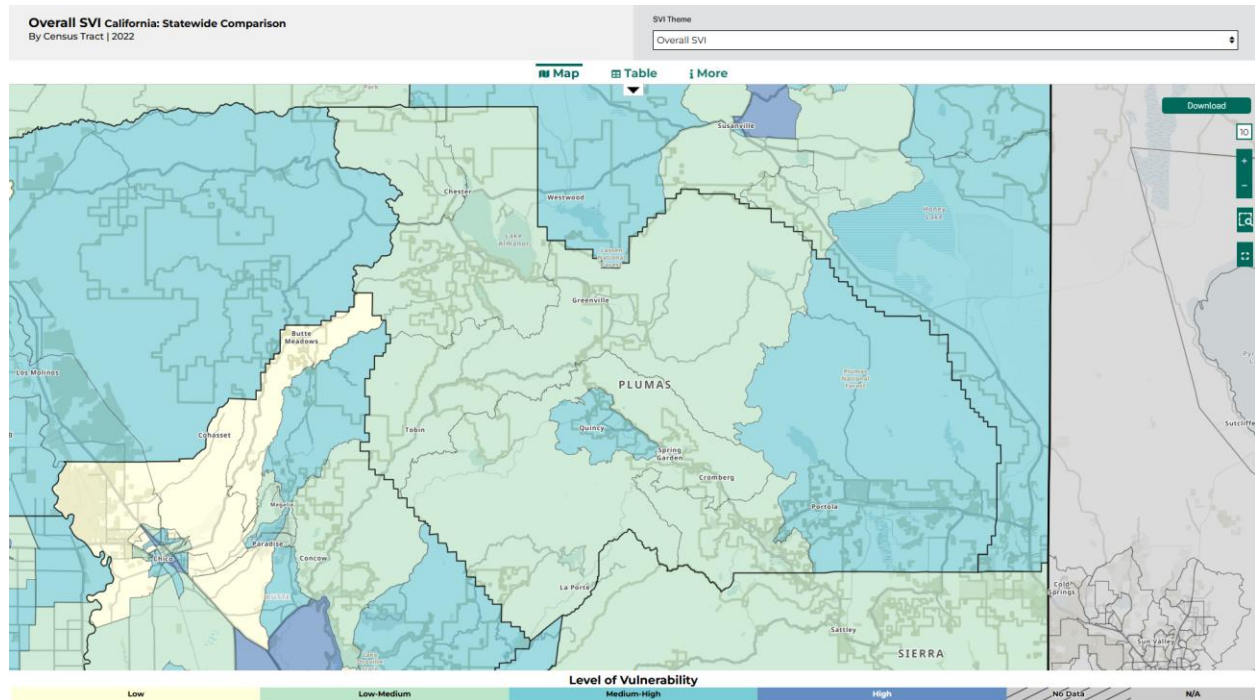
Every community must prepare for and respond to hazardous events, whether a natural disaster like a tornado or disease outbreak, or a human-made event such as a harmful chemical spill. A number of factors, including poverty, lack of access to transportation, and crowded housing may weaken a community's ability to prevent human suffering and financial loss in a disaster. These factors are known as social vulnerability.

Social vulnerability refers to the potential negative effects on communities caused by external stresses on human health. Such stresses include natural or human-caused disasters, or disease outbreaks. Reducing social vulnerability can decrease both human suffering and economic loss. CDC Social Vulnerability Index (CDC SVI) uses 15 U.S. census variables to help local officials identify communities that may need support before, during, or after disasters.

The Agency for Toxic Substances and Disease Registry's (ATSDR) Geospatial Research, Analysis & Services Program (GRASP) created databases to help emergency response planners and public health officials identify and map communities that will most likely need support before, during, and after a hazardous event. CDC SVI uses U.S. Census data to determine the social vulnerability of every census tract. Census tracts are subdivisions of counties for which the Census collects statistical data. The CDC SVI ranks each tract on 15 social factors, including poverty, lack of vehicle access, and crowded housing, and groups them into four related themes. Each tract receives a separate ranking for each of the four themes, as well as an overall ranking. Maps of the four themes are shown in the Plumas County Planning Area below. The overall SVI map is shown in Figure 4-3; the socioeconomic SVI for the Planning Area is shown in Figure 4-4; the household composition SVI is shown in Figure 4-5; the minority and language SVI is

shown in Figure 4-6; and the housing and transportation SVI is shown in Figure 4-7. As shown on all of these maps, the County shows moderate changes across the County in social vulnerability.

Figure 4-3 Plumas County Planning Area – Overall Social Vulnerability



Source: CDC Social Vulnerability Index – map retrieved 12/16/2024.

Level of Vulnerability Rating: **Yellow** – Low; **Green** – Low/Medium; **Aqua** – Medium/High; **Blue** – High; **Grey Hatched** – No Data; **Grey** – Not Available

Socioeconomic Status California: Statewide Comparison
By Census Tract | 2022

SVI Theme
Socioeconomic Status

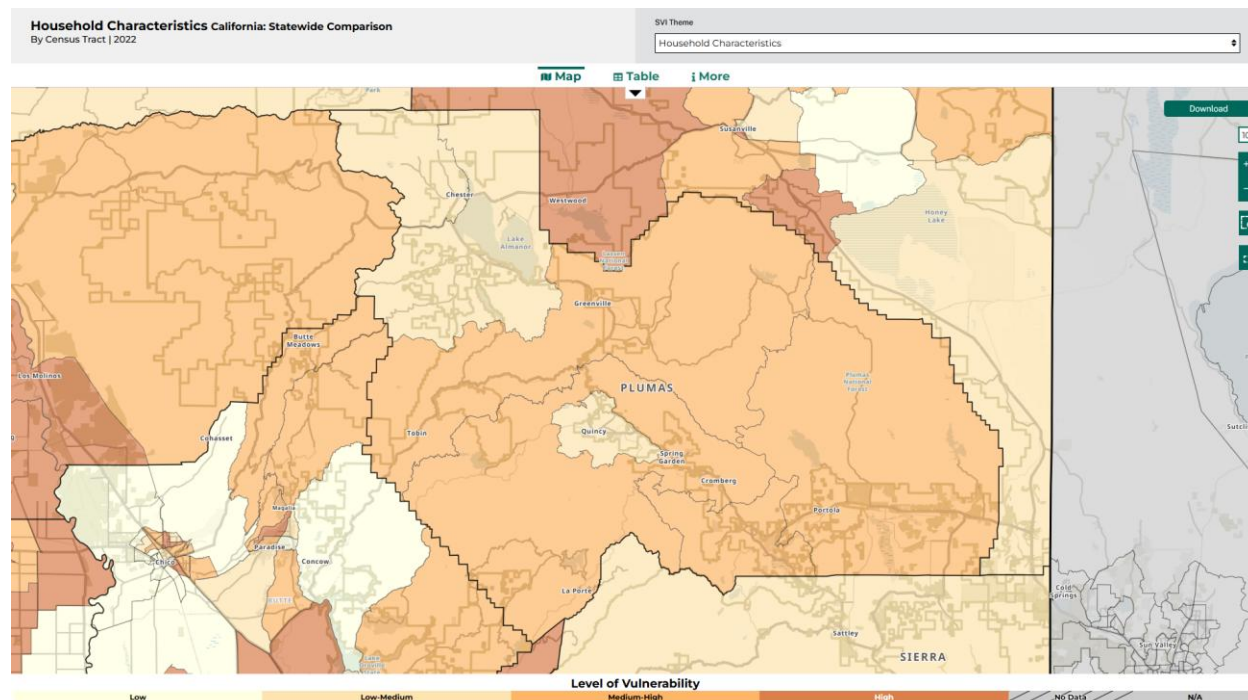
Map Table i More

Level of Vulnerability

Low Low-Medium Medium-High High No Data N/A

Level of Vulnerability Rating: **Faint Green** – Low; **Light Green** – Low/Medium; **Green** – Medium/High; **Dark Green** – High; **Grey Hatched** – No Data; **Grey** – Not Available

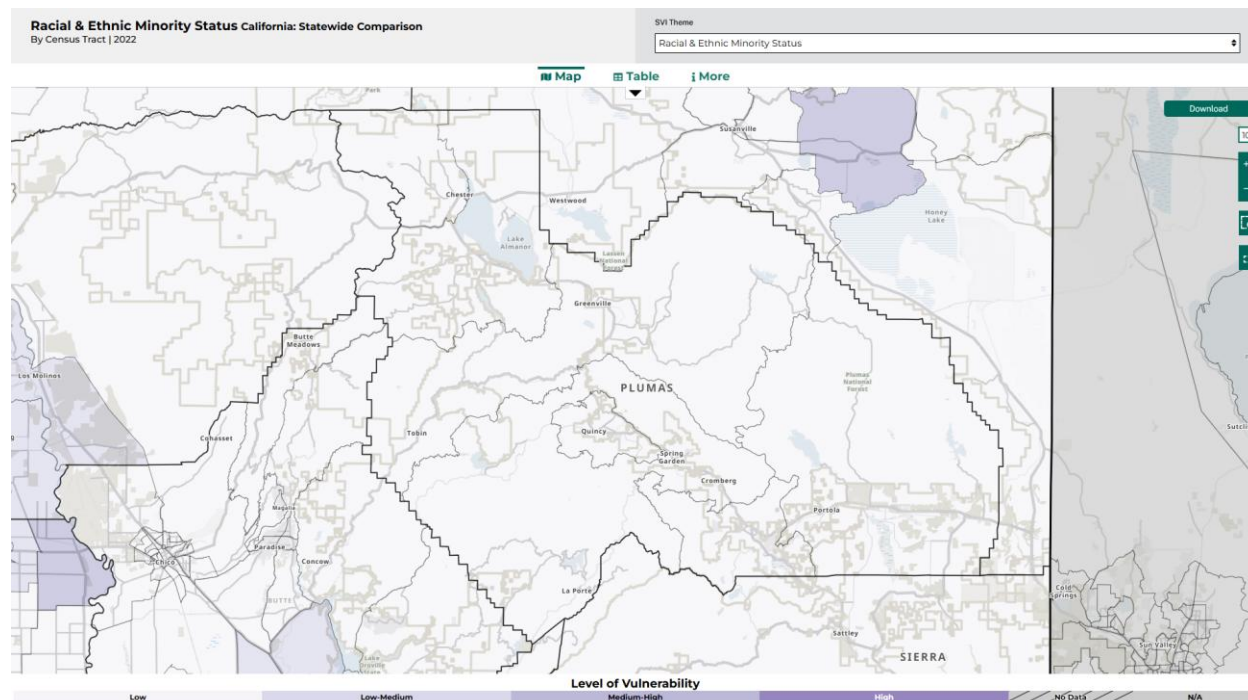
Figure 4-5 Plumas County Planning Area – Household Composition and Disabilities Social Vulnerability



Source: CDC Social Vulnerability Index – map retrieved 12/16/2024.

Level of Vulnerability Rating: **Faint Orange** – Low; **Light Orange**– Low/Medium; **Orange** – Medium/High; **Dark Orange** – High; **Grey Hatched** – No Data; **Grey** – Not Available

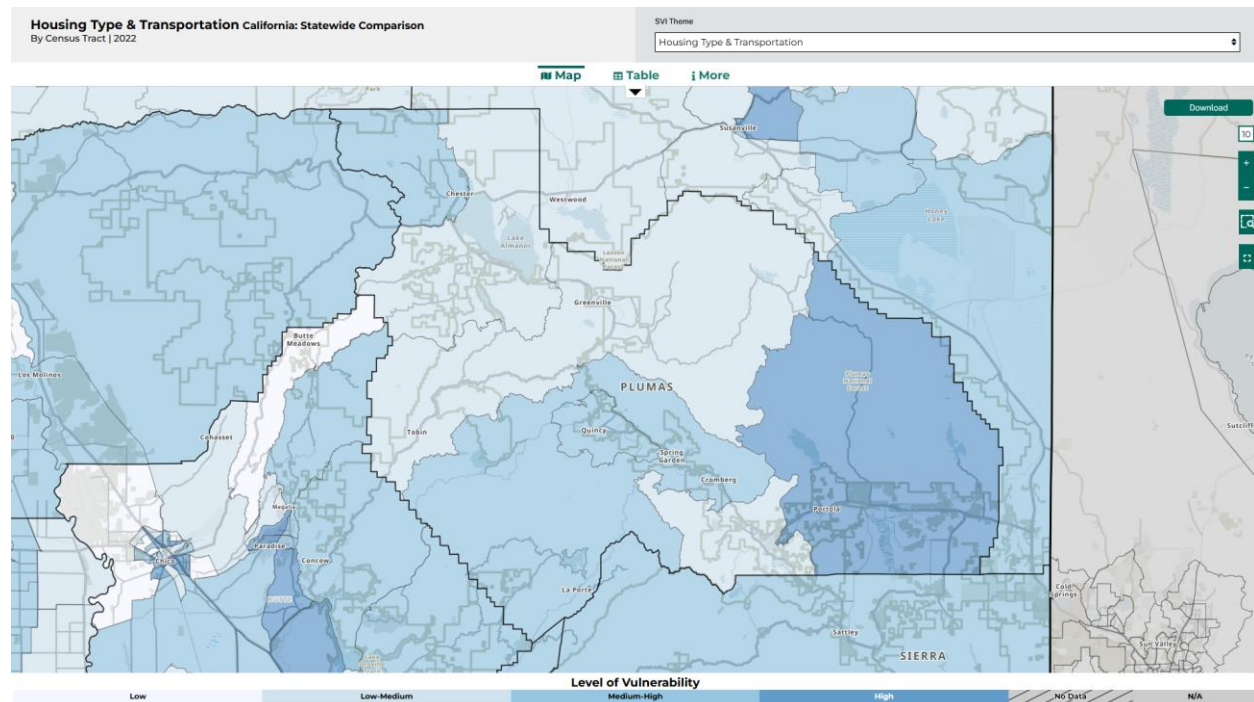
Figure 4-6 Plumas County Planning Area – Minority/Language Social Vulnerability



Source: CDC Social Vulnerability Index – map retrieved 12/16/2024.

Level of Vulnerability Rating: **Faint Purple** – Low; **Light Purple** – Low/Medium; **Purple** – Medium/High; **Dark Purple** – High; **Grey Hatched** – No Data; **Grey** – Not Available

Figure 4-7 Plumas County Planning Area – Housing/Transportation Social Vulnerability



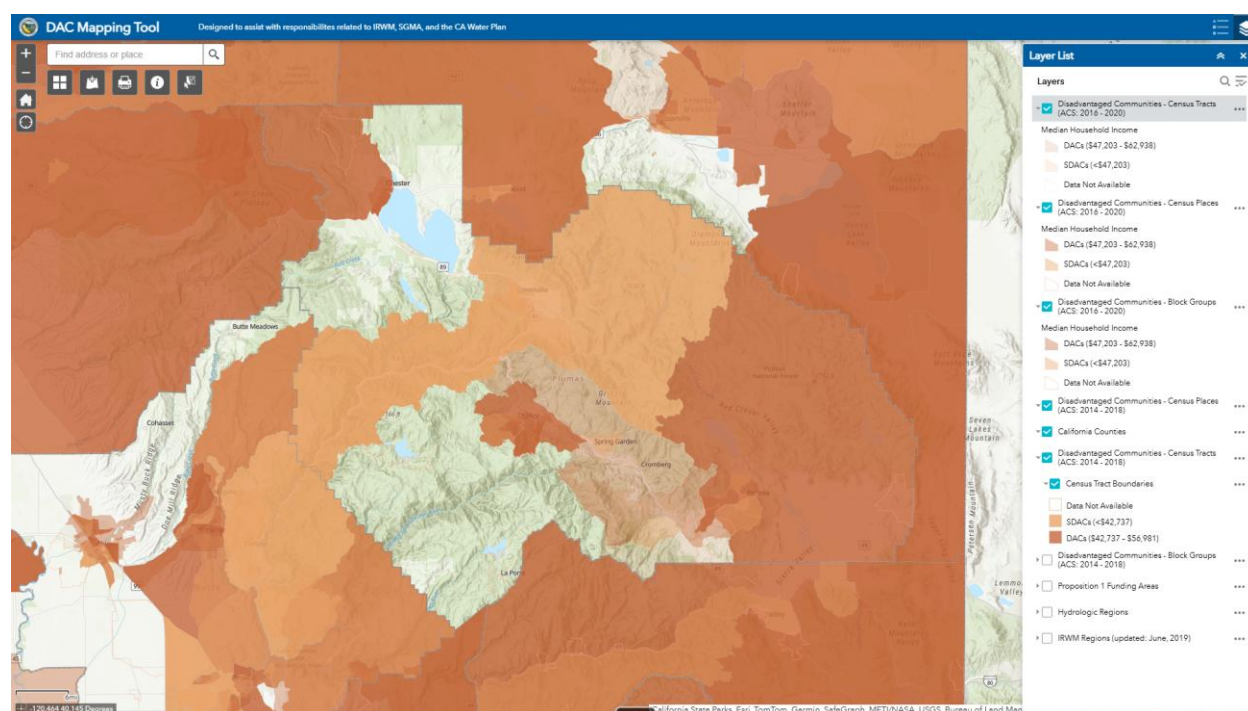
Source: CDC Social Vulnerability Index – map retrieved 12/16/2024.

Level of Vulnerability Rating: **Faint Blue** – Low; **Light Blue** – Low/Medium; **Blue** – Medium/High; **Dark Blue** – High; **Grey Hatched** – No Data; **Grey** – Not Available

California DWR Disadvantaged Community Mapping Tool

The State of California’s Proposition 1 Disadvantaged Community (DAC) Involvement Program is designated to ensure the involvement of DACs as well as Economically Distressed Areas and Underrepresented Communities, which DWR collectively refers to as DACs. The Cal DWR definition for a Disadvantaged Community is a community with an annual median household income (MHI) that is less than 80% of the Statewide annual MHI (PRC Section 75005(g)), and those census geographies with an annual MHI less than 60% of the Statewide annual MHI are considered “Severely Disadvantaged Communities”. Those areas in the Planning Area considered disadvantaged are shown in Figure 4-8.

Figure 4-8 Plumas County Planning Area – Disadvantaged Areas



Source: Cal DWR DAC Mapping Tool – retrieved 12/16/2024.

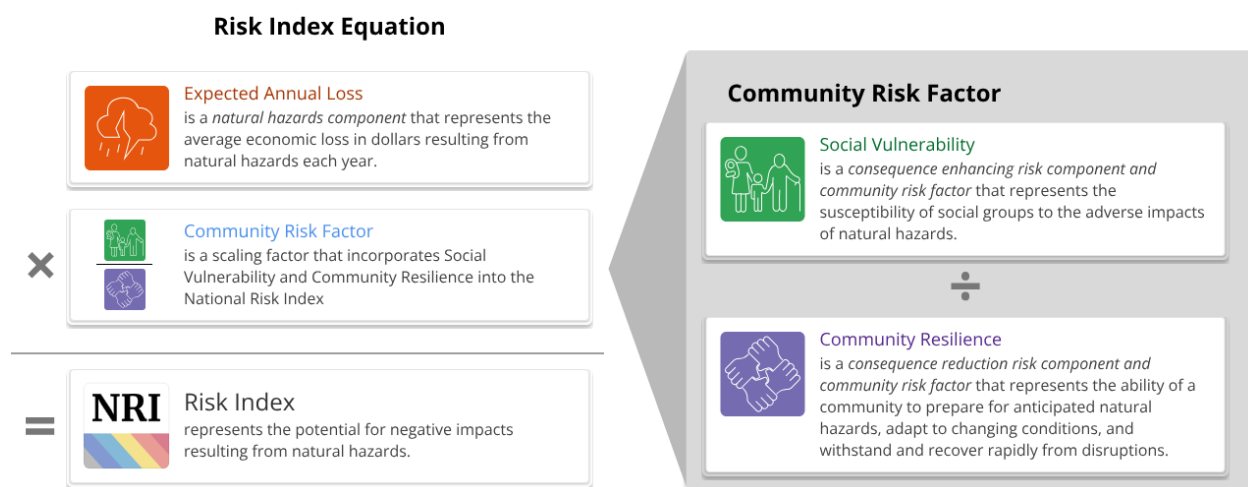
FEMA National Risk Index

Beginning in 2016, FEMA’s Natural Hazards Risk Assessment Program (NHRAP) started work on the National Risk Index by adopting an established vision for a multi-hazard view of risk that combines the likelihood and consequence of natural hazards with social factors and resilience capabilities. The goal was to take a broad, holistic view and create a nationwide baseline of natural hazard risk.

A community’s susceptibility to natural hazards varies from location to location. The National Risk Index is a dataset and online tool to help illustrate the United States communities most at risk for 18 natural hazards. It was designed and built by FEMA in close collaboration with various stakeholders and partners in academia; local, state, and federal government; and private industry. In the National Risk Index, risk is defined as the potential for negative impacts as a result of a natural hazard.

The risk equation behind the Risk Index includes three components (see Figure 4-9): a natural hazards component (Expected Annual Loss), a consequence enhancing component (Social Vulnerability), and a consequence reduction component (Community Resilience).

Figure 4-9 National Risk Index Equation



Source: FEMA National Risk Index

Using these three components, composite Risk Index values and hazard type Risk Index values are calculated for each community (county and Census tract) included in the Index. Risk Index values form an absolute basis for measuring Risk within the National Risk Index, and they are used to generate Risk Index percentiles and ratings across communities.

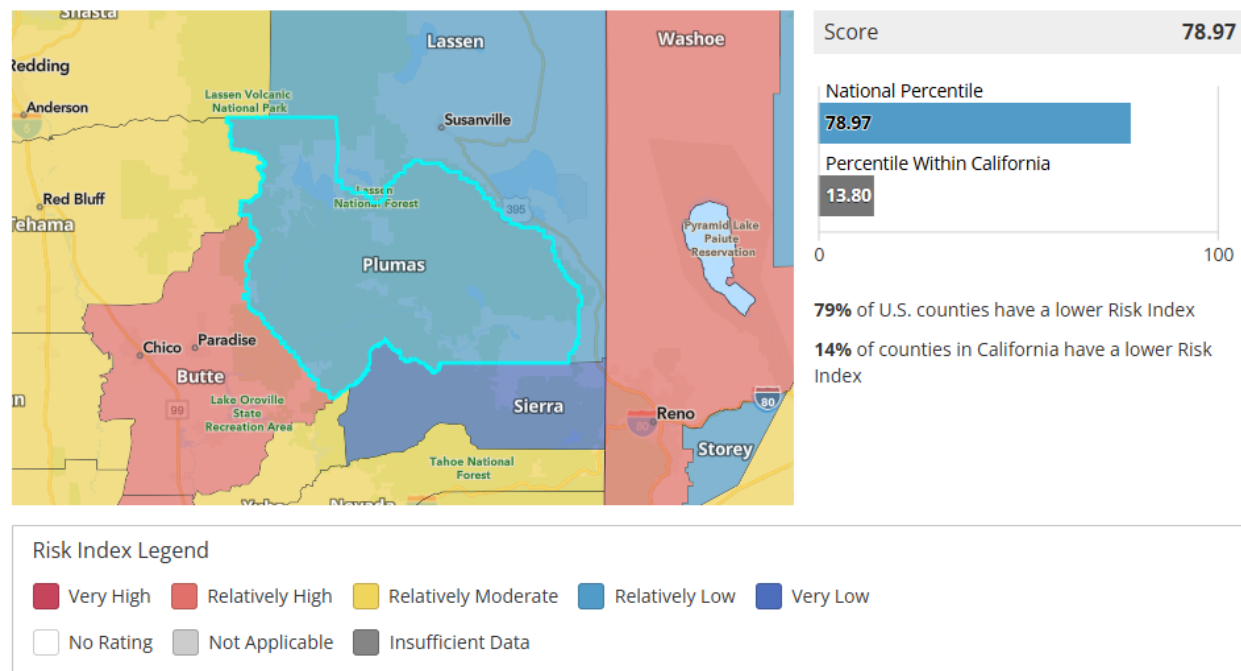
Data from the National Risk Index for the Plumas County Planning Area is seen below. Figure 4-10 shows a summary map and score for the County. As shown, Plumas County’s Risk Index rating is Relatively Low. Figure 4-11 shows the expected annual loss map and score. As shown, Plumas County’s expected annual loss rating is Relatively Low. Figure 4-12 shows the social vulnerability map and score. As shown, Plumas County has a Relatively Low social vulnerability. Figure 4-13 shows the community resilience map and score. As shown, communities in Plumas County have a Relatively High ability to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions.

The Plumas County FEMA National Risk Index Report is included in its entirety in Appendix H.

Figure 4-10 FEMA National Risk Index – Summary Map and Score for Plumas County

Risk Index

The Risk Index rating is **Relatively Low** for **Plumas County, CA** when compared to the rest of the U.S.

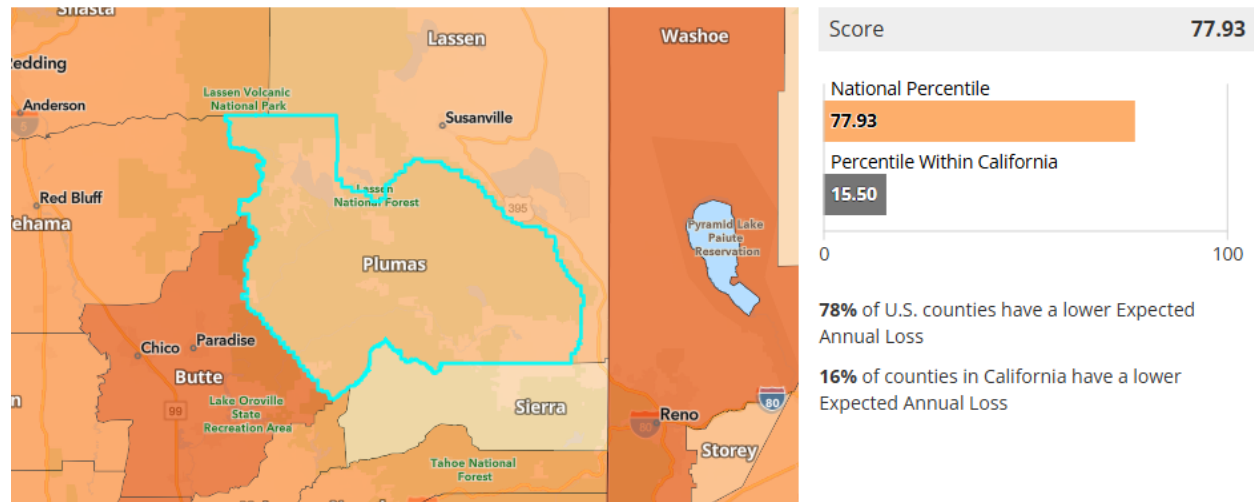


Source: FEMA National Risk Index, retrieved 01/09/2025.

Figure 4-11 FEMA National Risk Index – Expected Annual Loss Map and Score for Plumas County

Expected Annual Loss

In **Plumas County, CA**, expected loss each year due to natural hazards is **Relatively Low** when compared to the rest of the U.S.



Expected Annual Loss Legend

- Very High
- Relatively High
- Relatively Moderate
- Relatively Low
- Very Low
- No Expected Annual Losses
- Not Applicable
- Insufficient Data

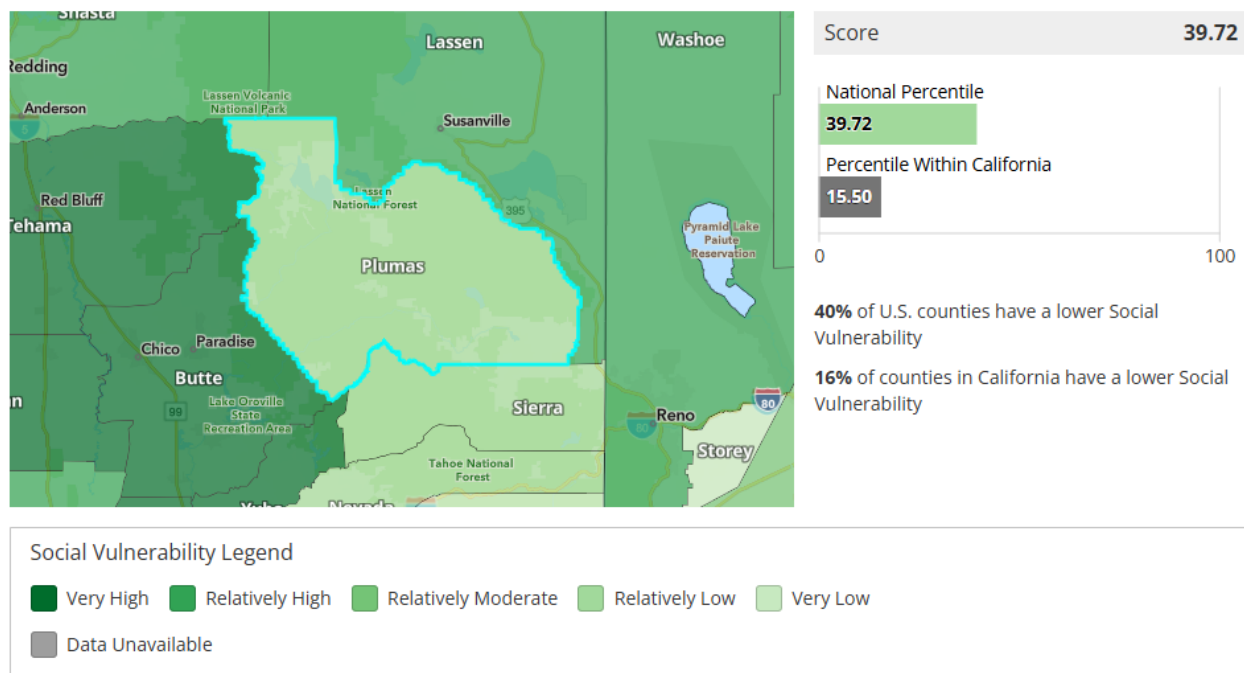
| | | | |
|---|--------------------------------------|----------------------------|----------------------|
| Composite Expected Annual Loss | | \$16,253,626.34 | |
| Composite Expected Annual Loss Rate National Percentile | | 87.7 | |
| Building EAL | \$14,930,347.87 | Population EAL | 0.08 fatalities |
| Building EAL Rate | \$1 per \$562.97 of building value | Population EAL Rate | 1 per 244.77K people |
| Agriculture EAL | \$387,504.16 | Population Equivalence EAL | \$935,774.31 |
| Agriculture EAL Rate | \$1 per \$28.40 of agriculture value | | |

Source: FEMA National Risk Index, retrieved 01/09/2025.

Figure 4-12 FEMA National Risk Index – Social Vulnerability Map and Score for Plumas County

Social Vulnerability

Social groups in **Plumas County, CA** have a **Relatively Low** susceptibility to the adverse impacts of natural hazards when compared to the rest of the U.S.

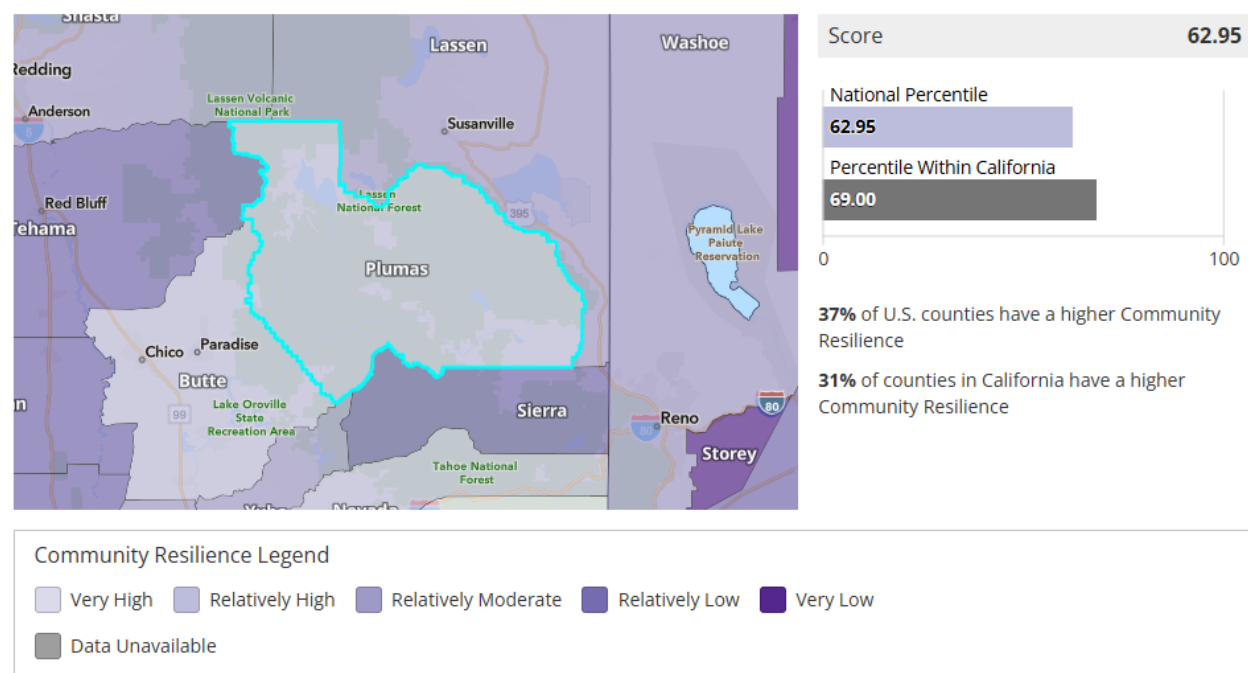


Source: FEMA National Risk Index, retrieved 01/09/2025

Figure 4-13 FEMA National Risk Index – Community Resilience Map and Score for Plumas County

Community Resilience

Communities in **Plumas County, CA** have a **Relatively High** ability to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions when compared to the rest of the U.S.



Source: FEMA National Risk Index, retrieved 01/09/2025.

Local Input

In Plumas County, vulnerable populations groups primarily include seniors, children and students, large households, low income, homeless populations, people with disabilities, those with lack of or limited mobility, and those with limited access to public transportation services in the more rural areas for evacuations and other hazard response needs. There is also a seasonal farmworker population and a local student population which can create challenges during hazard events. The concept of Plumas County being vulnerable due to its location and status as a small, rural, and remote community was determined to be a major descriptor of the County's underserved and vulnerable populations. **CAN THE COUNTY CONFIRM OR ADD TO THIS DESCRIPTION?**

Plumas County noted that the County has two homeless day shelters (Quincy and Portola) and a group home (Quincy) that were recently funded for backup generators. The facilities are used for sheltering during times of cold, as these facilities are heated, but there is no air conditioning at these facilities. These are facilities operated by PCIRC, a non-profit. **IS THIS ALL STILL ACCURATE?**

The Plumas Crisis Intervention and Resource Center noted that a Point in Time count of homeless in the County is done in January of every odd calendar year. The 2025 data was still being processed due to

changes in HUD guidelines, making the 2023 data the most recent fully available information. This can be seen in Table 4-8.

Table 4-8 Plumas County – 2023 Homeless Count

| Homeless Type/Cause | Number | Percentage |
|--------------------------|------------|----------------|
| Overall Count | | |
| Sheltered | 58 | 43.28% |
| Unsheltered | 76 | 56.72% |
| Total Homeless | 134 | 100.00% |
| Count Subtypes | | |
| Chronically Homeless | 13 | 9.70% |
| Veteran | 3 | 2.23% |
| Domestic Violence Victim | 5 | 3.37% |
| Felony Conviction | 25 | 18.66% |
| COVID-19 | 0 | 0.00% |
| Fire | 29 | 21.64% |
| Mental Health | 9 | 6.72% |
| Eviction | 35 | 26.12% |
| Drug Abuse | 8 | 5.97% |
| Family Break Up | 15 | 11.19% |
| Youth (18 to 24) | 4 | 2.99% |
| Children (under 18) | 18 | 13.43% |
| Male | 76 | 56.72% |
| Female | 49 | 36.57% |
| No Single Gender | 0 | 0.00% |
| Transgender | 0/1 | 0.00/0.75% |
| Questioning | 0 | 0.00% |

Source: Plumas County Intervention and Resource Center

PLACE ANY OTHER LOCAL INPUT HERE

Housing Element Special Populations

The County Planning Team noted that the Plumas County 2019-2024 Housing Element discusses special populations in the County. Discussions for seniors, those with disabilities, developmental disabilities, people experiencing homelessness, large households, female headed households, farmworkers, and students were included. These are discussed below.

Seniors

Many elderly individuals face challenges in securing affordable housing, given their fixed and often limited incomes. Physical disabilities and dependency needs further narrow their housing options while increasing the necessity for accessible healthcare and transportation. Despite Social Security and retirement benefits providing a guaranteed minimum income, many older adults still experience heightened poverty rates.

As of 2017, the American Community Survey estimated there were 4,364 seniors aged 65 years and over, living in unincorporated Plumas County, which represented over one-quarter of the total unincorporated County population, and approximately 6.8 percent of those 65 and older were below the poverty rate. When looking at senior household tenure, 87 percent of households were owner-occupied, and 13 percent were rented.

Disabled Citizens

As defined by the California Government Code, disabilities include physical and mental disabilities. A “mental disability” involves any mental or psychological disorder or condition, such as mental retardation, organic brain syndrome, emotional or mental illness, or specific learning disabilities that limit a major life activity. A “physical disability” includes any physiological disease, disorder, condition, cosmetic disfigurement, or anatomical loss of body functions. Physical disabilities include those that are neurological, immunological, or musculoskeletal in nature as well as those that involve the respiratory, cardiovascular, reproductive, genitourinary, hemic and lymphatic, or digestive systems and those involving the special sense organs, speech organs, skin, or endocrine system.

Cognitive difficulties and Ambulatory living difficulties are the most common forms of disability among residents ages 5 to 64 in Plumas County. Seniors aged 65 and above in unincorporated Plumas County are more likely to have either ambulatory difficulties or hearing difficulties. Persons aged 5–64 with a disability account for 1,975 individuals (10.0%) while persons aged 65 + with a disability account for 1,472 individuals (7.4%) residing in the County. The total sums to 3,447 individuals suffering from one or more disabilities (17.4%).

People with Developmental Disabilities

A developmental disability is a disability that occurs before an individual reaches 18 years of age, is expected to continue indefinitely, and constitutes a substantial disability for that individual. Developmental disabilities include mental retardation, cerebral palsy, epilepsy, autism, and disabling conditions closely related to mental retardation or requiring similar treatment. However, since data is collected by zip code, the exact number of developmentally disabled individuals is challenging to get an exact number. For 0-17 years-old, it's estimated there are 87 individuals while the 18+ years-old account for estimated 126 persons.

Homeless Persons

Homeless individuals and families have the most immediate housing need of any special needs group. Their needs are difficult to meet because of the diversity and complexity of the factors that lead to homelessness. California state law requires that housing elements estimate the need for emergency shelter for homeless people. The Plumas Crisis Intervention & Resource Center (PCIRC) offers homeless prevention and rapid

re-housing programs, based on an evidence-based Housing First Model, utilizing available annual funding to those experiencing homeless in Plumas County.

In 2019, the NorCal Continuum of Care Point-in-Time count identified 1,249 homeless people in Del Norte, Lassen Modoc, Plumas, Shasta, Sierra, and Siskiyou counties. In Plumas County specifically, the Point-in-Time count identified 53 homeless people, or 4 percent of the homeless population counted in the seven-county region—11 had been experiencing chronic homelessness, and 24 were female, though only 5 of the women were unsheltered.

Large Households

Large families are defined by the US Census Bureau as households containing five or more persons. They are considered a special needs group because there is a limited supply of adequately sized housing to accommodate their needs. According to the 2012–2016 US Census American Community Survey, 366 households (4.9%) in unincorporated Plumas County included five or more persons. Of those, 154 (42.1%) were owner-occupied large households, and 212 (57.9%) were renter-occupied large households.

As of 2017, there was no shortage of housing for large families in Plumas County due to the availability of housing by bedroom size. There are 7,591 three-bedroom housing units, 1,611 four-bedroom units, and 166 units with five or more bedrooms, respectively comprising 48.2 percent, 10.2 percent, and 1.1 percent of all housing in the county. Since the population of Plumas County changes gradually and the average household size was 2.06 persons per household in 2017, it can be presumed that the current supply of housing is sufficient to accommodate large families.

Female Headed Households

Female-headed households are households headed by a single female parent with children under the age of 18 living at home. Single-parent households generally have lower incomes than two-parent households and often require special attention due to their need for affordable childcare, health care, housing assistance, and other supportive services. Additionally, female-headed households generally tend to have lower incomes and higher living expenses, often making the search for affordable, decent, and safe housing more difficult.

Poverty is typically an issue with female-headed households. As of the 2012–2016 American Community Survey, approximately 11% of households in unincorporated Plumas County were female-headed households with children, and 3% of households were female-headed households under the poverty level.

Farmworkers

Agricultural workers earn their primary income through permanent or seasonal agricultural labor. The number of persons employed in agriculture (including forestry, fishing and hunting, and mining), according to the United State Department of Agriculture (USDA) 2017 Census of Agriculture, there were 173 hired farm laborers and 211 unpaid farm laborers in Plumas County. This population represents nearly 10 percent of the job market in Plumas County in 2017.

Most farmworkers earn relatively low wages, and thus they fall into the extremely low– and very-low-income categories. Housing opportunities for migrant farmworkers may include employee housing (i.e., dwelling units or manufactured homes) and other congregate living facilities as well as affordable multifamily or single-family rental units (Housing Element Program 20). Year-round farmworkers typically need affordable rental or ownership housing, which is available in the County’s existing residential zoning districts.

Students Residences

Feather River College (FRC) in Quincy is a public community college, which is fully accredited by the Western Association of Schools and Colleges, and offers two-year associate degrees, in addition to offering a four-year Bachelor of Science in Equine and Ranch Management. FRC, as of October 2019, operated the following student housing: On-Campus Dormitories – 64 apartments housing 160 students, the Meadows Apartments – 11 apartments housing 27 students, and the Pines Apartments – 25 rooms housing 46 students. This inventory consists of 77 one-bedroom apartments, 19 two-bedroom apartments, and 4 studio apartments across the three locations.

The FRC resident housing capacity is set at 233 students; however, the college has added extra bunks to some of the larger rooms, increasing the overall capacity to approximately 250 students. While the unmet need for student housing is difficult to track, FRC estimates the resident housing needs gap to be approximately 70+ students. Based on a waitlist reaching 65 names during the summer of 2019, FRC was able to accommodate 25 additional students, leaving approximately 40 who could not be served with student housing. FRC received another 40+ inquiries about student housing during the summer of 2019, but these potential students never turned in an application after they learned about the waitlist.

Structures

Structures include buildings used for a variety of purposes and reflect the Plumas County Planning Area’s existing built environment. Depending on the nature and extent of a hazard event or disaster, all structures may be exposed to some level of risk, where certain buildings or concentrations of buildings are more vulnerable. This section captures the structures, and associated land and contents values, which comprise the Plumas County Planning Area’s and unincorporated Plumas County’s existing built environment.

Parcel and Structure Inventory and Assessed Values

An inventory of structures located within the Plumas County Planning Area and unincorporated County was developed utilizing data from the Plumas County Assessor’s Office. It is based on the 2024 Assessor’s data/Parcel layer provided by Plumas County GIS. This data represents best available data.

While conducting an inventory of structure assets within the Plumas County Planning Area is a key element of this asset inventory, understanding the total assessed value of structures and built environment is a starting point to understanding the overall value of identified assets in the Plumas County Planning Area. When the total assessed values are combined with potential values associated with other community assets such as area populations, public and private critical infrastructure, historic and cultural resources, and natural resources, and other identified assets, the big picture emerges as to what is potentially at risk and vulnerable to the damaging effects of natural hazards within the Plumas County Planning Area.

Methodology

The 2024 Plumas County Assessor's data and County Parcel Layer was utilized as the basis for the inventory of assessed values for both improved and unimproved parcels within the Plumas County Planning Area. This data provides the land and improved values, and personal property values assessed for each parcel, along with key information such as property use. Other GIS data, such as jurisdictional boundaries, roads, streams, and area features, was also obtained from Plumas County and CalAtlas to support mapping and analysis of the existing built environment.

Data Limitations & Notations

Although based on best available data, the resulting information should only be used as an initial guide to overall values in the Plumas County Planning Area. In the event of a disaster, structures and other infrastructure improvements are at the greatest risk of damage. Depending on the type of hazard and resulting damages, the land itself may not suffer a significant loss. For that reason, the values of structures and other improvements are of greatest concern. Also, it is critical to note a specific limitation to the assessed values data within the Plumas County Planning Area, created by Proposition 13. Instead of adjusting property values annually, no adjustments are made until a property transfer occurs. As a result, overall property value information is likely significantly low and does not reflect current market, replacement, or true potential loss values for properties within the Plumas County Planning Area.

Another limitation to this data is found in the Williamson Act, also known as the California Land Conservation Act of 1965, that enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. When the County enters into a contract with the landowners under the Williamson Act, the landowner agrees to limit the use of the land to agriculture and compatible uses for a period of at least ten years and the County agrees to tax the land at a rate based on the agricultural production of the land rather than its real estate market value. This further affects the County's overall values for assessed taxable lands and structures.

Property Use Categories

The Plumas County Planning Area Assessor data included property use categories which provides detailed descriptive information about how each property is generally used, such as residential, commercial, or industrial. The property use codes were refined and categorized into the following property use categories and linked back to the Assessor data. The final property use categories for the Plumas County Planning Area include:

- Agricultural
- Commercial
- Federal Lands
- Government
- Industrial
- Institutional
- Miscellaneous
- Recreational
- Residential

➤ ROW/Utilities

Once property uses were grouped into categories, the number of total and improved parcels, land, personal property, and improved (structure) values were inventoried for the Plumas County Planning Area by property use.

Estimated Content Replacement Values

The Plumas County Planning Area assigned property use categories were used to develop estimated content replacement values (CRVs) that are potentially at loss from hazards. FEMA's standard CRV factors, derived from Hazus, were utilized to develop more accurate loss estimates for the total assets inventory and for all mapped hazard analyses. FEMA's CRV factors estimate content values as a percent of improved structure value by property use. Table 4-9 shows the breakdown of the different property uses in the Plumas County Planning Area and their estimated CRV factors.

Table 4-9 Plumas County Planning Area – Content Replacement Factors by Property use

| Plumas County Property Use Categories | Hazus Property Use Categories | Hazus Content Replacement Values |
|---------------------------------------|-------------------------------|----------------------------------|
| Agricultural | Agricultural | 100% |
| Commercial | Commercial | 100% |
| Federal Lands | Federal Lands | 100% |
| Government | Government | 100% |
| Industrial | Industrial | 150% |
| Institutional | Institutional | 100% |
| Miscellaneous | Miscellaneous | 100% |
| Recreational | Recreational | 100% |
| Residential | Residential | 50% |
| ROW/Utilities | ROW/Utilities | 100% |

Source: Hazus 6.1

Parcel and Structure Asset Inventory with Values Results

Values associated with land and improved structures and personal property were identified and summed in order to determine total assessed values at risk in the Plumas County Planning Area. Together, the land and improved structure values make up the majority of assessed values associated with each identified parcel or asset. Improved parcel counts were based on the assumption that a parcel was improved if a structure value was present. Content replacement values were then added to the assessed values, as described below, to provide an estimate of total values at risk in the Planning Area.

Table 4-10 shows the total values or exposure for the entire Plumas County Planning Area broken out by jurisdiction. Table 4-11 shows the values for the unincorporated Plumas County broken out by property use. Tables showing the property use breakouts for the incorporated communities are included in their respective annexes to this LHMP Update.

Table 4-10 Plumas County Planning Area – Total Parcels and Structures by Jurisdiction

| Jurisdiction | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|------------------------------|--------------------|-----------------------|------------------------|--------------------------|-------------------------|--------------------------|------------------------|
| City of Portola | 1,643 | 1,021 | \$37,950,371 | \$151,251,034 | \$1,915,072 | \$94,642,209 | \$285,758,686 |
| Unincorporated Plumas County | 24,234 | 13,427 | \$1,664,994,728 | \$3,202,945,278 | \$141,527,563 | \$1,734,158,622 | \$6,743,626,191 |
| Grand Total | 25,877 | 14,448 | \$1,702,945,099 | \$3,354,196,312 | \$143,442,635 | \$1,828,800,830 | \$7,029,384,876 |

Source: 2024 Plumas County Parcel/Assessor Data

Table 4-11 Unincorporated Plumas County – Total Parcels and Structures by Property Use

| Jurisdiction / Property Use | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|---|--------------------|-----------------------|------------------------|--------------------------|-------------------------|--------------------------|------------------------|
| Agricultural | 1,310 | 118 | \$70,282,817 | \$24,979,645 | \$2,766,527 | \$24,979,645 | \$123,008,634 |
| Commercial | 853 | 556 | \$78,599,880 | \$164,344,412 | \$32,275,885 | \$164,344,412 | \$439,564,589 |
| Federal Lands | 217 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 599 | 0 | \$124,956 | \$0 | \$0 | \$0 | \$124,956 |
| Industrial | 140 | 85 | \$10,733,621 | \$18,449,533 | \$33,550,208 | \$27,674,300 | \$90,407,662 |
| Institutional | 80 | 39 | \$2,145,116 | \$13,936,169 | \$196,380 | \$13,936,169 | \$30,213,834 |
| Miscellaneous | 26 | 0 | \$9,591 | \$0 | \$0 | \$0 | \$9,591 |
| Recreational | 519 | 91 | \$18,190,148 | \$25,212,673 | \$1,814,124 | \$25,212,673 | \$70,429,618 |
| Residential | 19,424 | 12,538 | \$1,484,908,599 | \$2,956,022,846 | \$70,924,439 | \$1,478,011,423 | \$5,989,867,307 |
| ROW/Utilities | 1,066 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Unincorporated Plumas County Total | 24,234 | 13,427 | \$1,664,994,728 | \$3,202,945,278 | \$141,527,563 | \$1,734,158,622 | \$6,743,626,191 |

Source: 2024 Plumas County Parcel/Assessor Data

Critical Facilities and Infrastructure

For purposes of this plan, a critical facility is defined as:

Any facility, including without limitation, a structure, infrastructure, property, equipment or service, that if adversely affected during a hazard event may result in severe consequences to public health, safety, and the environment or interrupt essential services and operations for the community at any time before, during, and after the hazard event.

A critical facility is classified by the following categories: (1) Essential Services Facilities; (2) At-Risk Populations Facilities, and (3) Hazardous Materials Facilities.

- **Essential Services Facilities** include, without limitation, public safety, emergency response, emergency medical, designated emergency shelters, communications, public utility facilities and equipment, and government operations. Sub-Categories include:
 - ✓ Public Safety – Sheriff station and substations, California highway patrol stations, fire and rescue stations, emergency operations centers, and any facility deemed critical or leased by PG&E for the purposes of a community resource center during Public Safety Power Shutoff (PSPS) events.
 - ✓ Emergency Response – Emergency vehicle and equipment storage and essential governmental work centers for continuity of government operations.
 - ✓ Emergency Medical – Hospitals, emergency care, clinics, wellness centers, pharmacies, and ambulance services.
 - ✓ Designated Emergency Shelters – Fairgrounds, memorial/veterans halls, and schools.
 - ✓ Communication Sites and Facilities – Main broadcasting equipment and systems, cell towers, data transmission, and other emergency warning systems (hubs for telephone, television, cable, radio, and internet).
 - ✓ Public Utility Plant and Substation Facilities – Equipment for treatment, generation, storage, pumping, and distribution (hubs for surface water, groundwater, wastewater, power, and fuel).
 - ✓ Essential Government Operations – County Courthouse (public records, elections, government administration and risk management, information technology, and courts), jails, probation, building permitting and inspection services, Public Works (maintenance and equipment yards), Child Support Services, Assessor, and County Annex (public health, behavioral health, social services, and environmental health).
 - ✓ Transportation Lifeline Systems – Airports, heliports, helipads, critical highways, critical roadways, bridges, railroads, and other transportation infrastructure.¹
- **At-Risk Populations Facilities** include, without limitation, pre-schools, public and private primary and secondary schools, before and after school care centers with 12 or more students, daycare centers with 12 or more children, group homes, and assisted living residential or congregate care facilities with 12 or more residents.
- **Hazardous Materials Facilities** include, without limitation, any facility that could, if adversely impacted, release hazardous material(s) in sufficient amounts during a hazard event that would significantly impact public health, safety, and the environment. For the purposes of this plan, those facilities storing threshold quantities of regulated substances subject to the California Accidental Release Response Plan (CalARP) program as specified in 19 CCR § 2770.5 are considered as meeting this criteria.

Critical facilities in the Plumas County Planning Area are shown on Figure 4-14. A summary of critical facilities in the Planning Area is shown in Table 4-12 and detailed in Table 4-13. Additional details of individual critical facilities can be found in Appendix G of this Plan Update.

¹ Note: critical linear transportation routes and systems such as highways and roadways will be determined during any hazard-specific evacuation planning and, for those reasons, are not specifically identified in this plan.

Figure 4-14 Plumas County Planning Area – Critical Facilities

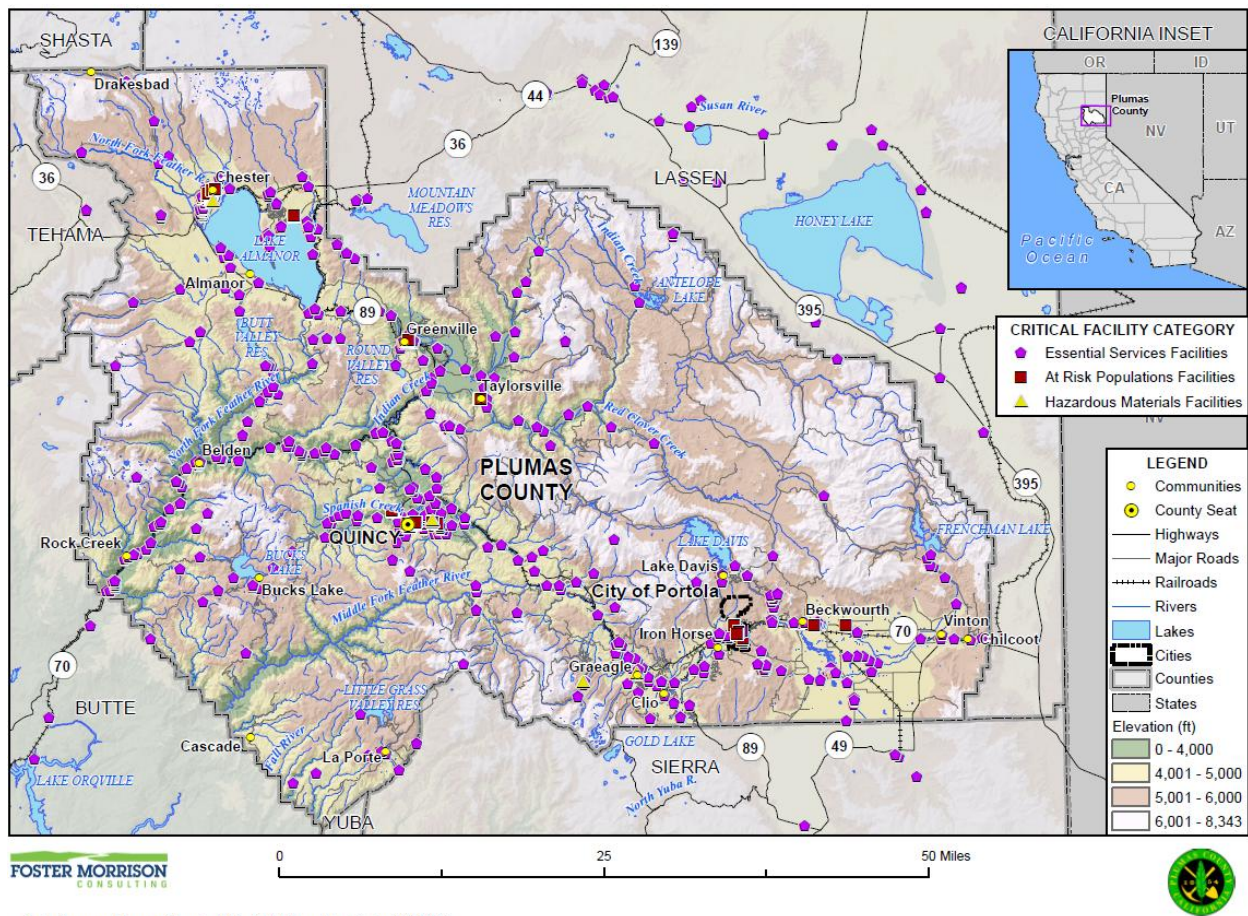


Table 4-12 Plumas County Planning Area – Critical Facilities by Jurisdiction and Critical Facility Category

| Jurisdiction / Critical Facility Category | Facility Count |
|---|----------------|
| City of Portola | |
| Essential Services Facilities | 16 |
| At Risk Populations Facilities | 8 |
| Hazardous Materials Facilities | 0 |
| City of Portola Total | 24 |
| Unincorporated Plumas County | |
| Essential Services Facilities | 829 |
| At Risk Populations Facilities | 33 |
| Hazardous Materials Facilities | 4 |
| Unincorporated Plumas County Total | 866 |
| Unincorporated Butte County | |

| Jurisdiction / Critical Facility Category | Facility Count |
|---|----------------|
| Essential Services Facilities | 4 |
| At Risk Populations Facilities | 0 |
| Hazardous Materials Facilities | 0 |
| Unincorporated Butte County Total | 4 |
| Unincorporated Lassen County | |
| Essential Services Facilities | 34 |
| At Risk Populations Facilities | 0 |
| Hazardous Materials Facilities | 0 |
| Unincorporated Lassen County Total | 34 |
| Unincorporated Sierra County | |
| Essential Services Facilities | 4 |
| At Risk Populations Facilities | 0 |
| Hazardous Materials Facilities | 0 |
| Unincorporated Sierra County Total | 4 |
| Unincorporated Tehama County | |
| Essential Services Facilities | 2 |
| At Risk Populations Facilities | 0 |
| Hazardous Materials Facilities | 0 |
| Unincorporated Tehama County Total | 2 |
| | |
| Grand Total | 934 |

Source: Plumas County GIS

Table 4-13 Plumas County Planning Area – Critical Facilities by Jurisdiction and Critical Facility Category and Facility Type

| Jurisdiction / Critical Facility Category | Critical Facility Type | Facility Count |
|---|--|----------------|
| Portola | | |
| Essential Services Facilities | Emergency Medical | 1 |
| | Essential Government Operations | 3 |
| | Public Safety | 2 |
| | Public Utility Plant and Substation Facilities | 8 |
| | Transportation Lifeline Systems | 2 |
| | Essential Services Facilities Total | 16 |
| At Risk Populations Facilities | Designated Emergency Shelter | 1 |
| | Public Safety | 1 |
| | School | 6 |
| | At Risk Populations Facilities Total | 8 |

| Jurisdiction / Critical Facility Category | Critical Facility Type | Facility Count |
|---|--|----------------|
| Portola Total | | 24 |
| Unincorporated Plumas County | | |
| Essential Services Facilities | Communication Sites and Facilities | 495 |
| | Designated Emergency Shelter | 3 |
| | Emergency Medical | 11 |
| | Emergency Response | 5 |
| | Essential Government Operations | 14 |
| | Nursing, Congregate or Assisted Living | 1 |
| | Public Safety | 42 |
| | Public Utility Plant and Substation Facilities | 119 |
| | Transportation Lifeline Systems | 139 |
| | Essential Services Facilities Total | 829 |
| At Risk Populations Facilities | Nursing, Congregate or Assisted Living | 2 |
| | School | 31 |
| | At Risk Populations Facilities Total | 33 |
| Hazardous Materials Facilities | Hazardous Materials Facilities | 3 |
| | Industrial | 1 |
| | Hazardous Materials Facilities Total | 4 |
| Unincorporated Plumas County Total | | 866 |
| Unincorporated Butte County | | |
| Essential Services Facilities | Public Utility Plant and Substation Facilities | 4 |
| | Essential Services Facilities Total | 4 |
| Unincorporated Butte County Total | | 4 |
| Unincorporated Lassen County | | |
| Essential Services Facilities | Communication Sites and Facilities | 1 |
| | Public Safety | 2 |
| | Public Utility Plant and Substation Facilities | 31 |
| | Essential Services Facilities Total | 34 |
| Unincorporated Lassen County Total | | 34 |
| Unincorporated Sierra County | | |
| Essential Services Facilities | Public Utility Plant and Substation Facilities | 4 |
| | Essential Services Facilities Total | 4 |
| Unincorporated Sierra County Total | | 4 |
| Unincorporated Tehama County | | |
| Essential Services Facilities | Public Safety | 2 |
| | Essential Services Facilities Total | 2 |
| Unincorporated Tehama County Total | | 2 |

| Jurisdiction / Critical Facility Category | Critical Facility Type | Facility Count |
|---|------------------------|----------------|
| | | |
| Grand Total | | 934 |

Source: Plumas County GIS

Community Lifelines

Assessing the vulnerability of the Plumas County Planning Area to natural hazards and disasters also involves reviewing and inventorying the community lifelines in place that could be affected. It is important to include these items in hazard discussions as the continuous operation of critical government and business functions is essential to human health and safety and/or economic security. Information on community lifelines include:

- Lifelines are the most fundamental services in the community that, when stabilized, enable all other aspects of society to function.
- FEMA has developed a construct for objectives-based response that prioritizes the rapid stabilization of Community Lifelines after a disaster.
- The integrated network of assets, services, and capabilities that provide lifeline services are used day-to-day to support the recurring needs of the community and enable all other aspects of society to function.
- When disrupted, decisive intervention (e.g., rapid re-establishment or employment of contingency response solutions) is required to stabilize the incident.

For this Plan, Community Lifelines includes the following (as defined by FEMA):

- **Safety and Security** – Law Enforcement/Security, Fire Service, Search and Rescue, Government Service, Community Safety
- **Food, Hydration, Shelter** – Food, Water, Shelter, Agriculture
- **Health and Medical** – Medical Care, Public Health, Patient Movement, Medical Supply Chain, Fatality Management
- **Energy** – Power Grid, Fuel
- **Communications** – Infrastructure, Responder Communications, Alerts Warnings and Messages, Finance, 911 and Dispatch
- **Transportation** – Highway/Roadway/Motor Vehicle, Mass Transit, Railway, Aviation, Maritime
- **Hazardous Material** – Facilities, HAZMAT, Pollutants, Contaminants
- **Water Systems** – Potable Water Infrastructure, Wastewater Management

In the Plumas County Planning Area, these community lifelines are all in place and functional as part of regular government operations. It should also be noted that these community lifelines collectively include many of the individual components of other community assets inventoried for this LHMP including structures and critical facilities and infrastructure.

After the HMPC reviewed the list of hazards from Table 4-3, it was determined that most hazards that occur would not overwhelm the community lifelines in the Plumas County Planning Area. A matrix was put together in Table 4-14 for the hazards in the County. As shown, only earthquake, volcano, and wildfire are thought be able to (temporarily) overwhelm the community lifelines in the Plumas County Planning Area.

Of the remaining hazards, only very extreme events of dam failure, flood, and hazardous materials transportation may have a chance of temporarily overwhelming community lifelines. Events associated with the remaining hazards would likely not overwhelm community lifelines.

Note: This inventory of community lifelines and hazard analysis only occurs in this overall asset inventory for Plumas County. To limit redundancy, it is not discussed further in the hazard profiles and vulnerability assessments in Section 4.3 below.

Table 4-14 Plumas County Planning Area – Hazards and their Potential to Overwhelm Community Lifelines

| Hazard | Potential to Overwhelm Community Lifelines | Hazard | Potential to Overwhelm Community Lifelines |
|--|--|--|--|
| Severe Weather: Extreme Cold, Freeze, and Snow (w/avalanche) | Limited | Earthquake | High |
| Severe Weather: Extreme Heat | Limited | Flood: 1%/0.2% annual chance (w/levee failure) | Moderate |
| Severe Weather: Heavy Rains and Storms | Limited | Flood: Localized Flooding | Limited |
| Severe Weather: High Winds and Tornado | Limited | Hazardous Materials Transportation | Moderate |
| Ag Hazard: Severe Weather/ Pests/Weeds | Limited | Landslide, Mudslide, and Debris Flow | Limited |
| Climate Change | Limited | Volcano | High |
| Dam Failure | Moderate | Wildfire (w/smoke and air quality) | High |
| Drought & Water Shortage (w/tree mortality) | Limited | – | – |

Source: Plumas County Planning Team

Efforts to mitigate potential impacts to community lifelines are key to building resilience. These community lifelines connect to the sectors in the National Mitigation Framework and the Recovery Support Functions under the National Disaster Recovery Framework; the same agencies and departments that support these sectors also often support community lifelines and the recovery mission.

Specific information on these community lifelines in the Plumas County Planning Area and how they may be affected by a hazard event or disaster are discussed in more detail in each hazard section below as well as in each jurisdictional annex to this Base Plan.

Natural, Historical, and Cultural Resources

Assessing the vulnerability of the Plumas County Planning Area to disaster also involves inventorying the natural, historic, and cultural assets of the area. This step is important for the following reasons:

- The community may decide that these types of resources warrant a greater degree of protection due to their unique and irreplaceable nature and contribution to the overall economy.

- If these resources are impacted by a disaster, knowing so ahead of time allows for more prudent care in the immediate aftermath, when the potential for additional impacts are higher.
- The rules for reconstruction, restoration, rehabilitation, and/or replacement are often different for these types of designated resources.
- Natural resources can have beneficial functions that reduce the impacts of natural hazards, such as wetlands and riparian habitat, which help absorb and attenuate floodwaters.

Natural Resources

Natural resources are important to include in cost/benefit analyses for future projects and may be used to leverage additional funding for mitigation projects that also contribute to community goals for protecting sensitive natural resources. Awareness of natural resource assets can lead to opportunities for meeting multiple objectives. For instance, protecting wetlands areas protects sensitive habitat as well as reducing the force of and storing floodwaters.

The Plumas County 2035 General Plan Conservation Open Space Element noted that Plumas County is located in an area of varying topography and slopes, with elevations ranging from approximately 1,800 feet in the Feather River Canyon to 8,300 feet near the summit of Mount Ingalls. With a majority of land associated with agricultural activities, forestry, or other managed resource uses, approximately 94% of the total County area, the primary land use in Plumas County is considered an open space use. Additionally, many of these lands are managed for a combination of resource values, including but not limited to recreation, mining, timber production, and cultural and historic resources.

Plumas County is comprised of a range of habitat types many of which influence the water quality and quantity of the Feather River Watershed. These habitats, or vegetation communities, provide food, shelter, movement corridors, and breeding opportunities for a variety of wildlife species, many unique to the Feather River Watershed and the larger Sierra Mountain region. Conifer (including Mixed Conifer) habitat types comprise approximately 72% of land coverage in the County and are habitats commonly found at higher elevations. Plants characteristic of this habitat includes a variety of pines and firs. As one gets farther away from the higher elevation Sierra regions of the County, the pines and firs give way to sagebrush, annual grasslands, and the freshwater emergent wetland habitat types more common at lower elevations.

Plumas County and the larger Feather River Watershed area contain a variety of aquatic habitats. Within the watershed, two types of fisheries are found: cold water river/stream species and warm water lake/reservoir species. Historically, the watershed was habitat to Chinook salmon and steelhead. Special-status species are plants or animals that are legally protected under the State and/or federal Endangered Species Acts (ESAs) or other regulations, and species that are considered by the scientific community to be sufficiently rare to qualify for such listing. The California Department of Fish and Wildlife has documented habitat for over 90 different species of special concern in the County. These include several amphibians, such as the red-legged frog, bald eagles, osprey, several mammals, and plant/wildlife species associated with wetland habitats.

Special Status Species

To further understand natural resources that may be particularly vulnerable to a hazard event, as well as those that need consideration when implementing mitigation activities, it is important to identify at-risk species (i.e., endangered species) in the Planning Area. An endangered species is any species of fish, plant life, or wildlife that is in danger of extinction throughout all or most of its range. A threatened species is a species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Both endangered and threatened species are protected by law and any future hazard mitigation projects are subject to these laws. Candidate species are plants and animals that have been proposed as endangered or threatened but are not currently listed.

The California Natural Diversity Database, a program that inventories the status and locations of rare plants and animals in California, was queried to create an inventory of special status species in Plumas County. A summary list of these species is found below in Table 4-15. Appendix E lists the name, federal status, state status, California Department of Fish and Wildlife status, and the California Rare Plant rank of species in Plumas County.

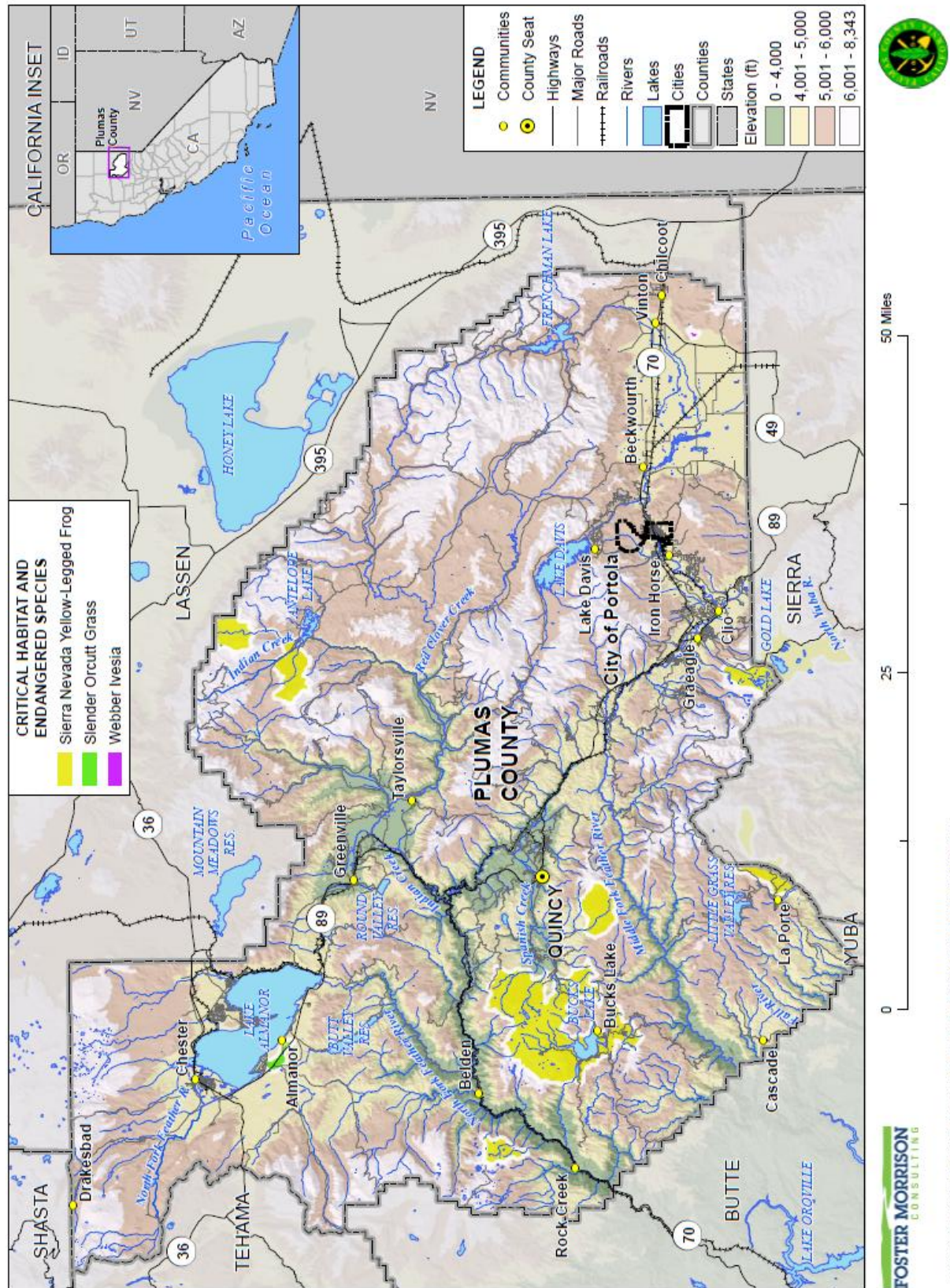
Table 4-15 Plumas County Planning Area – Summary of Special Status Species

| Type | Number |
|-------------------------|--------|
| Animals - Amphibians | 2 |
| Animals - Birds | 47 |
| Animals - Fish | 7 |
| Animals - Insects | 6 |
| Animals - Mammals | 26 |
| Animals – Mollusks | 11 |
| Animals – Reptiles | 2 |
| Community – Aquatic | 3 |
| Community – Terrestrial | 1 |
| Plant – Bryophytes | 2 |
| Plants – Vascular | 171 |

Source: California Natural Diversity Database. Retrieved January 2025.

Additionally, Plumas County has mapped critical habitat and endangered species in the County. This is shown on Figure 4-15.

Figure 4-15 Plumas County Critical Habitat and Endangered Species



Wetlands

Wetlands are habitats in which soils are intermittently or permanently saturated or inundated. Wetland habitats vary from rivers to seasonal ponding of alkaline flats and include swamps, bogs, marshes, vernal pools, and riparian woodlands. Wetlands are considered to be waters of the United States and are subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE) as well as the California Department of Fish and Wildlife (CDFW). Where the waters provide habitat for federally endangered species, the U.S. Fish and Wildlife Service may also have authority.

Wetlands are a valuable natural resource for communities providing beneficial impact to water quality, wildlife protection, recreation, and education, and play an important role in hazard mitigation. Wetlands provide drought relief in water-scarce areas where the relationship between water storage and streamflow regulation is vital and reduce flood peaks and slowly release floodwaters to downstream areas. When surface runoff is dampened, the erosive powers of the water are greatly diminished. Furthermore, the reduction in the velocity of inflowing water as it passes through a wetland helps remove sediment being transported by the water.

Fresh emergent wetland habitats occur in Plumas County on virtually all exposures and slopes, provided a basin or depression is saturated or at least periodically flooded. They are most common on level to gently rolling topography. They are found in various depressions or at the edge of rivers or lakes. Soils are predominantly silt and clay, although coarser sediments and organic material may be intermixed. In some areas organic soils (peat) may constitute the primary growth medium. Climatic conditions are highly variable and range from the extreme summer heat to winter temperatures well below freezing.

The US Fish and Wildlife Service has maps of wetlands in the United States. Those wetlands that fall in Plumas County are shown on Figure 4-16. They are detailed in Table 4-16 and are shown separated by jurisdiction. More information on the locations of wetlands in Portola can be found in its respective annex to this LHMP Update.

Figure 4-16 Plumas County Planning Area – Wetlands Locations

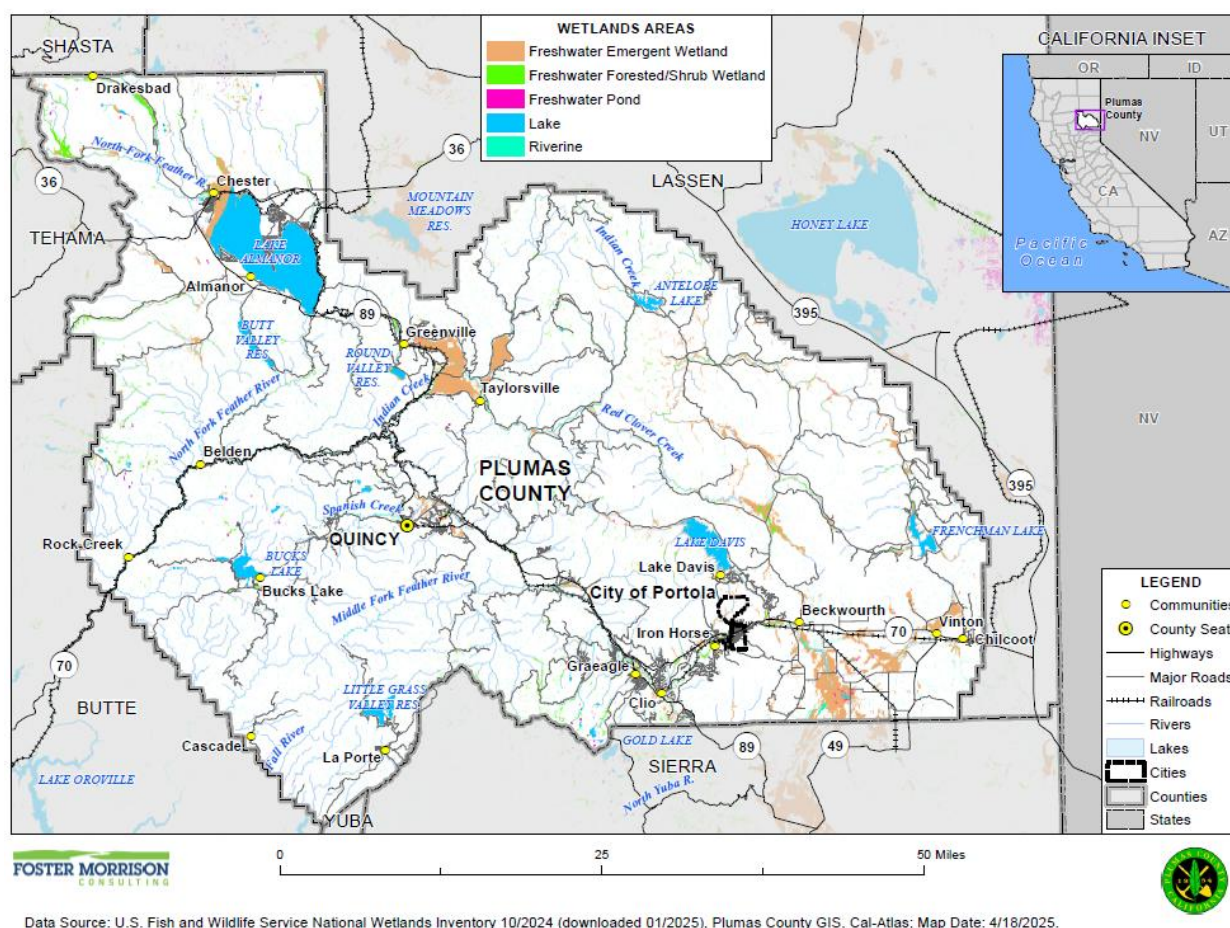


Table 4-16 Plumas County Planning Area – Wetlands

| Wetlands Area Type | Wetlands Count | Wetlands Area (in Acres) |
|-------------------------------------|----------------|--------------------------|
| City of Portola | | |
| Freshwater Emergent Wetland | 54 | 126.35 |
| Freshwater Forested/Shrub Wetland | 9 | 9.67 |
| Freshwater Pond | 1 | 0.18 |
| Lake | 0 | 0.0 |
| Riverine | 56 | 30.91 |
| Non-Wetland* | 1,643 | 3,324.21 |
| City of Portola Total | 1,763 | 3,491.32 |
| Unincorporated Plumas County | | |
| Freshwater Emergent Wetland | 7,077 | 43,290.38 |
| Freshwater Forested/Shrub Wetland | 7,571 | 11,795.93 |
| Freshwater Pond | 769 | 874.03 |

| Wetlands Area Type | Wetlands Count | Wetlands Area (in Acres) |
|---|----------------|--------------------------|
| Lake | 373 | 36,595.95 |
| Riverine | 18,236 | 14,995.44 |
| Non-Wetland* | 24,195 | 1,561,082.10 |
| Unincorporated Plumas County Total | 58,221 | 1,668,633.84 |
| | | |
| Grand Total | 59,984 | 1,672,125.16 |

Source: USFWS October 2024 National Wetlands Inventory

* This category is all other "blank/no data" areas

Wetlands Natural and Beneficial Functions

Wetlands are often found in floodplains and depressional areas of a watershed. Many wetlands receive and store floodwaters, thus slowing and reducing downstream flow. Wetlands perform a variety of ecosystem functions including food web support, habitat for insects and other invertebrates, fish and wildlife habitat, filtering of waterborne and dry-deposited anthropogenic pollutants, carbon storage, water flow regulation (e.g., flood abatement), groundwater recharge, and other human and economic benefits.

Wetlands, and other riparian and sensitive areas, provide habitat for insects and other invertebrates that are critical food sources to a variety of wildlife species, particularly birds. There are species that depend on these areas during all parts of their lifecycle for food, overwintering, and reproductive habitat. Other species use wetlands and riparian areas for one or two specific functions or parts of the lifecycle, most commonly for food resources. In addition, these areas produce substantial plant growth that serves as a food source to herbivores (wild and domesticated) and a secondary food source to carnivores.

Wetlands slow the flow of water through the vegetation and soil, and pollutants are often held in the soil. In addition, because the water is slowed, sediments tend to fall out, thus improving water quality and reducing turbidity downstream.

These natural floodplain functions associated with the natural or relatively undisturbed floodplain that moderates flooding, such as wetland areas, are critical for maintaining water quality, recharging groundwater, reducing erosion, redistributing sand and sediment, and providing fish and wildlife habitat. Preserving and protecting these areas and associated functions are a vital component of sound floodplain management practices for the Plumas County Planning Area.

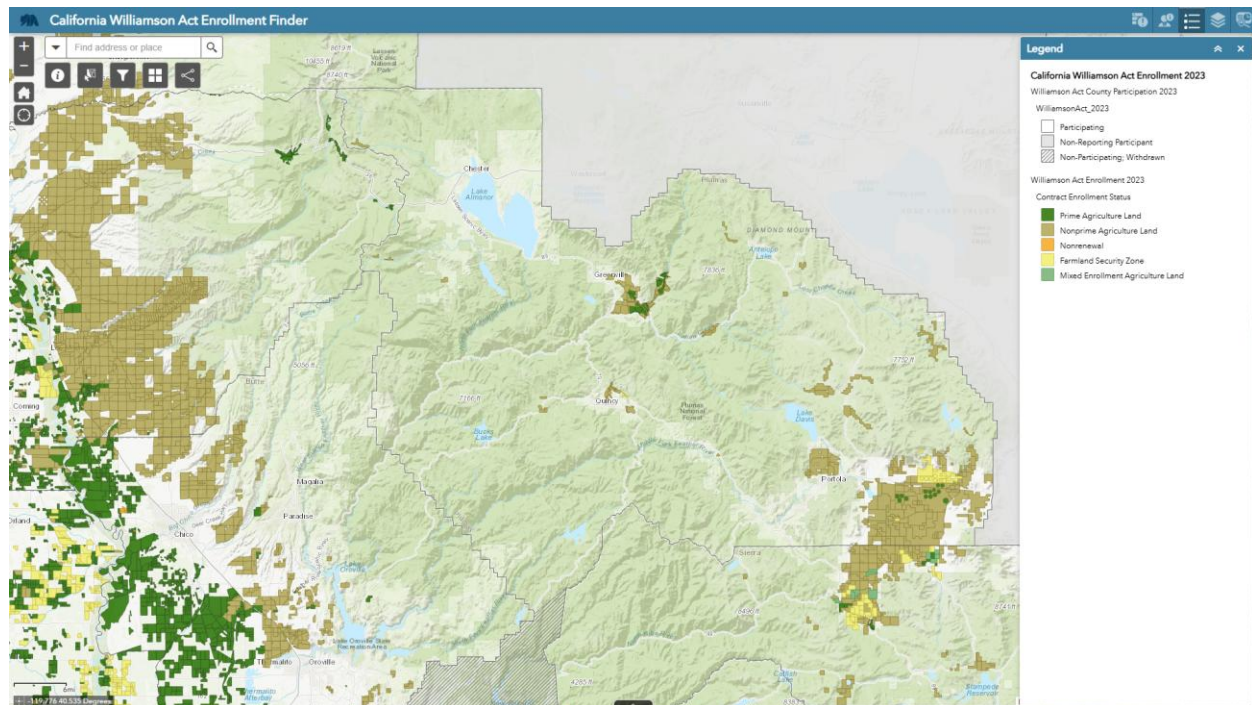
Farmlands

Williamson Act

The Williamson Act, also known as the California Land Conservation Act of 1965, enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. When the County enters into a contract with the landowners under the Williamson Act, the landowner agrees to limit the use of the land to agriculture and compatible uses for a period of at least ten years, and the County agrees to tax the land at a rate based on the agricultural production of the land rather than its real estate market value. This affects the County's

overall values for assessed taxable lands. The County has designated areas as agricultural preserves within which the County will enter into contracts for the preservation of the land in agriculture. Locations from the most recent map (dated 2023) can be seen on Figure 4-17 for Plumas County.

Figure 4-17 Plumas County – Williamson Act Lands



Source: California Department of Conservation. Retrieved 04/22/2025.

State Inventory of Important Farmland

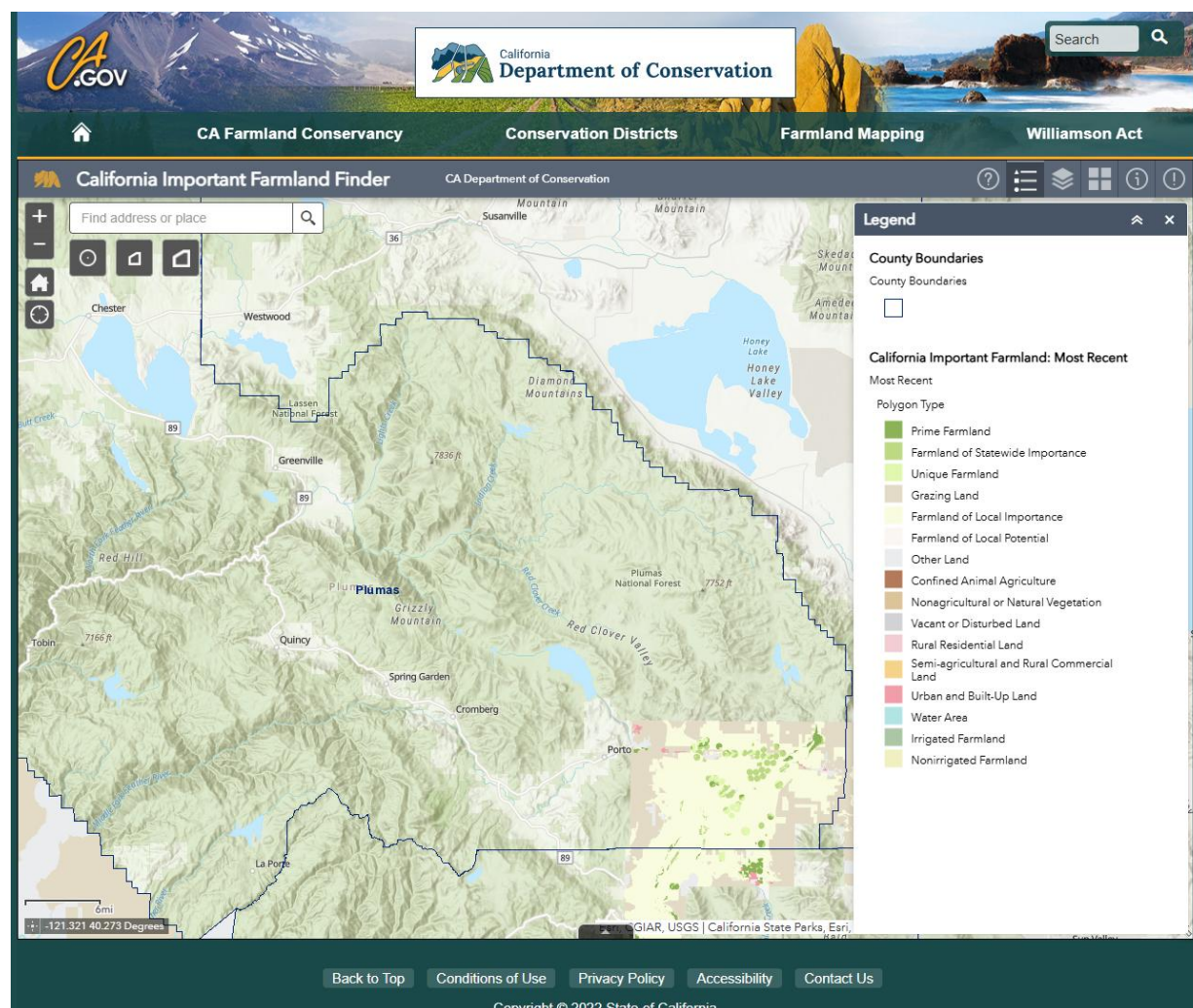
The Farmland Mapping and Monitoring Program was established in 1984 to document the location, quality, and quantity of agricultural lands and conversion of those lands over time. The program provides impartial analysis of agricultural land use changes throughout California. For inventory purposes, several categories were developed to describe the qualities of land in terms of its suitability for agricultural production. The State Department of Conservation utilizes the following classification system:

- The Prime Farmland category describes farmland with the best combination of physical and chemical features able to sustain long term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.
- Farmland of Statewide Importance is farmland similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.
- Unique Farmland is farmland of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated but may include non-irrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.

- Farmland of Local Importance is either currently producing crops or has the capability of production. This farmland category is determined by each county's board of supervisors and a local advisory committee.

The 2022 maps are the most recent versions. These lands are shown in Figure 4-18. The map does not show the full extent of the County; however, no important farmlands fall in the western and northwestern portions of the County.

Figure 4-18 Plumas County – Map of Important Farmlands 2022



Source: State of California Department of Conservation. Retrieved 04/22/2025.

Cultural and Historical Resources

Plumas County has a large stock of historically significant homes, public buildings, and landmarks. To inventory these resources, the HMPC collected information from a number of sources. The California Department of Parks and Recreation Office of Historic Preservation (OHP) was the primary source of information. The OHP is responsible for the administration of federally and state mandated historic preservation programs to further the identification, evaluation, registration, and protection of California's

irreplaceable archaeological and historical resources. OHP administers the National Register of Historic Places, the California Register of Historical Resources, California Historical Landmarks, and the California Points of Historical Interest programs. Each program has different eligibility criteria and procedural requirements.

- The **National Register of Historic Places** is the nation's official list of cultural resources worthy of preservation. The National Register is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect historic and archeological resources. Properties listed include districts, sites, buildings, structures, and objects that are significant in American history, architecture, archeology, engineering, and culture. The National Register is administered by the National Park Service, which is part of the U.S. Department of the Interior.
- The **California Register of Historical Resources** program encourages public recognition and protection of resources of architectural, historical, archeological, and cultural significance and identifies historical resources for state and local planning purposes; determines eligibility for state historic preservation grant funding; and affords certain protections under the California Environmental Quality Act. The Register is the authoritative guide to the state's significant historical and archeological resources.
- **California Historical Landmarks** are sites, buildings, features, or events that are of statewide significance and have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value. Landmarks #770 and above are automatically listed in the California Register of Historical Resources.
- **California Points of Historical Interest** are sites, buildings, features, or events that are of local (city or county) significance and have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value. Points designated after December 1997 and recommended by the State Historical Resources Commission are also listed in the California Register.

Historical resources included in the programs above are identified in Table 4-17.

Table 4-17 Plumas County Planning Area – Historical Resources

| Resource Name (Plaque Number) | National Register | State Landmark | California Register | Point of Interest | Date Listed | City/Community |
|---|-------------------|----------------|---------------------|-------------------|-------------|----------------|
| Beckwourth Pass (336) | | X | | | 8/8/1939 | Chilcoot |
| Buck's Lake (197) | | X | | | 6/20/1935 | Quincy |
| Ch'ichu'yam-Bam (N2213) | X | | | | 9/25/2003 | Crescent Mills |
| Chinese American Cemetery, Plumas County Memorial Park (P770) | | | | X | 5/11/1992 | Quincy |
| Drakesbad Guest Ranch (N2216) | X | | | | 10/22/2003 | Chester |
| Elizabethtown (231) | | X | | | 6/20/1935 | Quincy |
| James P. Beckwourth Ranch & Trading Post (P183) | | | | X | 9/24/1970 | Beckwourth |
| Jamison City, Eureka Mills, Johnstown, and The Famous Eureka Mine (196) | | X | | | 6/20/1935 | Blairsden |

| Resource Name (Plaque Number) | National Register | State Landmark | California Register | Point of Interest | Date Listed | City/Community |
|---|-------------------|----------------|---------------------|-------------------|-------------|------------------------|
| Lakes Basin Petroglyphs (N85) | X | | | | 5/6/1971 | Gold Lake |
| Marysville-Carson City Trail (P620) | | | | X | 8/16/1983 | Plumas National Forest |
| Peter Lassen Marker (Site Of Lassen Trading Post) (184) | | X | | | 6/20/1935 | Greenville |
| Pioneer Grave (Grizzly Creek) (212) | | X | | | 6/20/1935 | Quincy |
| Pioneer Schoolhouse (625) | | X | | | 1/13/1958 | Quincy |
| Pioneer Ski Area of America, Johnsville (723) | | X | | | 1/18/1960 | Blairsden |
| Plumas-Eureka Mill, Jamison Mines District (N249) | X | | | | 7/16/1973 | Blairsden |
| Rabbit Creek Hotel Monument (213) | | X | | | 6/20/1935 | La Porte |
| Rich Bar (337) | | X | | | 8/8/1939 | Quincy |
| Site of American Ranch And Hotel (479) | | X | | | 11/9/1950 | Quincy |
| Site Of Plumas House (480) | | X | | | 11/9/1950 | Quincy |
| Spanish Ranch and Meadow Valley (481) | | X | | | 11/9/1950 | Quincy |
| Taylorsville Schoolhouse (P742) | | | | X | 5/8/1991 | Taylorsville |
| Town Of Taylorsville (P318) | | | | X | 9/12/1973 | Taylorsville |
| Warner Valley Ranger Station (N579) | X | | | | 4/3/1978 | Chester |

Source: California Department of Parks and Recreation Office of Historic Preservation. Retrieved 12/3/2024.

It should be noted that these lists may not be complete, as they may not include those currently in the nomination process and not yet listed. Additionally, as defined by the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA), any property over 50 years of age is considered a historic resource and is potentially eligible for the National Register. Thus, in the event that the property is to be altered, or has been altered, as the result of a major federal action, the property must be evaluated under the guidelines set forth by CEQA and NEPA. Structural mitigation projects are considered alterations for the purpose of this regulation.

In addition to this, the County has its own inventory of historic buildings and places. These are shown on Figure 4-19, Table 4-17, and detailed in Appendix F.

Plumas County
Local Hazard Mitigation Plan Update
November 2025



Economic Assets and Community Activities of Value

Assessing the vulnerability of the Plumas County Planning Area to natural hazards and disasters also involves inventorying the economic assets and community activities of value to the Plumas County Planning Area.

Economic Assets

After a disaster, economic resiliency is one of the major drivers of a speedy recovery. Each community has specific economic drivers. These include:

- Primary Economic Sectors
- Major employers
- Commercial Centers

In the County, this includes Pacific Crest Trail; Plumas Corporation; Sierra Pacific Industries; Collins Pines; Plumas County; City of Portola; High Sierra Music Festival; 4th of July activities throughout Plumas County; Fair; Mountain Biking events; Christmas activities; Land Trust; Recreation; Feather River College; PG&E; and Plumas Sierra Rural Electric Cooperative.

Plumas National Forest; Plumas Unified School District; Hospitals; Central Plumas Recreation District; Almanor Recreation District; Tourism;

More information on economic assets for the incorporated jurisdictions in the County can be found in the respective jurisdictional annexes to this Base Plan.

Community Activities of Value

Inventorying economic assets in the Plumas County Planning Area and their vulnerability to natural hazards and disasters also involves inventorying activities that have value to the community. This includes activities that are important to a community, like long-standing traditions such as a festival or fair. Some areas rely on seasonal industries to sustain them throughout the year. Many of these activities provide economic benefits to the Planning Area. A hazard event that cancels or shortens these can affect a community's livelihood and can make disaster recovery more difficult or prolonged. This includes activities such as:

- Festivals and Fairs
- Sporting Events
- Tourism

In the County, this includes High Sierra Music Festival; 4th of July activities throughout Plumas County; Fair; Mountain Biking events; Christmas activities; and recreation events.

More information on community activities of value can be found in the respective jurisdictional annexes to this Base Plan.

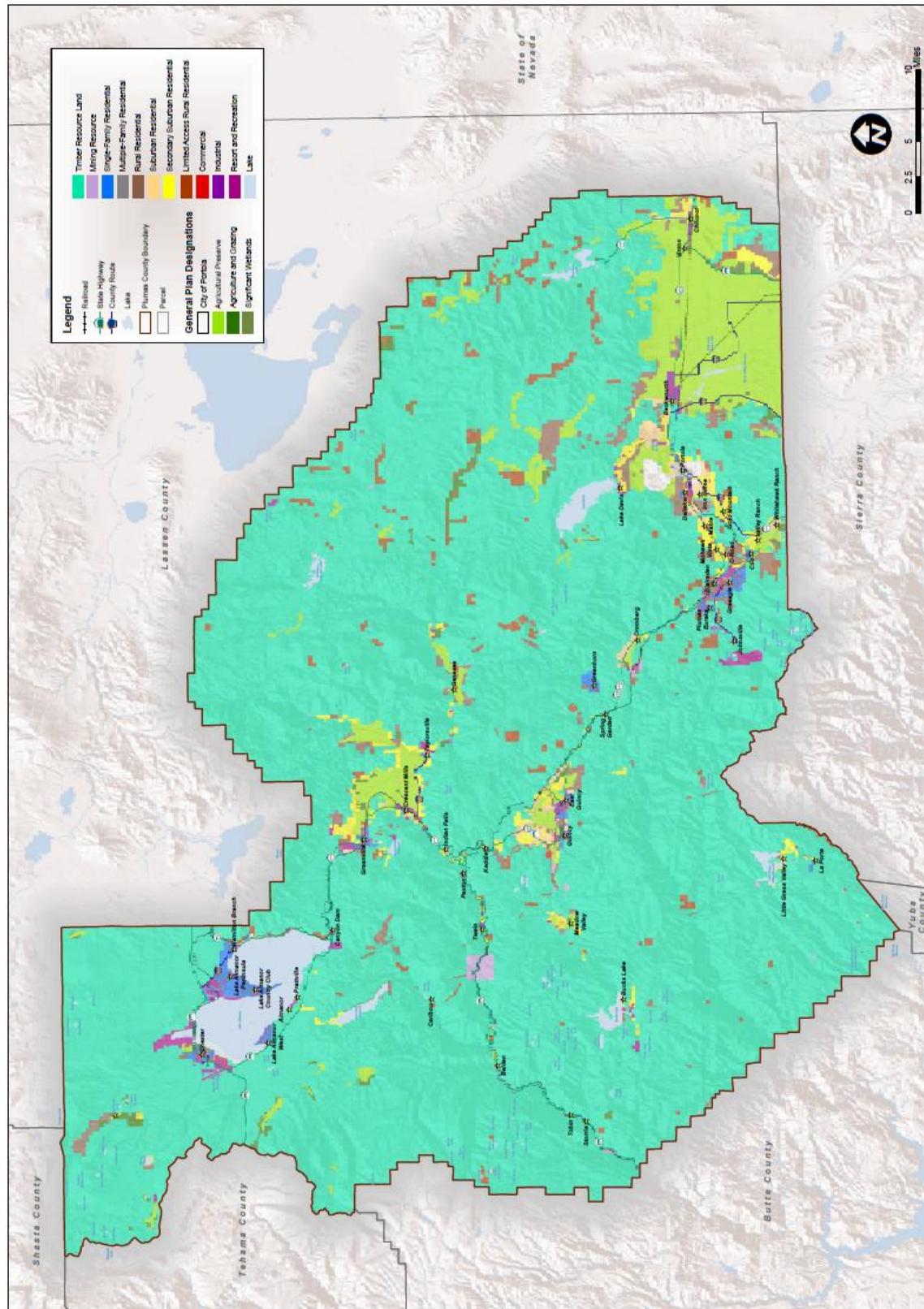
4.2.2. Growth and Development Trends

As part of the planning process, trends in growth and development, both current and future, were examined, both as a whole and in the context of hazard-prone areas, and how the changes in growth and development affect loss estimates and vulnerability over time. This discussion focuses on unincorporated Plumas County.

Land Use

The future use of land in the County is fundamental to attaining the vision of a balanced, self-sustaining community. A land use pattern which balances growth between rural and urban areas, as well as providing a balance between housing, employment, natural resources, and services in the County is a key element in maintaining the quality of life and unique character of the County. Descriptions of allowed uses for each classification are detailed in the Plumas County General Plan Land Use Element. Figure 4-20 is sourced from this section.

Figure 4-20 Plumas County General Plan Land Use



Source: Plumas County 2016 General Plan Land Use Element

Population Projections

As indicated in the previous section, Plumas County had been steadily growing from 1940 to 2020. Since then, the County has begun to lose population. Long term forecasts by the California Department of Finance project population in Plumas County continuing through 2070. Table 4-18 shows the population projections for the County Planning Area as a whole through 2070. As shown, populations are expected to shrink over time.

Table 4-18 Population Projections for the Plumas County Planning Area (incorporated and unincorporated), 2025-2070

| | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 | 2055 | 2060 | 2065 | 2070 |
|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Plumas County | 18,478 | 17,630 | 17,009 | 16,281 | 15,468 | 14,670 | 13,917 | 13,285 | 12,815 | 12,405 |

Source: California Department of Finance, P-2 Report

Development since 2020 Plan

The Plumas County Planning Department sought to track total building permits issued since 2020 for unincorporated Plumas County. A summary of this development is shown in Table 4-19. Development by known flood and fire hazard areas is shown in Table 4-20. All development in the identified hazard areas, including the 1% annual chance floodplains and high wildfire risk areas, were completed in accordance with the current and applicable development codes and standards in place at the time. Thus, with the exception of more people living in the area potentially exposed to natural hazards, this growth should not cause a significant change in vulnerability of the County to identified priority hazards.

Table 4-19 Unincorporated Plumas County Development 2020–2024 Summary

| Property Use | 2020 | 2021 | 2022 | 2023 | 2024 |
|--------------|------|------|------|------|------|
| Residential | | | | | |
| Commercial | | | | | |
| Industrial | | | | | |
| Other | | | | | |
| Total | | | | | |

Source: Plumas County Planning Department

Table 4-20 Unincorporated Plumas County Development in Hazard Areas since 2020

| Property Use | Moderate or Higher Fire Hazard Severity Zones | 1% Annual Chance Flood | Landslide Potential Areas | Other |
|--------------|---|------------------------|---------------------------|-------|
| Residential | 291 | 25 | 0 | 0 |
| Commercial | 6 | 0 | 0 | 0 |
| Industrial | 0 | 0 | 0 | 0 |

| Property Use | Moderate or Higher Fire Hazard Severity Zones | 1% Annual Chance Flood | Landslide Potential Areas | Other |
|--------------|---|------------------------|---------------------------|----------|
| Other | 7 | 2 | 0 | 0 |
| Total | 304 | 27 | 0 | 0 |

Source: Plumas County Planning Department, August 2025

Summary by Year

- Moderate or Higher Fire Hazard Severity Zones
 - ✓ 2020 – 37
 - ✓ 2021 – 60
 - ✓ 2022 – 66
 - ✓ 2023 – 81
 - ✓ 2024 – 60
- 1% Annual Chance Flood (Special Flood Hazard Area – 100-year floodplain)
 - ✓ 2020 – 4
 - ✓ 2021 – 8
 - ✓ 2022 – 2
 - ✓ 2023 – 8
 - ✓ 2024 – 5

In addition, it was noted that Plumas District Hospital Skilled Nursing Facility is currently being built. Seneca Healthcare District is building a new hospital. Plumas Crisis Intervention Resource Center added a housing center. Riley’s Jerky was built after the Dixie Fire destroyed their previous shop.

Future Development Areas

It is important to review future development plans for the County. Future development should be sited in areas that are away from known hazard risks. If this is not possible, mitigation should be done to ensure that future development is protected against future hazard events and disasters.

Plumas County has multiple areas that are expected to see or may see development over the next 5 years. These are listed below. Some of these have a narrative that follows the bulleted list. These are used as the basis for the GIS analysis below.

- CHP Station – This is a State/commercial facility. No narrative was available for this development area.
- Greenville Cy Hall Memorial Museum – This is a commercial museum property. No narrative was available for this development area.
- Greenville Rancheria Medical and Dental Clinic and Pharmacy – This is a medical/commercial facility. A narrative about this facility follows this bulleted list.
- Plumas Charter School – No narrative was available for this development area.
- Plumas County Search and Rescue – No narrative was available for this development area.

- Plumas District Hospital Skilled Nursing Facility – This is a medical/commercial facility. A narrative about this facility follows this bulleted list.
- Seneca Hospital – This is a medical/commercial facility. A narrative about this facility follows this bulleted list.
- Way Station – No narrative was available for this development area.
- Indian Valley Public Safety Center (Plumas County Sheriff Substation, Indian Valley Community Services District Fire Station, and Plumas District Hospital Ambulance) – This is an emergency services/commercial facility. A narrative about this facility follows this bulleted list.
- Meadow Edge Mobile Home Park – This is a residential single-family development. No narrative was available for this development area.
- North Star Navigation Center – Phase 2 – This is a residential multi-family development. A narrative about this facility follows this bulleted list.

In addition, though not mapped in the GIS analysis below, the County noted the following areas that may see development.

- 2024-2029 Housing Element Update Draft RHNA Vacant And Underutilized Sites List – multiple sites. A narrative about these follows this bulleted list.

Greenville Rancheria Medical Campus

On November 13, 2024, the Plumas County Zoning Administrator approved a special use permit amendment for the Greenville Rancheria of Maidu Indians of California to reestablish their Medical Campus in the Town of Greenville after the 2021 Dixie Fire destroyed the structure. The building involves the construction of a two-story, 16,200-square-foot outpatient medical, dental, pharmacy, and behavioral health facility and a 59-space parking lot on the parcels located at 408 and 410 Main Street, Greenville (APNs 110-062-007, 110-062-028, 110-062-029). As included in the construction document set, the proposed facility will have a reception and lobby area, waiting rooms, medical and dental exam and treatment rooms, behavioral health facilities, a pharmacy, administration and human resources offices, training and conference room space, a shipping and receiving area, employee break room, patient and staff restrooms, and several other supplemental rooms. The project will be able to serve up to a maximum of 25 patients a day with hours of operation Monday through Friday, 8:00 AM to 5:00 PM.

Plumas District Hospital Skilled Nursing Facility

On December 21, 2021, the Plumas County Zoning Administrator approved a special use permit for the construction of a new Plumas District Hospital skilled nursing facility in the Town of Quincy, located across the street from the existing hospital campus on Bucks Lake Road. The 22,507 square foot facility advanced construction activities in 2024 and is expected to be completed in summer 2025, consisting of two one-story buildings joined by a pedestrian bridge, and when fully operational, will host 36 beds with 24-hour nursing care and bring 79 livable wage jobs to Plumas County. Other functions include pharmaceutical service; dietary service space; activity programming space; common areas including lobby and reception, spa and salon, consult/family room, and restrooms; administrative offices; housekeeping; storage; employee dressing rooms; lockers; staff lounge; and parking.

Seneca Healthcare District Hospital Replacement

On June 13, 2023, the Plumas County Board of Supervisors approved Resolution 2023-8812 and Ordinance No. 2023-1149 approving a General Plan Amendment and Zone Change, including adopting a California Environmental Quality Act (CEQA) compliant Mitigated Negative Declaration (No. 685) for the Seneca Healthcare District Hospital property at 199 Reynolds Road, in the Town of Chester. The Seneca Healthcare District broke ground in 2024 and completed the underground infrastructure for the construction of a 45,000 square foot state-of-the-art healthcare hospital due to aging hospital facilities and the requirement of Sente Bill 1953 which mandated seismic safety standards for hospitals. The new hospital will typically have a staff of approximately 48 employees on site at peak hours and accommodate the District's acute-care replacement hospital and an expanded skilled nursing facility, in addition to other amenities, as follows:

- 10-bed acute care, 2 of those with isolation capabilities
- 3-bed private emergency room and Trauma/procedure room
- 26-bed skilled nursing facility
- Imaging to include x-ray, CT scanner, ultrasound, and mobile MRI via trailer
- Operating room, procedure room, and 3-bed patient recovery
- Pharmaceutical services
- Laboratory services
- Dietary services – kitchen and dining
- Ambulatory surgery
- Physical therapy
- Occupational therapy
- Maintenance, materials management, laundry services

All spaces are sized to allow for improved workflow, updated and improved infrastructure, updated technology and medical equipment, and ADA accessibility per current code requirements. Additionally, the hospital will include a 3,000 square foot support services building and the approved plans allow for the construction of 10,000 square feet of housing for District employees and their families with up to ten 1,000 square foot residential units. To fund the construction, the District pursued U.S. Department of Agriculture (USDA) funding as well as a public bond measure (Measure B), which passed in the November 8, 2022, election, and philanthropic offerings by the community. Construction will continue into 2025, through 2026, with an anticipated timeframe to open of early 2027.

Indian Valley Public Safety Center

On April 13, 2023, Indian Valley Community Services District (IVCSD), applicant, submitted a special use permit application (Exhibit 1) to allow a public service facility use to construct the Indian Valley Public Safety Center facility (approximately 9,890-square-foot multi-use structure) for emergency services, including the Indian Valley Community Services District Fire Department Station, Plumas County Sheriff's Substation, and Plumas District Hospital ambulance with sleeping quarters, in addition to other associated accessory structures on a 5.0-acre parcel zoned Periphery Commercial ("C-2") located at 19646 Highway 89, Greenville, CA, APN 110-330-007-000 (Exhibit 2).

As shown on the site plan (Exhibit 3) dated February 20, 2025, the proposed facility would include a 4,560-square-foot drive-through truck bay, 5,070-square-foot main building, 260-square-foot shop, 700-square-foot covered patio, 840-square-foot carport, and a 112-square-foot covered entry.

The existing fire house metal structure, with bays, shown on the site plan was placed on the property as a temporary fire house as a result of the destruction of the IVCSD fire house due to the 2021 Dixie Fire. The existing fire house would be kept on site for the storage of equipment.

The proposed 3,600-square-foot biomass building shown on the site plan may be relocated to another location in Greenville, but is shown to be analyzed, as it could possibly remain located on the subject parcel.

The Plumas District Hospital ambulance services would have personnel using the building twenty-four (24) hours per day, seven days per week, Monday through Sunday, and dependent on calls, the IVCSD Fire Department personnel may be using the building twenty-four (24) hours per day, seven days per week, Monday through Sunday. Other IVCSD staff would utilize the office space as a satellite office, with no public visits, to the primary public IVCSD office at 127 Crescent Street, Greenville. The Plumas County Sheriff's Substation would be used intermittently seven days per week, Monday through Sunday.

The maximum number of staff on site at any given time would be as follows:

- Eight (8) IVCSD Staff
- Two (2) Sheriff Deputies
- Three (3) Staff for Plumas District Hospital Ambulatory Services

Additionally, there are IVCSD Fire Department trainings held every Tuesday at a different fire station location throughout the District, which is a total of four (4) stations – Greenville, Taylorsville, North Arm Indian Valley, and Genesee. Therefore, on occasion, there would be a maximum of thirty (30) volunteer firefighters on site. For an intermittent total maximum number of staff on site of forty-three (43).

North Star Navigation Center – Phase 2

Plumas Crisis Intervention and Resource Center (PCIRC), Plumas County's homelessness and CE provider, broke ground in 2022 and completed construction of Phase 1 in 2024 on the County's first emergency and transitional housing Navigation Center under the state's Low Barrier housing model pursuant to Government Code Sec. 65660 – 65668 (AB 101, Weiner, 2019). The parcel is 1 acre and is zoned "M-R" Multiple Family Residential. The NorthStar Navigation Center is an appropriate site for a year-round emergency shelter as the parcel has utility services, including water, sewer, and power. Furthermore, the site is located in Quincy in proximity to retail services, public transportation, medical facilities, and employment opportunities. A Low Barrier Navigation Center pursuant to Government Code Sec. 65660 – 65668 (AB 101, Weiner, 2019) means a Housing First approach, low-barrier, service-enriched shelter focused on moving people into permanent housing that provides temporary living facilities while case managers connect individuals experiencing homelessness to income, public benefits, health services, shelter, and housing. "Low Barrier" means best practices to reduce barriers to entry, and may include, but is not limited to: the presence of partners if it is not a population-specific site, such as for survivors of domestic violence or sexual assault, women, or youth; pets; the storage of possessions; and privacy, such as partitions around beds in a dormitory setting or in larger rooms containing more than two beds, or private

rooms. The North Star Navigation Center provides immediate emergency shelter and transitional housing services to the homeless, chronically homeless, transitioning offenders, the Housing and Disability Advocacy Program (HDAP) for seniors and/or disabled, and former foster youth in Plumas. The main building (Phase 1) includes a 27-bed capacity emergency shelter with congregate beds and non-congregate bedrooms for families, associated congregate and non-congregate bathrooms, day use room areas, a kitchen and dining room, administrative offices for staff, and storage. More specifically, there are 12 beds in the bunkroom (7 male and 5 female) and three family rooms with a total 15 bed capacity. Ohana Village (Phase 2) will offer transitional housing that includes 26 detached cabins ranging in size from studio units (16 beds, one of which is accessible), 1 bedroom-units (16 beds, one of which is accessible), and 2 bedroom-units (8 beds, one of which is accessible). The 1- and 2-bedroom units will include half baths, while the studio units utilize a common building with congregate bathrooms that also have shower facilities for all Ohana Village units. A second common building will include Ohana Village resident dining and there is also a maintenance building and outdoor play area. Supportive service staffing includes a Navigation Center Manager, Housing Navigator, Behavioral Health Counselor, Alcohol and Drug Counselor, HDAP Disability Advocate, and Grief Recovery Specialist with the primary purpose to bring all activities in-house and on-site. Educational opportunities and trainings will be provided to North Star Navigation Center residents including money management, life skills, and workforce development skills. Expected outcomes include:

- Increasing access to emergency and transitional housing.
- Delivery of a comprehensive array of supportive services.
- Reducing the number of days of homelessness.
- Increasing access to permanent housing and housing stability.
- Developing a ‘systems change’ in how Plumas County addresses homelessness for its most vulnerable residents.

Sites from RHNA

The County provided the Initial Review Draft of the 2024-2029 Housing Element. It included the following tables (Table 4-21 through Table 4-24) where development may occur to accommodate Very Low Income and Low Income housing. Any of these sites could be used for future development.

Table 4-21 Vacant High-Density Sites to Accommodate the Very Low Income RHNA¹

| Identified in Prior 5 th /6 th Planning Cycle | APN/Address | Community/ ZIP Code | Approx. Acreage | General Plan Land Use Designation | Zoning | Community Services District (CSD) | Electricity | FEMA Flood Zone | Site Constraints | Min Density (10 du/acre) | Max Density (21.8 du/acre) | Realistic Capacity |
|---|--------------------------------------|---------------------|------------------------|-----------------------------------|--------|-----------------------------------|-------------|-----------------|----------------------|--------------------------|----------------------------|--------------------|
| Yes | 116-172-010 1967 Claremont Way | East Quincy/95971 | 0.98 | Multiple-Family Residential | M-R | American Valley CSD Water/Sewer | PG&E | Shaded Zone X | None | 9 | 21 | 12 |
| Yes | 116-320-034 1506 Peppard Flat Rd. | East Quincy/95971 | Gross 7.47 Net 2.70 | Multiple-Family Residential | M-R | American Valley CSD Water/Sewer | PG&E | Unshaded Zone X | Topography/ Forested | 27 | 58 | 32 |
| Total | | | | | | | | | | 36 | 79 | 44 |

Source: Plumas County Planning Department, August 2025.

¹ The 32-unit realistic capacity of 1506 Peppard Flat Rd. as a vacant high-density site to accommodate a portion of the very low income RHNA assumes accommodating the acutely low- and extremely low-income RHNA of 10 units.

Table 4-22 Underutilized High-Density Sites to Accommodate the Very Low Income RHNA

| Identified in Prior 5 th /6 th Planning Cycle | APN/Address | Community/ ZIP Code | Approx. Acreage | General Plan Land Use Designation | Zoning | Community Services District (CSD) | Electricity | FEMA Flood Zone | Site Constraints | Min Density (10 du/acre) | Max Density (21.8 du/acre) | Realistic Capacity |
|---|----------------------------------|---------------------|-----------------|-----------------------------------|--------|-----------------------------------|-------------|-----------------|-----------------------|--------------------------|----------------------------|--------------------|
| No | 116-112-008 7 Fairground Rd. | East Quincy/95971 | 1.28 | Multiple-Family Residential | M-R | American Valley CSD Water/Sewer | PG&E | Unshaded Zone X | One (1) Dwelling Unit | 12 | 27 | 16 |
| No | 116-172-012 56 Mill Creek Rd. | East Quincy/95971 | 1.16 | Multiple-Family Residential | M-R | American Valley CSD Water/Sewer | PG&E | Unshaded Zone X | One (1) Dwelling Unit | 11 | 25 | 24 |
| Total | | | | | | | | | | 23 | 52 | 40 |

Source: Plumas County Planning Department, August 2025.

Table 4-23 Vacant High-Density Sites to Accommodate the Low Income RHNA

| Identified in Prior 5 th /6 th Planning Cycle | APN/Address | Community/ ZIP Code | Approx. Acreage | General Plan Land Use Designation | Zoning | Community Services District (CSD) | Electricity | FEMA Flood Zone | Site Constraints | Min Density (10 du/acre) | Max Density (21.8 du/acre) | Realistic Capacity |
|---|------------------------------------|---------------------|------------------------|-----------------------------------|--------|-----------------------------------|-------------|-----------------|--------------------|--------------------------|----------------------------|--------------------|
| Yes | 115-080-022 105 Louisiana Ave. | Quincy/95971 | Gross 3.64 Net 1.96 | Multiple-Family Residential | M-R | American Valley CSD Water/Sewer | PG&E | Unshaded Zone X | Soils/Geotechnical | 19 | 42 | 40 |
| No | 110-171-022 168 Hot Springs Rd. | Greenville/95947 | 0.79 | Multiple-Family Residential | M-R | Indian Valley CSD Water/Sewer | PG&E | Unshaded Zone X | None | 7 | 17 | 12 |
| Total | | | | | | | | | | 26 | 59 | 52 |

Source: Plumas County Planning Department, August 2025.

Table 4-24 Underutilized High-Density Sites to Accommodate the Low Income RHNA

| Identified in Prior 5 th /6 th Planning Cycle | APN/Address | Community/ ZIP Code | Approx. Acreage | General Plan Land Use Designation | Zoning | Community Services District (CSD)t | Electricity | FEMA Flood Zone | Site Constraints | Min Density (10 du/acre) | Max Density (21.8 du/acre) | Realistic Capacity |
|---|------------------------------------|---------------------|------------------------|-----------------------------------|--------|------------------------------------|-------------|-----------------|--|--------------------------|----------------------------|--------------------|
| No | 110-171-023 184 Hot Springs Rd. | Greenville/95947 | Gross 3.50 Net 2.60 | Multiple-Family Residential | M-R | Indian Valley CSD Water/Sewer | PG&E | Unshaded Zone X | Existing Plumas District Hospital Building with Medical Clinic/Road & Parking Easement | 26 | 56 | 24 |
| Total | | | | | | | | | | 26 | 56 | 24 |

Source: Plumas County Planning Department, August 2025.

GIS Analysis

Plumas County provided 13 future development areas which were used as the basis for the inventory of future development for unincorporated Plumas County. These were mapped in GIS. Figure 4-21 show the locations of the future development areas. Table 4-25 shows the details of the future development areas by acreage and parcel count.

Figure 4-21 Unincorporated Plumas County – Future Development Areas

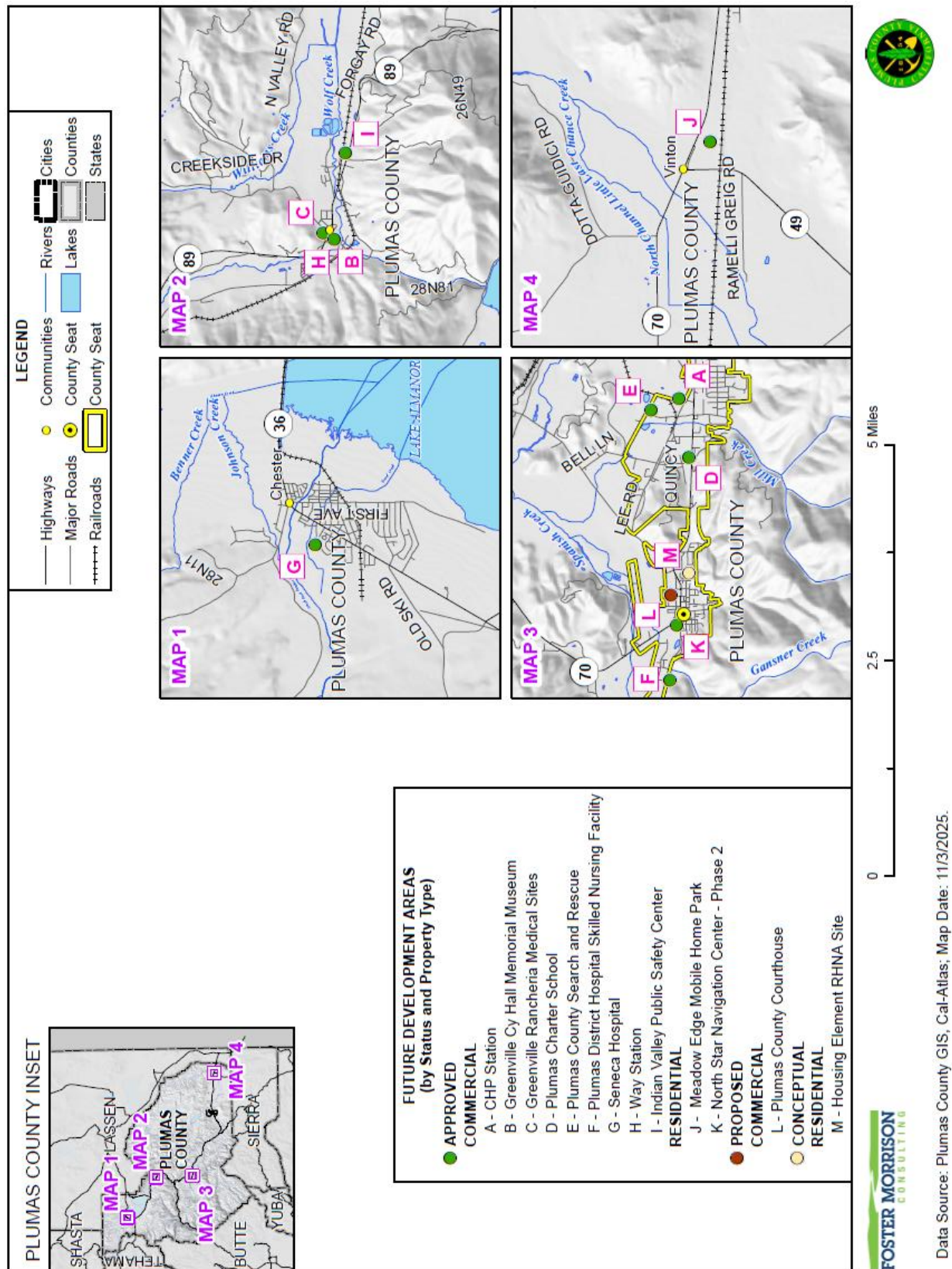


Table 4-25 Unincorporated Plumas County – Future Development Areas by Parcels and Acres

| Future Development Status and Type | Site / Map ID and Future Development Name | Total Parcel Count | Improved Parcel Count | Unimproved Parcel Count | Total Acres | Total Improved Acres | Total Unimproved Acres |
|------------------------------------|---|--------------------|-----------------------|-------------------------|--------------|----------------------|------------------------|
| Approved | | | | | | | |
| Commercial | A - CHP Station | 1 | 0 | 1 | 5.00 | 0.00 | 5.00 |
| | B - Greenville Cy Hall Memorial Museum | 1 | 0 | 1 | 0.11 | 0.00 | 0.11 |
| | C - Greenville Rancheria Medical, Dental Clinic, and Pharmacy | 1 | 0 | 1 | 1.58 | 0.00 | 1.58 |
| | D - Plumas Charter School | 1 | 0 | 1 | 0.89 | 0.00 | 0.89 |
| | E - Plumas County Search and Rescue | 1 | 1 | 0 | 4.50 | 4.50 | 0.00 |
| | F - Plumas District Hospital Skilled Nursing Facility | 1 | 0 | 1 | 4.12 | 0.00 | 4.12 |
| | G - Seneca Hospital | 1 | 0 | 1 | 11.80 | 0.00 | 11.80 |
| | H - Way Station | 1 | 0 | 1 | 0.28 | 0.00 | 0.28 |
| | I - Indian Valley Public Safety Center | 1 | 0 | 1 | 5.00 | 0.00 | 5.00 |
| | Commercial Total | 9 | 1 | 8 | 33.28 | 4.50 | 28.78 |
| Residential | J - Meadow Edge Mobile Home Park | 1 | 1 | 0 | 42.74 | 42.74 | 0.00 |
| | K - North Star Navigation Center - Phase 2 | 1 | 1 | 0 | 1.00 | 1.00 | 0.00 |
| | Residential Total | 2 | 2 | 0 | 43.74 | 43.74 | 0.00 |

| Future Development Status and Type | Site / Map ID and Future Development Name | Total Parcel Count | Improved Parcel Count | Unimproved Parcel Count | Total Acres | Total Improved Acres | Total Unimproved Acres |
|------------------------------------|---|--------------------|-----------------------|-------------------------|--------------|----------------------|------------------------|
| Approved Total | | 11 | 3 | 8 | 77.02 | 48.24 | 28.78 |
| Proposed | | | | | | | |
| Commercial | L - Plumas County Courthouse | 1 | 1 | 0 | 2.86 | 2.86 | 0.00 |
| | Commercial Total | 1 | 1 | 0 | 2.86 | 2.86 | 0.00 |
| Proposed Total | | 1 | 1 | 0 | 2.86 | 2.86 | 0.00 |
| Conceptual | | | | | | | |
| Residential | M - Housing Element RHNA Site | 1 | 1 | 0 | 3.64 | 3.64 | 0.00 |
| | Residential Total | 1 | 1 | 0 | 3.64 | 3.64 | 0.00 |
| Conceptual Total | | 1 | 1 | 0 | 3.64 | 3.64 | 0.00 |
| | | | | | | | |
| Grand Total | | 13 | 5 | 8 | 83.52 | 54.74 | 28.78 |

Source: Plumas County GIS

4.3 Hazard Profiles and Vulnerability Assessment

44 CFR Requirement §201.6(c)(2)(i): [The risk assessment shall include a] description of the...location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

44 CFR §201.6(c)(2)(i): [The risk assessment shall include a] description of the...location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

44 CFR §201.6(c)(2)(ii): [The risk assessment shall include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community.

44 CFR §201.6(c)(2)(ii)(A): The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas.

44 CFR §201.6(c)(2)(ii)(B): [The plan should describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) of this section and a description of the methodology used to prepare the estimate.

44 CFR §201.6(c)(2)(ii)(C): [The plan should describe vulnerability in terms of] providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

The hazards identified in Section 4.1 Hazard Identification, are profiled individually in this section. The Hazard Profiles set the stage for the Vulnerability Assessment, where the vulnerability is quantified, as data allows, for each of the identified hazards.

Hazard Profiles Methodology

Each hazard is profiled in the following format:

- **Hazard/Problem Description**—This section gives a description of the hazard and associated issues followed by details on the hazard specific to the Plumas County Planning Area and unincorporated Plumas County. Where known, this includes information on the hazard extent, location, seasonal patterns, speed of onset/duration, and magnitude and/or any secondary effects.
- **Past Occurrences**—This section contains information on historical incidents, including impacts where known. Hazard research, historical incident worksheets and other input from the Hazard Mitigation Planning Committee were used to capture information on past occurrences.
- **Likelihood of Future Occurrence**—The frequency of past events is used in this section to gauge the likelihood of future occurrences. Where possible, frequency was calculated based on existing data. It was determined by dividing the number of events observed by the number of years on record and multiplying by 100. This gives the percent chance of the event happening in any given year (e.g., three droughts over a 30-year period equates to a 10 percent chance of experiencing a drought in any given year). The likelihood of future occurrences is categorized into one of the following classifications:
 - ✓ **Highly Likely**—Near 100 percent chance of occurrence in next year or happens every year.
 - ✓ **Likely**—Between 10 and 100 percent chance of occurrence in next year or has a recurrence interval of 10 years or less.

- ✓ **Occasional**—Between 1 and 10 percent chance of occurrence in the next year or has a recurrence interval of 11 to 100 years.
- ✓ **Unlikely**—Less than 1 percent chance of occurrence in next 100 years or has a recurrence interval of greater than every 100 years.
- **Climate Change**—This section contains the effects of climate change (as applicable). The possible influence of climate change on the hazard is discussed.

Vulnerability Assessment Methodology

With the Plumas County Planning Area’s hazards identified and profiled, a vulnerability assessment was conducted to describe the vulnerability and impact that each hazard would have on the Plumas County Planning Area and specific to each jurisdiction. The vulnerability assessment quantifies, to the extent feasible using best available data, assets at risk to identified hazards and estimate potential losses. This section focuses on the vulnerabilities of the Plumas County Planning Area as a whole and specific to unincorporated Plumas County. The vulnerability assessment is done in the following format:

- **General Vulnerability Discussion** – An assessment of the vulnerability of the Plumas County Planning Area to each hazard is provided in addition to the estimate of the risk of future occurrence. This is followed by a general discussion of the hazard and its vulnerability on the Plumas County Planning Area and unincorporated Plumas County. Vulnerability is measured in general, qualitative terms and is a summary of the potential impact based on past occurrences, spatial extent, and damage and casualty potential. It is categorized into one of the following classifications:
 - ✓ **Extremely Low**—The occurrence and potential cost of damage to life and property is very minimal to nonexistent.
 - ✓ **Low**—Minimal potential impact. The occurrence and potential cost of damage to life and property is minimal.
 - ✓ **Medium**—Moderate potential impact. This ranking carries a moderate threat level to the general population and/or built environment. Here the potential damage is more isolated and less costly than a more widespread disaster.
 - ✓ **High**—Widespread potential impact. This ranking carries a high threat to the general population and/or built environment. The potential for damage is widespread. Hazards in this category may have occurred in the past.
 - ✓ **Extremely High**—Very widespread with catastrophic impact.
- **Local Concerns** – This includes information on how the unincorporated Plumas County is uniquely affected by or vulnerable to each hazard. Information contained in this section also supports the resulting mitigation strategy for the unincorporated County. Local concerns sections specific to each of the other participating jurisdictions are included in their jurisdictional annexes to this plan.
- **Assets at Risk** – A discussion of the assets at risk follows. This includes sections on: People and Populations, as well as Structures (including Critical Facilities and Infrastructure; and Natural, Historic, and Cultural Resources). These are discussed in specific terms for mapped hazards, and in more general terms for those hazards that are unmapped.
 - ✓ **FEMA NRI Hazard Vulnerability** – For each hazard in the FEMA National Risk Index in Plumas County, the relevant portions of the hazard analysis done by FEMA is presented. This includes the Hazard Risk Index Rating, Expected Annual Loss Values, Exposure Values, and the Historic Loss Ratio Rating.

- **Impacts** – A discussion on hazard impacts is included. Impacts describe how each hazard can affect the County and its assets. The type and severity of impacts reflect both the potential magnitude of the hazard and the vulnerability of the asset.
- **Future Conditions/Future Development** – A discussion of how future conditions will influence or affect the hazard over time is included here and considers factors related to climate change, changes in population patterns, and changes in land use and development. This section also discusses future development plans relative to each hazard as well as mitigating measures that should be considered in the development process. Future conditions and future development is addressed specifically for mapped hazards, and in more general terms for those hazards that are unmapped.

Existing Built Environment and Assets at Risk

Vulnerability can be quantified in those instances where there is a known, identified hazard area, such as a mapped floodplain. In these instances, the numbers and types of assets subject to the identified hazard can be counted and their values tabulated. Other information can be collected in regard to the hazard area, such as the location of critical facilities, historic structures, and valued natural resources. Together, this information conveys the impact, or vulnerability, of the Plumas County Planning Area and unincorporated Plumas County to that hazard.

The vulnerability assessment identified six hazards in the Plumas County Planning Area for which specific geographical hazard areas have been defined and for which sufficient data exists to support a quantifiable vulnerability analysis. These six hazards are:

- Dam Failure
- Earthquake
- Flood: 1%/0.2% (w/levee failure)
- Hazardous Materials Transportation
- Landslide, Mudslides, and Debris Flows
- Wildfire (w/smoke and air quality)

These hazards were analyzed using GIS, Plumas County data, and hazard data.

The vulnerability and potential impacts from the nine priority hazards that do not have specific mapped areas nor the data to support additional vulnerability analysis are discussed in more general terms. These include:

- Agricultural Hazards (severe weather/pests/weeds)
- Climate Change
- Drought and Water Shortage (w/tree mortality)
- Flood: Localized/Stormwater
- Severe Weather: Extreme Cold, Freeze, and Snow (w/avalanche)
- Severe Weather: Extreme Heat
- Severe Weather: Heavy Rain and Storms
- Severe Weather: High Winds and Tornadoes
- Volcano

Power Outages/Failure: A Common Vulnerability of all Hazards

An additional impact or vulnerability common to most all hazards is power outage or power failure. The US power grid crisscrosses the country, bringing electricity to homes, offices, factories, warehouses, farms, traffic lights and even campgrounds. According to statistics gathered by the Department of Energy, major blackouts are on the upswing. Over the past two decades, blackouts impacting at least 50,000 customers have increased 124 percent. The electric power industry does not have a universal agreement for classifying disruptions. Nevertheless, it is important to recognize that different types of outages are possible so that plans may be made to handle them effectively. Electric power disruptions can be generally grouped into two categories: intentional and unintentional.

Intentional Disruptions

There are four types of intentional disruptions:

- **Planned:** Some disruptions are intentional and can be scheduled based maintenance or upgrading needs.
- **Unscheduled:** Some intentional disruptions must be done "on the spot." in response to an emergency.
- **Demand-Side Management:** Some customers (i.e., on the demand side) have entered into an agreement with their utility provider to curtail their demand for electricity during periods of peak system loads.
- **Load Shedding:** When the power system is under extreme stress due to heavy demand and/or failure of critical components, it is sometimes necessary to intentionally interrupt the service to selected customers to prevent the entire system from collapsing, resulting in rolling blackouts.

The California Independent System Operator (CAISO) is tasked with managing the power distribution grid that supplies most of California, except in areas served by municipal utilities. CAISO is thus the entity that coordinates statewide flow of electrical supply. CAISO uses a series of stage alerts to the media based on system conditions. The alerts are:

- Stage 1 – reserve margin falls below 7 percent
- Stage 2 – reserve margin falls below 5 percent
- Stage 3 – reserve margin falls below 1.5 percent

Rotating blackouts become a possibility when Stage 3 is reached. Rotating outages and/or blackouts such as those experienced in 2000/2001 and 2006 can occur due to losses in transmission or generation and/or extremely severe temperatures that lead to heavy electric power consumption. Key California events include the following:

On January 17, 2001, CAISO declared a Stage 3 Emergency and notified the then Governor's Office of Emergency Services that PG&E was dropping firm load of 500 megawatts (MW) in Northern California leading to rolling blackouts. Cal OES, in turn, issued an Electrical Emergency Message to all Emergency Services Agencies to prepare for rolling blackouts. This scenario was repeated the following day, January 18, 2001, and again on March 19, 2001.

A July 2006 heat storm event affected the entire state as well as most of the West, producing record energy demand levels in California. The State was able to avoid rotating outages due to a combination of favorable

factors that included no major transmission outages, lower than typical generator outages, significant customer response to pleas for energy conservation, high imports from the Pacific Northwest despite unusually high loads, outstanding cooperation among western control area operators, and prompt response to fires that potentially threatened major interties. However, the event brought to light the vulnerability of the electric distribution system, as over 3,500 distribution transformers failed, leaving over two million customers without power at various times over the ten-day event, many for several hours and a small minority for up to three days.

In 2020, the state battled both extreme heat and wildfires. As a result of extreme heat, the CAISO declared a Stage 3 emergency. PG&E initiated rotating outages in August at the request of California's grid operator. The outages, which impacted 220,000 customers, occurred during periods of high heat. These rolling blackouts lasted less than a week.

Unintentional Disruptions

Unintentional or unplanned disruptions are outages that come with essentially no advance notice. This type of disruption can be the most problematic. The following are categories of unplanned disruptions:

- Accident by the utility, utility contractor, or others
- Malfunction or equipment failure
- Equipment overload (utility company or customer)
- Reduced capability (equipment that cannot operate within its design criteria)
- Tree contact other than from storms
- Vandalism or intentional damage
- Weather, including lightning, wind, earthquake, flood, and broken tree limbs taking down power lines
- Wildfire that damages transmission lines

Public Safety Power Shutoff

A new intentional disruption type of power shortage/failure event has recently occurred in California. In recent years, several wildfires have started as a result of downed power lines or electrical equipment. This was the case for the Camp Fire in 2018. As a result, California's three largest energy companies (including PG&E), at the direction of the California Public Utilities Commission (CPUC), coordinated to prepare all Californians for the threat of wildfires and power outages during times of extreme weather. To help protect customers and communities during extreme weather events, electric power may be shut off for public safety in an effort to prevent a wildfire. This is called a Public Safety Power Shutoff (PSPS).

PSPS are another tool that PG&E uses to help eliminate and minimize ignitions caused by objects coming in contact with electrical circuits and causing fires. Severe weather, such as high winds, low humidity, and dry vegetation are some of the key elements to trigger a PSPS event in high fire threat areas (Tier 2 & Tier 3). By proactively shutting off power in areas that are very prone and susceptible to catastrophic wildfires, PG&E can help minimize the chance of a fire caused by electrical infrastructure. PG&E doesn't take lightly the shutting off power to residents, business, and critical customers and has a strict protocol for these actions.

Public Safety Power Shutoff for Plumas-Sierra Rural Electric Cooperative (PSREC)

PSREC may be affected by PSPS events. PSREC provides power to areas in Plumas County. During the summer, PG&E will de-energize electric lines that pass through high fire-threat areas. NV Energy has a similar program, though they call their outages Public Safety Outage Management (PSOM). These shutoffs will affect both distribution and transmission lines. The goal is to reduce the risk of fire during high-fire risk times such as high winds, low humidity levels and red flag warnings declared by the National Weather Service.

Although PSREC does not buy power from PG&E, PSREC's main transmission feed is from PG&E through the Feather River Canyon, where this feed transports power to PSREC members. Since PSREC relies on this transmission feed, these public safety power shutoffs will impact members. PSREC will strive to keep the impact of these shutoffs as minimal as possible to members.

A backup feed that comes to members from NV Energy is able to help support PSREC's system. However, this back-up isn't always available and could be de-energized for an NV Energy PSOM at the same time as a PG&E PSPS. When available during peak hours, it may not be enough, so rolling blackouts may need to be implemented. PSREC asks members to conserve when they are on a backup feed to prevent disruptions to service for all members.

It is likely that, in the event of PSPS and PSOM events, electric power will be out for one to a few days. Because these events will be triggered by PG&E and NV Energy's assessment of weather conditions and fire risk, PSREC cannot reliably predict the timing or duration. Residents or businesses who can't be without power should consider a professionally installed generator that meets local code requirements.

Public Safety Power Shutoff Criteria for PG&E

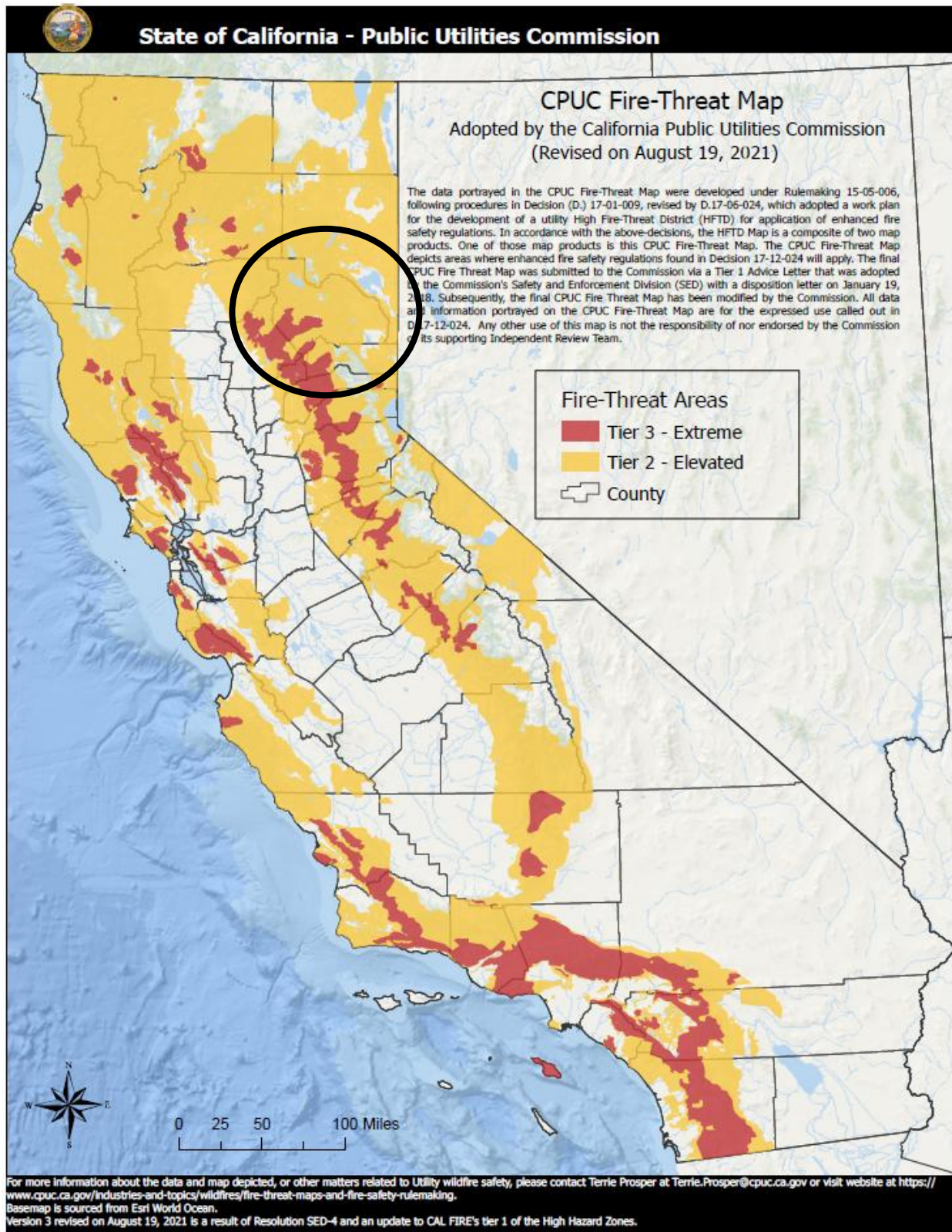
The Wildfire Safety Operations Center (WSOC) monitors fire danger conditions across PG&E's service area, including PSPS conditions. These factors include:

- A Red Flag Warning declared by the National Weather Service
- Low humidity levels generally 20% and below
- Forecasted sustained winds generally above 25 mph and wind gusts in excess of approximately 45 mph, depending on location and site-specific conditions such as temperature, terrain and local climate
- Condition of dry fuel on the ground and live vegetation (moisture content)
- On-the-ground, real time observations from PG&E's WSOC and field observations from PG&E crews

The most likely electric lines to be considered for shutting off for safety will be those that pass through areas that have been designated by the CPUC as at elevated (Tier 2) or extreme (Tier 3) risk for wildfire (seen on Figure 4-22). This includes both distribution and transmission lines. The specific area and number of affected customers will depend on forecasted weather conditions, and which circuits PG&E needs to turn off for public safety. Although a customer may not live or work in a high fire-threat area, their power may also be shut off if their community relies upon a line that passes through an area experiencing extreme fire danger conditions. This means that any customer who receives electric service from PG&E should be prepared for a possible PSPS. PSPS events, while preventative in nature, can cause a variety of issues related to the lack of power to those impacted by the PSPS. For the Plumas County Planning Area, a

significant concern is the impact to their communication systems as well as on other critical infrastructure and services. PSPS events also cause concerns for certain vulnerable populations. As seen on Figure 4-22, Plumas County has areas inside the Tier 2 and Tier 3 areas, as well as areas outside of them.

Figure 4-22 State of California Tier 2 and 3 Areas



PG&E noted that extreme weather threats can change quickly. When possible, PG&E will provide customers with advance notice prior to turning off the power, as well as updates until power is restored. Timing of notifications (when possible) are:

- Approximately 48 hours before power is turned off
- Approximately 24 hours before power is turned off
- Just before power is turned off
- During the public safety outage
- Once power has been restored

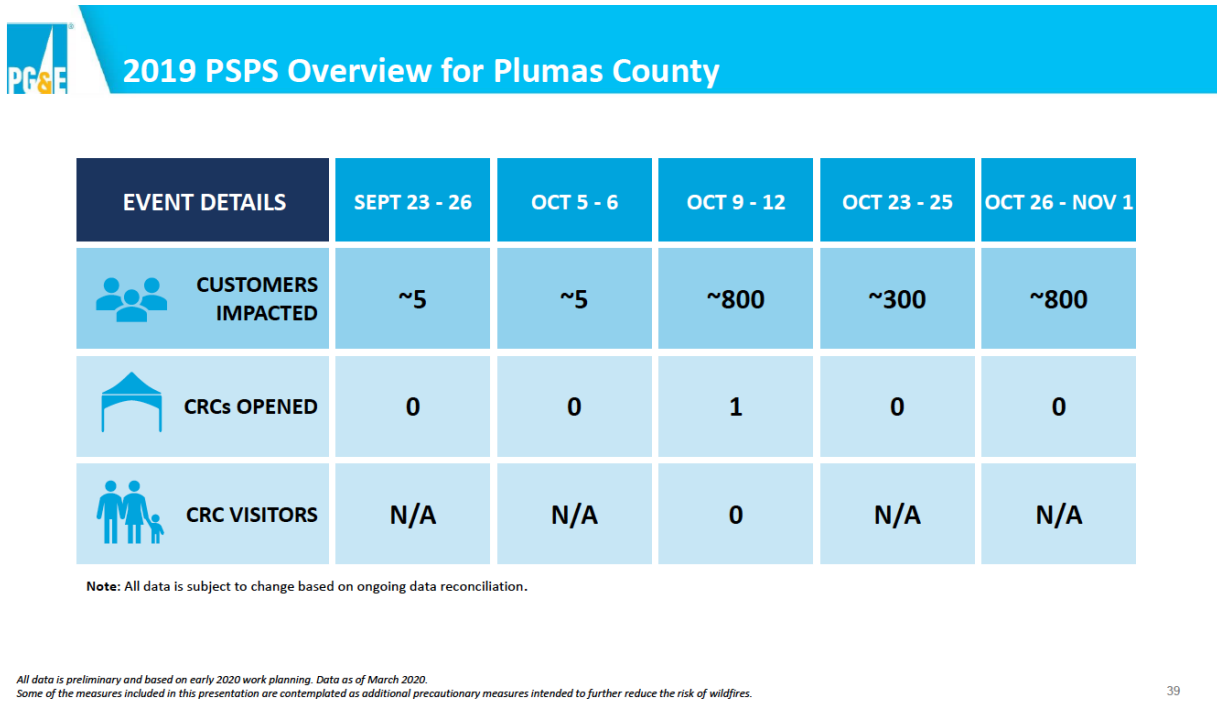
Power outages that affect Plumas County residents do happen, though these outages are becoming less frequent and are not sustained as long as past years. This is due to PG&E's hardening and undergrounding projects along with its enhanced vegetation management practices. During these outages, PG&E provides contacts and tools to assist the residents and officials with current outage information for planning purposes. PG&E works with county officials to assist and help mitigate outages affecting the residents of Plumas County.

When a PSPS is forecasted, PG&E will notify County Emergency Management Agencies so they may monitor and make any plans they see needed. Customers affected will also get notified so they may also take steps to plan and make arrangements they deem necessary for the event. PG&E will support the customers with Community Resource Centers (CRC) near the affected areas of the PSPS and offer other programs to qualified customers. PG&E will also work with the public safety agencies in the area to help mitigate any other issues related to the PSPS event. PG&E offers many tools to help assist the agencies in monitoring and planning for these events. The County noted that there have been events in the past where wildfires have not occurred, but wildfire conditions were high. During these times of high winds, high temps, and high wildfire risk, a PSPS occurred in the County. These are also discussed in the City of Portola's respective annex to this Base Plan.

October 9–November 1, 2019: The 2019 California power shutoffs, described as massive PSPS events, included Plumas County among approximately 30 counties affected by PG&E, Southern California Edison (SCE), and San Diego Gas & Electric (SDG&E). Multiple events occurred during this period, but the exact number specific to Plumas County is not isolated in the source.

Figure 4-23 Plumas County – 2019 PSPS Events

1



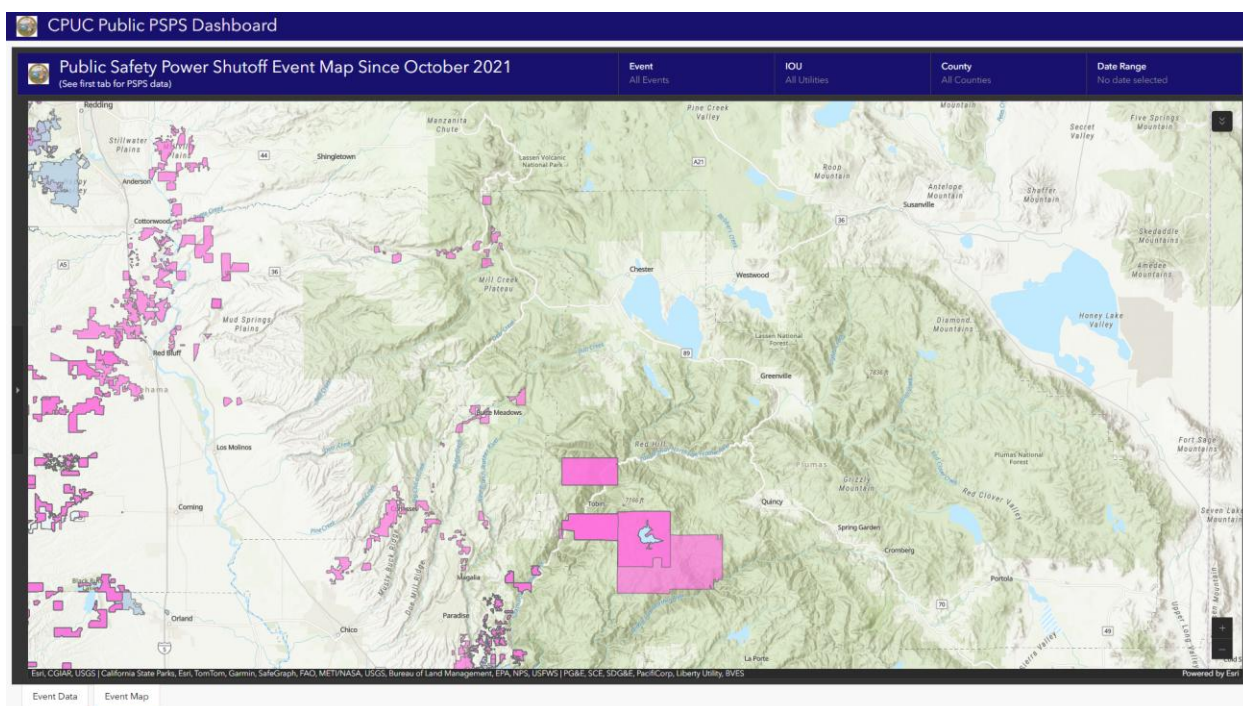
39

It should be noted that “customers” in PG&E vernacular refer to both households or business addresses.

October 2020: A PSPS event impacted 1,855 customers in Plumas County, as part of a broader event affecting 41,000 customers across multiple counties.

In October of 2021, the California Public Utilities Commission began a mapping application to show areas affected by PSPS. These are shown on Figure 4-24, and each event is discussed below.

Figure 4-24 Plumas County Planning Area – PSPS Events since October 2021



Source: California Public Utility Commission PSPS Dashboard. Retrieved 4/22/2024.

October 11, 2021: A PSPS event was reported, with potential impacts in Plumas County, specifically in the Bucks Lake area and a portion of the Feather River Canyon. The source does not confirm the exact number of customers affected but notes 25,000 customers across 20 counties were impacted.

August 2021: A potential PSPS event was expected to affect 778 customers in Plumas County, as part of a broader event impacting 39,000 customers across 16 counties.

February 22, 2024 – Seneca Health noted a PG&E Power Failure - Hospital on Emergency Generator power. The CT machine was out of service due to power outage. Stroke and trauma patients had to be diverted. Power out at 1550 and Restored at 1700.

March 29, 2024 – at 11:23 PM Liberty Utilities had a power outage. The outage lasted for 2 days. Plumas County OES opened a warming shelter on March 30th.

April 6, 2024 – Seneca Health noted a PG&E Power Outage from 0009 – 0330. The Hospital was on emergency power and CT was disrupted due to outage.

April 29, 2024 – At 11:23 PM Liberty Utilities' customers lost power. They supply power to a portion of Portola and Sierra Valley. Liberty Utilities receives its power from Nevada Energy. Nevada Energy lost power. Unknown what broke.

October 17–20, 2024: A PSPS event affected 658 customers in Plumas County, with specific areas like Little Grass Valley Reservoir, Bucks Lake, Haskins, and Feather River Canyon noted.

November 5, 2024: A PSPS watch was issued for Plumas County, with potential outages in areas east of Highway 70, including Storrie, as part of a 12-county event affecting 15,000 customers. It's unclear if this watch resulted in an actual shutoff.

PG&E has started to underground more power lines to reduce wildfire risks. The most recent map for Plumas County showing this progress is included in Figure 4-25.

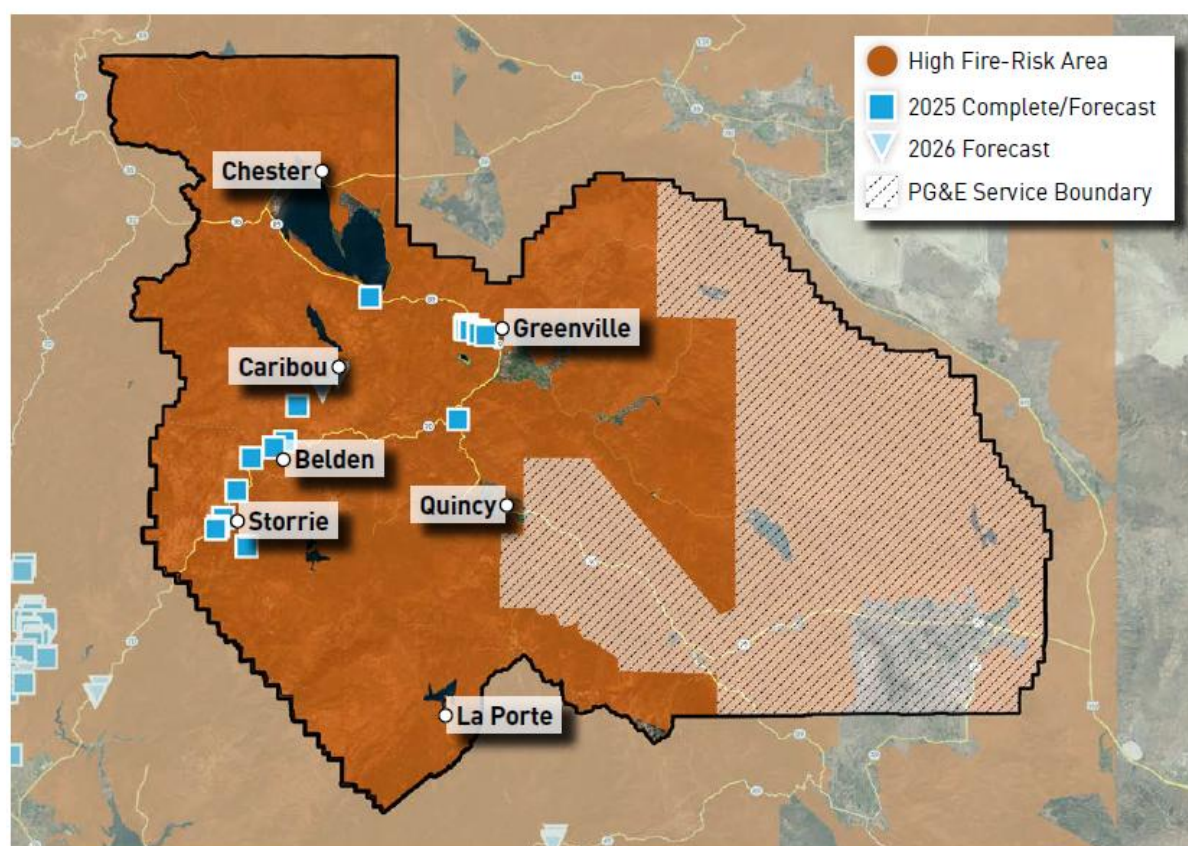
Figure 4-25 Plumas County – PG&E Undergrounding

Undergrounding Map Plumas County

Undergrounding is one of many layers of protection that PG&E uses to reduce the risk of wildfires and keep our customers and hometowns safe. The map below shows the approximate locations of recently completed or forecast projects for 2025, as well as areas we have identified for potential work in 2026. Forecast miles include areas that are in any stage of the planning process and projects are subject to change.

| 2025 COMPLETE/FORECAST | 2026 FORECAST* |
|-------------------------|------------------------|
| APPROX. 16 MILES | APPROX. 3 MILES |

*Extended forecast is preliminary and has a higher potential for changes.



To view an interactive map of undergrounding throughout our service area, go to pge.com/progressmap and select the “Undergrounding/System Upgrades (Hardening)” layer.

Data as of 1/13/2025. Maps are for illustrative purposes. Projects may be only partially within incorporated city boundaries and forecast mileage is approximate. Forecasts can change as our risk model evolves to address the greatest wildfire risk. Forecast miles also exceed annual targets. Mileage in a community may increase or decrease due to access, weather, permitting or other constraints. In most cases, if a project is not completed during the year originally identified, it will continue through planning/construction phases during subsequent years. Mileage represents projects that will be energized in a given year. Construction for a project may begin before the year of energization, and final property and road restoration work may occur after the year of energization.

Some of the measures included in this document are contemplated as additional precautionary measures intended to further reduce the risk of wildfires.
 *PG&E refers to Pacific Gas and Electric Company, a subsidiary of PG&E Corporation. ©2025 Pacific Gas and Electric Company. All rights reserved. CCC-0125-5111. 1/31/2025.

Source: PG&E – January 2025.

It was also noted that PG&E is working to enhance its power network with Enhanced Powerline Safety Settings (EPSS) capable lines. EPSS are advanced safety settings. They allow PG&E powerlines to automatically turn off power within one-tenth of a second. This can happen when there is a hazard, like a tree branch falling into a powerline, which can cause a fire. These settings are in high fire-risk and surrounding areas. These have not yet been installed in and near the Plumas County area, as PG&E focuses on other very high fire hazard areas in its service territory first. It is thought these EPSS capable lines will eventually come to the Plumas County Planning Area.

Climate Change and Power Outages/Failures (Energy Shortage)

Changing climate is expected to bring more frequent and intense natural disasters. Key climate parameters are starting to move outside of historically observed variability at a rate that makes historical data a poor predictor of future climate. For example, the warmest years on record in California occurred in 2014, 2015, 2016, and 2019. 2022 - 2025 were remarkably hot years as well. In addition, the 2016-2017 year broke the record as the wettest ever recorded in the northern Sierra Nevada Mountains. Recent years, including the 2023 storms, have also seen heavy precipitation, further compounded by atmospheric river events.

Changes in temperatures, precipitation patterns, extreme events, and sea level rise have the potential to decrease the efficiency of thermal power plants and substations, decrease the capacity of transmission lines, render hydropower less reliable, spur an increase in electricity demand, and put energy infrastructure at risk of flooding.

With climate warming, higher costs from increased demand for cooling in the summer are expected to outweigh the decreases in heating costs in the cooler seasons. Hotter temperatures in California will mean more energy (typically measured in “cooling-degree days”) needed to cool homes and businesses both during heat waves and on a daily basis, during the daytime peak of the diurnal temperature cycle. During future heat waves, historically cooler coastal cities (e.g., San Francisco and Los Angeles) are projected to experience greater relative increases in temperature, such that areas that never before relied on air conditioning will experience new cooling demands.

Secondary impacts of energy shortages are most often felt by vulnerable populations. For example, those who rely on electric power for life-saving medical equipment, such as respirators, are extremely vulnerable to power outages. Also, during periods of extreme heat emergencies, the elderly and the very young are more vulnerable to the loss of cooling systems requiring power sources.

Additional impacts from power disruption can also affect remote areas. This can affect evacuation messaging and coordination difficulties, and a reduction in firefighting capabilities due to lack of water access in more remote areas (especially for those on wells).

Hazard Profiles and Vulnerability Assessment by Hazard

The following sections provide the hazard profile and vulnerability assessments for each of the hazards identified in Section 4.1 Hazard Identification. ***The severe weather hazards are discussed first to paint the picture of the Plumas County’s Planning Area’s climate and hazard environment which often lead to other hazards such as flood and wildfire. The remainder of the hazards follow alphabetically.***

Data Sources

In general, information provided by the County, participating jurisdictions, and the HMPC is integrated into this section with information from other data sources. The data sources listed below formed the basis for this Hazard Profiles portion of the plan. Where data and information from these studies, plans, reports, and other data sources were used, the source is referenced as appropriate throughout this risk assessment.

➤ ADD MORE

- 2014 California Natural Resources Report
- 2017 California Adaptation Planning Guide
- 2020 US Census Bureau Average Household Size
- 2021 California Climate Adaptation Study
- 2023 State of California Hazard Mitigation Plan
- American Society of Civil Engineers
- Bureau of Land Management
- Cal Adapt – Extended Drought Scenarios
- CAL FIRE
- CAL FIRE (FHSZ SRA 2024, FHSZ FRA 2007)
- CAL FIRE (LRA 2025)
- Cal-Adapt
- Cal-Adapt – Number of Extreme Heat Days by Year
- Cal-Adapt – Precipitation: Decadal Averages Map
- Cal-Adapt – Temperature: Decadal Averages Map
- Cal-Adapt 2017/2023
- Cal-Adapt Climate Projections
- California Climate Adaptation Strategy
- California Department of Conservation’s Farmland Mapping and Monitoring Program
- California Department of Public Health
- California Department of Water Resources
- California Department of Water Resources 2012-2016 California Drought: Historical Perspective
- California Department of Water Resources Best Available Maps
- California Department of Water Resources Division of Safety of Dams
- California Division of Mines and Geology
- California Geological Survey
- California Invasive Plant Council
- California Natural Resource Agency
- California Office of Emergency Services
- California Public Utilities Commission
- California’s Adaptation Planning Guide: Understanding Regional Characteristics
- Center for Western Weather and Water Extremes
- Climate Change and Health Profile Report – Plumas County
- Design-Magnitude Avalanche Mapping and Mitigation Analyses
- DSOD/Cal OES/NID Dam Status 1/25
- Federal Emergency Management Agency – DFIRM 1/20/2016
- Federal Emergency Management Agency – Disaster Declaration Database
- Federal Emergency Management Agency – National Flood Hazard Layer

- Federal Emergency Management Agency – Wind Zones in the United States
- Federal Emergency Management Agency: Building Performance Assessment: Oklahoma and Kansas Tornadoes
- Fire and Resource Assessment Program
- Geology Open File Report 84-52 (1994)
- Hazus-MH 6.1
- Intergovernmental Panel on Climate Change
- Multi-Hazard Identification and Risk Assessment, FEMA 1997
- National Aeronautics and Space Administration
- National Avalanche Center
- National Center for Atmospheric Research
- National Climate Assessment
- National Climatic Data Center Storm Events Database.
- National Drought Mitigation Center
- National Earthquake Information Center
- National Flood Insurance Program
- National Integrated Drought Information System
- National Inventory of Dams
- National Oceanic and Atmospheric Administration
- National Oceanic and Atmospheric Administration Storm Prediction Center
- National Oceanic and Atmospheric Administration’s National Climatic Data Center
- National Park Service
- National Performance of Dams Program
- National Weather Service
- National Weather Service HeatRisk
- National Weather Service XMAC site
- Public Policy Institute of California
- Sierra Avalanche Center
- Smoke Impacts CA: 2020 Lessons – 2021 Actions
- State of California Department of Conservation Farmland Mapping and Monitoring Program
- Susceptibility to Deep-Seated Landslides map – CSG Map Sheet 58 (05/2011)
- University of California, Berkeley’s Department of Environmental Science, Policy, and Management
- US Army Corps of Engineers
- US Department of Agriculture
- US Department of Agriculture – Farm Service Agency Secretarial Disasters Declarations
- US Drought Monitor
- US Farm Service Agency
- US Fish and Wildlife Service
- US Forest Service
- US Geological Survey Earthquake Intensity Zonation and Quaternary Deposits, Miscellaneous Field Studies Map 9093, 1977
- US Geological Survey Emergency Assessment of Post-Fire Debris Flow Hazards
- US Geological Survey National Earthquake Information Center
- US Geological Survey Open File Report 2015-3009
- Vaisala National Lightning Detection Network
- Western Regional Climate Center

4.3.1. Severe Weather: General

Severe weather is generally any destructive weather event, but usually occurs throughout the Plumas County Planning Area as temperature extremes, localized storms that bring heavy rain and strong winds, and other extreme weather events. The National Oceanic and Atmospheric Administration's (NOAA's) National Climatic Data Center (NCDC) has been tracking severe weather since 1950. Their Storm Events Database contains data on the following: all weather events from 1993 to current (except from 6/1993-7/1993); and additional data from the Storm Prediction Center, which includes tornadoes (1950-1992), thunderstorm winds (1955-1992), and hail (1955-1992). This database contains 785 severe weather events that occurred in Plumas County between January 1, 1950, and July 31, 2024. Table 4-26 summarizes these events.

*Table 4-26 NCDC Severe Weather Events for Plumas County 1950-7/31/2024**

| Event Type | Number of Events | Deaths | Deaths (indirect) | Injuries | Injuries (indirect) | Property Damage | Crop Damage |
|-----------------------|------------------|----------|-------------------|----------|---------------------|---------------------|-------------|
| Astronomical Low Tide | 2 | 1 | 0 | 0 | 0 | \$0 | \$0 |
| Blizzard | 3 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| Cold/Wind Chill | 3 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| Debris Flows | 21 | 0 | 0 | 0 | 0 | \$2,000 | \$0 |
| Dense Fog | 9 | 0 | 0 | 0 | 0 | \$1,000 | \$0 |
| Dense Smoke | 1 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| Drought | 2 | 0 | 0 | 0 | 0 | \$50,000 | \$0 |
| Excessive Heat | 5 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| Flash Flood | 3 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| Flood | 12 | 0 | 0 | 1 | 0 | \$3,140,000 | \$0 |
| Freezing Fog | 1 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| Hail | 10 | 0 | 0 | 0 | 0 | \$100 | \$5,000 |
| Heat | 2 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| Heavy Rain | 60 | 0 | 0 | 0 | 0 | \$1,000 | \$0 |
| Heavy Snow | 330 | 1 | 0 | 0 | 0 | \$220,000 | \$0 |
| High Wind | 88 | 0 | 0 | 1 | 0 | \$2,245,500 | \$0 |
| Ice Storm | 1 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| Lightning | 1 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| Strong Wind | 4 | 0 | 0 | 0 | 0 | \$63,300 | \$0 |
| Thunderstorm Wind | 2 | 0 | 0 | 0 | 0 | \$675,000 | \$0 |
| Wildfire | 14 | 1 | 0 | 3 | 0 | \$22,775,000 | \$0 |
| Winter Storm | 150 | 0 | 0 | 0 | 0 | \$150,000 | \$0 |
| Winter Weather | 61 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| Total | 785 | 3 | 0 | 5 | 0 | \$29,322,900 | \$0 |

Source: NCDC

*Note: Losses reflect totals for all impacted areas, some of which fell outside of Plumas County

The NCDC table above summarizes severe weather events that occurred in Plumas County. Only a few of the events actually resulted in federal and state disaster declarations. It is further interesting to note that different data sources capture different events during the same time period, and often display different information specific to the same events. While the HMPC recognizes these inconsistencies, they see the value this data provides in depicting the County’s “big picture” hazard environment.

As previously mentioned, most all of Plumas County’s federal and state disaster declarations have been a result of severe weather. For this Plan Update, severe weather is discussed in the following subsections:

- Severe Weather: Extreme Cold, Freeze, and Snow (w/avalanche)
- Severe Weather: Extreme Heat
- Severe Weather: Heavy Rains and Storms
- Severe Weather: High Winds and Tornadoes

4.3.2. Severe Weather: Extreme Cold, Freeze, and Snow (w/Avalanche)

Hazard Profile

This hazard profile contains multiple sections that detail how this hazard can affect the Plumas County Planning Area and unincorporated Plumas County. These sections include a hazard/problem description; description of location and extent; past occurrences of this hazard; likelihood of future occurrence; and how climate change can affect or influence this hazard.

Hazard/Problem Description

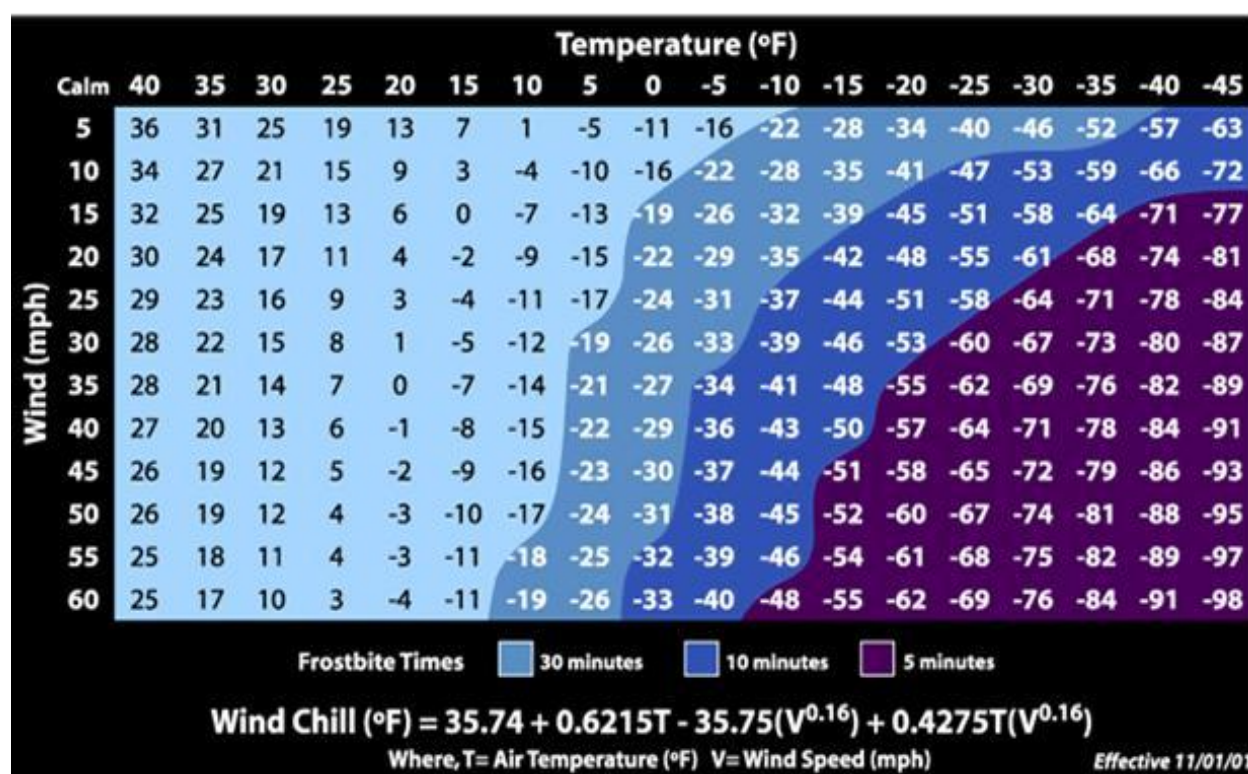
Separate hazard descriptions and locations and extents are shown below for cold and freeze, as well as for snow and avalanche.

Extreme Cold and Freeze

According to the National Weather Service (NWS) and the Western Regional Climate Center (WRCC), extreme cold often accompanies a winter storm (and snow event) or is left in its wake. Prolonged exposure to cold can cause frostbite or hypothermia and can be life-threatening. Infants and the elderly are most susceptible. Pipes may freeze and burst in homes or buildings that are poorly insulated or without heat. Freezing temperatures can cause significant damage to the agricultural industry. The effects of freezing temperatures on agriculture in Plumas County are discussed further in Section 4.3.6 Agricultural Hazards.

In 2001, the NWS implemented an updated Wind Chill Temperature index (shown in Figure 4-26), which is reproduced below. This index was developed to describe the relative discomfort/danger resulting from the combination of wind and temperature. Wind chill is based on the rate of heat loss from exposed skin caused by wind and cold. As the wind increases, it draws heat from the body, driving down skin temperature and eventually the internal body temperature.

Figure 4-26 Wind Chill Temperature Chart



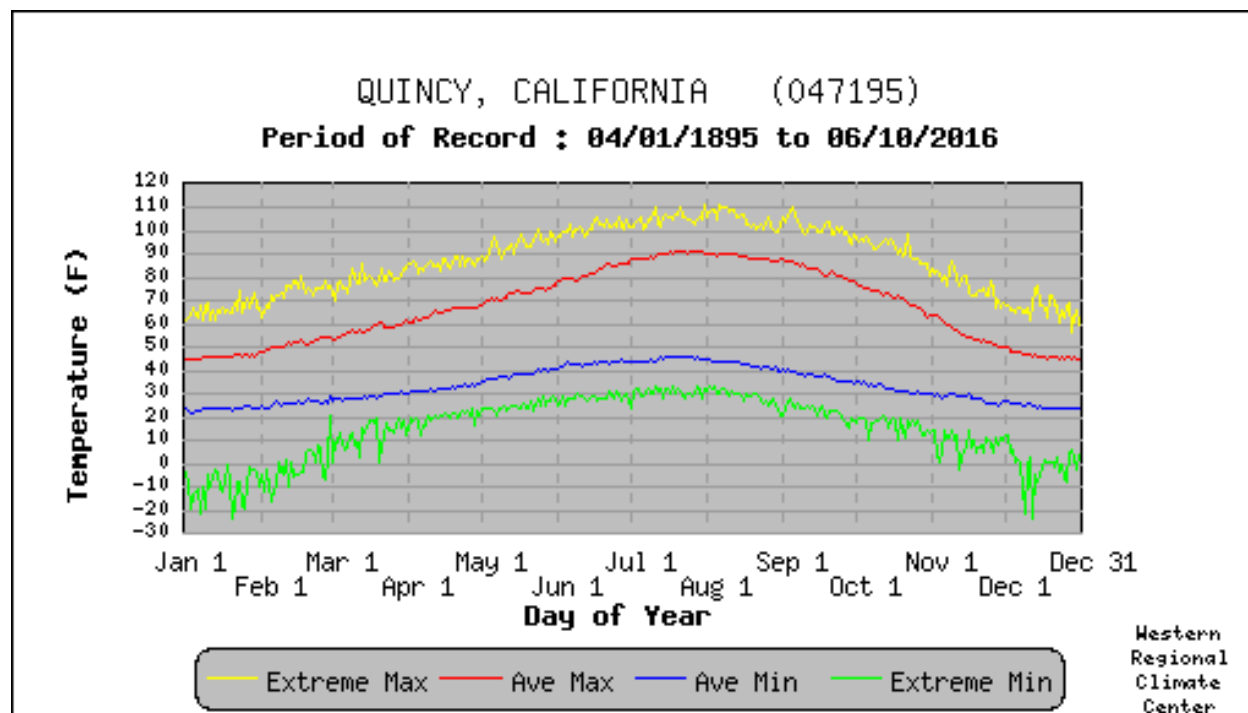
Source: National Weather Service

It should be noted that the WRCC and NWS maintain data on weather normal and extremes in the western United States. Each of these data sources maintain data in slightly different ways. Data from the WRCC stopped being collected in April of 2016. NWS covers the entire time period to present. Therefore, both data sets are shown below. WRCC and NWS data for extreme cold and freeze for the County is summarized below.

Plumas County—WRCC Quincy Station Weather Station, Period of Record 1895 to 2016

According to the WRCC, in Plumas County monthly average minimum temperatures from November through April range from the low-20s to upper-40s. The lowest recorded daily extreme was -28°F on January 8, 1937. In a typical year, minimum temperatures fall below 32°F on 166.9 days with 1.5 days falling below 0°F. Table 4-27 shows the record low temperatures by month for western Plumas County. Average daily temperatures for Plumas County are shown in Figure 4-27.

Figure 4-27 Plumas County— Quincy Station (WRCC) Daily Temperature Averages and Extremes



Source: Western Regional Climate Center

Table 4-27 Plumas County – Quincy Station (WRCC) Record Low Temperatures 1895 to 2016

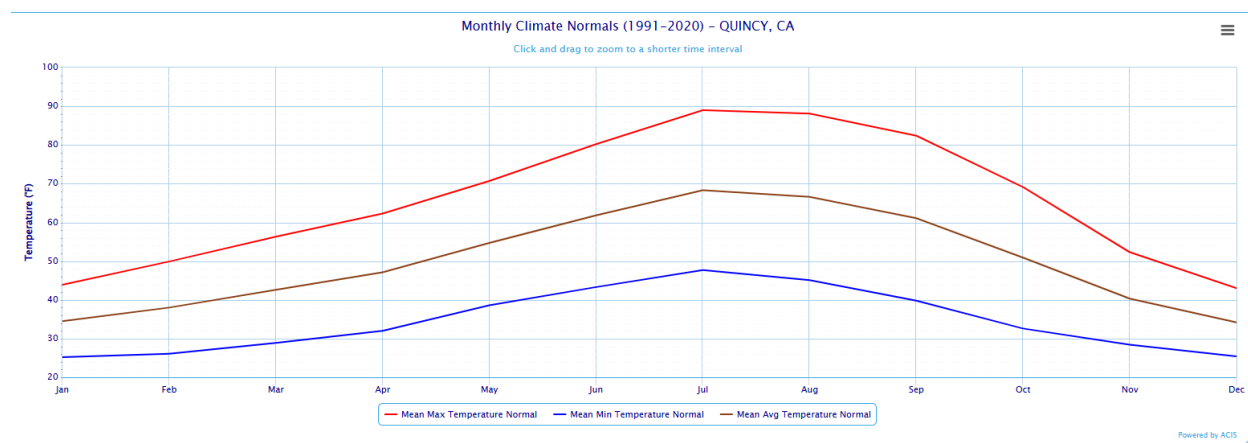
| Month | Record Low | Date | Month | Record Low | Date |
|----------|------------|-----------|-----------|------------|------------|
| January | -28° | 1/8/1937 | July | 23° | 7/1/1912 |
| February | -19° | 2/13/1949 | August | 20° | 8/31/1910 |
| March | 0° | 3/20/1952 | September | 15° | 9/28/1972 |
| April | 12° | 4/6/1982 | October | 6° | 10/27/1917 |
| May | 20° | 5/7/1984 | November | -3° | 11/12/1985 |
| June | 25° | 6/4/1950 | December | -24° | 12/12/1972 |

Source: Western Regional Climate Center

Plumas County—NWS Quincy Station Weather Station, Period of Record 1895 to 2025

According to the NWS, monthly average minimum temperatures in the coldest months (December through February) range from the mid to upper-20s. The lowest recorded daily extreme was -24°F on December 12, 1972. Figure 4-28 shows the average daily low temperatures and extremes for the County. Table 4-28 shows the record low temperatures for the County.

Figure 4-28 Plumas County – Quincy Station (NWS) Daily Temperature Averages and Extremes, 1991-2020



| Month | Mean Max Temperature Normal (°F) | Mean Min Temperature Normal (°F) | Mean Avg Temperature Normal (°F) |
|-----------|----------------------------------|----------------------------------|----------------------------------|
| January | 43.9 | 25.2 | 34.5 |
| February | 49.9 | 26.1 | 38.0 |
| March | 56.3 | 28.9 | 42.6 |
| April | 62.3 | 32.0 | 47.1 |
| May | 70.7 | 38.6 | 54.7 |
| June | 80.2 | 43.3 | 61.8 |
| July | 89.0 | 47.7 | 68.3 |
| August | 88.1 | 45.1 | 66.6 |
| September | 82.4 | 39.8 | 61.1 |
| October | 69.1 | 32.6 | 50.9 |
| November | 52.3 | 28.4 | 40.3 |
| December | 43.0 | 25.4 | 34.2 |
| Annual | 65.6 | 34.4 | 50.0 |

Source: National Weather Service XMAC site. Retrieved 3/12/2025

Table 4-28 Plumas County – Quincy Station (NWS) Record Low Temperatures 1895 to 2025

| Temperature | Date |
|-------------|------------|
| -24.0° | 12/12/1972 |
| -24.0° | 1/20/1937 |
| -22.0° | 12/9/1972 |
| -22.0° | 1/7/1937 |
| -20.0° | 1/21/1937 |
| -20.0° | 1/9/1937 |
| -19.0° | 1/3/1950 |
| -19.0° | 1/25/1949 |
| -18.0° | 1/24/1949 |
| -16.0° | 2/5/1989 |

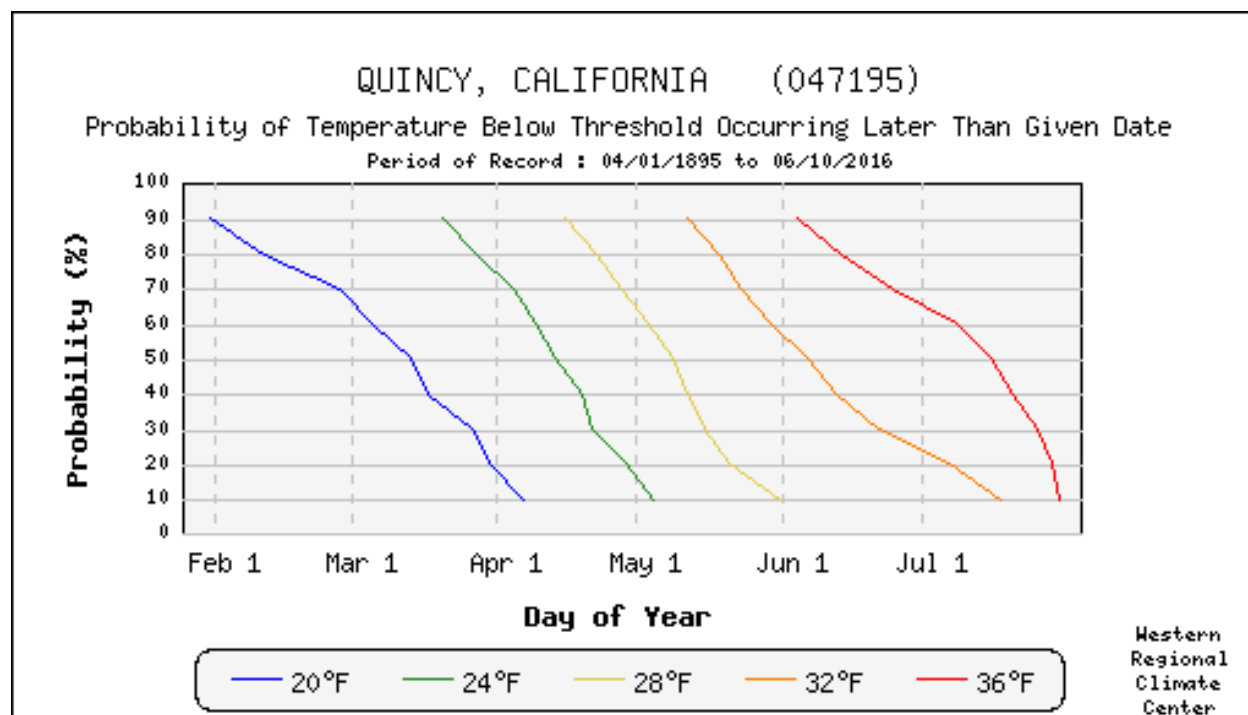
Source: National Weather Service XMAC site. Retrieved 3/12/2025

Location and Extent of Extreme Cold and Freeze

Extreme cold and freeze events occur on a regional basis. Extreme cold can occur in any location of the County. All portions of the County are at risk to extreme cold, with the upper elevations at greater risk. Extreme cold can affect agricultural products in the County. Freeze damages reduce the values of

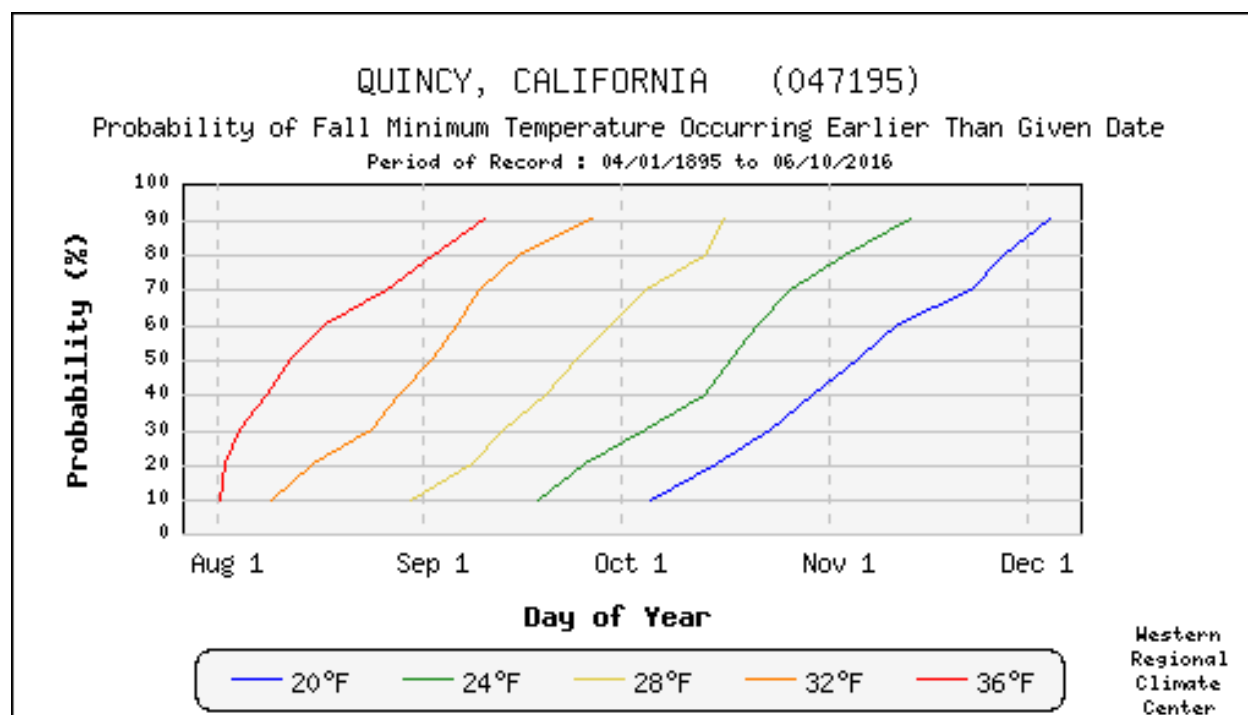
agricultural crops (discussed further in Section 4.3.6). While there is no scale (i.e. Richter, Enhanced Fujita) to measure the effects of freeze, temperature data from the County from the WRCC indicates that there are 166.9 days that fall below 32°F. Freeze has a slow onset and can generally be predicted in advance for the County. Freeze events can last for hours (in a cold overnight), or for days to weeks at a time. Figure 4-29 and Figure 4-30 show the probabilities in the County of freeze for both spring and fall. **Note:** there are no National Weather Service XMAC freeze probabilities, so only the WRCC is captured below.

Figure 4-29 Plumas County – Spring Freeze Probabilities



Source: Western Regional Climate Center

Figure 4-30 Plumas County – Fall Freeze Probabilities



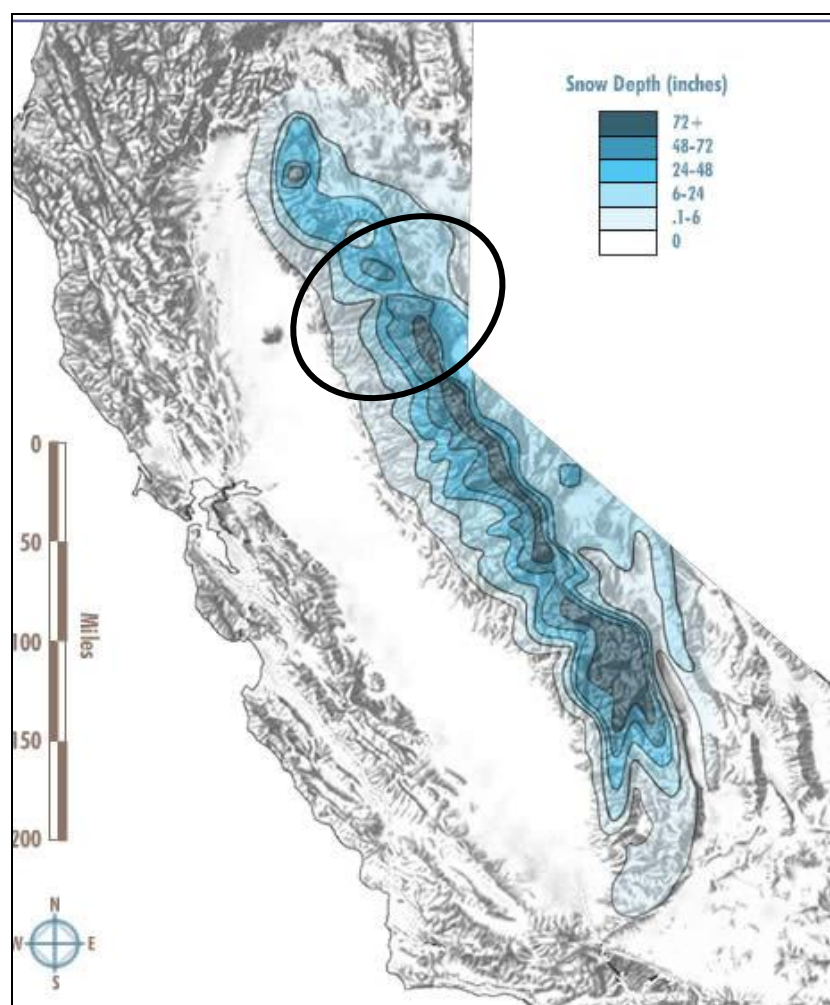
Source: Western Regional Climate Center

Snow and Avalanche

Plumas County is located in the Sierra Nevada region of the State of California. Severe weather affects all areas of Plumas County but differs significantly by region. Throughout areas of the County there are significant variations in the average temperature and amount of precipitation received due to topography.

Snowfall in the Sierras increases with elevation. The lower foothills rarely receive any measurable snow. Middle elevations receive a mix of snow and rain during the winter. Above about 6,000 ft., the majority of precipitation falls as snow. It is not unusual, in some locations, to have ten feet of snow on the ground for extended periods. Figure 4-31 shows the average maximum measured snow depth in the Sierra Nevada for the month of March (the month of greatest average snow depths).

Figure 4-31 Average Maximum Snow Depths of Sierra Nevada Mountains in March



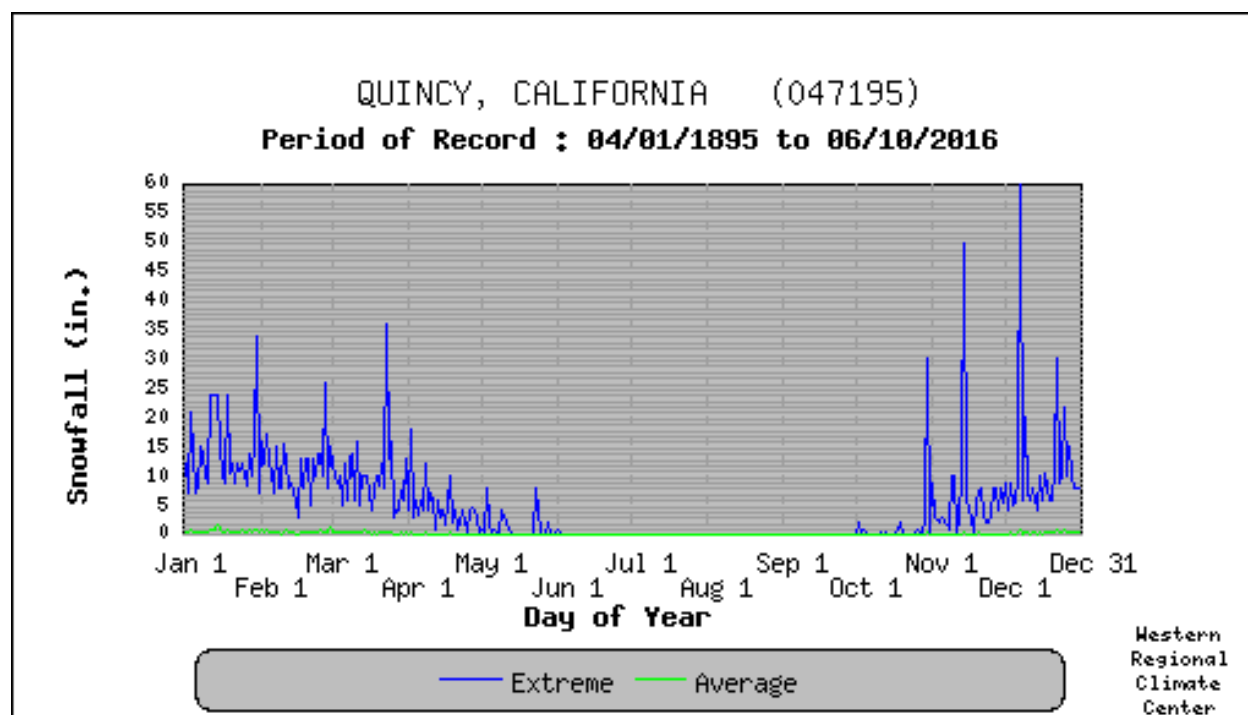
Source: <http://www.sierranevadaphotos.com>. This image is no longer available publicly. It was retrieved for the 2020 Plumas County LHMP Update.

It should be noted that the WRCC and NWS maintain data on weather normal and extremes in the western United States. Each of these data sources maintain data in slightly different ways. Data from the WRCC stopped being collected in April of 2016. NWS covers the entire time period to present. Therefore, both data sets are shown below. WRCC and NWS data for snowfall for the County is summarized below.

Plumas County—WRCC Quincy Station Weather Station, Period of Record 1895 to 2016

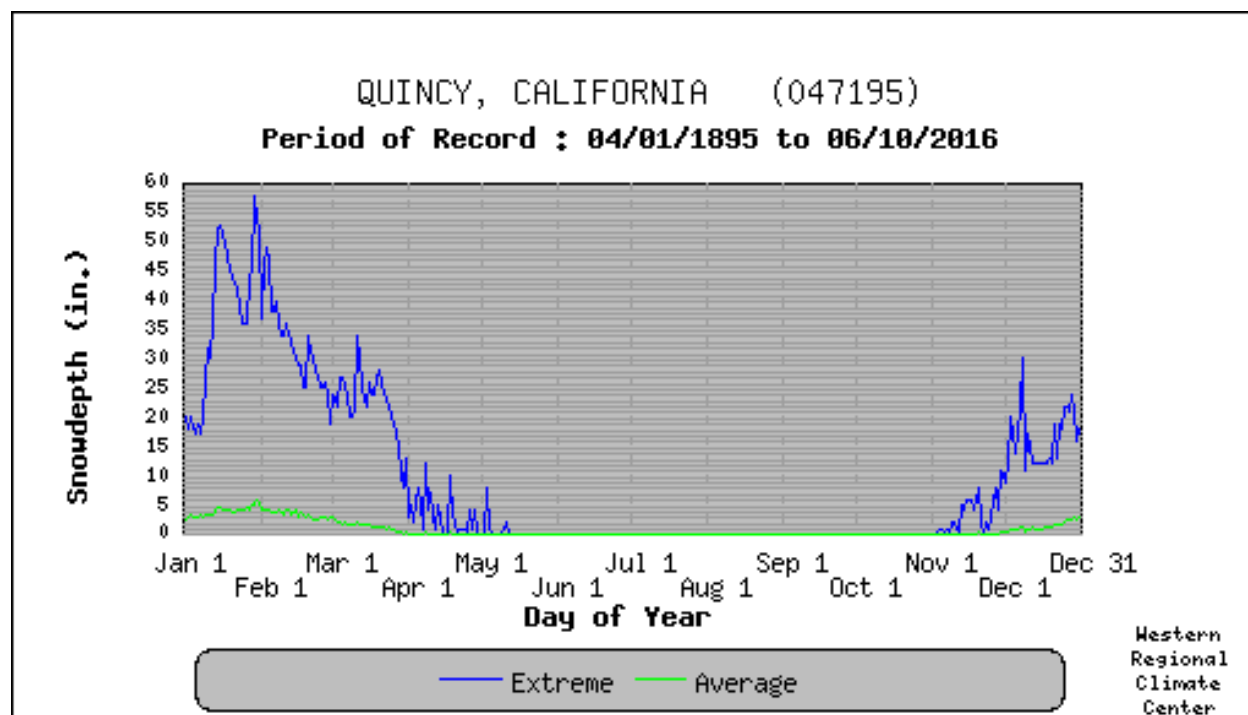
According to the WRCC, average snowfall of the County is 55.1 inches, as shown in Figure 4-32. The highest annual snowfall fell in 1952, when 167.2 inches fell. Highest monthly snowfall accumulation came in January of 1916, when 133.0 inches fell. Average snow depths in January through March can be significant. This can be seen in Figure 4-33.

Figure 4-32 Plumas County—Snowfall Averages and Extremes



Source: Western Regional Climate Center

Figure 4-33 Plumas County—Snow Depth Averages and Extremes



Source: Western Regional Climate Center

Plumas County—NWS Quincy Station Weather Station, Period of Record 1895 to 2025

Table 4-29 shows historical data of the highest daily snowfall on March 23, 1907, when 36.0 inches fell. The maximum snow depth came on January 29th of 1916, with a depth of 58.0 inches. This can be seen in Table 4-30. Monthly average snowfall (from 1991 to 2020) is shown on Figure 4-34. **Note:** While the overall period of record for this NWS station is 1895 to 2025, not all data is recorded for those dates. Snowfall is covered from November of 1895 to April 2025. Snow depth is covered from November of 1900 to April of 2025.

Table 4-29 Plumas County –Quincy Station (NWS) Highest Daily Snowfall 1895 to 2025

| Snowfall in Inches | Date |
|--------------------|------------|
| 36.0 | 3/23/1907 |
| 34.0 | 1/30/1968 |
| 30.0 | 10/30/1909 |
| 30.0 | 12/22/1908 |
| 26.0 | 2/27/1955 |
| 24.0 | 1/18/1955 |
| 24.0 | 1/12/1952 |
| 24.0 | 1/13/1911 |
| 24.0 | 1/11/1911 |
| 24.0 | 1/14/1910 |

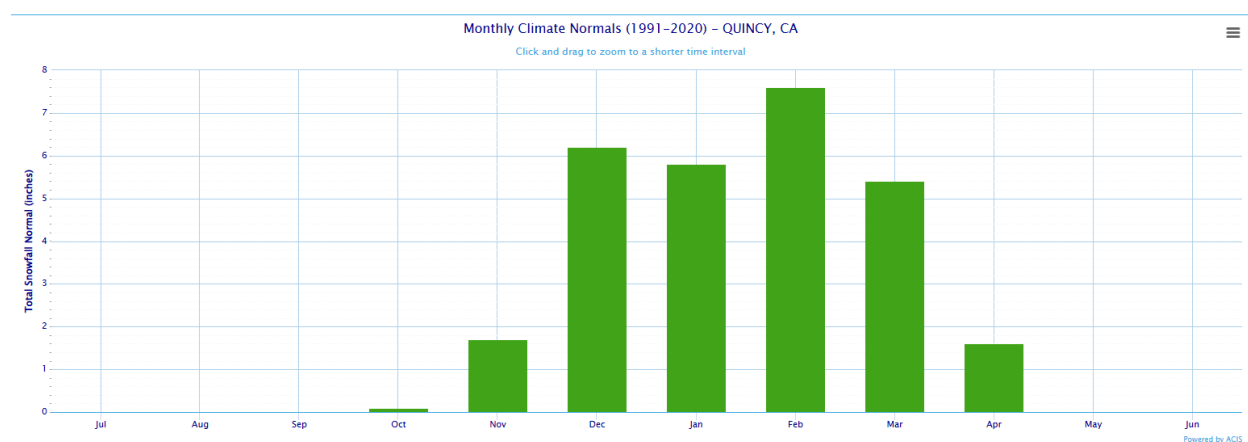
Source: National Weather Service XMAC site. Retrieved 3/12/2025

Table 4-30 Plumas County – Quincy Station (NWS) Maximum Snow Depth 1895 to 2025

| Snow Depth in Inches | Date |
|----------------------|-----------|
| 58.0 | 1/29/1916 |
| 54.0 | 1/30/1916 |
| 53.0 | 1/15/1952 |
| 52.0 | 1/14/1952 |
| 52.0 | 1/31/1916 |
| 51.0 | 1/16/1952 |
| 50.0 | 1/17/1952 |
| 49.0 | 2/3/1937 |
| 48.0 | 1/18/1916 |
| 48.0 | 1/17/1916 |

Source: National Weather Service XMAC site. Retrieved 3/12/2025

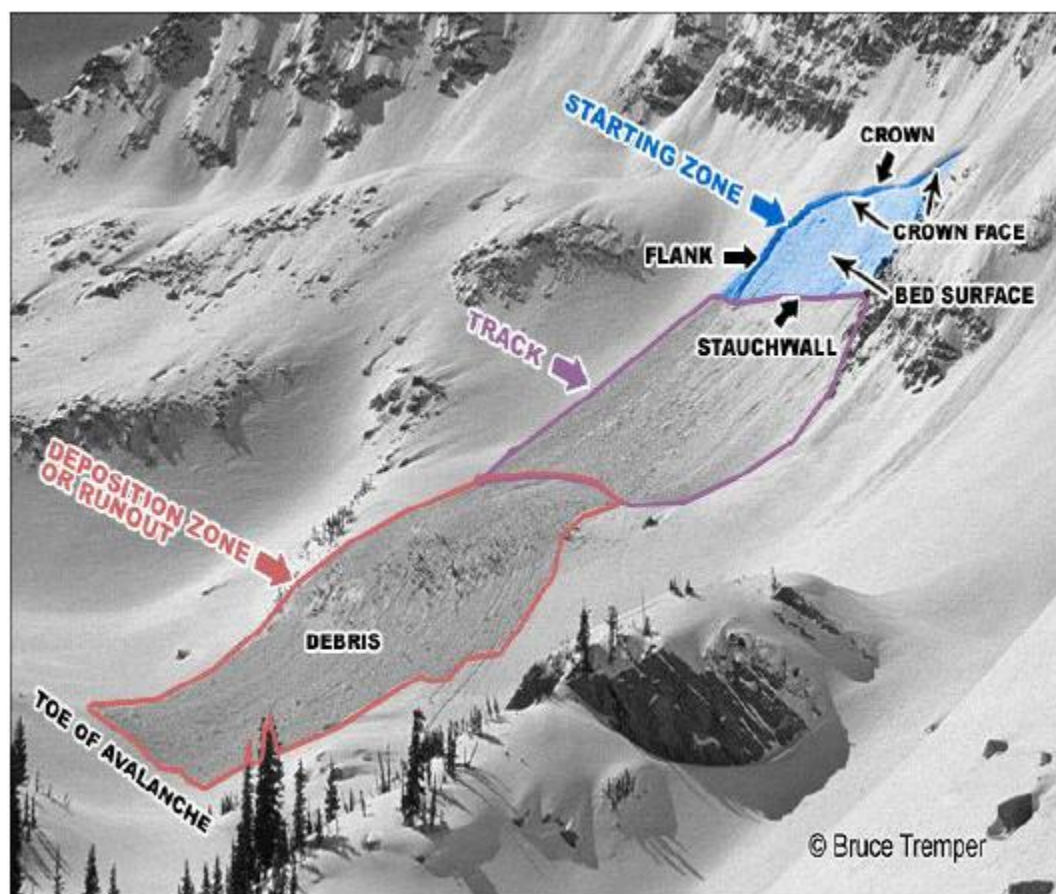
Figure 4-34 Plumas County –Quincy Station (NWS) Average Daily Snowfall 1991 to 2020



Source: National Weather Service XMAC site. Retrieved 3/12/2025

According to the Sierra Avalanche Center, avalanches occur when loading of new snow increases stress at a rate faster than strength develops, and the slope fails. Avalanches are a rapid down-slope movement of snow, ice and debris triggered by ground shaking, sound, or human or animal movement. Avalanches consist of a starting zone where the ice or snow breaks loose, a track which is the grade or channel the debris slides down and a run-out zone where the snow is deposited. This can be seen in Figure 4-35.

Figure 4-35 Avalanche Zones



Source: Sierra Avalanche Center

Critical stresses develop more quickly on steeper slopes and where deposition of wind-transported snow is common. The vast majority of avalanches occur during and shortly after storms. This hazard generally affects a small number of people, such as snowboarders, skiers, and hikers who venture into backcountry areas during or after winter storms. Roads and highway closures, damaged structures, and destruction of forests are also a direct result of avalanches.

Location and Extent of Snow and Avalanche

Snowfall can affect almost all areas of the County. Depending on the elevation of any given area, severe snowstorms are some of the most common extreme weather events that occur in Plumas County. Some winter storms are accompanied by strong winds, creating blizzard conditions with blinding wind-driven snow, severe drifting and dangerous wind chills. There is no scale (i.e. Richter, Enhanced Fujita) to measure the effects of snowfall other than snow depths. Heavy snow has a slow to moderate onset and can generally be predicted in advance for the County. Snow events can last for hours or for days, and snow can stay on the ground for weeks to months at a time.

Avalanche affects only certain areas of the County. The combination of steep slopes, abundant snow, weather, snowpack, and an impetus to cause movement to create an avalanching episode. Avalanche

hazards exist in many of the steeply sloped areas of Plumas County, where combinations of the above criteria occur. The two primary factors impacting avalanche activity are weather and terrain. Large, frequent storms deposit snow on steep slopes to create avalanche hazards. Additional factors that contribute to slope stability are the amount of snow, rate of accumulation, moisture content, wind speed and direction and type of snow crystals. Topography also plays a vital role in avalanche dynamics. Slope angles between 30 to 45 degrees are optimal for avalanches. The risk of avalanches decreases on slope angles below 30 degrees. At 50 or more degrees they tend to produce sluff or loose snow avalanches that account for only a small percentage of avalanche deaths and property damage annually. The HMPC noted that Genesee (and approximately 20 homes) are in an area affected by avalanche.

Speed of onset of avalanche is short, as is the duration of each event. Most avalanches occur during and shortly after storms between January and March. A scale of avalanche danger has been created for North America. This can be found in Table 4-31.

Table 4-31 North American Public Avalanche Danger Scale

| Danger Level | Travel Advice | Likelihood of Avalanche | Avalanche Size or Distribution. |
|------------------|---|---|---|
| 5 – Extreme | Avoid all avalanche terrain | Natural and human-triggered avalanches certain | Large to very large avalanches in many areas |
| 4 – High | Very dangerous avalanche conditions. Travel in avalanche terrain not recommended | Natural avalanches likely; human-triggered avalanches very likely | Large avalanches in many areas; or very large avalanches in specific areas |
| 3 – Considerable | Dangerous avalanche conditions. Careful snowpack evaluation, cautious route-finding and conservative decision making essential | Natural avalanches possible; human-triggered avalanches likely | Small avalanches in many areas; or large avalanches in specific areas; or very large avalanches in isolated areas |
| 2 – Moderate | Heightened avalanche conditions on specific terrain features. Evaluate snow and terrain carefully; identify features of concern | Natural avalanches unlikely; human-triggered avalanches possible | Small avalanches in specific areas; or large avalanches in isolated areas |
| 1 – Low | Generally safe avalanche conditions. Watch for unstable snow on isolated terrain features | Natural and human-triggered avalanches unlikely | Small avalanches in isolated areas or extreme terrain |

Source: National Avalanche Center

Past Occurrences

Disaster Declaration History

The County has had no past federal and one past state disaster declarations for extreme cold and freeze. There were no disasters from snow or from avalanche. Table 4-32 shows the dates of the disaster declarations. More information on USDA disaster declarations (2016, twice in 2022, 2023) from cold and freeze can be found in Table 4-51 in the Past Occurrences in Section 4.3.6.

Table 4-32 Plumas County – Federal and State Disaster Declarations for Freeze 1950-2025

| Disaster Type | State Declarations | | Federal Declarations | |
|---------------|--------------------|-------|----------------------|-------|
| | Count | Years | Count | Years |
| Freeze | 1 | 2007 | 0 | – |

Source: Cal OES, FEMA

NCDC Events

The NCDC data shows 549 extreme cold, freeze, and snow incidents for Plumas County since 1993. Information for these events is shown in Table 4-33. The NCDC has no recorded events of avalanche.

*Table 4-33 NCDC Cold and Freeze Events for Plumas County 1950-7/31/2024**

| Event Type | Number of Events | Deaths | Deaths (indirect) | Injuries | Injuries (indirect) | Property Damage | Crop Damage |
|-----------------|------------------|----------|-------------------|----------|---------------------|------------------|-------------|
| Blizzard | 3 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| Cold/Wind Chill | 3 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| Freezing Fog | 1 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| Heavy Snow | 330 | 1 | 0 | 0 | 0 | \$220,000 | \$0 |
| Ice Storm | 1 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| Winter Storm | 150 | 0 | 0 | 0 | 0 | \$150,000 | \$0 |
| Winter Weather | 61 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| Total | 549 | 1 | 0 | 0 | 0 | \$370,000 | \$ 0 |

Source: NCDC

*Note: Losses reflect totals for all impacted areas, some of which fell outside of Plumas County

Hazard Mitigation Planning Committee Events

The HMPC noted past events. These are separated for cold and freeze, snow, and avalanche.

Cold and Freeze Events

These section separates events since the 2019/2020 LHMPs and those before 2019.

Events since 2019/2020 LHMP

The County noted the following notable events since the 2019 and 2020 LHMPs:

- 2022
 - ✓ On the 1st-2nd of January, temperatures dropped down to 6° and 7°.
 - ✓ On September 14th, Plumas County had its first frost of the year.
 - ✓ On the 20th of November, temperatures dropped to 15°.
- 2023
 - ✓ In January, temperatures dropped to 11°-15° on the 21st, 30th, and 31st.
 - ✓ In February, Temperatures reached 15° on the 16th and the 22nd.

- ✓ A cold event on June 21 caused temperatures to drop to 37° and frost was seen.
- 2024
 - ✓ A cold event on June 18 caused temperatures to decrease to 33° causing a freeze event.

Events before 2019

Many events occurred, but not specific events causing damages could be recalled.

Snow Events

This section separates events since the 2019/2020 LHMPs and those before 2019.

Events since 2019

- **2020** – Jan 14-16. 12.75' of snow. Mar 16. 21.75' of snow
- **2021** – In the month of December 6.75" of snow fell on the 16th. Following this, the 25- 29 received 35" (or almost 3 ft.) of snow
- **2022** – On November 9th, 5" of snow fell in Plumas County.
- **February of 2023** – between the days of the 23rd and 28th, 40.75" of snow fell, causing blizzard conditions on the 28th.
- **March of 2023** – Snow occurred in the County as part of an atmospheric river storm event. A strong winter storm impacted Plumas County from February 26 through March 4, 2024. Rain, strong winds and multiple feet of snow occurred with this storm. Blizzard conditions were widespread with a total snow accumulation of 1 to 10 feet. Snow levels dropped as low as 1,500 feet over the weekend, with a significant accumulation. Visibility on roads was poor. Downed trees and power outages occurred throughout Plumas County. Outages ranged from less than an hour to 96 hours. Portola was impacted the most with over 4 feet of snow and power outages for 4 days. Liberty Utilities supplies power to a portion of Portola and Sierra Valley. Liberty Utilities receives its power from Nevada Energy. The damage was down a steep hill with no easy access. Nevada Energy did not keep linemen on 24/7 during this event. Once Nevada restored their power, Liberty linemen were on top of getting the power restored. A Damage Tracking document provided by the County indicated that several parties did have major damage to their residences where the weight of the snow cracked their walls, there was ice dam destruction to roofs, and minor flooding in basements. All parties affected advised the County that they are still able to live in the structures. This caused flooding in areas of the County. This is discussed in the Past Occurrences of Section 4.3.11.
- **2024** – In March, after multiple inches of rain had already fallen, 13.75" fell on the 3rd and 7.25" fell the next day, totaling to 21" of snowfall. In May, late snowfall impacted the county with 2.25" falling.

Events before 2019

HMPc also noted the following events:

- Extreme snow events have included up to 60 inches of snow in Quincy and 45 inches of snow in Chester in one month. Two notable snow seasons occurred in **1951-1952**, and **1992-1993**. During these years the Chester area received a total of 362 inches of snow in **1951-52** and 295 inches in **1992-93**.

Figure 4-36 Community of Chester 1951-1952 Snow Event



Source: Plumas County

Figure 4-37 1993 Storm Damage of Store in Quincy



Source: KCRA News Report

Figure 4-38 Community of Chester 2001 Snow Event



Source: Plumas County

- On **June 12 to 14 of 1981**, there were freezes each day in Quincy. A member of the HMPC from Viera Ranch noted that the freeze killed their garden.
- Between **March 28 and April 7 of 1982**, there was high snowfall in the Quincy area. A member of the HMPC from Viera Ranch noted that power was out by March 31, with roads and schools closed in the area.
- The winter of **1989** featured many cold weather incidents and heavy snows. A member of the HMPC from Viera Ranch noted that from January 1 to 3, 46 inches of snow fell. Lows in Quincy from February 5 to February 8 were -8°F, -15°F, -14°F, and -18°F, respectively.
- The winter of **1990** also featured many cold weather incidents and heavy snows. A member of the HMPC from Viera Ranch noted that from February 15 to 18 46 inches of snow fell. Lows in Quincy from December 21 and 22 were -5°F and -8°F, respectively.
- On **June 15, 1992**, a late freeze hit. It killed gardens and crops in the area.
- A member of the HMPC from Viera Ranch noted from **December 28 of 1992 to January 9 of 1993** over six feet of snow fell in Quincy.
- A member of the HMPC from Viera Ranch noted on **February 20 and 21 of 1994**, 23 inches of snow fell near Quincy. June 20-24 of that year also saw lows around 32°F.
- A member of the HMPC from Viera Ranch noted the from **January 4-6 of 1995**, 13 inches of snow fell. Between the 7th and the 15th, 27.85 inches of rain fell as well. This caused flooding in Quincy. Snow fell again in March, and on the 22nd and 23rd, 41 inches of snow fell, cancelling schools and knocking out power. June 16th of 1995 of that year also saw 2.5 inches of snow!
- A member of the HMPC from Viera Ranch noted 19 inches of snow fell between **April 5th and 8th of 1999**.

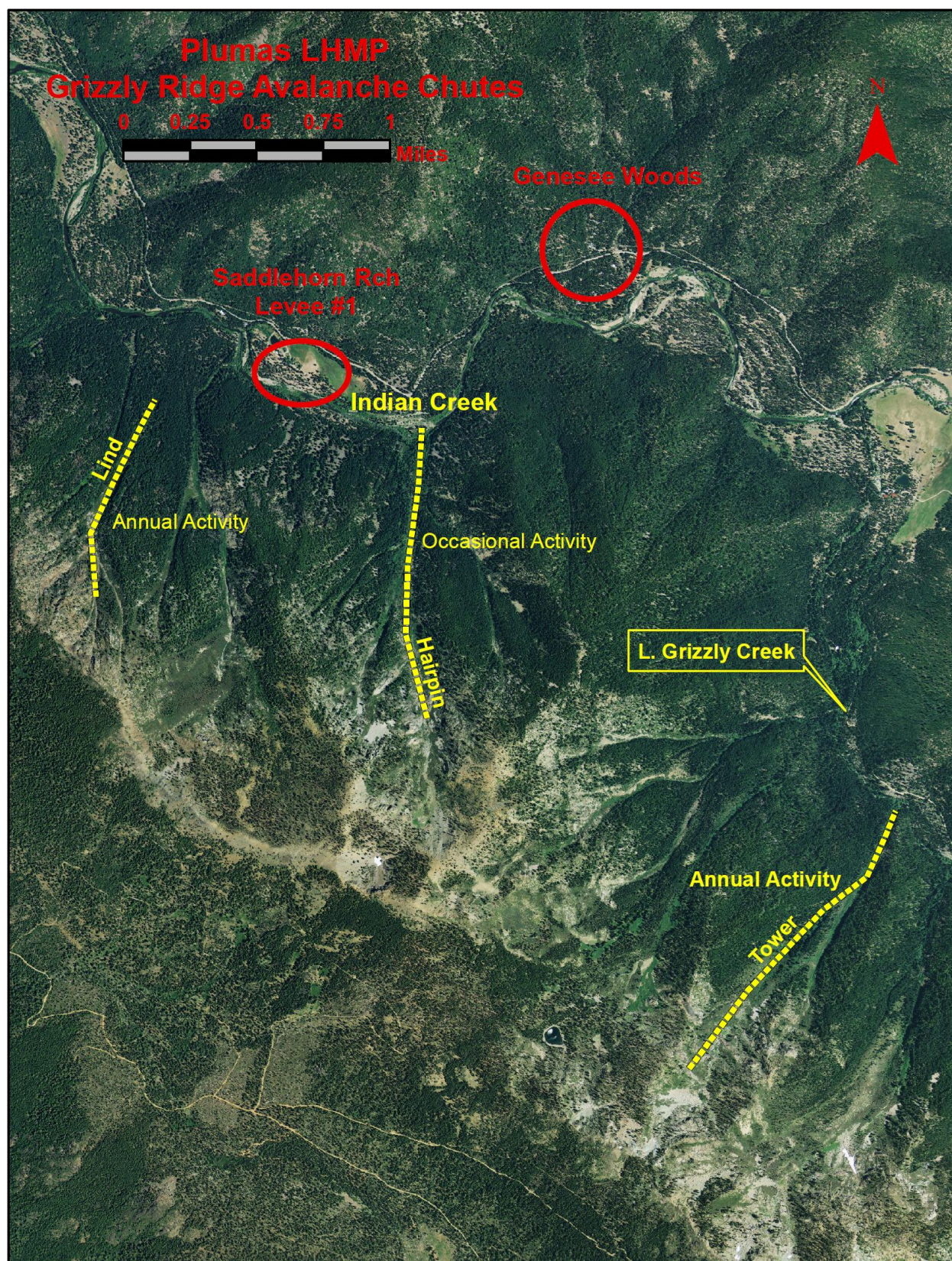
- A low of 8°F was seen on **February 15th of 2001**.
- A member of the HMPC from Viera Ranch noted heavy snows between January 7th and 11th of 2005. Power was out in the Quincy area on January 11th. Events of frost were noted between **June 3rd and 6th of 2005**.
- June 7th of 2007 saw frost, with damages to gardens and crops in the area reported.
- Frost was noted on **June 18th, 2014**.

Avalanche Events

Historically, avalanches occur within the steeply sloped portion of the County between the months of January and March, following snowstorms. Past occurrences of avalanche in the County include:

- The HMPC noted that near Grizzly Ridge in Genessee, avalanches occur with regularity. These have blocked Indian Creek and Little Grizzly Creek and/or Grizzly Creek. There are 4 homes in the area that have their ingress and egress routes blocked. There are numerous avalanche chutes on the northeast and north faces of Grizzly Ridge in the Genessee Valley area. These can be seen in Figure 4-39. The Tower & Lind chutes are active annually, with multiple small to moderate falls per year. The Tower does deliver stream-blocking falls to Little Grizzly Creek (observed by a member of the HMPC in **1983 and 1993**). The Lind chute, while very active, does not extend to Indian Creek. The Hairpin chute reportedly blocked Indian Creek in **1952 and 1963** (as reported by members of the HMPC). It last sent snow to Indian Creek in **1995**, without blocking the creek. The less active chutes are becoming more overgrown with vegetation with overall reductions in last 30 years in snowfall/avalanches to keep clear.

Figure 4-39 Plumas County – Grizzly Ridge Avalanche Chutes



- An avalanche occurred in the winter of **2012** near Sloat. No injuries or deaths were reported. Timber stock in the avalanche area was damaged, though no damage estimates were available.
- CalTrans had an avalanche in **2023** on SR70 in the Feather River Canyon within the Butte County section of the highway, but the risk factors are similar to Plumas County along that portion of SR70.

Likelihood of Future Occurrence

Highly Likely—Extreme cold, freeze, snow, and avalanche are likely to continue to occur annually in the Plumas County Planning Area, especially in the eastern portion of the County. In a typical year, minimum temperatures fall below 32°F on 166.9 days in Plumas County. Snow falls in the County every year. Avalanches occur every year (though many go unreported as they occur in undeveloped areas). This equates to a likelihood of future occurrences being considered highly likely.

It is likely that climate change will decrease the chance of future occurrence as well as future impacts. More information on climate change and extreme cold, freeze, snow, and avalanche can be found in the next section. More information on future impacts can be found in the Future Conditions/Future Development section of the Vulnerability Assessment below.

Climate Change and Extreme Cold, Freeze, Snow, and Avalanche

According to the 2021 California Climate Adaptation Study (CAS) as well as the 2024 Draft CAS, freezing spells are likely to become less frequent in California as climate temperatures increase. If emissions increase, freezing events could occur only once per decade in large portion of the State by the second half of the 21st century. According to a California Natural Resources Report in 2014, it was determined that while fewer freezing spells would decrease cold related health effects, too few freezes could lead to increased incidence of disease as vectors and pathogens do not die off. Snow and avalanche are expected to decline due to reduced snow and snowpack.

Vulnerability Assessment

Vulnerability—Medium

Extreme cold, freeze, snow, and avalanche events happen in the Plumas County Planning Area each year. It can impact key assets in the Planning Area. The whole of the Planning Area has some measure of vulnerability to extreme cold, freeze, snow, and avalanche.

An assessment of a community's vulnerability to this hazard begins with an understanding of local exposure to unincorporated Plumas County. This is included in the Local Concerns section below. After that, vulnerability is discussed in multiple sections that detail how this hazard can affect both the entire Plumas County Planning Area as well as the unincorporated portions of Plumas County. How the hazard affects the other participating jurisdictions can be found in their respective annexes to this LHMP Update. These sections below include assets at risk, impacts, and how future development can be affected by this hazard.

Local Concerns (unincorporated Plumas County)

The unincorporated County has specific concerns regarding this hazard. These concerns form a portion of the basis for the mitigation strategy and mitigation actions that seek to reduce risk and vulnerabilities to this hazard.

The varying elevations in the County, in part, determine the extent to which a given area is affected by freeze and cold. The agricultural industry is especially vulnerable to extreme temperatures. Freezing temperatures can cause significant loss to crops. Historically, extreme cold and freeze have caused losses to agricultural crops and have resulted in several USDA disaster declarations including the ones noted above in the Past Occurrences section.

The Plumas County Planning Area does experience snowfall on a seasonal basis, and portions of the County receive an abundance of snow, mostly between the months of November through March. Winter snowstorms in the County, including strong winds and blizzard conditions, can result in localized power and phone outages and closures of streets, highways, schools, businesses, and nonessential government operations. During periods of heavy snow there is also an increase in the number and severity of traffic accidents. People can become isolated in their homes and vehicles and are unable to receive essential services. During times of isolation, individuals and communities become isolated and must depend upon themselves in early stages of an emergency. Snow removal costs can impact budgets significantly. Heavy snowfall during winter can lead to flooding or landslides during the spring if the area snowpack melts too quickly and can also create numerous challenges for emergency responders.

Heavy snow events occur on an annual basis in the higher elevations of the County. Snow removal is an ongoing issue in the upcountry areas of the County. Snow removal is constant during the snowiest months, within the County and other agencies providing snow removal on public roads. Individuals and road associations are a primary snow removal resource for all the private roads. Impacts to the County as a result of winter snowstorms include damage to infrastructure, utility outages, road closures, traffic accidents, and interruption in business and school activities. Also, of concern as described below is the impact to populations with additional needs such as the elderly, low-income individuals, and those requiring the use of medical equipment should the power go out. Delays in emergency response services can be of significant concern during large storm events. Further, there are economic impacts associated with areas prone to heavy snow.

There have been many extreme snow events that have occurred in Plumas County, most notably in the high elevation regions such as Chester and La Porte. However, lower elevation areas such as Quincy are also susceptible to extreme snow events. Seneca Road, the first part of the road, has been impacted by avalanches during heavy snow (this is County Road 306).

The HMPC noted that Genesee (and approximately 20 homes) are in an area affected by avalanche.

Local concerns for Portola and the Special Districts can be found under the Local Concerns heading in each respective jurisdictional annex to this LHMP Update.

Assets at Risk

Assets at risk from extreme cold, freeze, snow, and avalanche include people and populations; structures; critical facilities and infrastructure; and natural, historic, and cultural resources. These are discussed in the following sections for the Plumas County Planning Area and unincorporated Plumas County.

Additionally, for each hazard in the FEMA National Risk Index in Plumas County, the relevant portions of the hazard analysis done by FEMA is presented below. This includes the Hazard Risk Index Rating, Expected Annual Loss Values, Exposure Values, and the Historic Loss Ratio Rating. These are presented for the Plumas County Planning Area as a whole.

People and Populations

All populations within the Plumas County Planning Area are vulnerable to extreme cold, freeze, and snow, but this hazard generally affects people spending large amounts of time outside to a greater extent. Prolonged exposure to cold can cause frostbite or hypothermia and can be life-threatening. Snow can cause transportation issues for people, including vulnerable populations. Vulnerable populations to cold, freeze, and snow include the unhoused; individuals who exercise or train outdoors; outdoor workers; individuals that lack the resources to afford heat; and the young, old, or medically fragile individuals that are more susceptible to cold related impacts. In addition to vulnerable populations, pets and livestock are at risk to freeze and cold. Populations in the County are much less vulnerable to avalanche.

Structures

Structures in the Plumas County Planning Area have some measure of risk from extreme cold and freeze. Buildings in the upper elevations of the County can be affected directly by freeze; pipes that feed buildings can be damaged during periods of extreme cold and cause water damage and other related impacts to a structure. Structures can also be damaged by downed trees during freeze and winter storm and snow events. Structures can also be damaged by excessive snow loads (as seen above in Past Occurrences). Structures in the Plumas County Planning Area have some measure of risk from avalanche. Buildings in the upper elevations of the County can be affected directly by avalanche events. However, most of these events occur away from structures in the Plumas County Planning Area.

Critical Facilities and Infrastructure

Winter storms typically involve snow and ice, occasionally accompanied by high winds, cold temperatures, and avalanche, which can cause downed trees and power lines, power outages, accidents, and road closures. Transportation networks, communications, and utilities infrastructure are the most vulnerable physical assets in the County. Depending on the facility type and function, critical facilities and infrastructure may be affected directly by freeze and extreme cold and winter weather events. Damage to pipes that feed buildings can be damaged during periods of extreme cold. Other equipment may also be affected. Infrastructure such as roads, highways, and bridges can become slippery, causing accidents and road closures. Depending on the facility type and function, critical facilities and infrastructure may be affected directly by avalanche events. Infrastructure such as roads, highways, and bridges can be blocked during these events.

Natural, Historic, and Cultural Resources

Depending on how low the temperatures go and the duration of an extreme cold, freeze, snow, or avalanche event, natural resources in the Plumas County Planning Area may be affected. During periods of freeze and heavy snow, trees in the Planning Area may be damaged. This is especially true if a freeze occurs during a winter storm with winds and precipitation. Other natural resources like wildlife may be at risk during a period of freeze. While it is rare for buildings to be affected directly by freeze, damages to pipes that feed historic buildings can be damaged during periods of extreme cold and cause additional impacts to the structures.

FEMA NRI Hazard Vulnerability Assessment

FEMA's NRI provides additional data on Plumas County's vulnerability to Extreme Cold, Freeze, and Snow (with avalanche). The NRI contains data and analysis for 18 separate natural hazards. The NRI hazards related to Plumas County's Extreme Cold, Freeze, and Snow (with Avalanche) hazards are: avalanche, cold wave, ice storm, and winter weather. As shown in Table 4-34, while avalanches, cold waves, and ice storms are expected to cause no expected annual losses and are given no historic loss ratio, winter weather could cause a total of \$29,230 in expected annual losses, with a rating of very low. Winter weather has a relatively low rating for social vulnerability and a relatively high community resilience, with a risk index score of 35.8 out of 100. According to the NRI, there have been 297 events on record between the years 2005-2021, with an average of 16.5 events per year.

Table 4-34 Plumas County Planning Area – Avalanche, Cold Wave, Ice Storm, and Winter Weather Vulnerability Ratings from FEMA NRI

| NRI Hazard | Hazard Risk Index Rating | Expected Annual Loss Values (total)** | Exposure Value (total)*** | Historic Loss Ratio Rating |
|----------------|--------------------------|---------------------------------------|---------------------------|----------------------------|
| Avalanche | – | \$0 | \$0 | – |
| Cold Wave | 0 | \$0 | \$0 | No rating |
| Ice Storm | – | \$0 | \$0 | – |
| Winter Weather | 35.8 | \$29,230 | \$237,469,807,133 | Very low |

Source: FEMA NRI Report

*Hazard Risk Index is calculated using data for only a single hazard type, and reflects a communities expected annual loss value, community risk factors, and the adjustment factor used to calculate the risk value.

**Expected annual loss represents the average economic loss in dollars resulting from natural hazards each year.

***Exposure is a natural hazard consequence factor that is the representative value of buildings, populations, or agriculture potentially exposed to a natural hazard occurrence.

Additional information on the FEMA NRI can be found in Section 4.2 and Appendix H.

Impacts from Severe Weather: Extreme Cold, Freeze, Snow, and Avalanche

Extreme cold, freeze, and snow can affect critical facilities and infrastructure, down trees, break pipes, and can be a life safety issue. Transportation networks, communications, and utilities infrastructure are often the most vulnerable physical assets in the Plumas County Planning Area. Infrastructure such as roads and utilities are at risk to freezing temperatures and snow, causing failures and hazardous road conditions.

When extreme cold is coupled with high winds and freezing storms, power lines may be downed, resulting in power outages and an interruption of utilities and critical services. During periods of extremely low or prolonged cold temperatures, other impacts to the Planning Area include can include interruption in business and school activities.

The elderly, the young, and those experiencing medical issues are often more vulnerable to temperature extremes, but anyone can be affected. Exposure to cold temperatures can cause hypothermia and frostbite. Those exercising or recreating outdoors, outdoor workers, and the unhoused may be at a higher risk.

The most significant impacts from snow avalanches are the closure of transportation corridors, which can isolate populations and interrupt commodity flows. Avalanches tend to occur independently of other types of hazards, although it is possible for avalanches to be triggered by severe weather and earthquakes. There may be occasions where avalanches contribute to the presence of other hazards, such as flash floods resulting from mountainside erosion. Avalanches might cause erosion on sloped terrain, thereby increasing the likelihood of future landslides. In addition, debris deposited in a river or stream because of avalanches might alter its flow and contribute to flooding later.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the County may be affected in the future by climate change (which was discussed in the hazard profile section above), changes in population patterns, and changes in land use and development. The influencing effects of these factors on this hazard are discussed further in the Future Conditions/Future Development discussion below.

Future Conditions/Future Development

This section provides a discussion of how future conditions will influence or affect the hazard over time and also discusses future development relative to each hazard.

Future Conditions

Future conditions may be affected by climate change, changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. Findings on these factors for Plumas County include the following:

- Climate change is unlikely to exacerbate extreme cold, freeze, snow, and avalanche and their associated impacts to the County.
- The population of Plumas County is expected to slowly shrink as time progresses. Future population growth should be considered, as having more or less people in a community affects the overall hazard vulnerability to the County. Changes in populations patterns should also be considered. Especially vulnerable individuals to this hazard include older adults, children, outdoor workers, those below the poverty line and the unhoused. Planning for population changes will help to decrease the County's overall vulnerability. Changes in population and population patterns may or may not increase the impacts and vulnerability of the County to this hazard depending on the location and nature of population growth and continued planning for future hazard conditions.
- Land use planning should be proactive to address future hazard conditions. County building codes are in effect to reduce this risk and should be updated as necessary to continue to address future freeze, extreme cold, and heavy snow conditions. In addition, structures should be built away from avalanche

prone areas. Due to adherence to protective building codes, changes in land use and development will likely not increase the impacts and associated vulnerabilities of the County to this hazard.

Future Development

Future development built to code should be able to withstand extreme cold, freeze, and heavy snow. Future development should be built away from avalanche zones. Current building codes provide such provisions for new construction. Older buildings and infrastructure should be evaluated to ensure that extreme cold and freeze will not cause negative impacts. Future development considerations should be ongoing and proactive. Ensuring that comprehensive land use planning is conducted, regulatory requirements such as building codes are followed, and varying needs for different demographic groups that reside within the County are considered can help make for a more resilient community.

4.3.3. Severe Weather: Extreme Heat

Hazard Profile

This hazard profile contains multiple sections that detail how this hazard can affect the Plumas County Planning Area. These sections include a hazard/problem description; description of location and extent; past occurrences of this hazard; likelihood of future occurrence; and how climate change can affect or influence this hazard.

Hazard/Problem Description

According to information provided by FEMA, extreme heat is defined as temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks. Heat kills by taxing the human body beyond its abilities. In a normal year, about 175 Americans succumb to the demands of summer heat. In the 40-year period from 1936 through 1975, nearly 20,000 people were killed in the United States by the effects of heat and solar radiation. In the heat wave of 1980, more than 1,250 people died. Recently in California, records were set across the state during a July 2024 heat event. 2024 was considered the hottest on record. Extreme heat can also affect the agricultural industry. Extreme heat as it affects agriculture in Plumas County is discussed further in the agricultural hazards discussion in Section 4.3.6.

Heat disorders generally have to do with a reduction or collapse of the body's ability to shed heat by circulatory changes and sweating or a chemical (salt) imbalance caused by too much sweating. When heat gain exceeds a level at which the body can remove it, or when the body cannot compensate for fluids and salt lost through perspiration, the temperature of the body's inner core begins to rise, and heat-related illness may develop. Elderly persons, small children, those on certain medications or drugs, and persons with weight and alcohol problems are particularly susceptible to extreme heat.

Location and Extent

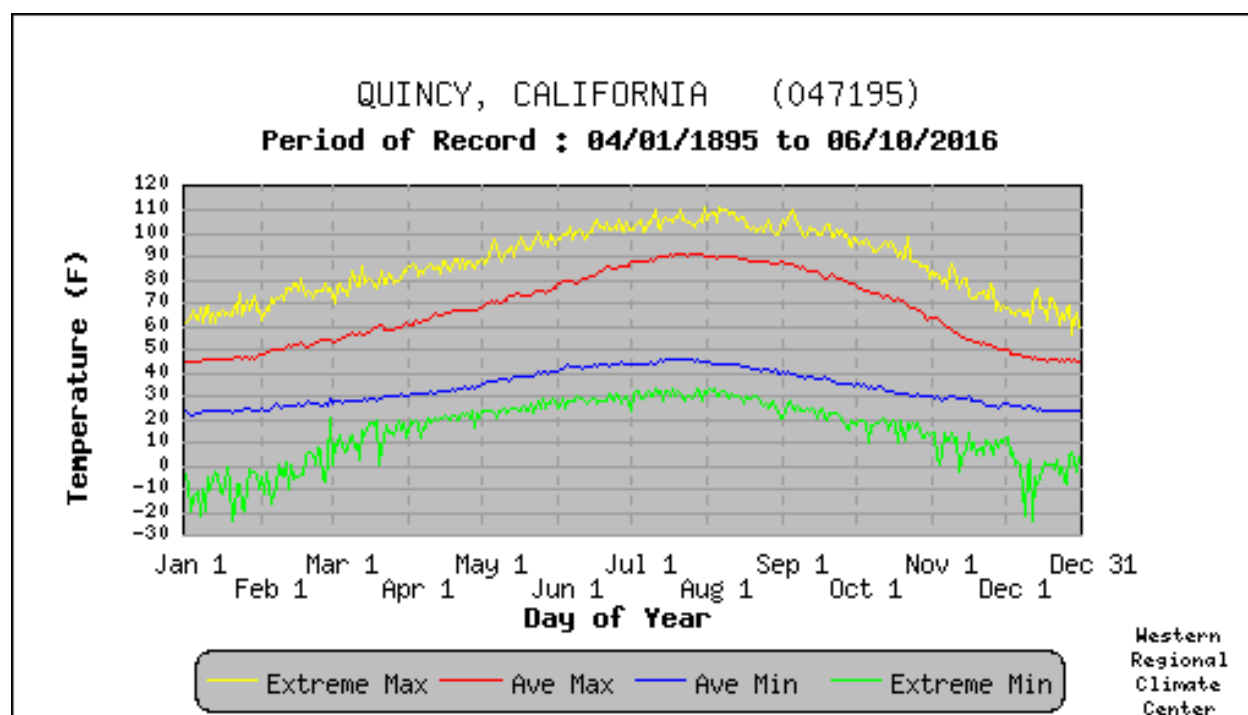
Extreme heat events occur on a regional basis. Extreme heat can occur in any location of the County. All portions of the County are at risk to extreme heat. Extreme heat occurs throughout the Planning Area primarily during the summer months. The WRCC and NWS maintain data on weather normal and extremes in the western United States. Each of these data sources maintain data in slightly different ways. Data from

the WRCC stopped being collected in April of 2016. NWS covers the entire time period to present. Therefore, both data sets are shown below. WRCC and NWS data for the County is summarized below.

Plumas County — WRCC Quincy Station, Period of Record 1896 to 2016

According to the WRCC, in Plumas County, monthly average maximum temperatures in the warmest months (May through October) range from the low-70s to the upper-80s. The highest recorded daily extreme was 110°F on both August 9, 1981, and September 5, 1988. In a typical year, maximum temperatures exceed 90°F on 45.3 days. Figure 4-40 shows the average daily high temperatures and extremes for the County. Table 4-35 shows the record high temperatures for the County.

Figure 4-40 Plumas County – Quincy Station (WRCC) Daily Temperature Averages and Extremes 1943 to 2016



Source: Western Regional Climate Center. Retrieved 3/19/2025

Table 4-35 Plumas County – Quincy Station (WRCC) Record High Temperatures 1943 to 2016

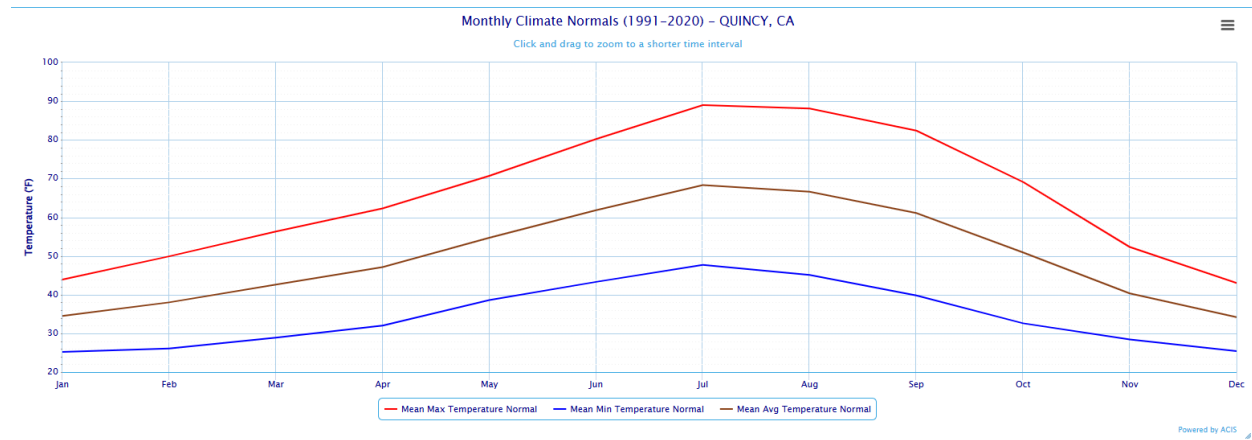
| Month | Record High | Date | Month | Record High | Date |
|----------|-------------|-----------|-----------|-------------|------------|
| January | 74° | 1/23/1918 | July | 109° | 7/21/1994 |
| February | 80° | 2/17/1920 | August | 110° | 8/09/1981 |
| March | 85° | 3/13/1910 | September | 110° | 9/05/1988 |
| April | 89° | 4/21/2006 | October | 98° | 10/22/1988 |
| May | 100° | 5/24/1992 | November | 86° | 11/09/1990 |
| June | 105° | 6/17/1895 | December | 76° | 12/14/1921 |

Source: Western Regional Climate Center

Plumas County—NWS Quincy Station, Period of Record 1895 to 2025

According to the NWS, monthly average maximum temperatures in the warmest months (May through October) range from the mid-70s to the low 90s. The highest recorded daily extreme was 111°F on August 6, 1994, and July 31, 1994. Figure 4-41 shows the average daily high temperatures and extremes for the County. Table 4-28 shows the record low temperatures for the County.

Figure 4-41 Plumas County – Quincy Station (NWS) Daily Temperature Averages and Extremes, 1991-2020



Source: National Weather Service XMAC site. Retrieved 3/12/2025

Table 4-36 Plumas County – Quincy Station (NWS) Record High Temperatures 1895 to 2025

| Temperature | Date |
|-------------|-----------|
| 111.0° | 8/6/1994 |
| 111.0° | 7/31/1994 |
| 110.0° | 8/7/1990 |
| 110.0° | 9/5/1988 |
| 109.0° | 8/9/1981 |
| 109.0° | 7/11/2002 |
| 109.0° | 7/21/1994 |
| 109.0° | 8/8/1981 |
| 108.0° | 8/3/1993 |
| 108.0° | 8/12/1992 |

Source: National Weather Service XMAC site. Retrieved 3/12/2025

Heat emergencies are often slower to develop, taking several days of continuous, oppressive heat before a significant or quantifiable impact is seen. Heat waves do not strike victims immediately, but rather their cumulative effects slowly take the lives of vulnerable populations. Heat waves do not generally cause damage or elicit the immediate response of floods, fires, earthquakes, or other more “typical” disaster scenarios. While heat waves are obviously less dramatic, they are potentially deadlier. According to the 2018/2023 California State Hazard Mitigation Plan, the worst single heat wave event in California occurred in Southern California in 1955, when an eight-day heat wave resulted in 946 deaths.

The NWS has in place a system to initiate alert procedures (advisories or warnings) when extreme heat is expected to have a significant impact on public safety. The expected severity of the heat determines whether advisories or warnings are issued. The NWS HeatRisk forecast provides a quick view of heat risk potential over the upcoming seven days. The heat risk is portrayed in a numeric (0-4) and color (green/yellow/orange/red/magenta) scale which is similar in approach to the Air Quality Index (AQI) or the UV Index. This can be seen in Table 4-37.

Table 4-37 National Weather Service HeatRisk Categories

| Category | Level | Meaning |
|----------|-------|---|
| Green | 0 | No Elevated Risk |
| Yellow | 1 | Low Risk for those extremely sensitive to heat, especially those without effective cooling and/or adequate hydration |
| Orange | 2 | Moderate Risk for those who are sensitive to heat, especially those without effective cooling and/or adequate hydration |
| Red | 3 | High Risk for much of the population, especially those who are heat sensitive and those without effective cooling and/or adequate hydration |
| Magenta | 4 | Very High Risk for entire population due to long duration heat, with little to no relief overnight |

Source: National Weather Service

The NWS office in Sacramento or Reno can issue the following heat-related advisory as conditions warrant.

- **Heat Advisories** are issued during events where the HeatRisk is on the Orange/Red threshold (Orange will not always trigger an advisory)
- **Excessive Heat Watches/Warnings** are issued during events where the HeatRisk is in the Red/Magenta output

Past Occurrences

Disaster Declaration History

There have been no FEMA or Cal OES disasters related to extreme heat, as shown in Table 4-4. There have been no USDA disaster declarations for extreme heat.

NCDC Events

The NCDC data shows 7 extreme heat incidents for Plumas County since 1993. Information for these events are shown in Table 4-38.

*Table 4-38 NCDC Extreme Heat Events in Plumas County 1993 to 7/31/2024**

| Event Type | Number of Events | Deaths | Deaths (indirect) | Injuries | Injuries (indirect) | Property Damage | Crop Damage |
|----------------|------------------|----------|-------------------|----------|---------------------|-----------------|-------------|
| Excessive Heat | 5 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| Heat | 2 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| Total | 7 | 0 | 0 | 0 | 0 | \$ 0 | \$ 0 |

Source: NCDC

*Deaths, injuries, and damages are for the entire event, and may not be exclusive to the County.

Hazard Mitigation Planning Committee Events

These section separates events since the 2019/2020 LHMPs and those before 2019.

Events since 2019/2020 LHMP

A member of the HMPC from Viera Ranch searched through records kept by the Ranch, and found the following extreme heat events:

- **2020** – In the month of June, from the 22nd to the 29th, high temperatures reached 101° to 104°. June 29 saw 101°F. In the month of July, from the 15th to the 17th, temperatures reached 102° to 103°F. In August 9th and 10th, temperatures reached 102° to 103°F.
- **June 2021** – In the second half of the month of June, temperatures reached as high as 103°-108°, the highest being on the 28th.
- **July 6-9, 2021** – Seneca Health noted excessive heat during these days caused in influx of additional patients. Temperatures reached 103°-106°F.
- **August 29th of 2021** saw temperatures reached up to 101° F.
- **September 9th and 10th of 2021** saw temperatures reached 101°- 102° F.
- **2022** - In January, temperatures reached odd heights, up to 60°-61° on the 13th, 28th, and 30th. In July, between the 27th and 30th, temperatures reached up to 101°-105°F. In early September, the 5th-8th, temperatures reached up to 101°-105°F.
- **2023** – In July, throughout various days between the 2nd and 22nd, temperatures reached 101°-106°F. In August, the heat trend continued from the 12th to the 16th, with temperatures reaching 103°-105°F. Seneca Health noted excessive heat during these days caused an influx of additional patients.
- **2024** - In July, from the 5th to the 20th, temperatures ranged from 101°-105°.

Events before 2019

A member of the HMPC from Viera Ranch searched through records kept by the Ranch, and found the following extreme heat events:

- **1999** – From July 6th to 10th, high temperatures ranged from 100°F to 103°F. On October 9th, daytime highs were at 92°F.
- **2002** – Multiple days saw very high temperatures. This includes July 9th – 104°F; July 10th – 108°F; July 11th – High 109°F; 8/14/2002 – 105°F; 8/15/2002 – 104°F; 8/16/2002 – 101°F.
- **2003** – Multiple days saw very high temperatures. This includes June 28th – 102°F, July 14th to 23rd – 100°F to 108°F, and July 28th to 30th – 102°F to 105°F.

- **2006** – Multiple days saw very high temperatures. This includes June 20th to 24th – 101°F to 103°F, and July 17th to 25th – 100°F plus highs.
- **2007** – Multiple days saw very high temperatures. This includes July 4th to 6th – 101°F to 101°F.
- **2015** – Multiple days saw very high temperatures. This includes June 24th to 27th – 105°F to 108°F, and June 30th to July 2nd – 101°F to 105°F.
- **2016** – Multiple days saw very high temperatures. This includes July 14th – 102°F, July 23rd to 30th – 101°F to 108°F, and August 13th to 21st – 102°F to 107°F.
- **2017** – Multiple days saw very high temperatures. This includes June 19th to 23rd – 101°F to 106°F, and July 30th to August 2nd – 102°F to 110°F.
- **2018** – Multiple days saw very high temperatures. This includes July 18th – 101°F, July 19th – 103°F, July 25th – 102°F, July 26th – 104°F, and August 7th to 10th – High 10°F each day.

Likelihood of Future Occurrence

Highly Likely—Temperature extremes are likely to continue to occur annually in the Plumas County Planning Area. Temperatures at or above 90°F are common most summer days in the western portion of the County.

It is likely that climate change will increase the chance of future occurrence as well as future impacts. More information on climate change and extreme heat can be found in the next section. More information on future impacts can be found in the Future Conditions/Future Development section of the Vulnerability Assessment below.

Climate Change and Extreme Heat

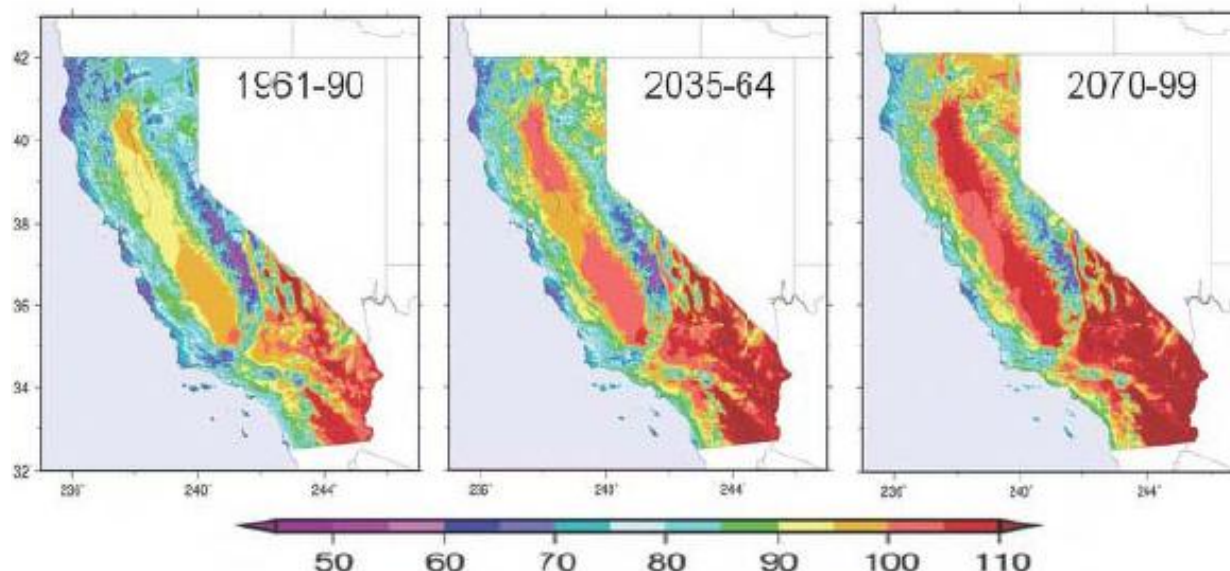
Climate change and its effect on extreme heat in the County has been discussed by three sources:

- California Climate Adaptation Strategy (CAS) – 2021
- Climate Change and Health Profile Report –Plumas County
- Cal-Adapt

Climate Adaptation Strategy

The 2021 CAS (as well as the 2024 Draft CAS), citing a California Energy Commission study, states that “over the past 15 years, heat waves have claimed more lives in California than all other declared disaster events combined.” This study shows that California is getting warmer, leading to an increased frequency, magnitude, and duration of heat waves. These factors may lead to increased mortality from excessive heat, as shown in Figure 4-42.

Figure 4-42 California Historical and Projected Temperature Increases – 1961 to 2099



Source: Dan Cayan; California Climate Adaptation Strategy

As temperatures increase, California and Plumas County will face increased risk of death from dehydration, heat stroke, heat exhaustion, heart attack, stroke and respiratory distress caused by extreme heat. According to the 2021 CAS report (as well as the 2024 Draft CAS) and the 2023 State of California Hazard Mitigation Plan, by 2100, hotter temperatures are expected throughout the state, with projected increases of 3-5.5°F (under a lower emissions scenario) to 8-10.5°F (under a higher emissions scenario). These changes could lead to an increase in illnesses and deaths related to extreme heat in Plumas County.

Climate Change and Health Profile Report – Plumas County

The Climate Change and Health Profile Report (CCHPR) noted for Plumas County that increased temperatures manifested as heat waves and sustained high heat days directly harm human health through heat-related illnesses (mild heat stress to fatal heat stroke) and the exacerbation of pre-existing conditions in the medically fragile, chronically ill, and vulnerable. Increased heat also intensifies the photochemical reactions that produce smog and ground level ozone and fine particulates (PM2.5), which contribute to and exacerbate respiratory disease in children and adults. Increased heat and carbon dioxide enhance the growth of plants that produce pollen, which are associated with allergies. Increased temperatures also add to the heat load of buildings in urban areas and exacerbate existing urban heat islands adding to the risk of high ambient temperatures.

Cal-Adapt

Cal Adapt also noted that overall temperatures are expected to rise substantially throughout this century. During the next few decades, scenarios project average temperature to rise between 1 and 2.3°F; however, the projected temperature increases begin to diverge at mid-century so that, by the end of the century, the temperature increases projected in the higher emissions scenario (Representative Concentration Pathways (RCP) 8.5) are approximately twice as high as those projected in the lower emissions scenario (RCP 4.5).

These projections also differ depending on the time of year and the type of measurement (highs vs. lows), all of which have different potential effects to the state's ecosystem health, agricultural production, water use and availability, and energy demand. Future temperature estimates from Cal-Adapt for the Plumas County Planning are shown in Figure 4-43. It shows the following:

- The upper chart shows the number of days in a year when daily maximum temperature is above the extreme heat threshold of 98.5°F. Data is shown for Plumas County under the RCP 8.5 scenario in which emissions continue to rise through 2050 and maintain that trend into 2100.
- The lower chart shows the number of days in a year when daily maximum temperature is above the extreme heat threshold of 98.5 °F. Data is shown for Plumas County under the RCP 4.5 scenario in which emissions show continued rise throughout 2050 with continued increasing patterns into 2100.

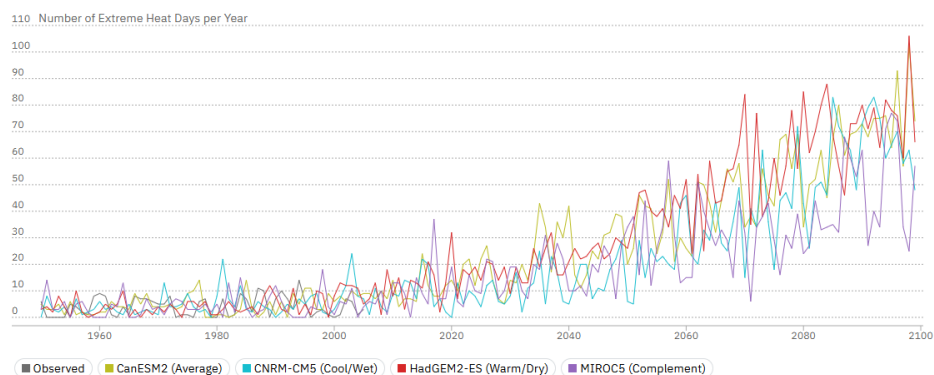
Figure 4-43 Plumas County – Future Temperature Estimates in Low and High Emission Scenarios

LOCA Grid Cell 39.96875, -120.96875

[Change Location](#)

Projected changes in **Number of Extreme Heat Days per Year** when **daily maximum temperature** is above **98.5 °F** under a **High Emissions (RCP 8.5)** Scenario.

| MODELED HISTORICAL | | FUTURE PROJECTIONS | | FUTURE PROJECTIONS | |
|-------------------------------|---------------|-------------------------------|---------------|-------------------------------|---------------|
| Baseline (1961-1990) | | Mid-Century (2035-2064) | | End-Century (2070-2099) | |
| Change Period | | Change Period | | Change Period | |
| 30 YEAR AVG | 30 YEAR RANGE | 30 YEAR AVG | 30 YEAR RANGE | 30 YEAR AVG | 30 YEAR RANGE |
| 4 days/yr | 0–22 days/yr | 27 days/yr | 5–59 days/yr | 56 days/yr | 6–106 days/yr |
| Learn More | | Learn More | | Learn More | |



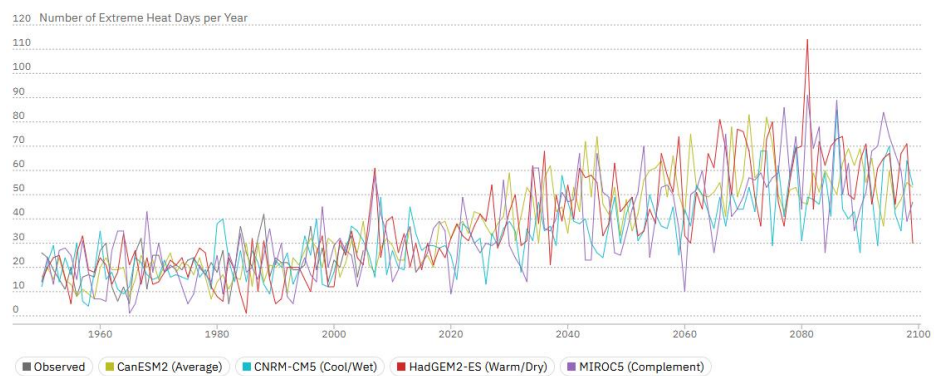
Source: Cal-Adapt. Data: LOCA Downscaled CMIP5 Climate Projections (Scripps Institution of Oceanography), Gridded Observed Meteorological Data (University of Colorado Boulder), LOCA Derived Products (Geospatial Innovation Facility).

LOCA Grid Cell 39.96875, -120.96875

[Change Location](#)

Projected changes in **Number of Extreme Heat Days per Year** when **daily maximum temperature** is above **98.5 °F** under a **Medium Emissions (RCP 4.5)** Scenario.

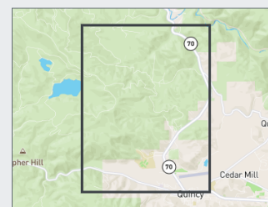
| MODELED HISTORICAL | | FUTURE PROJECTIONS | | FUTURE PROJECTIONS | |
|-------------------------------|---------------|-------------------------------|---------------|-------------------------------|----------------|
| Baseline (1961-1990) | | Mid-Century (2035-2064) | | End-Century (2070-2099) | |
| Change Period | | Change Period | | Change Period | |
| 30 YEAR AVG | 30 YEAR RANGE | 30 YEAR AVG | 30 YEAR RANGE | 30 YEAR AVG | 30 YEAR RANGE |
| 19 days/yr | 1–43 days/yr | 46 days/yr | 10–75 days/yr | 57 days/yr | 26–114 days/yr |
| Learn More | | Learn More | | Learn More | |



Source: Cal-Adapt. Data: LOCA Downscaled CMIP5 Climate Projections (Scripps Institution of Oceanography), Gridded Observed Meteorological Data (University of Colorado Boulder), LOCA Derived Products (Geospatial Innovation Facility).

Source: Cal-Adapt – Number of Extreme Heat Days by Year. Retrieved 2/10/2025.

SELECT LOCATION



[Learn More](#)

SELECT CLIMATE VARIABLE

- ☒ Extreme Heat Days
- ☐ Warm Nights

[Learn More](#)

SELECT INDICATOR

Frequency

[Learn More](#)

SELECT SCENARIO

- ☐ Medium (RCP 4.5)
- ☒ High (RCP 8.5)

[Learn More](#)

SET THRESHOLD

Add a new threshold value or select from list

- ☒ 98.5 °F (98th Percentile)
- ☐ 100 °F
- ☐ 65 °F
- ☒ 98.5 °F (98th Percentile)
- ☒ 98.5 °F (98th Percentile)

SELECT LOCATION



[Learn More](#)

SELECT CLIMATE VARIABLE

- ☒ Extreme Heat Days
- ☐ Warm Nights

[Learn More](#)

SELECT INDICATOR

Frequency

[Learn More](#)

SELECT SCENARIO

- ☒ Medium (RCP 4.5)
- ☐ High (RCP 8.5)

[Learn More](#)

SET THRESHOLD

Add a new threshold value or select from list

- ☒ 98.5 °F (98th Percentile)
- ☐ 100 °F
- ☐ 65 °F
- ☒ 98.5 °F (98th Percentile)
- ☒ 98.5 °F (98th Percentile)

Vulnerability Assessment

Vulnerability—Medium

Extreme heat happens in Plumas County each year. Extreme heat may overload demands for electricity to run air conditioners and other utilities in homes and businesses during prolonged periods of exposure and presents health concerns to individuals outside in the temperatures. Extreme heat may also be a secondary effect of droughts or may cause drought-like conditions in a temporary setting. For example, several weeks of extreme heat increases evapotranspiration and reduces moisture content in vegetation, leading to higher wildfire vulnerability for that time period even if the rest of the season is relatively moist. Extreme heat, when combined with wind, can also lead to PSPS events in the County. Extreme heat also contributes to poor air quality during extended events.

Vulnerable populations are at the greatest risk to the effects of extreme heat. The Public Health Alliance has developed a composite index to identify cumulative health disadvantages in California. Factors such as those bulleted above were combined to show what areas are at greater risk to hazards like extreme heat.

The whole of the Planning Area has some measure of vulnerability to extreme heat. An assessment of a community's vulnerability to this hazard begins with an understanding of local exposure to unincorporated Plumas County. This is included in the Local Concerns section below. After that, vulnerability is discussed in multiple sections that detail how this hazard can affect both the entire Plumas County Planning Area as well as the unincorporated portions of Plumas County. How the hazard affects the other participating jurisdictions can be found in their respective annexes to this LHMP Update. These sections below include assets at risk, impacts, and how future development can be affected by this hazard.

Local Concerns (unincorporated Plumas County)

The unincorporated County has specific concerns regarding this hazard. These concerns form a portion of the basis for the mitigation strategy and mitigation actions that seek to reduce risk and vulnerabilities to this hazard.

The County noted that extreme heat can cause crop damages. These can be substantial if extreme heat occurs during periods of plant susceptibility to heat. Extreme heat contributes to PSPS and wildfire issues in the County. Heat domes have settled over the County in the past, which has caused the County to open cooling centers. The County is also worried about the effects on vulnerable populations. It was also noted that extreme heat contributes to unhealthy air quality.

Local concerns for Portola and the Special Districts can be found under the Local Concerns heading in each respective jurisdictional annex to this LHMP Update.

Assets at Risk

Assets at risk from extreme heat include people and populations; structures; critical facilities and infrastructure; and natural, historic, and cultural resources. These are discussed in the following sections for both the Plumas County Planning Area and unincorporated Plumas County.

Additionally, for each hazard in the FEMA National Risk Index in Plumas County, the relevant portions of the hazard analysis done by FEMA is presented below. This includes the Hazard Risk Index Rating, Expected Annual Loss Values, Exposure Values, and the Historic Loss Ratio Rating. These are presented for the Plumas County Planning Area as a whole.

People and Populations

All populations within the Plumas County Planning Area are vulnerable to extreme heat, but it generally affects people spending large amounts of time outside or without means of cooling indoor structures. During extended periods of high temperatures, extreme heat may overload the demands for electricity to run air conditioners and can present health concerns to individuals. When interruptions in power occur during extreme heat, the risk of heat related illnesses and deaths increase. Extreme heat is a significant concern to vulnerable populations. The unhoused; individuals who exercise or train outdoors; outdoor workers; individuals that lack the resources to afford heat; and the young, old, or medically fragile individuals that are more susceptible to heat related impacts. In addition to vulnerable populations, pets and livestock are at risk to extreme heat conditions.

Structures

Extreme heat normally does not generally impact structures, but individuals working in structures may be affected during periods of extended heat, especially in structures that might not be equipped with air conditioning or other means of cooling. In the Plumas County Planning Area, extreme heat has caused interruptions to power in the past. Also depending on the structure, sensitive contents such as IT equipment can be impacted, especially if a power outage occurs.

Critical Facilities and Infrastructure

Depending on their type and function, critical facilities and infrastructure can also be affected by extreme heat. Interruptions in power caused by extreme heat can lead to system failures. Schools without air conditioning may have to close or operate on a reduced schedule.

Natural, Historic, and Cultural Resources

Park areas and natural resource assets in the Plumas County Planning Area may be vulnerable during periods of extreme heat. These include turfed areas; landscapes, trees, wildlife and habitat areas, and wetlands and marsh lands. Recently, trees were lost in areas of Plumas County that were weakened by drought and extreme heat. Extreme heat may also cause drought-like conditions, contributing to other issues. For example, several weeks of extreme heat increases evapotranspiration and reduces moisture content in vegetation, leading to higher wildfire vulnerability in the region for that time period, even if the rest of the season is relatively moist. Historic and cultural resources are not expected to be affected by extreme heat.

FEMA NRI Hazard Vulnerability Assessment

FEMA's NRI provides additional data on Plumas County's vulnerability to Extreme Heat. The NRI contains data and analysis for 18 separate natural hazards. The NRI hazard related to Plumas County's

Extreme Heat is a heat wave. As shown in Table 4-39, heatwaves could cause a total of \$8,162 in expected annual losses, with a historic loss rating of very low. Heat wave has a relatively low rating for social vulnerability and relatively high community resilience, with a risk index score of 23.8 out of 100. According to the NRI, there have been 11 events on record between the years 2005-2021, with an average of 0.7 events per year.

Table 4-39 Plumas County Planning Area – Heat Wave Vulnerability Ratings from FEMA NRI

| NRI Hazard | Hazard Risk Index Rating | Expected Annual Loss Values (total)** | Exposure Value (total)*** | Historic Loss Ratio Rating |
|------------|--------------------------|---------------------------------------|---------------------------|----------------------------|
| Heat Wave | 23.8 | \$8,162 | \$237,469,807,133 | Very low |

Source: FEMA NRI Report

*Hazard Risk Index is calculated using data for only a single hazard type, and reflects a communities expected annual loss value, community risk factors, and the adjustment factor used to calculate the risk value.

**Expected annual loss represents the average economic loss in dollars resulting from natural hazards each year.

***Exposure is a natural hazard consequence factor that is the representative value of buildings, populations, or agriculture potentially exposed to a natural hazard occurrence.

Additional information on the FEMA NRI can be found in Section 4.2 and Appendix H.

Impacts from Severe Weather: Extreme Heat

The County experiences temperatures in excess of 100°F during the summer and fall months. The temperature moves to 105-110°F in rather extreme situations. Health issues are the primary concern with this hazard with vulnerable populations at greater risk, although economic impacts can also be an issue. Air quality can also be an issue during extreme heat.

During these times, drought conditions may worsen, and the Planning Area may see an increase in dry fuels contributing to wildfires. For example, several weeks of extreme heat increases evapotranspiration and reduces moisture content in vegetation, leading to higher wildfire vulnerability for that time period even if the rest of the season is relatively moist. Also power outage and PSPS events may occur during these times as well. Drought is discussed further in Section 4.3.9 and wildfire in Section 4.3.15.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the County may be affected in the future by climate change (which was discussed in the hazard profile section above), changes in population patterns, and changes in land use and development. The influencing effects of these factors on this hazard are discussed further in the Future Conditions/Future Development discussion below.

Future Conditions/Future Development

This section provides a discussion of how future conditions will influence or affect the hazard over time and also discusses future development relative to each hazard.

Future Conditions

Future conditions may be affected by climate change, changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. Findings on this for Plumas County include the following:

- Climate change is likely to exacerbate future extreme heat conditions and associated impacts and vulnerability of the County.
- Future population growth should be considered, as having more or less people in a community affects the overall hazard vulnerability to the County. Population is expected to decrease for Plumas County and, as such, the vulnerability to this hazard may decrease. However, certain growing vulnerable populations such as the senior citizens population continues to rise within the communities of the County. Along with this, low income and the unhoused population are at risk to extreme heat which can put strain on emergency services and shelters. Changes in population and population patterns may or may not increase the impacts and vulnerability of the County to this hazard depending on the location and nature of growth and continued planning for future hazard conditions.
- Land use planning should be proactive to address future hazard conditions. County building codes are in effect to reduce this risk and should be updated as necessary to continue to address future extreme heat conditions. Due to adherence to protective building codes, changes in land use and development will likely not increase the impacts and associated vulnerabilities of the County to this hazard.

Future Development

Future development in the County will take extreme heat into account. Backup generators are currently in use at many County facilities, and additional generators and backup power sources are being sought for other locations. One way to reduce the negative impacts of an extreme heat event is to develop a comprehensive heat response plan that combines individual strategies into an integrated approach. Components of such a plan might include forecasting and monitoring, education and awareness, and heat wave preparedness and response.

In addition to a comprehensive heat response plan, local officials can help areas adapt to extreme heat in the short-term by improving the resilience of infrastructure. Transportation planners can protect or modify roads, bridges, and other structures—for example, by using materials that are more resilient and heat tolerant—to help these systems withstand higher temperatures and reduce service disruptions. They can also implement energy efficiency and conservation efforts to reduce stress on electricity systems during heat waves and help avoid power outages.

Future development considerations should be ongoing and proactive. Ensuring that comprehensive land use planning is conducted, regulatory requirements such as building codes are followed, and varying needs for different demographic groups that reside within the County are considered can help make for a more disaster resilient community.

4.3.4. Severe Weather: Heavy Rains and Storm

Hazard Profile

This hazard profile contains multiple sections that detail how this hazard can affect the Plumas County Planning Area. These sections include a hazard/problem description; description of location and extent; past occurrences of this hazard; likelihood of future occurrence; and how climate change can affect or influence this hazard.

Hazard/Problem Description

Storms in the Plumas County Planning Area occur throughout the Planning Area and are generally characterized by heavy rain often accompanied by strong winds and sometimes lightning and hail. Approximately 10 percent of the thunderstorms that occur each year in the United States are classified as severe. A thunderstorm is classified as severe when it contains one or more of the following phenomena: hail that is three-quarters of an inch or greater, winds in excess of 50 knots (57.5 mph), or a tornado. Heavy precipitation in the Plumas County area falls mainly in the fall, winter, and spring months.

Cloudburst storms can be expected in the spring, summer, and fall. Cloudburst storms, sometimes lasting as long as 6 hours in the study areas, are high intensity storms that can produce floods characterized by high peak flows, short-duration flood flows, and small runoff volume. In small drainage basins such as Portola Tributary, cloudbursts can produce peak flows substantially larger than those of general rainstorms.

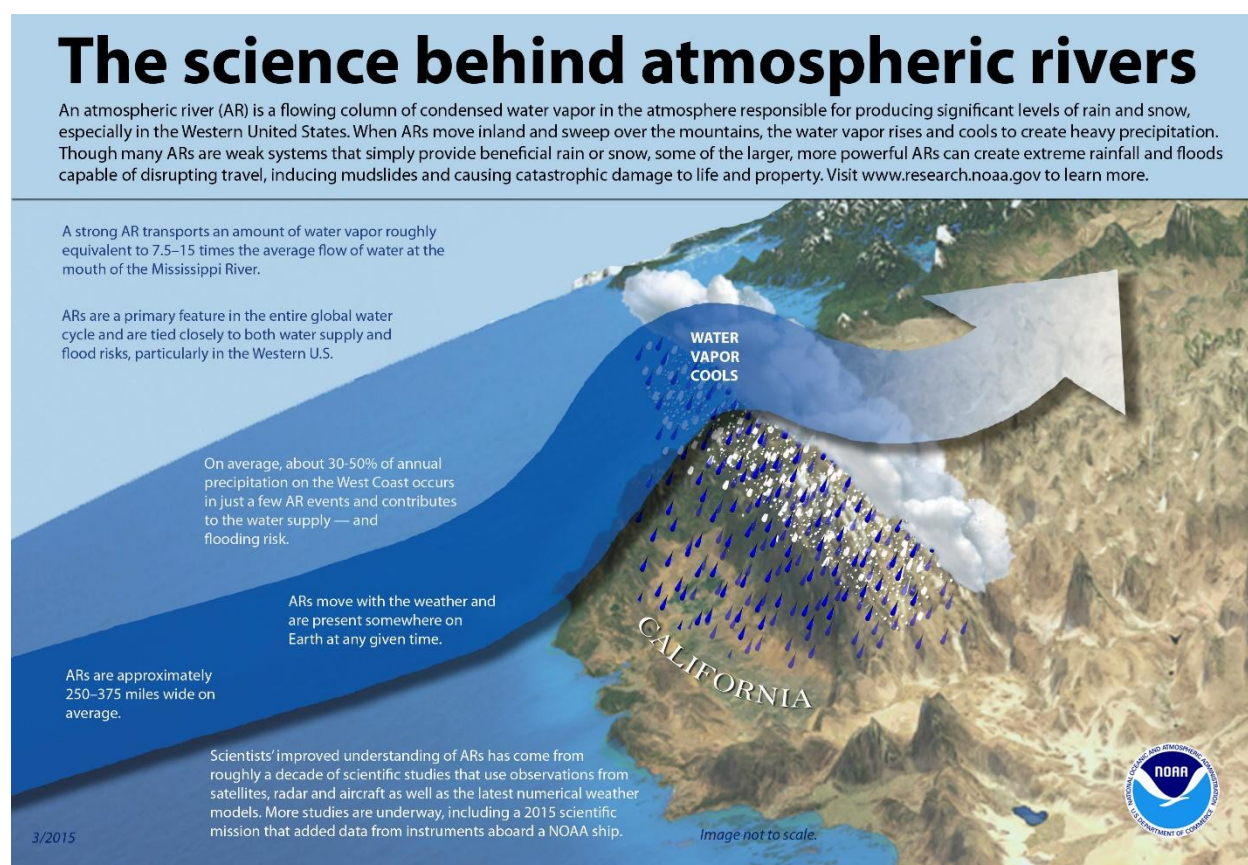
Separate hazard descriptions and locations and extents are shown below for heavy rains and storms, hail, and lightning.

Heavy Rain and Storms

The NWS reports that storms and thunderstorms result from the rapid upward movement of warm, moist air. They can occur inside warm, moist air masses and at fronts. As the warm, moist air moves upward, it cools, condenses, and forms cumulonimbus clouds that can reach heights greater than 35,000 ft. As the rising air reaches its dew point, water droplets and ice form and begin falling the long distance through the clouds towards earth's surface. As the droplets fall, they collide with other droplets and become larger. The falling droplets create a downdraft of air that spreads out at Earth's surface and causes strong winds associated with thunderstorms.

The County and the rest of California can also be affected by a phenomenon known as an atmospheric river. According to the NOAA, atmospheric rivers are relatively long, narrow regions in the atmosphere – like rivers in the sky – that transport most of the water vapor outside of the tropics. These columns of vapor move with the weather, carrying an amount of water vapor roughly equivalent to the average flow of water at the mouth of the Mississippi River. When the atmospheric rivers make landfall, they often release this water vapor in the form of rain or snow. This can be seen in Figure 4-44.

Figure 4-44 Atmospheric Rivers



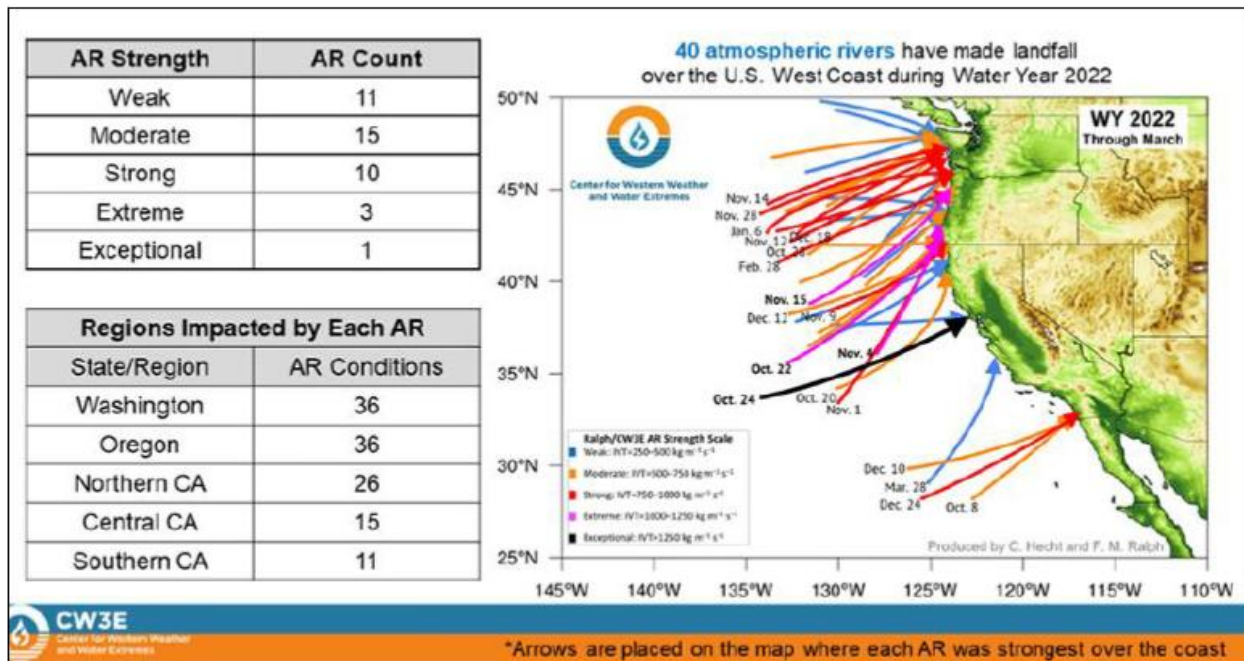
Source: NOAA

Although atmospheric rivers come in many shapes and sizes, those that contain the largest amounts of water vapor and the strongest winds can create extreme rainfall and floods, often by stalling over watersheds vulnerable to flooding. These events can disrupt travel, induce mudslides and cause catastrophic damage to life and property. A well-known example is the "Pineapple Express," a strong atmospheric river that is capable of bringing moisture from the tropics near Hawaii over to the U.S. West Coast.

Not all atmospheric rivers cause damage; most are weak systems that often provide beneficial rain or snow that is crucial to the water supply. Atmospheric rivers are a key feature in the global water cycle and are closely tied to both water supply and flood risks — particularly in the western United States.

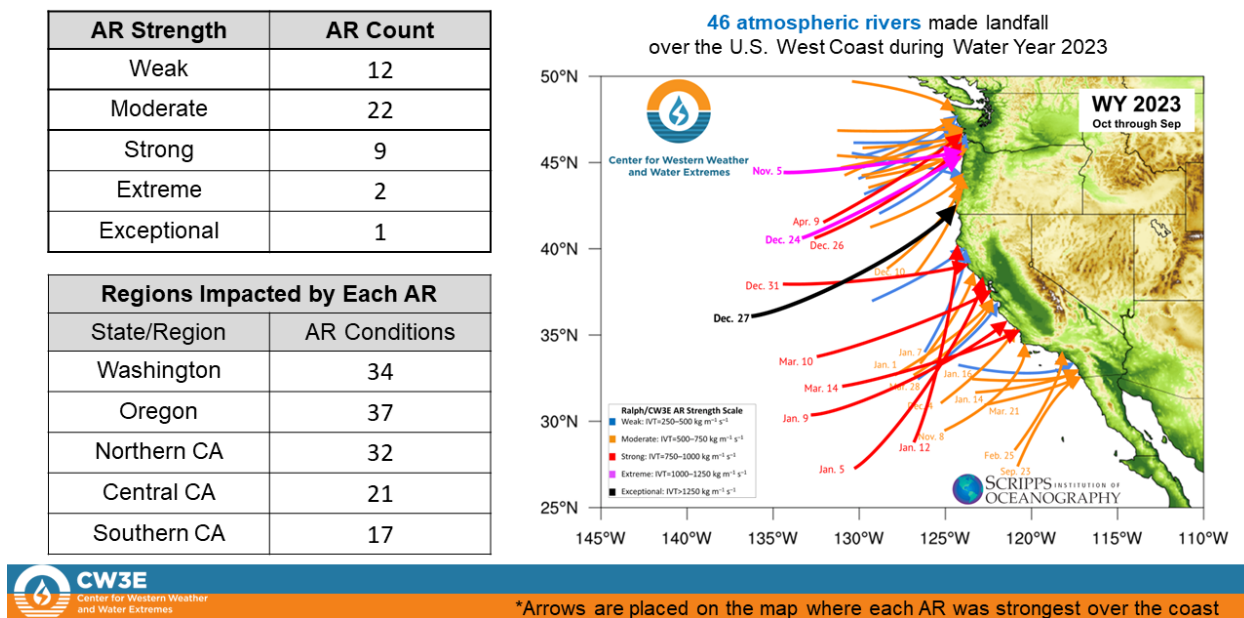
While atmospheric rivers are responsible for great quantities of rain that can produce flooding, they also contribute to beneficial increases in snowpack. A series of atmospheric rivers fueled the strong winter storms that battered the U.S. West Coast from western Washington to southern California from Dec. 10–22, 2010, producing 11 to 25 inches of rain in certain areas. These rivers also contributed to the snowpack in the Sierras, which received 75 percent of its annual snow by Dec. 22, the first full day of winter. Another example of this happened in 2022. Multiple atmospheric river storms occurred in the County and the rest of California. This can be seen in Figure 4-45. This also happened in the 2023 as well as in 2024, which can be seen in Figure 4-46 and Figure 4-47, respectively.

Figure 4-45 2022 Atmospheric River Events



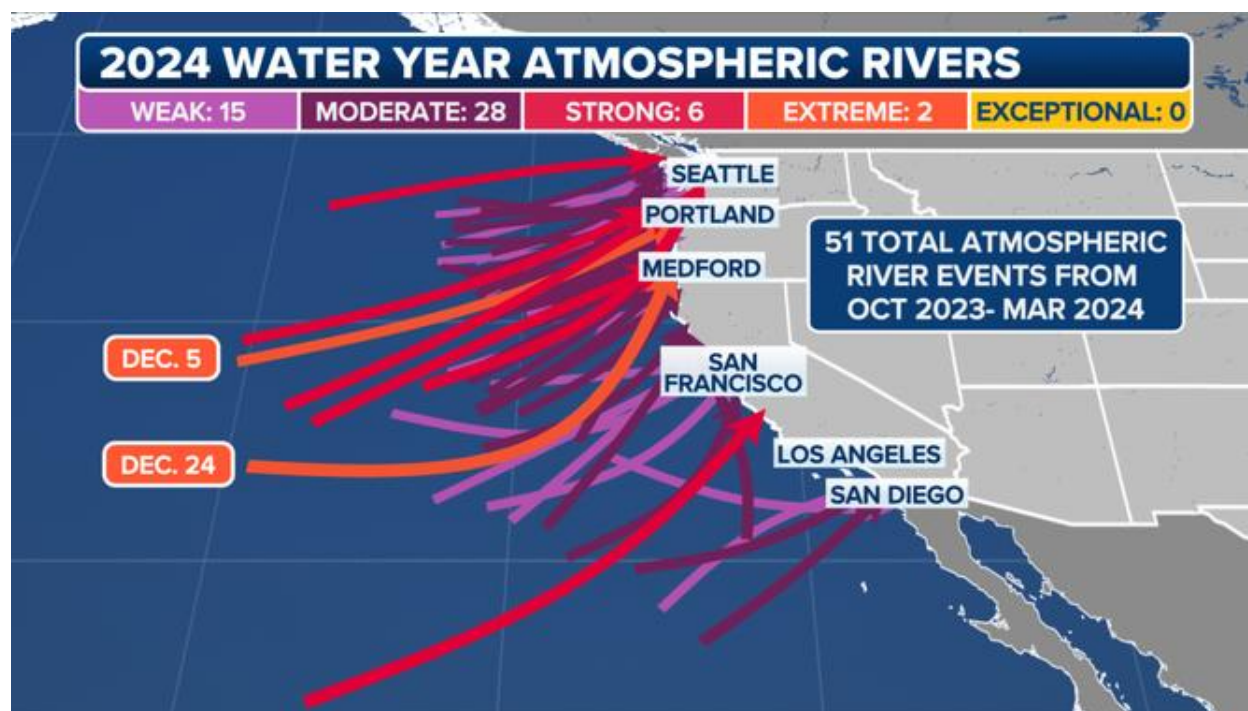
Source: Center for Western Weather and Water Extremes. Retrieved 12/18/2024.

Figure 4-46 2023 Atmospheric River Events



Source: Center for Western Weather and Water Extremes. Retrieved 12/18/2024.

Figure 4-47 2024 Atmospheric Rivers



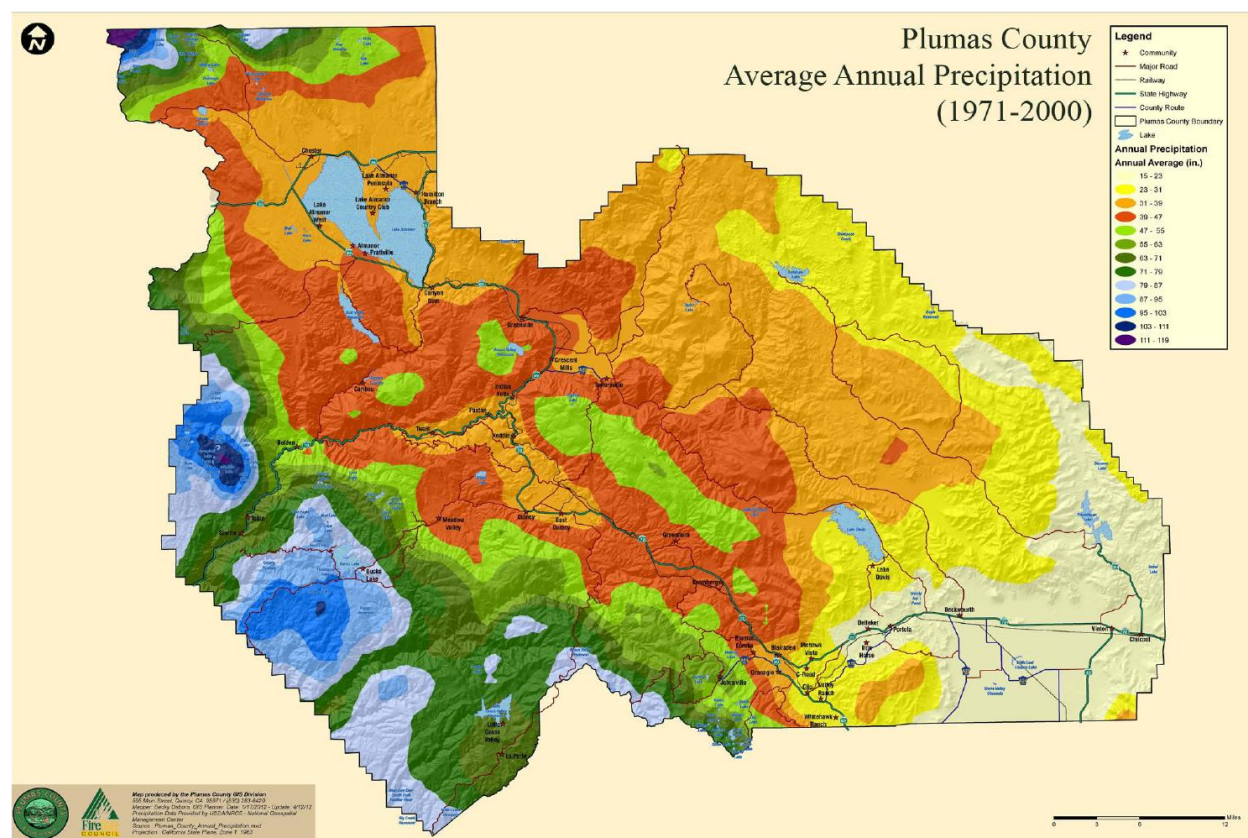
Source: Foxweather.com. Retrieved 12/18/2024.

Short-term, heavy storms can cause both widespread flooding as well as extensive localized drainage issues. In addition to the flooding that often occurs during these storms, strong winds, when combined with saturated ground conditions, can down very mature trees.

Location and Extent of Heavy Rains and Storms

Heavy rains in Plumas County vary by season and location. Plumas County is located in the Northern portion of the Sierra Nevada region and has significant topographic variation, which causes it to experience a more severe and geographically variable winter climate (discussed in more detail in Section 4.3.2). The highest precipitation amounts are seen in the Western portion of the county where there is an orographic lift that forces air from low elevations to a higher elevation, quickly cooling down the air and raising the relative humidity to 100%. Under the right conditions orographic lifts create rain shadows where high amounts of precipitation are found on the crests of mountain ranges, but as the air descends to the leeward side of the mountain it warms and dries. In Plumas County the leeward side of the mountains represents the Eastern portion of the county where precipitation typically averages around two inches in the wettest months of the year. Areas west of the mountains, however, experience much higher precipitation levels. For example, Bucks Creek averages nearly 12 inches per month in December and January as shown on Figure 4-48. Most of these rains occur during the winter months, as discussed below.

Figure 4-48 Plumas County Average Annual Precipitation



Source: Plumas County GIS

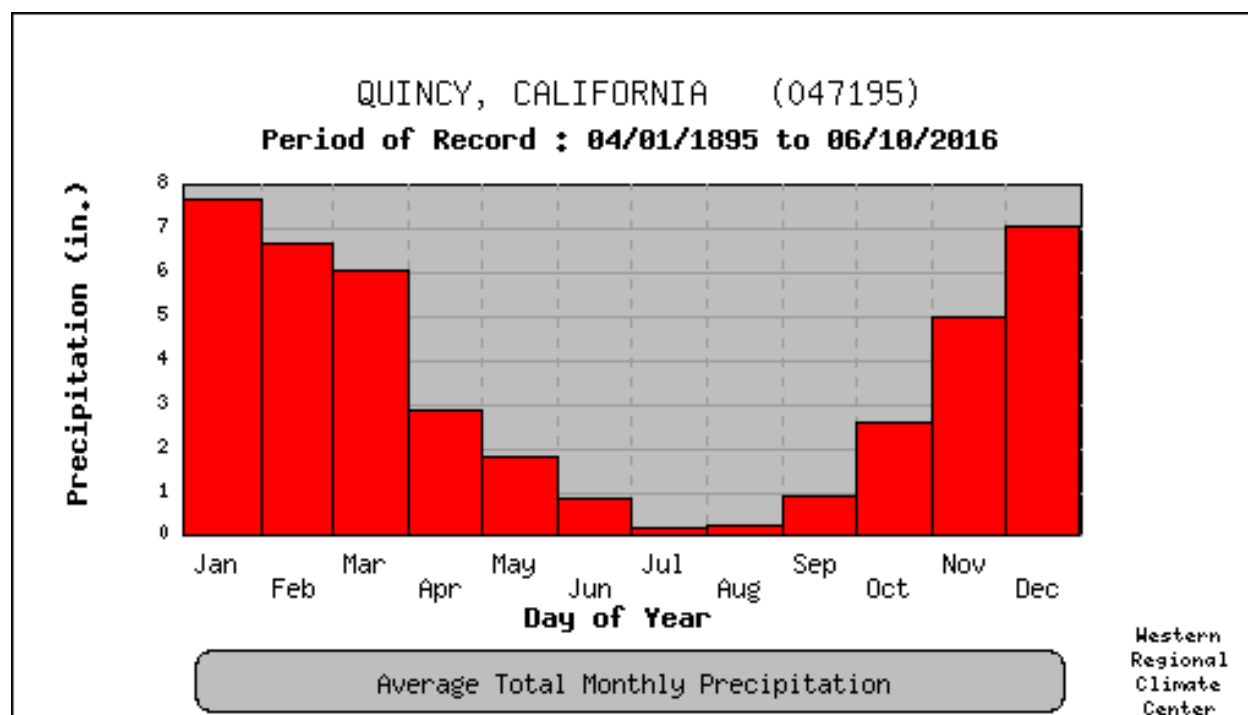
There is no scale by which heavy rains are measured – usually it is measured in terms of rainfall amounts. Magnitude of storms is measured often in rainfall and damages. The speed of onset of heavy rains can be short, but accurate weather prediction mechanisms often let the public know of upcoming events. Duration of thunderstorms in California is often short, ranging from minutes to hours. This can cause localized flooding, which is discussed in more detail in Section 4.3.12.

The WRCC and NWS maintain data on weather normal and extremes in the western United States. Each of these data sources maintain data in slightly different ways. Data from the WRCC stopped being collected in April of 2016. NWS covers the entire time period to present. Therefore, both data sets are shown below. WRCC and NWS data for the County is summarized below.

Plumas County—WRCC Quincy Station Weather Station, Period of Record 1895 to 2016

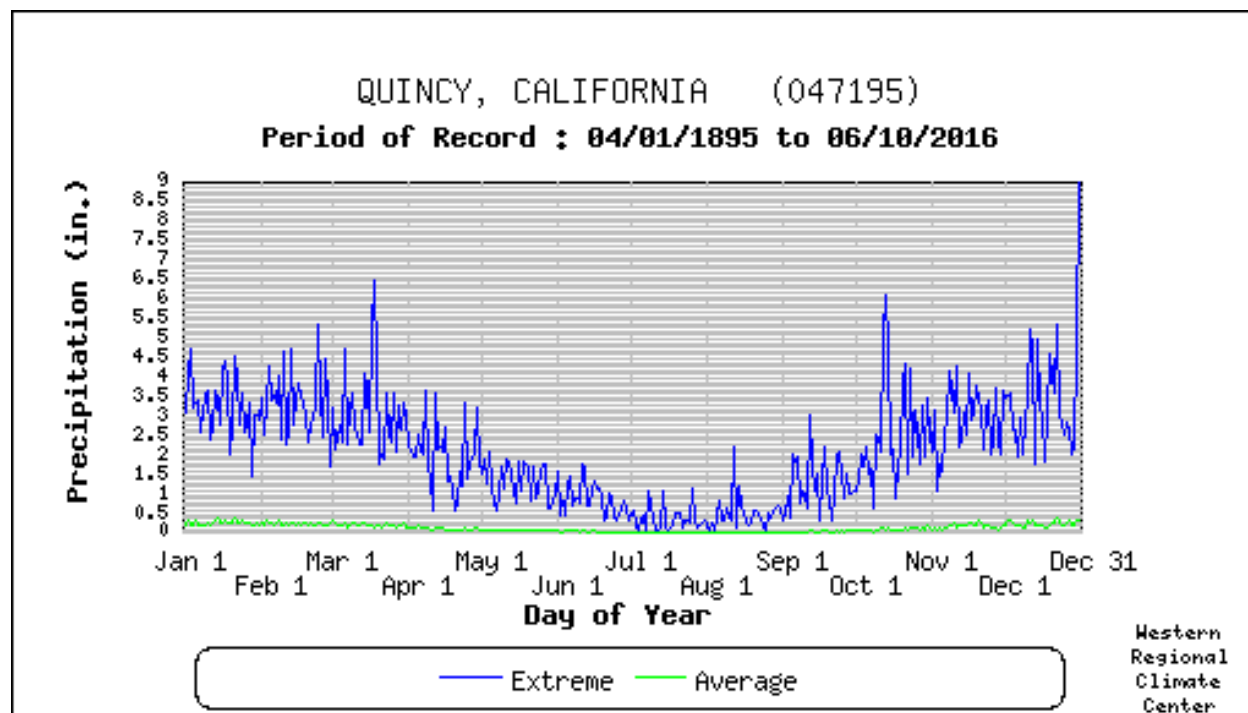
According to the WRCC, average annual precipitation in Plumas County is 40.15 inches per year. The highest recorded annual precipitation is 68.87 inches in 1909; the highest recorded precipitation for a 24-hour period is 6.50 inches on March 18, 1907. The lowest recorded annual precipitation was 22.15 inches in 1949. Average monthly precipitation for Plumas County is shown in Figure 4-49. Daily average and extreme precipitations are shown in Figure 4-50.

Figure 4-49 Plumas County—WRCC Monthly Average Total Precipitation



Source: Western Regional Climate Center, www.wrcc.dri.edu/. Retrieved 4/12/2025.

Figure 4-50 Plumas County—WRCC Daily Average and Extreme Precipitation

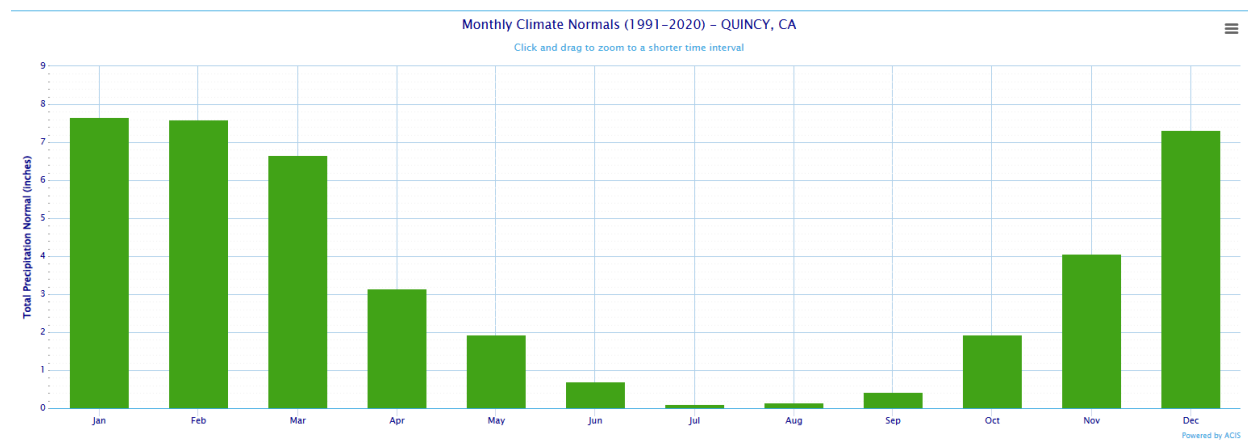


Source: Western Regional Climate Center, www.wrcc.dri.edu/. Retrieved 4/12/2025.

Plumas County—NWS Quincy Station Weather Station, Period of Record 1895 to 2016

According to the NWS, average annual precipitation in Plumas County is 41.7 inches per year. Average monthly precipitation for Plumas County is shown in Figure 4-51. The highest recorded precipitation for a 24-hour period is 9.0 inches on December 31, 2004. One day extreme precipitations are shown on Table 4-40.

Figure 4-51 Plumas County— Quincy Station (NWS) Monthly Average Total Precipitation 1991 to 2020



Source: National Weather Service XMAC site. Retrieved 4/12/2025.

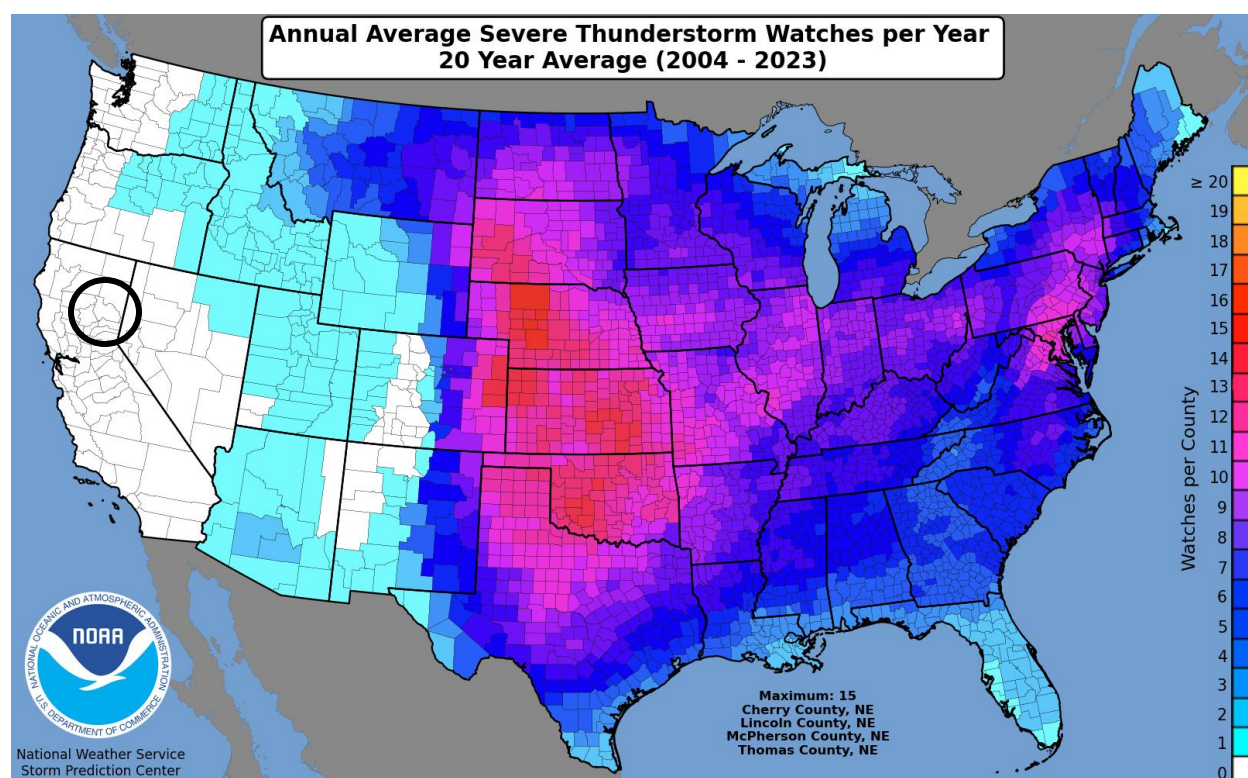
Table 4-40 Plumas County – Quincy Station (NWS) 24 Hour Rainfall Extremes from 1895 to 2025

| Rainfall in Inches | Date |
|--------------------|------------|
| 9.00 | 12/31/2004 |
| 6.71 | 10/25/2021 |
| 6.50 | 3/18/1907 |
| 6.10 | 10/13/1962 |
| 5.33 | 12/22/1964 |
| 5.32 | 2/24/1904 |
| 5.30 | 3/17/1907 |
| 5.25 | 12/11/1937 |
| 5.17 | 12/11/1937 |
| 5.05 | 11/23/2024 |

Source: National Weather Service XMAC site. Retrieved 4/12/2025.

The NOAA Storm Prediction Center tracks thunderstorm watches on a county basis. Figure 4-52 shows thunderstorm watches in Plumas County and the United States for a 20-year period between 2004 and 2023.

Figure 4-52 Plumas County – Average Thunderstorm Watches per Year (2004 to 2023)



Source: NOAA Storm Prediction Center. Retrieved 3/5/2025.

Hail

Hail can occur throughout the Planning Area during storm events, though it is rare in the County. Hail is formed when water droplets freeze and thaw as they are thrown high into the upper atmosphere by the violent internal forces of thunderstorms. Hail is sometimes associated with severe storms within the Plumas County Planning Area. Hailstones are usually less than two inches in diameter and can fall at speeds of 120 miles per hour (mph). Severe hailstorms can be quite destructive, causing damage to roofs, buildings, automobiles, vegetation, and crops.

The National Weather Service classifies hail by diameter size, and corresponding everyday objects to help relay scope and severity to the population. Table 4-41 indicates the hailstone measurements utilized by the National Weather Service.

Table 4-41 Hailstone Measurements

| Average Diameter | Corresponding Household Object |
|------------------|--------------------------------|
| .25 inch | Pea |
| .5 inch | Marble/Mothball |
| .75 inch | Dime/Penny |
| .875 inch | Nickel |
| 1.0 inch | Quarter |

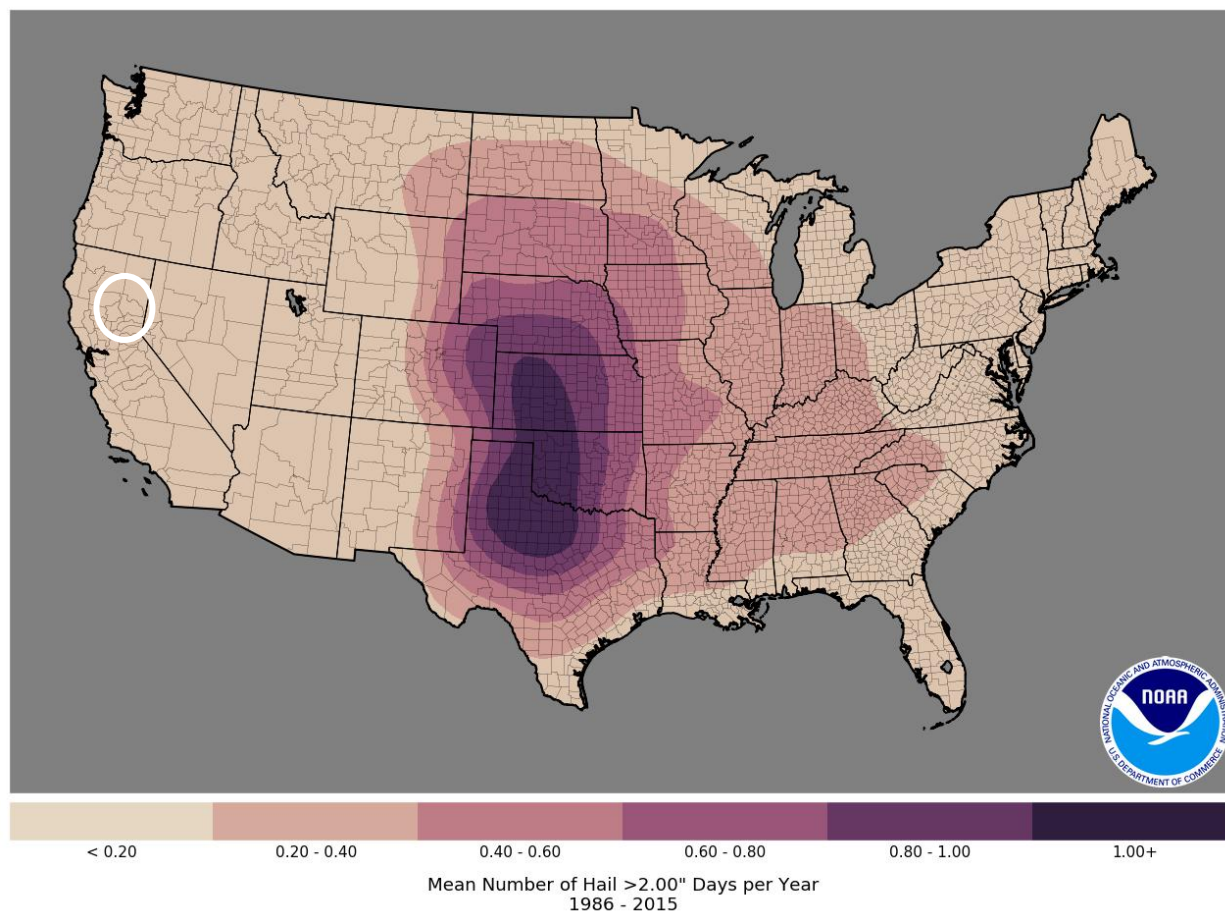
| Average Diameter | Corresponding Household Object |
|------------------|--------------------------------|
| 1.5 inch | Ping-pong ball |
| 1.75 inch | Golf-Ball |
| 2.0 inch | Hen Egg |
| 2.5 inch | Tennis Ball |
| 2.75 inch | Baseball |
| 3.00 inch | Teacup |
| 4.00 inch | Grapefruit |
| 4.5 inch | Softball |

Source: National Weather Service

Location and Extent of Hail

Hail events can occur in any location of the County. All portions of the County are at risk to hail. Hail tends to be rare in California. There is no scale in which to measure hail, other than hail stone size as detailed above. The speed of onset of hail can be short, but accurate weather prediction mechanisms often let the public know of upcoming events. Duration of thunderstorms that can cause hail in California is often short, ranging from minutes to hours. Hail events last shorter than the duration of the total thunderstorm. The National Weather Service tracks hail events. Figure 4-53 shows the average days each year where hail of greater than 1" in diameter occurred during a 20-year period from 1986 to 2015 (the most recent data available).

Figure 4-53 Plumas County – Average Hail Days per Year (1986 to 2015)



Source: National Weather Service. Retrieved 4/23/2025.

Lightning

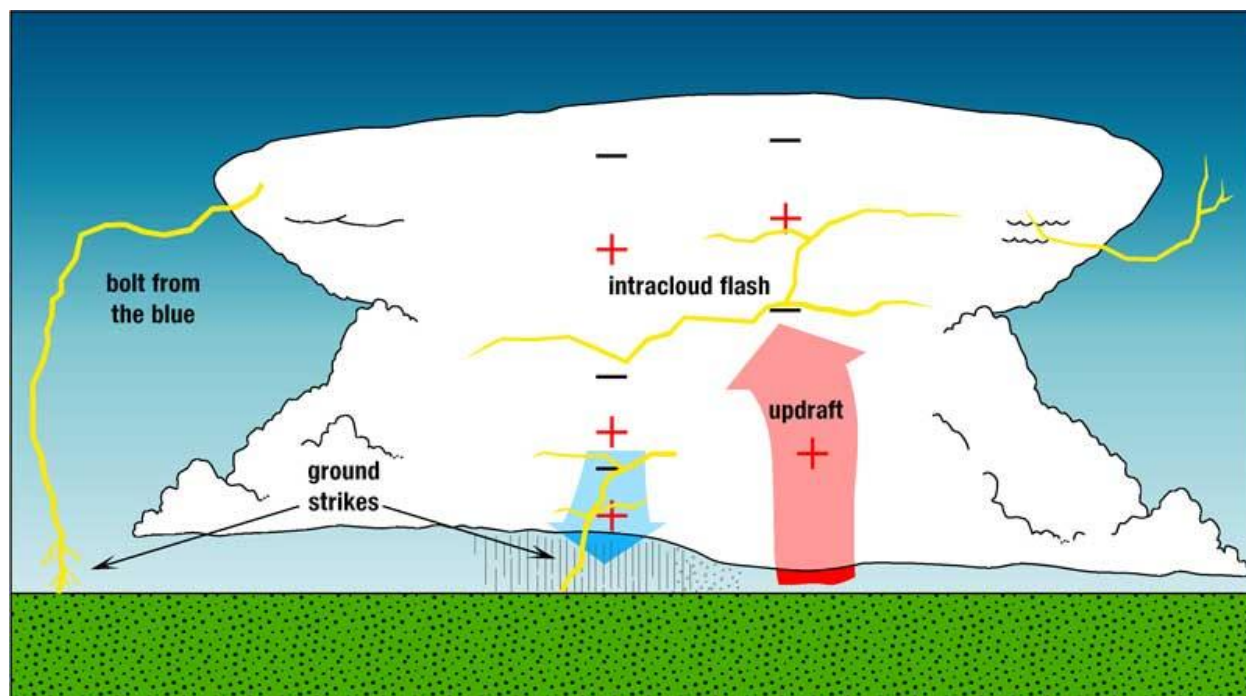
Lightning can occur throughout the County during storm events. Lightning is defined by the NWS as any and all of the various forms of visible electrical discharge caused by thunderstorms. Thunderstorms and lightning are usually (but not always) accompanied by rain. Cloud-to-ground lightning can kill or injure people by direct or indirect means. Objects can be struck directly, which may result in an explosion, burn, or total destruction. Or damage may be indirect when the current passes through or near an object, which generally results in less damage.

Intra-cloud lightning is the most common type of discharge. This occurs between oppositely charged centers within the same cloud. Usually, it takes place inside the cloud and looks from the outside of the cloud like a diffuse brightening that flickers. However, the flash may exit the boundary of the cloud, and a bright channel, similar to a cloud-to-ground flash, can be visible for many miles.

Cloud-to-ground lightning is the most damaging and dangerous type of lightning, though it is also less common. Most flashes originate near the lower-negative charge center and deliver negative charge to earth. However, a large minority of flashes carry positive charge to earth. These positive flashes often occur during the dissipating stage of a thunderstorm's life. Positive flashes are also more common as a percentage

of total ground strikes during the winter months. This type of lightning is particularly dangerous for several reasons. It frequently strikes away from the rain core, either ahead or behind the thunderstorm. It can strike as far as 5 or 10 miles from the storm in areas that most people do not consider to be a threat (see Figure 4-54). Positive lightning also has a longer duration, so fires are more easily ignited. And, when positive lightning strikes, it usually carries a high peak electrical current, potentially resulting in greater damage.

Figure 4-54 Cloud to Ground Lightning



Source: National Weather Service

Location and Extent of Lightning

Lightning events can occur in any location of the County and are often associated with thunderstorms. All portions of the County are at risk to lightning. Lightning tends to be infrequent in the County, as discussed in the extent section below.

Lightning in the County can occur during thunderstorms. The speed of onset of thunderstorms that can cause lightning can be short, but accurate weather prediction mechanisms often let the public know of upcoming events. Duration of thunderstorms in California is often short, ranging from minutes to hours. Thunderstorms and lightning are rare in the County. Lightning can also occur in the County outside of a thunderstorm event. Vaisala maintains the National Lightning Detection Network. It tracks cloud to ground lightning incidences in the United States. Figure 4-55 shows lightning incidences in the County and the rest of the United States from 2008 to 2017 (the most recent long term tracking map available). Figure 4-56 shows a more recent lightning density by county map.

Figure 4-55 Plumas County – Lightning Incidence Map 2008 to 2017

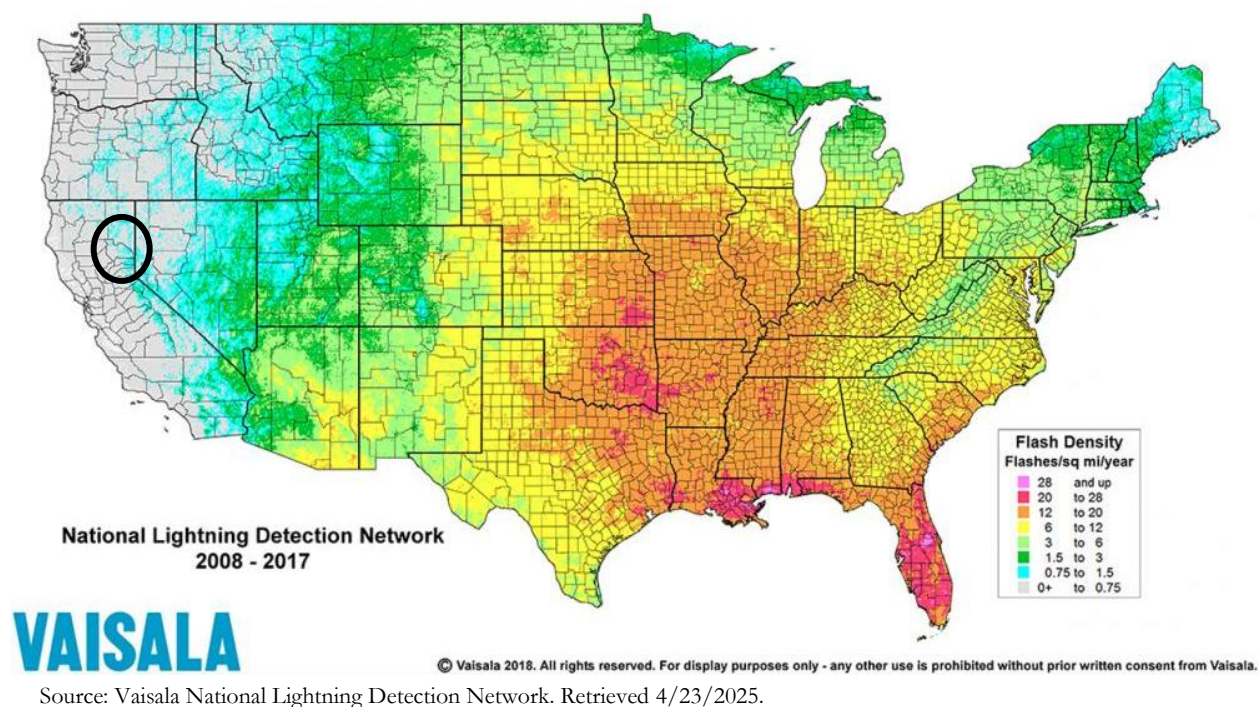
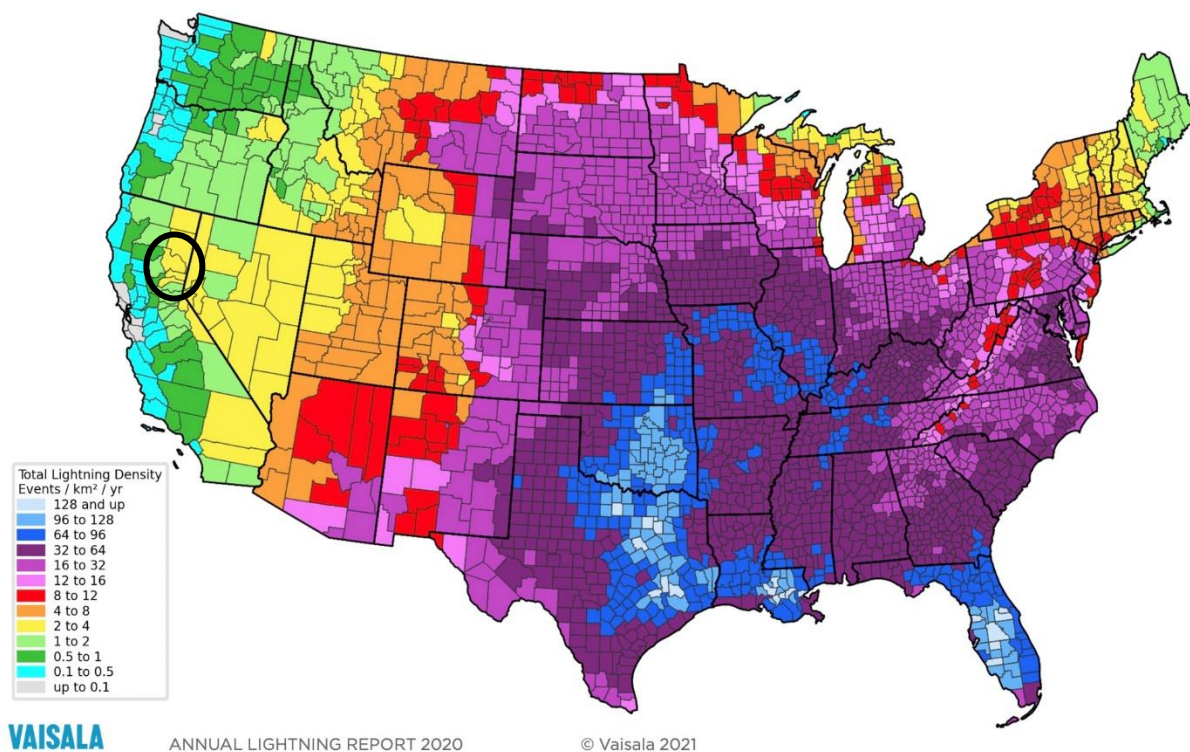


Figure 4-56 Plumas County – Average US Total Lightning Density per County 2015-2019



Past Occurrences

Disaster Declaration History

A search of FEMA and Cal OES disaster declarations turned up multiple events. Heavy rains and storms have caused flooding in the County. Events where flooding and heavy rains and storms resulted in a state or federal disaster declaration are shown in Table 4-42. More information on USDA disaster declarations from heavy rain and storms (once in 2016 and once in 2017) can be found in Table 4-51 in the Past Occurrences in Section 4.3.6.

Table 4-42 Plumas County – Disaster Declarations from Heavy Rain and Storms 1950-2025

| Disaster Type | State Declarations | | Federal Declarations | |
|--|--------------------|---|----------------------|---|
| | Count | Years | Count | Years |
| Flood (including heavy rains and storms) | 22 | 1950, 1955, 1958 (twice), 1964, 1963, 1964, 1969, 1970 1980, 1986, 1993, 1992*, 1995 (twice*), 1996, 1997, 2006, 2017 (twice*), 2023 (twice*) | 19 | 1950, 1955, 1958 (twice), 1963, 1964, 1969, 1970, 1986, 1992 (twice), 1995 (twice), 1997, 2006*, 2017 (twice*), 2023 (twice*) |

Source: FEMA, Cal OES

*indicates heavy rains and storms may have also caused landslide issues

NCDC Events

The NCDC data recorded 132 hail and heavy rain weather incidents for Plumas County since 1950. Winter weather events tend to be more rain in the lower elevations of the County, while snow can fall in the upper elevations. No incidents of lightning were found in the NCDC database for the County. A summary of these events is shown in Table 4-43.

Table 4-43 NCDC Severe Weather Events in Plumas County 1950-7/31/2024*

| Event Type | Number of Events | Deaths | Deaths (indirect) | Injuries | Injuries (indirect) | Property Damage | Crop Damage |
|----------------|------------------|----------|-------------------|----------|---------------------|-----------------|----------------|
| Hail | 10 | 0 | 0 | 0 | 0 | \$100 | \$5,000 |
| Heavy Rain | 60 | 0 | 0 | 0 | 0 | \$1,000 | \$0 |
| Lightning | 1 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| Winter Weather | 61 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| Total | 132 | 0 | 0 | 0 | 0 | \$1,100 | \$5,000 |

Source: NCDC

*Note: Losses reflect totals for all impacted areas, some of which fell outside of Plumas County

Hazard Mitigation Planning Committee Events

These section separates events since the 2019/2020 LHMPs and those before 2019.

Events since 2019/2020 LHMP

HMPC also noted the following events:

- **2019** – 2.65 inches of rain fell in the Quincy area on January 7th. Between the 15th and 17th of January, another 8.05 inches of rain fell. February 13th and 14th saw another 5.47 inches of rain fall. February 25th to 27th, 9.5 more inches of rain fell. March 26th saw 3.52 inches of rain.
- On **September 5, 2019**, quarter size hail was reported near Vinton. No injuries or deaths were reported. Property damage occurred, but damage estimates were unavailable.
- **2020** – In the month of May on the 16th and 17th, 1.40” of rain was recorded for both days, totaling at 2.80”. On July 26, 1/2” hail was reported. On Aug 16 a lightning storm was reported. In the month of November on the 17-18, 2.25” first day and 2.62” the next. Dec 26, 1.30” of rain fell.
- **2021** – Dec 13, 4.03” of rain fell.
- **2022** – In April, inches worth of rain fell on the 16th, 19th, and 21st. Over an inch fell each day, resulting in a total of 4.59”. In December, two larger rain periods occurred. In the beginning of the month, a total of 5.03” fell. At the end of the month, an atmospheric river caused another 3.81” to fall.
- **2023** – In January, 15.92” fell between the 1st and the 15th. During the event period starting February 21st, 2023, through July 10th, 2023, the State of California experienced a series of atmospheric river events that brought heavy rains and high winds. The heavy rains saturated the ground, caused severe flooding throughout the State of California. An atmospheric river caused 2.5” of rain to fall on the County; only a few days after 86” of snow had fallen in the region. Plugged culverts caused damage to road surface, base and subbase. On November 18, 1.85” of rain fell. On December 19, 2.32” of rain fell.
- **2024** – In February, 1.90” of rain fell on the 5th. More rain fell on the 19th-20th, dropping a total of 4.57”. In March, an atmospheric river along with high winds impacted the County on the first two days. This rain event dropped a total of 4.53”. In May, alongside snowfall, 2.86” of rain fell on the County. In December, an atmospheric river during the 21st-23rd dropped a total of 13.92” of rain.
- **2025** – In August, lightning caused multiple fires to occur in Plumas National Forest. 29 fires were started by lightning. Fortunately, heavy rains followed the lightning event which kept the fires to a small burn area (the largest being 2.75 acres).

Events before 2019

In **1977** and **1981** there were lightning events that caused damages in the County.

A member of the HMPC from Viera Ranch searched through records kept by the ranch, and found the following heavy rain and storm events:

- **November 6, 1994** – 4.2 inches of rain fell in the Quincy area.
- **December 2, 1994** – 3.5 inches of rain fell in the Quincy area.
- **From January 7th to 15th of 1995**, 27.85 inches of rain fell in the Quincy area. This came after 3 inches of snow had fallen the previous two days.
- **April 26, 1995**, saw 4.1 inches of rain fall in the Quincy area.
- **January 16th to 23rd 1999** – 7.85 inches of rain fell in the Quincy area. From February 6th to the 9th, another 10.3 inches of rain fell in the Quincy area.
- In early **2000**, large amounts of rain fell. Between January 10th and 24th, 14.9 inches of rain fell in the Quincy area. From February 11th to 27th, another 13.7 inches fell.

- **July 10, 2001** – Portola had 2 inches of rain in 30 minutes. 4" of 1" diameter hail fell. Flash flooding occurred.
- **December 2002** - 49.3 inches of rain and 21.5 inches of snow fell in the Quincy area.
- **2003** – 5.7 inches rain fell in Quincy on March 14th and 15th. Marble size hail was seen on June 23rd. 1.25 inches of rain fell in 3 hours on August 22nd. 3.25 inches and 3.4 inches fell on the 6th and 10th of December, respectively.
- **June 8, 2004** – A thunderstorm with pea sized hail occurred in the Quincy area.
- **2006** - 5.8 inches rain fell on the 27th and 28th of February, and 5.33 inches fell on the 3rd and 4th of April.
- **2007** – between February 8th and 12th, 7.4 inches of rain fell.
- **2015** – 3.4 inches of rain fell in the Quincy area between February 5th and 7th. Trees were blown down, and power outages were reported.
- **2016** – Heavy rains fell in the Quincy area in both January and March. January saw 18.44 inches of rain, while March saw 18.24 inches of rain.
- **2017** – From January 7th to 22nd, 13.03 inches of rain fell in the Quincy area. Between February 1st and 11th, another 18.71 inches fell. April 7th saw 3.72 inches of rain fall. 0.5-inch hail was reported on May 29th.
- **2018** – Between the 8th and 9th of January, 3.75 inches of rain fell.

The HMPC also noted some events of heavy rain and storm that caused agricultural impacts. Those are discussed in the Past Occurrences in Section 4.3.6. The HMPC also noted that Plumas County experience localized heavy rains yearly. Additionally, the County noted many of these past events are discussed in the Section 4.3.11 Flood: 1%/0.2% Annual Chance and Section 4.3.12 Flood: Localized Stormwater Flooding.

Likelihood of Future Occurrence

Highly Likely – Based on NCDC data and HMPC input, 131 heavy rain and storm incidents over a 75-year period (1950-2024) equates to a severe storm event every year. Severe weather is a well-documented seasonal occurrence that will continue to occur often in the Plumas County Planning Area.

It is likely that climate change will increase the chance of future occurrence as well as future impacts. More information on climate change and heavy rains and storms can be found in the next section. More information on future impacts can be found in the Future Conditions/Future Development section of the Vulnerability Assessment below.

Climate Change and Heavy Rains and Storms

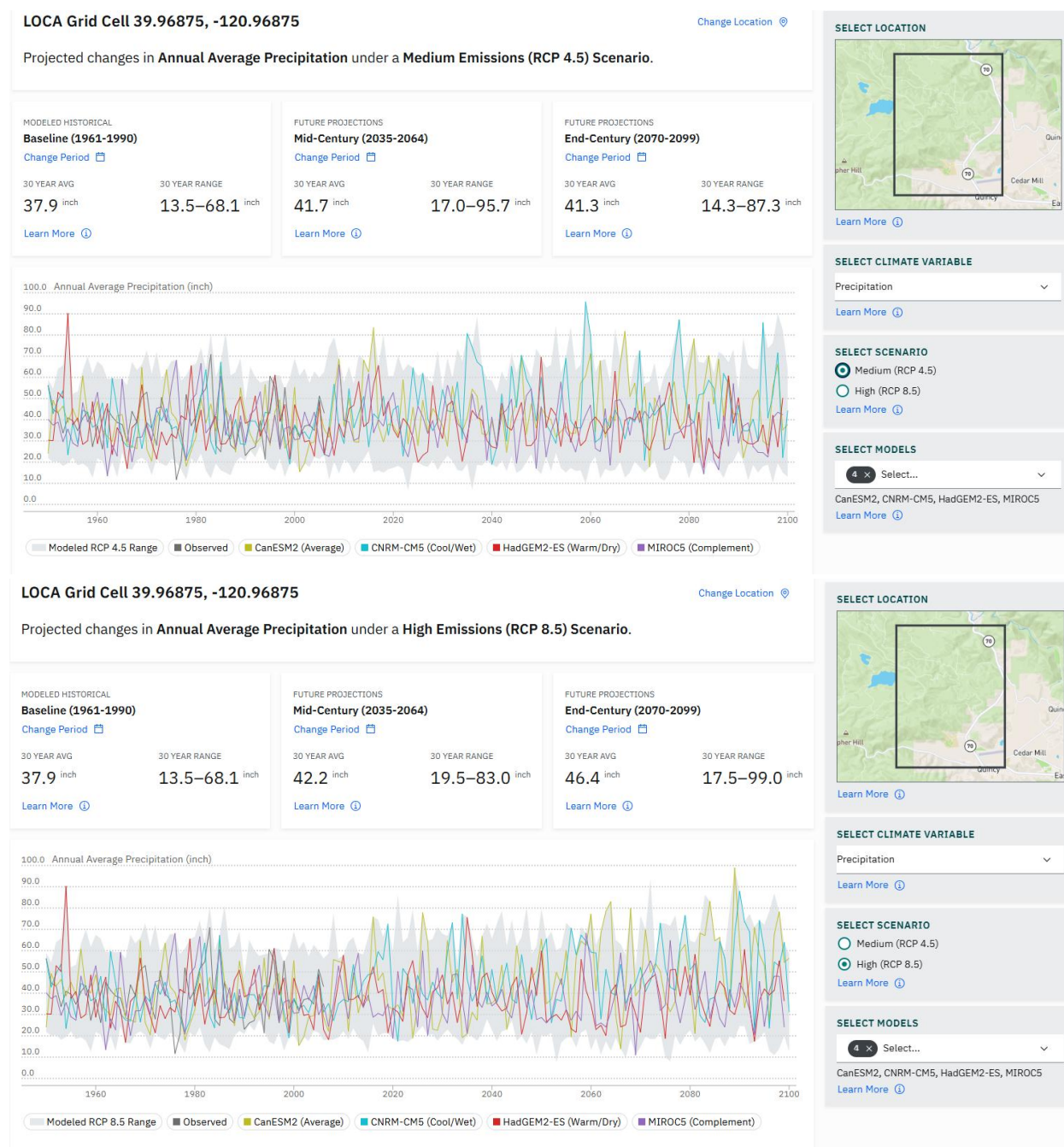
According to the 2021 CAS (and 2024 Draft CAS), while average annual rainfall may increase or decrease slightly, the intensity of individual rainfall events is likely to increase during the 21st century. It is unlikely that hail will become more common in the County. The amount of lightning is not projected to change.

Cal-Adapt noted that, on average, the projections show little change in total annual precipitation in California. Furthermore, among several models, precipitation projections do not show a consistent trend during the next century. The Mediterranean seasonal precipitation pattern is expected to continue, with most precipitation falling during winter from North Pacific storms. One of the four climate models projects slightly wetter winters, and another projects slightly drier winters with a 10 to 20 percent decrease in total

annual precipitation. However, even modest changes would have a significant impact because California ecosystems are conditioned to historical precipitation levels and water resources are nearly fully utilized. Future precipitation estimates for the County are shown in Figure 4-57.

- The upper chart shows annual averages of observed and projected Precipitation values for the selected area on map under the RCP 4.5 scenario. The gray line (1950 – 2005) is observed data. The colored lines (2006 – 2100) are projections from 10 LOCA downscaled climate models selected for California. The light gray band in the background shows the least and highest annual average values from all 32 LOCA downscaled climate models.
- The lower chart shows annual averages of observed and projected Precipitation values for the selected area on map under the RCP 8.5 scenario. The gray line (1950 – 2005) is observed data. The colored lines (2006 – 2100) are projections from 10 LOCA downscaled climate models selected for California. The light gray band in the background shows the least and highest annual average values from all 32 LOCA downscaled climate models.

Figure 4-57 Plumas County– Future Precipitation Estimates: High and Low Emission Scenarios



Source: Cal-Adapt – Precipitation: Decadal Averages Map. Retrieved 2/10/2025.

Vulnerability Assessment

Vulnerability—Medium

According to historical hazard data, heavy rains and storms, including hail and lightning, are an annual occurrence in the Plumas County Planning Area. Heavy rains can cause both localized flooding and

flooding in the floodplains. Atmospheric river storms, which have been more frequent in recent years, are of great concern as they can dump large amounts of water in single storms, or in back-to-back storms.

The whole of the Planning Area has some measure of vulnerability to heavy rains and storms, including hail and lightning. An assessment of a community's vulnerability to this hazard begins with an understanding of local exposure to unincorporated Plumas County. This is included in the Local Concerns section below. After that, vulnerability is discussed in multiple sections that detail how this hazard can affect both the entire Plumas County Planning Area as well as the unincorporated portions of Plumas County. How the hazard affects the other participating jurisdictions can be found in their respective annexes to this LHMP Update. These sections below include assets at risk, impacts, and how future development can be affected by this hazard.

Local Concerns (unincorporated Plumas County)

The unincorporated County has specific concerns regarding this hazard. These concerns form a portion of the basis for the mitigation strategy and mitigation actions that seek to reduce risk and vulnerabilities to this hazard.

One of the primary concerns of the County to heavy rains and storms is the resulting flooding that occurs during extreme storm events. These include large flood events as detailed in the Flood: 1%/0.2% annual chance flood hazard section and the localized flooding that occurs following these storms. Localized flood problem areas in the unincorporated County are shown in Section 4.3.12. Downed trees, power outages, and agricultural impacts are also concerns.

With the increased growth of the area, the lack of adequate drainage systems has become an increasingly important issue.

Lightning in the County is also a concern due to the number of fires that are started by lightning strikes. Wildfire is discussed in more detail in Section 4.3.15.

Local concerns for Portola and the Special Districts can be found under the Local Concerns heading in each respective jurisdictional annex to this LHMP Update.

Assets at Risk

Assets at risk from heavy rain and storms include people and populations; structures; critical facilities and infrastructure and community lifelines; natural, historic, and cultural resources; and economic assets and community activities of value. These are discussed in the following sections for the Plumas County Planning Area and unincorporated Plumas County.

Additionally, for each hazard in the FEMA National Risk Index in Plumas County, the relevant portions of the hazard analysis done by FEMA is presented below. This includes the Hazard Risk Index Rating, Expected Annual Loss Values, Exposure Values, and the Historic Loss Ratio Rating. These are presented for the Plumas County Planning Area as a whole.

People and Populations

All populations in the Plumas County Planning Area have some measure of risk to heavy rains and storms. Those populations that work or recreate outside and unhoused individuals are more vulnerable to impacts from heavy storm events. Heavy rains and storms occur every year and do not generally cause significant adverse impacts to individuals; it is the secondary hazard, flooding, which poses the biggest impact to people. Populations at risk to flooding resulting from heavy rains and storm events include those who live in floodplains (discussed in further detail in the Flood: 1%/0.2% Annual Chance in Section 4.3.11) and those who live in and near localized flooding areas floodplains (discussed in further detail in the Flood: Localized Stormwater Flooding in Section 4.3.12).

Structures

Structures in the Plumas County Planning Area have some risk to heavy rains and storms. Structures built to modern building codes are built to withstand heavy rains and storms (including thunderstorm winds and lightning). During a heavy storm, localized flooding may cause water intrusion into buildings from the outside. Trees can be downed causing impacts to structures. Older homes and buildings may be at increased risk to heavy rains and storms. Lightning can damage buildings. Power outages during severe storm events can occur, impacting the use of structures until the power is back online.

Critical Facilities and Infrastructure

Heavy rain and storms can affect critical facilities and infrastructure, and community lifelines during large events. Power outages may occur taking facilities offline. High winds can down power lines and trees impacting facilities. Water intrusion into facilities and infrastructure can impact operations. Local roads, streets, and bridges can be impacted resulting in closures restricting traffic flow in the Planning Area. In certain areas, large storms can cause erosion and localized landslides which can impact affected facilities. Many critical facilities are built to modern design standards that take heavy rains and storms into account when siting and building these structures, and others may need to be retrofitted to better withstand these events.

Natural, Historic, and Cultural Resources

Large storm events and associated flooding can affect natural, historic, and cultural resources. Silt and sediment can damage natural areas. Trees can be uprooted and downed by high winds. Extended periods of rainfall can erode natural banks along waterways and degrade soil stability for terrestrial species. While some natural systems can be adversely impacted during these large storms, heavy rain events can also provide benefits. Groundwater and wetland areas can be recharged, and water supplies replenished. Historic and cultural resources may also be affected. Generally, the impacts are associated with damage to structures affected by large storm events, but other cultural resources such as those associated with Native Americans and old tribal areas can also be disturbed, damaged, and lost during extreme storm and flood events.

FEMA NRI Hazard Vulnerability Assessment

FEMA's NRI provides additional data on Plumas County's vulnerability to Heavy Rains and Storms. The NRI contains data and analysis for 18 separate natural hazards. The NRI hazard related to Plumas County's Heavy Rains and Storms are: hail and lightning. As shown in Table 4-44, hail could cause a total of \$4,198 in expected annual losses, with a historic loss rating of relatively low. Lightning could cause a total of \$77,248 in expected annual losses with a historic loss ratio rating of very high. Hail and lightning have a relatively low rating for social vulnerability and a relatively high community resilience, with a risk index score of 6.1 out of 100 for hail and 45.8 out of 100 for lightning. According to the NRI, there have been 5 hail events between the years 1986-2021 with an average of 0.1 events per year and 73 lightning events on record between the years 1991-2012, with an average of 3.3 events per year.

Table 4-44 Plumas County Planning Area – Hail and Lightning Vulnerability Ratings from FEMA NRI

| NRI Hazard | Hazard Risk Index Rating | Expected Annual Loss Values (total)** | Exposure Value (total)*** | Historic Loss Ratio Rating |
|------------|--------------------------|---------------------------------------|---------------------------|----------------------------|
| Hail | 6.1 | \$4,198 | \$237,469,962,102 | Relatively low |
| Lightning | 45.8 | \$77,248 | \$237,458,956,144 | Very high |

Source: FEMA NRI Report

*Hazard Risk Index is calculated using data for only a single hazard type, and reflects a communities expected annual loss value, community risk factors, and the adjustment factor used to calculate the risk value.

**Expected annual loss represents the average economic loss in dollars resulting from natural hazards each year.

***Exposure is a natural hazard consequence factor that is the representative value of buildings, populations, or agriculture potentially exposed to a natural hazard occurrence.

Additional information on the FEMA NRI can be found in Section 4.2 and Appendix H.

Impacts from Heavy Rains and Storms

Impacts from heavy rains and storms include damage to property, critical facilities and infrastructure, and the natural landscape. This includes: erosion, downed trees, damaged utility structures and infrastructure; power outages; road damage and blockages; and lightning strikes to critical infrastructure and people. Lightning can also cause wildfires and urban fires to occur. Landslides occur when the soil on slopes becomes oversaturated and fails. Climate change may cause these impacts to worsen.

Actual damage associated with the primary effects of severe storms and heavy rains has been somewhat limited. It is the secondary hazards caused by these severe weather events, such as floods, landslides, and erosion that have had the greatest impact on the Planning Area. The risk and vulnerability associated with these secondary hazards are discussed in other sections of this Plan (Section 4.3.11 Flood: 100/500-year, Section 4.3.12 Flood: Localized Stormwater – specifically in the localized flood areas shown on the tables in the Local Concerns section, Section 4.3.8 Dam Failure, and Section 4.3.13 Landslide.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the County may be affected in the future by climate change (which was discussed in the hazard profile section above), changes in

population patterns, and changes in land use and development. The influencing effects of these factors on this hazard are discussed further in the Future Conditions/Future Development discussion below.

Future Conditions/Future Development

This section provides a discussion of how future conditions will influence or affect the hazard over time and also discusses future development relative to each hazard.

Future Conditions

Future conditions may be affected by climate change, changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. Findings on this for Plumas County include the following:

- Climate change is likely to exacerbate future heavy rain and storm conditions and associated impacts and vulnerability of the County to flooding.
- Future population growth should be considered as having more or less people in a community affects the overall hazard vulnerability to the County. Population is expected to decrease slowly for Plumas County; however, the vulnerability may change depending on changes to the makeup of more vulnerable populations. Certain vulnerable populations, such as the unhoused, outdoor workers, and others could experience disproportional effects from this hazard. and should be addressed as the County continues to grow. Thus, changes in population and population patterns may or may not increase the impacts and vulnerability of the County to this hazard depending on the location and nature of growth and continued planning for future hazard conditions.
- Land use planning should be proactive to address future hazard conditions. Changes in land use may also amplify the impacts of heavy rains and storms, as additional impervious surfaces can cause additional runoff and localized flooding throughout the County. Building codes in the County ensure that new development is built to current building standards, which should reduce the risk to future development in the County from heavy rains and storms. New critical facilities such as communications towers and others should be built to withstand hail damage, lightning, and thunderstorm winds. With adherence to development standards, changes in land use and development will not likely increase the impacts and associated vulnerabilities of the County to this hazard.

Future Development

Future development considerations should be ongoing and proactive. Ensuring that comprehensive land use planning is conducted, regulatory requirements, such as building codes, are followed, and varying needs for different demographic groups with intersecting identities that reside within the County are considered can help make for a more resilient community.

4.3.5. Severe Weather: High Winds and Tornadoes

Hazard Profile

This hazard profile contains multiple sections that detail how this hazard can affect the Plumas County Planning Area. These sections include a hazard/problem description; description of location and extent;

past occurrences of this hazard; likelihood of future occurrence; and how climate change can affect or influence this hazard.

Hazard/Problem Description

High Winds

High winds, often accompanying severe storms and thunderstorms, can cause significant property and crop damage, threaten public safety, and have adverse economic impacts from business closures and power loss. High winds, as defined by the NWS glossary, are sustained wind speeds of 40 mph or greater lasting for 1 hour or longer, or winds of 58 mph or greater for any duration. These winds may occur as part of a seasonal climate pattern or in relation to other severe weather events such as thunderstorms.

Straight-line winds may also exacerbate existing weather conditions by increasing the effect on temperature and decreasing visibility due to the movement of particulate matters through the air, as in dust and snowstorms. The winds may also exacerbate fire conditions by drying out the ground cover, propelling fuel around the region, and increasing the ferocity of exiting fires. These winds may damage crops, push automobiles off roads, damage roofs and structures, and cause secondary damage due to flying debris.

A special type of wind event can occur in the County. Microbursts have occurred in the County. According to the National Weather Service, a microburst is a downdraft (sinking air) in a thunderstorm that is less than 2.5 miles in scale. Some microbursts can pose a threat to life and property, but all microbursts pose a significant threat to aviation. Although microbursts are not as widely recognized as tornadoes, they can cause comparable, and in some cases, worse damage than some tornadoes produce. In fact, wind speeds as high as 150 mph are possible in extreme microburst cases.

Another type of wind in the County is a foehn wind. A foehn wind is a type of dry down-slope wind that occurs in the lee (downwind side) of a mountain range. Winds of this type are called "snow-eaters" for their ability to make snow melt or sublime rapidly. This snow-removing ability is caused not only by warmer temperatures, but also the low relative humidity of the air mass coming over the mountain(s). They are also associated with the rapid spread of wildfires, making some regions which experience these winds particularly fire prone. Burn patterns of almost all historic large wildfires in the County indicate they occurred during foehn winds. This is discussed in greater detail in the wildfire profile in Section 4.3.15.

Location and Extent

The entire Planning Area is subject to significant, non-tornadic (straight-line), winds. Each area of the County is at risk to high winds. Magnitude of winds is measured often in speed and damages. These events are often part of a heavy rain and storm event but can occur outside of storms. The speed of onset of winds can be short, but accurate weather prediction mechanisms often let the public know of upcoming events. Duration of winds in California is often short, ranging from minutes to hours. The Beaufort scale is an empirical measure that relates wind speed to observed conditions at sea or on land. Its full name is the Beaufort wind force scale. Figure 4-58 shows the Beaufort wind scale.

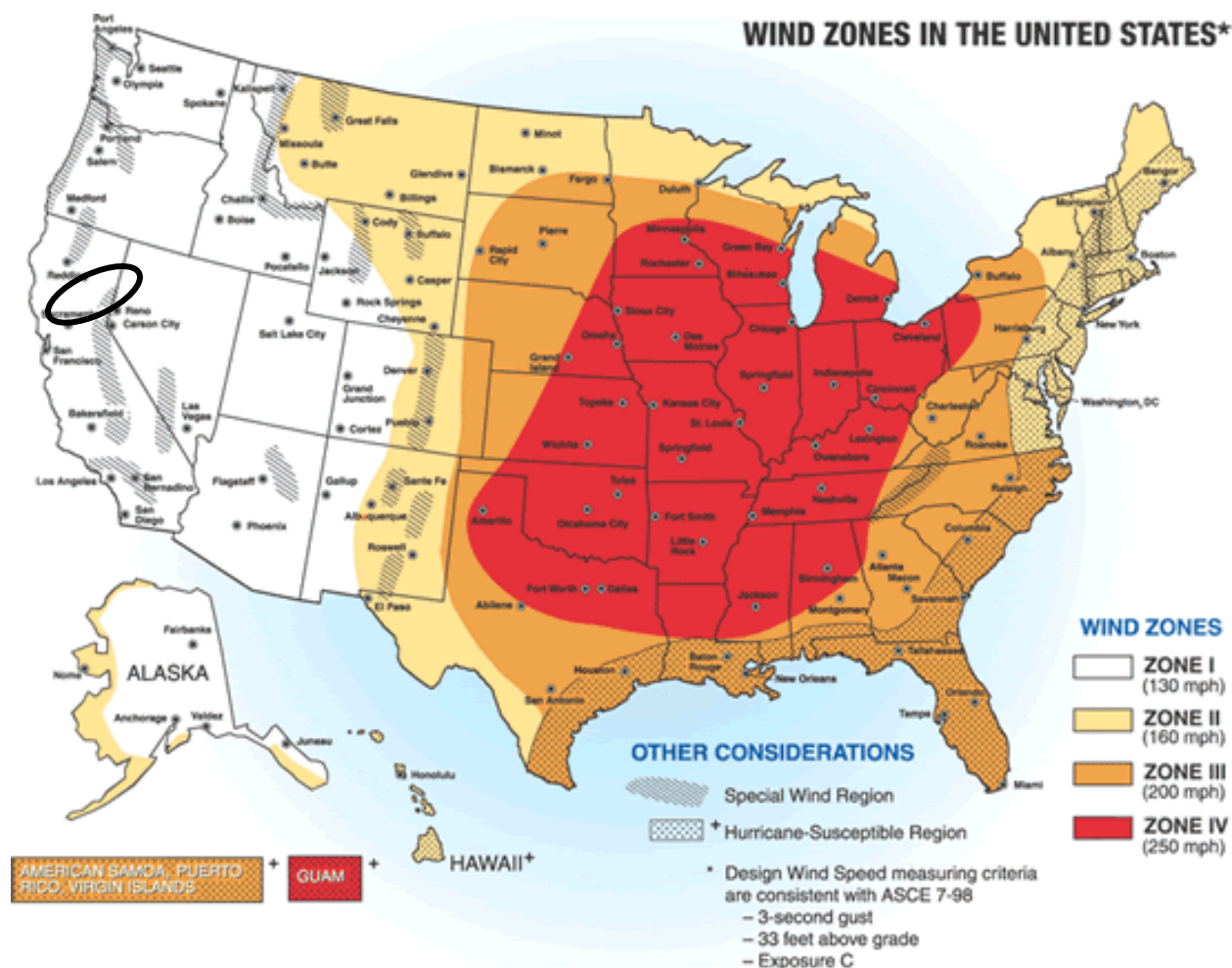
Figure 4-58 Beaufort Wind Scale

| Beaufort Number | Wind Speed (miles/hour) | Wind Speed (km/hour) | Wind Speed (knots) | Description | Wind Effects on Land |
|-----------------|-------------------------|----------------------|--------------------|-----------------|--|
| 0 | <1 | <1 | <1 | Calm | Calm. Smoke rises vertically. |
| 1 | 1-3 | 1-5 | 1-3 | Light Air | Wind motion visible in smoke. |
| 2 | 4-7 | 6-11 | 4-6 | Light Breeze | Wind felt on exposed skin. Leaves rustle. |
| 3 | 8-12 | 12-19 | 7-12 | Gentle Breeze | Leaves and smaller twigs in constant motion. |
| 4 | 13-18 | 20-28 | 11-16 | Moderate Breeze | Dust and loose paper are raised. Small branches begin to move. |
| 5 | 19-24 | 29-38 | 17-21 | Fresh Breeze | Small trees begin to sway. |
| 6 | 25-31 | 39-49 | 22-27 | Strong Breeze | Large branches are in motion. Whistling is heard in overhead wires. Umbrella use is difficult. |
| 7 | 32-38 | 50-61 | 28-33 | Near Gale | Whole trees in motion. Some difficulty experienced walking into the wind. |
| 8 | 39-46 | 62-74 | 34-40 | Gale | Twigs and small branches break from trees. Cars veer on road. |
| 9 | 47-54 | 75-88 | 41-47 | Strong Gale | Larger branches break from trees. Light structural damage. |
| 10 | 55-63 | 89-102 | 48-55 | Storm | Trees broken and uprooted. Considerable structural damage. |
| 11 | 64-72 | 103-117 | 56-63 | Violent Storm | Widespread damage to structures and vegetation. |
| 12 | > 73 | > 117 | > 64 | Hurricane | Considerable and widespread damage to structures and vegetation. Violence. |

Source: National Weather Service

Figure 4-59 depicts wind zones for the United States. The map denotes that Plumas County falls into Zone I, which is characterized by high winds of up to 130 mph. Portions of the County are also located in a special wind hazard region, which is a result of foehn winds (as discussed above).

Figure 4-59 Wind Zones in the United States



Source: FEMA

Tornadoes

Tornadoes and funnel clouds can also occur during these types of severe storms. Tornadoes are another severe weather hazard that, though rare, can affect lower elevations within the Plumas County Planning Area, but most often in the lower elevation, and primarily occur during the storm season in the late fall and early spring. Tornadoes form when cool, dry air sits on top of warm, moist air. Tornadoes are rotating columns of air marked by a funnel-shaped downward extension of a cumulonimbus cloud whirling at destructive speeds of up to 300 mph, usually accompanying a thunderstorm. Tornadoes are the most powerful storms that exist. They can have the same pressure differential across a path only 300 yards wide or less as 300-mile-wide hurricanes. Figure 4-60 illustrates the potential impact and damage from a tornado.

Figure 4-60 Potential Impact and Damage from a Tornado

Figure 2-2 Potential impact of a tornado

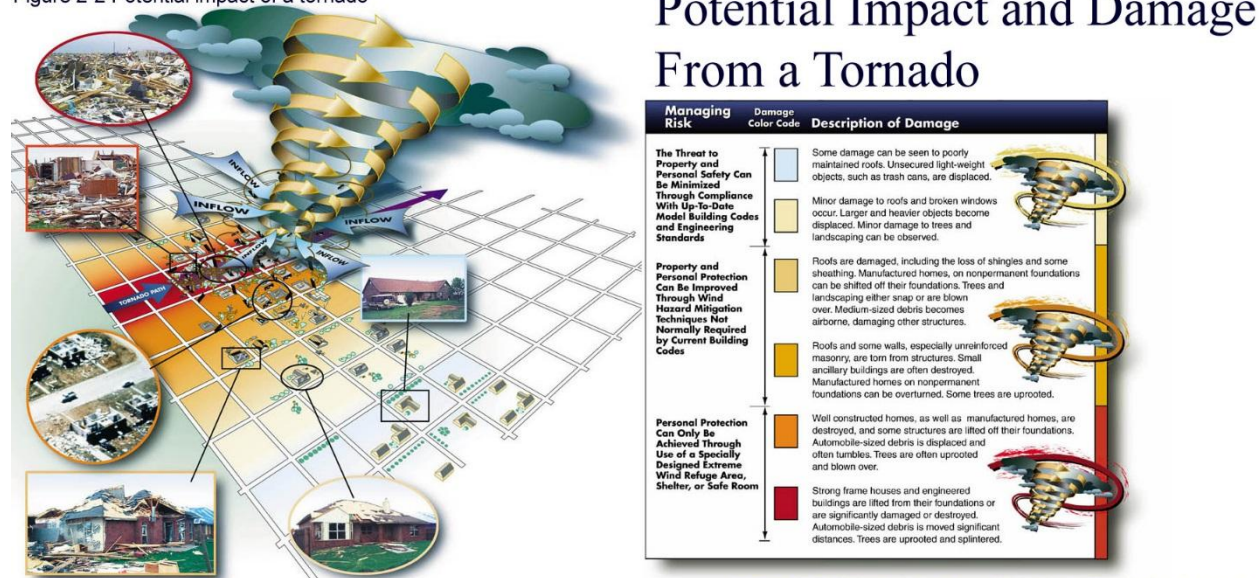


Figure 2-2 Potential damage table for impact of a tornado

Source: FEMA: Building Performance Assessment: Oklahoma and Kansas Tornadoes

Location and Extent

Tornadoes, while rare, can occur lower elevation locations in the County, but most often occur in the lower elevations.

Prior to February 1, 2007, tornado intensity was measured by the Fujita (F) scale. This scale was revised and is now the Enhanced Fujita scale. Both scales are sets of wind estimates (not measurements) based on damage. The new scale provides more damage indicators (28) and associated degrees of damage, allowing for more detailed analysis and better correlation between damage and wind speed. It is also more precise because it considers the materials affected and the construction of structures damaged by a tornado. Table 4-45 shows the wind speeds associated with the original Fujita scale ratings and the damage that could result at different levels of intensity. Table 4-46 shows the wind speeds associated with the Enhanced Fujita Scale ratings.

Table 4-45 Original Fujita Scale

| Fujita (F) Scale | Fujita Scale Wind Estimate (mph) | Typical Damage |
|------------------|----------------------------------|--|
| F0 | < 73 | Light damage. Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged. |
| F1 | 73-112 | Moderate damage. Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads. |
| F2 | 113-157 | Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground. |

| Fujita (F) Scale | Fujita Scale Wind Estimate (mph) | Typical Damage |
|------------------|----------------------------------|--|
| F3 | 158-206 | Severe damage. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown. |
| F4 | 207-260 | Devastating damage. Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown, and large missiles generated. |
| F5 | 261-318 | Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yards); trees debarked; incredible phenomena will occur. |

Source: National Oceanic and Atmospheric Administration Storm Prediction Center, www.spc.noaa.gov/faq/tornado/f-scale.html

Table 4-46 Enhanced Fujita Scale

| Enhanced Fujita (EF) Scale | Enhanced Fujita Scale Wind Estimate (mph) |
|----------------------------|---|
| EF0 | 65-85 |
| EF1 | 86-110 |
| EF2 | 111-135 |
| EF3 | 136-165 |
| EF4 | 166-200 |
| EF5 | Over 200 |

Source: National Oceanic and Atmospheric Administration Storm Prediction Center, www.spc.noaa.gov/faq/tornado/ef-scale.html

It is difficult to predict a tornado or the conditions that preclude a tornado far in advance. Tornadoes can strike quickly with very little warning. In California it is rare for tornadoes to exceed EF3 magnitude. Most tornadoes that touch down are not long lived and cause limited damages.

Past Occurrences

Disaster Declaration History

There have been no past federal or state disaster declarations due to high winds or tornadoes, according to Table 4-4. There was one USDA Secretarial Disaster Declaration for high winds from 2016, which can be found in Table 4-51 in Section 4.3.6 below.

NCDC Events

The NCDC data recorded 94 high wind and no tornado incidents for Plumas County since 1950. A summary of these events is shown in Table 4-47.

Table 4-47 NCDC High Wind and Tornado Events in Plumas County 1950-7/31/2024

| Event Type | Number of Events | Deaths | Deaths (indirect) | Injuries | Injuries (indirect) | Property Damage | Crop Damage |
|-------------|------------------|--------|-------------------|----------|---------------------|-----------------|-------------|
| High Wind | 88 | 0 | 0 | 1 | 0 | \$2,245,500 | \$0 |
| Strong Wind | 4 | 0 | 0 | 0 | 0 | \$63,300 | \$0 |

| Event Type | Number of Events | Deaths | Deaths (indirect) | Injuries | Injuries (indirect) | Property Damage | Crop Damage |
|-------------------|------------------|----------|-------------------|----------|---------------------|--------------------|-------------|
| Thunderstorm Wind | 2 | 0 | 0 | 0 | 0 | \$675,000 | \$0 |
| Total | 94 | 0 | 0 | 1 | 0 | \$2,983,800 | \$ 0 |

Source: NCDC

Hazard Mitigation Planning Committee Events

These section separates events since the 2019/2020 LHMPs and those before 2019.

Events since 2019/2020 LHMP

WHAT HAS OCCURRED SINCE 2020? DATES? DAMAGES? PICTURES?

Events before 2019

HMPC also noted the following events:

In **2002**, a microburst occurred in Plumas County. This caused large amounts of damage throughout the County. In all, 122 buildings were damaged. 32 had minor damage, 40 had moderate damage, and 50 had severe damage. Damages to a motel from this event can be seen in Figure 4-61. Total initial damage estimates in the County exceeded \$3 million.

Figure 4-61 Damage to Motel from Tree Felled during Microburst in 2002



Source: Plumas County

December 10, 1995 – A member of the HMPC from Viera Ranch noted gale force winds. The Ranch lost parts of the well house roof. Other damages were reported in Quincy.

July 11, 2002 – After a day with 109°F highs, a microburst occurred in Quincy. Damage estimates were unavailable. No injuries or deaths were reported.

February 5th to 7th, 2015 – Heavy rains were accompanied by high winds. Gusts over 45 mph were recorded. Many trees were blown down, and power lines were downed.

July 3, 2015 – The Lake Almanor area was hit with high winds. Wind which toppled trees seemed to cause the biggest losses (in terms of cost). Figure 4-62 shows a house suffering the most damage located on the Lake Almanor peninsula. Based only on observations, this looks to be significant damage and could total \$250,000 by itself. Two other houses were damaged on the west shore, but these were much less significant perhaps totaling \$75,000. Three vehicles were damaged including a Sheriff Deputy patrol car. Total replacement cost could be another \$100,000. Many residents suffered mud and debris problems in yards and driveways, but these were not always reported and not easy to tally for damage estimates. A few of the larger incidents may total \$100,000, bringing the total for the event just over \$500,000.

Figure 4-62 Plumas County – 2015 Wind Event Damage



January 7th and 8th, 2017 – Heavy rains and winds caused issues in the County. 6.12 inches of rain fell and were accompanied by high winds. This knocked out power in areas of the County.

Likelihood of Future Occurrence

Highly Likely/Unlikely– Based on NCDC data and HMPC input, 94 wind and tornado incidents over a 74-year period (1950-2024) equates to a severe wind event every year. High winds are a well-documented seasonal occurrence that will continue to occur annually in the Plumas County Planning Area. Tornadoes tend to be rare in the County and warrant a likelihood of future occurrence rating of unlikely.

Climate change may increase the chance of future occurrence as well as future impacts. More information on climate change and high winds and tornadoes can be found in the next section. More information on future impacts can be found in the Future Conditions/Future Development section of the Vulnerability Assessment below.

Climate Change and High Winds

According to the 2021 CAS (as well as the 2024 Draft CAS), while average annual rainfall may increase or decrease slightly, the intensity of individual thunderstorm wind events is likely to increase during the 21st century. This may bring stronger thunderstorm winds. The CAS does not discuss non-thunderstorm winds.

Vulnerability Assessment

Vulnerability—Medium

The Plumas County Planning Area is subject to potentially destructive high winds and tornadoes. High winds are common throughout the area and can happen during most times of the entire year and outside of a severe storm event. Tornadoes are rare. High winds and tornadoes can be a significant public safety and economic concern.

The whole of the Planning Area has some measure of vulnerability to high winds and tornadoes. An assessment of a community's vulnerability to this hazard begins with an understanding of local exposure to unincorporated Plumas County. This is included in the Local Concerns section below. After that, vulnerability is discussed in multiple sections that detail how this hazard can affect both the entire Plumas County Planning Area as well as the unincorporated portions of Plumas County. How the hazard affects the other participating jurisdictions can be found in their respective annexes to this LHMP Update. The sections below include assets at risk, impacts, and how future development can be affected by this hazard.

Local Concerns (unincorporated Plumas County)

The unincorporated County has specific concerns regarding this hazard. These concerns form a portion of the basis for the mitigation strategy and mitigation actions that seek to reduce risk and vulnerability to this hazard.

The County noted that while there has been some scattered record keeping describing the impacts of windstorms, there is little information to indicate that straight-line winds are little more than a nuisance. For example, while winds can blow weeds that can create an additional expense for farmers, they often cause little long-term damage and there is little justification for allocating resources to combat them. Trees may be downed in the County. As detailed in the wildfire discussion, one of the most significant concerns in the County is the effect of high winds in fueling wildfires. Even before a wildfire starts, high winds can cause PG&E to put PSPS events into effect.

Local concerns for Portola and the Special Districts can be found under the Local Concerns heading in each respective jurisdictional annex to this LHMP Update.

Assets at Risk

Assets at risk from high winds and tornadoes include people and populations; structures; critical facilities and infrastructure; and natural, historic, and cultural resources. These are discussed in the following sections for the Plumas County Planning Area and unincorporated Plumas County.

Additionally, for each hazard in the FEMA National Risk Index in Plumas County, the relevant portions of the hazard analysis done by FEMA is presented below. This includes the Hazard Risk Index Rating, Expected Annual Loss Values, Exposure Values, and the Historic Loss Ratio Rating. These are presented for the Plumas County Planning Area as a whole.

People and Populations

All populations are at some vulnerability to high winds and tornadoes. Certain vulnerable populations are at the greatest risk to the effects of high winds and tornadoes. These include the unsheltered, residents who live in mobile homes, residents who live in older buildings not built to withstand high winds and that may not have areas to shelter, such as below ground floors, and those working or caught outdoors during a wind or tornado event.

Structures

All structures in the Plumas County Planning Area have some measure of risk from high wind and tornadoes. Though most structures are built to withstand winds, high wind speeds can still cause damages in the Planning Area. Though rare, a tornado could cause damage to virtually all facilities in the tornado touchdown path. This would affect homes, businesses, commercial property, as well as government and critical facilities. During a wind or tornado event, power lines in the Planning Area can be damaged causing power outages and falling trees can cause damage to nearby structures by falling trees caused by wind. A tornado could also damage power lines. High winds are also a cause for PSPS events to be declared, causing power outages to occur. High winds and tornadoes could cause sparks from electric wires and other sources, which could lead to wildfire ignition. Once ignited, high winds can also cause wildfires to rapidly spread and become out of control. High wind conditions can cause wildfires to move into more urban areas destroying structures and whole subdivisions, as seen in recent wildfire events in California.

Critical Facilities and Infrastructure

Though most critical facilities are built to withstand winds, high wind speeds can still cause damage in the Plumas County Planning Area. Though rare, a tornado could cause damage to virtually all facilities in the tornado touchdown path. Winds can cause PSPS events and lead to out-of-control wildfires, which can damage critical facilities and impact their abilities to perform their critical roles in the community.

Natural, Historic, and Cultural Resources

Natural resources, such as trees, are vulnerable to winds. Increased levee and streambank erosion can occur during periods of high water and high winds. High wave action during significant wind events can cause streambank erosion and impact marsh lands, wetlands, and habitat areas. Soil erosion can also occur during high winds. Most all natural, historic, or cultural resources are at risk to tornadoes. Tornadoes can tear apart habitats, causing fragmentation across ecosystems and can damage and destroy historic structures and cultural resources.

FEMA NRI Hazard Vulnerability Assessment

The NRI contains data and analysis for 18 separate natural hazards. The NRI hazard related to Plumas County's High Winds and Tornadoes are: strong winds and tornadoes. As shown in Table 4-48, strong winds could cause a total of \$15,164 in expected annual losses, with a historic loss rating of relatively moderate. Tornadoes could cause a total of \$38,006 in expected annual losses with a historic loss ratio rating of very low. Strong winds and tornadoes have a relatively low rating for social vulnerability and a relatively high community resilience, with a risk index score of 5.4 out of 100 for strong winds and 8 out of 100 for tornadoes. According to the NRI, there have been 3 strong wind events between the years 1986-2021 with an average of 0.1 events per year and 0 tornado events on record between the years 1950-2021, with an average of 0.1 events per year.

Table 4-48 Plumas County Planning Area – Strong Wind and Tornado Vulnerability Ratings from FEMA NRI

| NRI Hazard | Hazard Risk Index Rating | Expected Annual Loss Values (total)** | Exposure Value (total)*** | Historic Loss Ratio Rating |
|-------------|--------------------------|---------------------------------------|---------------------------|----------------------------|
| Strong Wind | 5.4 | \$15,164 | \$237,469,962,102 | Relatively moderate |
| Tornado | 8 | \$38,006 | \$237,469,962,102 | Very low |

Source: FEMA NRI Report

*Hazard Risk Index is calculated using data for only a single hazard type, and reflects a communities expected annual loss value, community risk factors, and the adjustment factor used to calculate the risk value.

**Expected annual loss represents the average economic loss in dollars resulting from natural hazards each year.

***Exposure is a natural hazard consequence factor that is the representative value of buildings, populations, or agriculture potentially exposed to a natural hazard occurrence.

Additional information on the FEMA NRI can be found in Section 4.2 and Appendix H.

Impacts from Severe Weather: High Wind and Tornado

Wind and tornadoes can cause damage to property and loss of life. While most tornado damage is caused by violent winds, the majority of injuries and deaths generally result from flying debris. Property damage can include damage to buildings, fallen trees, and power lines. Local industries may also be damaged or destroyed. Access roads and streets may be blocked by debris, delaying necessary emergency response. Winds can push automobiles off roads, damage roofs and structures, cause power outages, and cause secondary damage due to flying debris and hazardous trees. High winds can also contribute to the spread and intensity of wildfires.

Tornadoes can cause damage to property and loss of life. While most tornado damage is caused by violent winds, the majority of injuries and deaths generally result from flying debris. Property damage can include damage to buildings, fallen trees and power lines, broken gas lines, broken sewer and water mains, and the outbreak of fires. Agricultural crops and industries may also be damaged or destroyed. Access roads and streets may be blocked by debris, delaying necessary emergency response.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the County may be affected in the future by climate change (which was discussed in the hazard profile section above), changes in population patterns, and changes in land use and development. The influencing effects of these factors on this hazard are discussed further in the Future Conditions/Future Development discussion below.

Future Conditions/Future Development

This section provides a discussion of how future conditions will influence or affect the hazard over time and also discusses future development relative to each hazard.

Future Conditions

Future conditions may be affected by climate change, changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. Findings on this for Plumas County include the following:

- Climate change is likely to exacerbate future wind conditions and associated impacts and vulnerability of the County. Climate change is not likely to affect future tornado conditions.
- Future population growth should be considered as having more or less people in a community affects the overall hazard vulnerability to the County. Population in Plumas County is expected to shrink over time. Changes in population and population patterns may or may not increase the impacts and vulnerability of the County to this hazard depending on the location and nature of growth (or decline) and continued planning for future hazard conditions.
- Land use planning should be proactive to address future hazard conditions. Building codes in the County ensure that new development is built to current building standards to withstand high winds, which should reduce the risk to future development in the County from high winds and tornadoes. With adherence to development standards, future losses to new development should be minimal. Changes in land use and increased development may amplify the impacts of high winds and tornadoes, as additional structures in the County increase the number of buildings at risk to high winds and tornadoes.

Future Development

Future development considerations should be ongoing and proactive. Ensuring that comprehensive land use planning is conducted, regulatory requirements, such as building codes, are followed, and varying needs for different demographic groups that reside within the County are considered can help make for a more resilient community. Utilities at risk to high winds should be undergrounded as new facilities are improved or added. Whether high winds and tornadoes will occur, where, when, and of what intensity are all factors that evolve over the days and hours before they form and after they do. Improved weather forecasts coupled with new information technologies, including social media, have resulted in an increasingly large volume of risk information that is available to people when tornadoes and high winds threaten.

4.3.6. Agricultural Hazards: Severe Weather/ Pests/ Weeds

Hazard Profile

This hazard profile contains multiple sections that detail how this hazard can affect the Plumas County Planning Area. These sections include a hazard/problem description; description of location and extent; past occurrences of this hazard; likelihood of future occurrence; and how climate change can affect or influence this hazard.

Hazard/Problem Description

In Plumas County, forest and agriculture lands are a fundamental component of the rural character, historic use, and way of life. Agriculture plays a significant role in the income and history of the County as well as in the current landscape. Agriculture provides not only local food production, agricultural lands make up open space and scenic vistas that are an intrinsic part of the Plumas County environment.

Agricultural losses occur on an annual basis and are usually associated with severe weather events, including heavy rains, floods, freeze, heat, and drought. The 2023 State of California Multi-Hazard Mitigation Plan attributes most of the agricultural disasters statewide to drought, freeze, and insect infestations. Other agricultural hazards include fires, crop and livestock disease, insects, and noxious weeds.

In addition to severe weather, pests and weeds, including invasive species, can affect the agricultural industry in the County. Invasive species are organisms that are introduced into an area beyond their natural range and become a pest in the new environment. This hazard also addresses the issues related to pests, weeds, and invasive species including those that pose a significant threat to the agricultural industry and are therefore a concern in the Plumas County Planning Area. This hazard does not address pests and plants that cause impacts to human health, as those issues are addressed in other planning mechanisms in the County.

According to the 2023 Plumas County Crop Report (the most recent available), many commodities are grown in Plumas County. The top three commodities for the County in 2023 were cattle; field crops; and timber products. According to the 2023 Crop Report, Plumas County's 2023 estimated commodity production value is \$38,262,907. Timber harvest dropped in 2023. This decrease represents the end of the

Dixie Fire salvage and the resulting loss of harvestable timber in the County. A summation of crop production values, sourced from the Plumas County Agricultural Commissioner’s Annual Crop Reports, from 2020-2023 for Plumas County is shown in Table 4-49.

Table 4-49 Plumas County – Value of Agricultural Production 2020-2023

| Crop | 2020 | 2021 | 2022 | 2023 |
|------------------------------|---------------------|---------------------|---------------------|---------------------|
| Apiary | \$26,305 | \$20,734 | \$54,000 | \$113,066 |
| Fruit and Vegetable | \$285,000 | \$161,557 | \$311,359 | \$311,807 |
| Field Crops | \$5,473,000 | \$4,234,300 | \$7,676,000 | \$3,493,359 |
| Livestock Productions | \$10,595,000 | \$13,001,000 | \$25,572,000 | \$14,201,134 |
| Livestock & Poultry Products | \$36,222 | \$43,419 | \$87,110 | \$29,653 |
| Timber | \$16,666,000 | \$21,790,520 | \$24,067,294 | \$14,804,401 |
| Rangeland | \$3,300,000 | \$3,300,000 | \$3,154,000 | \$3,291,828 |
| Pastureland | \$1,896,000 | \$1,896,000 | \$1,902,560 | \$2,017,659 |
| Organic Crops | \$55,358 | \$70,301 | \$82,937 | \$89,560 |
| Total | \$38,332,885 | \$44,517,831 | \$62,907,260 | \$38,262,907 |

Source: Plumas County Agricultural Commissioner Reports. Retrieved 4/25/2025.

Natural Disasters and Severe Weather

According to the US Department of Agriculture (USDA), every year natural disasters, such as droughts, earthquakes, extreme heat and cold, floods, fires, earthquakes, hail, landslides, and tornadoes, challenge agricultural production. Because agriculture relies on the weather, climate, and water availability to thrive, it is easily impacted by natural events and disasters. Agricultural impacts from natural events and disasters most commonly include: contamination of water bodies, loss of harvest or livestock, increased susceptibility to disease, and destruction of irrigation systems and other agricultural infrastructure. These impacts can have long lasting effects on agricultural production including crops, forest growth, and arable lands, which require time to mature.

Animal Pests

California is home to a large diversity of wildlife. Human-wildlife conflict can occur when humans and wild animals interact in an unwanted or unsafe way. In California, habitat loss and a changing climate have increased the frequency and type of wildlife incidents reported to the California Department of Fish and Wildlife. It has become more common for people to observe, encounter, and interact with wildlife while recreating outdoors or living in a wildland-urban interface as wild animals search for food and water. (California Department of Fish and Wildlife 2025). The HMPC noted that invasive species in animal groups like wild pigs are causing extensive damage to both residential areas and also agricultural areas. However, feral hog herds are not prevalent in Plumas County at this time.

Insect Pests

Plumas County is threatened by a number of insects that, under the right circumstances, can cause severe economic and environmental harm to the agricultural industry. Insects of concern to plants and crops include the Spongy Moth, Japanese Beetle, and European Pine Shoot Moth. Pest detection is a proactive program that seeks to identify exotic, invasive insects. These pests have wide host ranges and are difficult and costly to manage once established. Early detection is essential for quick and efficient eradication. Public participation is critical to the success of this program, since staff relies on the goodwill of property owners who allow traps to be placed on their properties. The Plumas County Department of Agriculture traps and monitors all these agricultural pests. Bark Beetles and Clear Wing Grasshoppers can also cause great destruction of crops within Plumas County

Weeds (both invasive and native)

Noxious weeds, defined as any plant that is or is liable to be troublesome, aggressive, intrusive, detrimental, or destructive to agriculture, silviculture, or important native species, and difficult to control or eradicate, are also of concern. Noxious weeds within the Planning Area include those listed on Table 4-50.

Table 4-50 Plumas County Weeds of Concern

| Species of Concern | | | | | |
|--------------------|-------------------|----------------------|----------------------|---------------------|------------------|
| Barb Goatgrass | Jointed Goatgrass | Medusahead | Yellow Starthistle | Scotch thistle | Musk Thistle |
| Scotch Broom | French Broom | Tree of Heaven | Perennial pepperweed | Spotted knapweed | Diffuse Knapweed |
| Rush Skeletonweed | Musk thistle | Himalayan blackberry | Leafy Spurge | Dalmatian Toad Flax | Puncture vine |
| Euphorbia | Stinkwort | Saltcedar | Hounds Tongue | Spanish Broom | Dyer's Woad |

Source: California Invasive Plant Council

The Plumas County Department of Agriculture uses mechanical and chemical control measures to contain all of these agricultural pests.

Location and Extent

Agricultural hazards occur throughout the County where lands are used for farming and grazing. The County has large swaths of agricultural lands in the non-federally owned areas of the County. These are shown in the Land Use Map for the County on Figure 4-20 above. Areas not as greatly affected by severe weather, insects, and pests are the City of Portola as well as the communities of Chester and Quincy in Plumas County, as well as the upper elevations of the County which all contain fewer agricultural acres. However, while the communities may not be directly affected, they are indirectly affected economically when agricultural losses occur.

There is no scale that measures agricultural hazards. Agriculture in the County is at risk to many hazards: insects, weeds, severe weather, as well as downturns in commodity prices. Each of these has a different duration and speed of onset. Some, such as freeze, can have a short onset and a short duration. Drought

can have a long onset and long duration. Insects and weeds can have short or long onset, and short or long durations. All agricultural losses can have a significant impact on affected communities.

Wildlife and human interactions can take place anywhere in the County. The extent of these interactions ranges from peaceful viewing at a distance, but can also include deadly encounters for pets, livestock, and people.

Past Occurrences

Disaster Declaration History

The agricultural lands of Plumas County have historically been affected by weather related events such as extreme heat, freeze, heavy rain, and drought. The severe weather events can have devastating effects leading to losses in yield and affecting quality. The US Farm Services Agency provided information on disaster declarations from 2012 through 2024. These are shown in Table 4-51.

Table 4-51 Plumas County – USDA Disaster Declarations 2012 to 2024

| Year Declared/Disaster Type | Designation Number | Primary or Contiguous | Begin Date |
|---|--------------------|-----------------------|------------|
| 2012 | | | |
| Drought-FAST TRACK | S3248 | Contiguous | 5/31/2012 |
| Drought-FAST TRACK | S3268 | Primary | 7/12/2012 |
| 2013 | | | |
| Drought – FAST TRACK | S3491 | Contiguous | 1/1/2013 |
| 2014 | | | |
| Drought – FAST TRACK | S3637 | Primary | 1/14/2014 |
| 2015 | | | |
| Drought – FAST TRACK | S3784 | Primary | 1/1/2015 |
| 2016 | | | |
| Drought – FAST TRACK | S3952 | Primary | 1/1/2016 |
| Excessive rain, high winds, cold temperatures, and hail | S4170 | Contiguous | 3/1/2016 |
| 2017 | | | |
| – | – | – | – |
| 2018 | | | |
| Drought – FAST TRACK | S4349 | Contiguous | 2/28/2018 |
| 2019 | | | |
| – | – | – | – |
| 2020 | | | |
| Drought – FAST TRACK | S4675 | Primary | 4/14/2020 |
| Drought – FAST TRACK | S4691 | Primary | 4/21/2020 |

| Year Declared/Disaster Type | Designation Number | Primary or Contiguous | Begin Date |
|-----------------------------|--------------------|-----------------------|------------|
| Drought – FAST TRACK | S4697 | Contiguous | 4/21/2020 |
| 2021 | | | |
| Drought – FAST TRACK | S4916 | Primary | 10/1/2020 |
| 2022 | | | |
| Drought – FAST TRACK | S5146 | Primary | 4/8/2022 |
| Freeze | S5229 | Contiguous | 7/1/2022 |
| Freeze | S5332 | Contiguous | 4/12/2022 |
| 2023 | | | |
| Drought – FAST TRACK | S5371 | Primary | 10/1/2022 |
| Freeze | S5556 | Contiguous | 2/16/2023 |
| 2024 | | | |
| – | – | – | – |

Source: US Farm Service Agency

NCDC Events

The NCDC does not track agriculture events.

Hazard Mitigation Planning Committee Events

These sections separate events since the 2019/2020 LHMPs and those before 2019.

Events since 2019/2020 LHMP

The County noted the following recent events:

2022 – The HMPC noted that agriculture events occur yearly, though with varying levels of damages to a variety of crops. The 2021 Plumas County Crop Report noted that 2021 saw multiple issues that affected the agricultural industry in the County. Drought has had large impacts in the County.

Due to the severity of the drought Plumas County was experiencing single digit relative humidity (RH) during the summer of 2021. This resulted in a lack of forage for livestock as well as a decrease in hay production. The lack of livestock feed had a ripple effect in that most of the ranchers had to reduce their herds to match the available forage.

On July 13, 2021, Plumas County dealt with another devastating blow, the Dixie Fire started to burn and continued to burn until October consuming half of the range land in as well as half of the timberland in Plumas County. It takes three years for the rangeland to recover and 70 years for timber to grow back. In 2021 and 2022 there was a spike in timber harvest receipts as there is a two-year window in which to harvest trees after a fire.

The following statistics show how the County was affected:

- Timber production rose to \$24,002,774 in 2022, due to the Dixie fire timber harvest, and then fell to \$14, 804, 401 in 2023 and will continue to decline before stabilizing.
- Total hay tonnage decreased from 24,000 tons in 2022 to 14,000 tons in 2023 due to lack of surface water and grasshoppers.
- In 2021 some agricultural wells ran dry resulting in the loss of high dollar hay acreage that was turned into pasture for grazing.

Summer of 2023 – Grasshoppers are no longer experiencing winter kill due to the warming climate and are decimating pastureland and some hay fields. As the grasshopper population increases so does the blister beetle which feeds on grasshopper eggs. The blister beetle is highly toxic to livestock as well as causing blisters on people. Blister Beetle also affects the marketability of hay.

Events before 2019

Multiple events occurred before 2019. These are captured in other past occurrences in the rest of the hazard sections.

Likelihood of Future Occurrence

Highly Likely—As long as severe weather events, insects, pests, and weeds continue to be an ongoing concern to the Plumas County Planning Area, the potential for agricultural losses remains.

It is likely that climate change will increase the chance of future occurrence as well as future impacts. More information on climate change and agricultural hazards can be found in the next section. More information on future impacts can be found in the Future Conditions/Future Development section of the Vulnerability Assessment below.

Climate Change and Agricultural Hazards

According to the 2021 CAS (as well as the 2024 Draft CAS), addressing climate change in agriculture will encompass reducing vulnerability through adapting to the ongoing and predicted impacts of climate. Agriculture in California is vulnerable to predicted impacts of climate change, including less reliable water supplies, increased temperatures, and increased pests.

The 2023 California State Hazard Mitigation Plan noted that California farmers contend with a wide range of crop-damaging invasive pests and pathogens. Continued climate change is likely to alter the abundance and types of many pests, lengthen pests' breeding season, and increase pathogen growth rates. It also noted that change in climate can directly impact crop growth through new temperature patterns and northward shifts of pests and disease. Additionally, longer growing seasons may enable pest species to complete more reproductive cycles, which can increase severity of infestations.

Finally, the 2023 State Plan noted that temperature is not the only climatic influence on pests. For example, some insects are unable to cope in extreme drought, while others cannot survive in extremely wet conditions. Furthermore, while warming speeds up the life cycles of many insects, suggesting that pest

problems could increase, some insects may grow more slowly as elevated carbon dioxide levels decrease the protein content of the leaves on which they feed.

Vulnerability Assessment

Vulnerability—High

According to historical hazard data, severe weather affecting agriculture and agricultural pests and weeds are an annual occurrence in the Plumas County Planning Area. If left unchecked, insects, pests, and weeds, including invasive species can threaten native species, biodiversity, ecosystem services, recreation, water resources, agricultural and forest production, cultural resources, economies and property values, public safety, and infrastructure.

The whole of the Planning Area has some measure of vulnerability to agricultural hazards. An assessment of a community's vulnerability to this hazard begins with an understanding of local exposure to unincorporated Plumas County. This is included in the Local Concerns section below. After that, vulnerability is discussed in multiple sections that detail how this hazard can affect both the entire Plumas County Planning Area as well as the unincorporated portions of Plumas County. How the hazard affects the other participating jurisdictions and Districts can be found in their respective annexes to this LHMP Update. These sections below include assets at risk, impacts, and how future development can be affected by this hazard.

Local Concerns (unincorporated Plumas County)

The unincorporated County has certain specific concerns regarding this hazard. These concerns form a portion of the basis for the mitigation strategy and mitigation actions that seek to reduce vulnerabilities to this hazard.

USDA Concerns

According to the USDA, every year natural disasters, such as droughts, earthquakes, extreme heat and cold, floods, fires, earthquakes, hail, landslides, and tornadoes, challenge agricultural production. Because agriculture relies on the weather, climate, and water availability to thrive, it is easily impacted by natural events and disasters. Agricultural impacts from natural events and disasters most commonly include contamination of water bodies, loss of harvest or livestock, increased susceptibility to disease, and destruction of irrigation systems and other agricultural infrastructure. These impacts can have long lasting effects on agricultural production including crops, forest growth, and arable lands, which require time to mature. Specific impacts by hazard are listed below:

- Drought's most severe effects on agriculture include water quality and quantity issues. Other impacts include decreased crop yields, impact to feed and forage, altered plant populations and tree mortality.
- Earthquakes, though rare in Plumas County, can strike without warning and cause dramatic changes to the landscape of an area that can have devastating impacts on agricultural production and the environment. These impacts could include loss of harvest or livestock and destruction of irrigation systems and other agricultural infrastructure.

- Extreme cold may result in loss of livestock, increased deicing, downed power lines, and increased use of generators. Deicing can impact agriculture by damaging local ecosystems and contaminating water bodies. Downed power lines cause people to run generators more often, which can release harmful air pollutants.
- Hot weather and extreme heat can worsen ozone levels and air quality as well as leading to drought conditions. Excessive heat and prolonged dry or drought conditions can impact agriculture by creating worker safety issues for farm field workers, severely damaging crops, and reducing availability of water and food supply for livestock.
- Wildfires can spread quickly and devastate thousands of acres of land, which may include agricultural lands. This devastation could lead to large losses in crops, forestry, livestock, and agricultural infrastructure.
- Flooding causes many impacts to agricultural production, including water contamination, damage to crops, loss of livestock, increased susceptibility of livestock to disease, flooded farm machinery, and environmental damage to and from agricultural chemicals.
- The County sees lots of alfalfa loss during heavy storm/rain and flood events. The alfalfa sits in these temporary “lakes” and rots. Additionally, ranchers can’t get the cattle in these areas when wet/flooded.
- Landslides and debris flow occur in all 50 states and commonly occur in connection with other major natural disasters such as earthquakes, volcanoes, wildfires, and floods. Some of the threats from landslides and debris flow include rapidly moving water and debris that can cause trauma; broken electrical, water, gas, and sewage lines; and disrupted roadways and railways. This can lead to agricultural impacts including contamination of water, change in vegetation, and harvest and livestock losses.

The Plumas County Agricultural Commissioner noted that of the above, the County is most concerned with drought, freeze, and insect infestations.

Climate Change and Ag Hazards

A recent report from the Intergovernmental Panel on Climate Change shows that the climate crisis has already affected or resulted in the loss of ecosystems, and global warming will likely reach or exceed 1.5°C in the near-term. Agricultural experts warn that these changes are already threatening crop productivity worldwide. Extreme heat has a significant impact on crops, particularly affecting hay crops, rangeland, and livestock gains. Unusually hot temperatures cause smaller harvests and rising food prices, a phenomenon known as “heatflation”. This is also true with timber and other high value Plumas County crops.

Wildlife Interactions

Wildlife and human interactions can take place anywhere in the County. The extent of these interactions ranges from peaceful viewing at a distance, but can also include deadly encounters for pets, livestock, and people. Wildlife and human interaction can present the following hazards in Plumas County:

Wildlife – Vehicle Collisions

Vehicle collisions with wildlife are an ongoing concern across Plumas County. Large animals such as deer, pronghorn, bears, mountain lions, and wolves cross rural roads, often at dawn and dusk. Vehicle drivers on narrow winding roads may encounter wildlife with little to no time to avoid an accident.

Wolf Attacks

Plumas County issued an emergency declaration on April 15, 2025, for the devastating economic toll wolves are having on ranchers in the county. Wolves have shown a lack of fear towards humans, attacking livestock near homes where both adults and children are present. Incidents in 2025 have shown that the wolves killed cattle without feeding on them, suggesting reasons beyond hunger. This behavior poses an imminent danger to local livestock producers and the families living and working on affected properties. Between January and June 6, 2025, the California Department of Fish and Wildlife reported 42 confirmed or probable wolf depredations. Ranchers and homeowners are not allowed to shoot at or around the wolves because of their protected status under the California Endangered Species Act. Deterrent measures such as electric fencing, turbo fladry, and full-time riders in the herds have not proven to be feasible or cost-effective.

Bear Conflict

According to the Plumas County Sheriff's Office bears are a weekly nuisance in the spring, summer, and fall, but they are usually not a public safety issue. Some bears have been known to break into homes, sheds and barns and cause much destruction in the process. Visitors and residents can mitigate the hazard by properly storing food and trash so as not to attract bears. Electric fencing is also a recommended mitigation measure. Bears also cause agricultural losses through livestock depredation and apiary destruction.

Mountain Lions

Mountain Lions are now frequently observed in rural communities. Most often they will prey on dogs and cats that are outside at night. Livestock depredation is also a known occurrence. Night penning can be a mitigation measure to prevent attacks. A Mountain Lion interacting directly with humans is considered a public safety concern.

Local concerns for Portola and the Special Districts can be found under the Local Concerns heading in each respective jurisdictional annex to this LHMP Update.

Assets at Risk

Assets at risk from agricultural hazards include people and populations; structures; critical facilities and infrastructure; and natural, historic, and cultural resources. These are discussed in the following sections for the Plumas County Planning Area and unincorporated Plumas County.

Additionally, for each hazard in the FEMA National Risk Index in Plumas County, the relevant portions of the hazard analysis done by FEMA is presented below. This includes the Hazard Risk Index Rating, Expected Annual Loss Values, Exposure Values, and the Historic Loss Ratio Rating. These are presented for the Plumas County Planning Area as a whole.

People and Populations

Agricultural hazards (severe weather, pests and weeds, both native invasive species) have a minimal effect on people and populations in Plumas County, including vulnerable populations. However, damage to crops

from invasive and nuisance species can cause significant increases in food prices and food insecurity among low-income communities.

Structures

Structures in Plumas County may be indirectly affected by agricultural hazards. The effects of severe weather on structures are included in the discussions on severe weather above. This section focuses then on native and invasive species, pests, and weeds. Some species can impact vegetation and can result in stream bank instability, erosion, and increased sedimentation, impacting ground stabilization and possibly causing foundation issues for nearby structures. If species cause trees and other vegetation to die, there is an increased risk of damage to roadways, powerlines, and buildings, and increased risk to wildfire. Some invasive plants have been shown to destabilize soil due to high densities and shallow root systems, negatively impacting nearby buildings and septic systems. Other nuisance plant species have been known to clog culverts and streams, increasing flooding risk.

Critical Facilities and Infrastructure

Critical facilities and infrastructure in Plumas County may be affected by agricultural hazards, though these effects are expected to be limited. The effects of severe weather on critical facilities are included in the discussions on severe weather above. This section focuses then on native and invasive species and insects, pests, and weeds. The 2023 State of California Hazard Mitigation Plan noted that water treatment plants could be impacted by invasive and nuisance species. Water that becomes polluted due to increased sedimentation and erosion will require additional treatment. If the system becomes clogged with these pollutants or with invasive aquatic species, the ability of water treatment plants to operate may become impaired. Additionally, soil that becomes unstable due to decaying vegetation can impact critical facilities that are built on or around these soils.

Natural, Historic, and Cultural Resources

Natural resources can be affected by agricultural hazards. The effects of severe weather on these resources are included in the discussions on severe weather above. This section focuses then on invasive species and pests. Negative impacts of pests and weeds to natural resources include the following:

- Loss of wildlife habitat and reduced wildlife numbers;
- Loss of native plant species;
- Reduced livestock grazing capacity;
- Increased soil erosion and topsoil loss;
- Diminished water quality and fish habitat.

Historic and cultural resources have a more limited risk from agricultural hazards.

FEMA NRI Hazard Vulnerability Assessment

Agricultural hazards are not an NRI hazard; therefore, no data is presented.

Impacts from Agricultural Hazards

According to the California Invasive Plants Council. California annually suffers over \$3 billion in agricultural losses due to these invasive species. The magnitude of this problem cannot be understated, as both the United States and California Departments of Agriculture are mandated to protect against the invasion of exotic pests and diseases.

The consequences of agricultural disasters to the Planning Area include ruined plant crops, dead livestock, ruined feed and agricultural equipment, monetary loss, job loss, and possible multi-year effects (i.e., trees might not produce if damaged, loss of markets, food shortages, increased prices, possible spread of disease to people, and loss or contamination of animal products). When these hazards cause a mass die-off of livestock, other issues occur that include the disposal of animals, depopulation of affected herds, decontamination, and resource problems. Those disasters related to severe weather may also require the evacuation and sheltering of animal populations. Overall, any type of severe agricultural disaster can have significant economic impacts on both the agricultural community and the entire Plumas County Planning Area.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the County may be affected in the future by climate change (which was discussed in the hazard profile section above), changes in population patterns, and changes in land use and development. The influencing effects of these factors on this hazard are discussed further in the Future Conditions/Future Development discussion below.

Future Conditions/Future Development

This section provides a discussion of how future conditions will influence or affect the hazard over time and also discusses future development relative to each hazard.

Future Conditions

Future conditions may be affected by climate change, changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. Findings on this for Plumas County include the following:

- Climate change is likely to exacerbate future conditions that may impact the agricultural industry in Plumas County.
- Future population growth should be considered as having more or less people in a community affects the overall hazard vulnerability to the County. Population growth in Plumas County is expected to decrease. Population changes are unlikely to affect the vulnerability of the County to this hazard unless the population growth significantly increases, displacing agricultural uses. Changes in population and population patterns may or may not increase the impacts and vulnerability of the County to this hazard depending on the location and nature of growth and continued planning for future hazard conditions.
- Land use planning should be proactive to address future hazard conditions. Limited growth is occurring in the County, which should result in limited changes to land uses that would affect the agricultural industry. As the County continues to add new development, land uses may change resulting in a reduction in agricultural uses. However, for the next five years covered by this LHMP Update, changes

in land use and development will likely not increase the impacts and associated vulnerabilities of the County to this hazard.

Future Development

Future development in the County is not likely to have an impact on agricultural hazards in Plumas County, except to the extent that agricultural lands are taken out of production as new development occurs reducing available land for agricultural uses, including those related to farming, timber production and grazing. In addition, the HMPC did note that with additional development in the County, there may be additional competition for water resources thus possibly impacting the agricultural industry.

4.3.7. Climate Change

Hazard Profile

This hazard profile contains multiple sections that detail how this hazard can affect the Plumas County Planning Area. These sections include a hazard/problem description; description of location and extent; past occurrences of this hazard; likelihood of future occurrence; and how climate change can affect or influence this hazard.

Hazard/Problem Description

Climate change is the distinct change in measures of weather patterns over a long period of time, ranging from decades to millions of years. More specifically, it may be a change in average weather conditions such as temperature, rainfall, snow, ocean and atmospheric circulation, or in the distribution of weather around the average. While the Earth's climate has cycled over its 4.5-billion-year age, these natural cycles have taken place gradually over millennia, and the Holocene, the most recent epoch in which human civilization developed, has been characterized by a highly stable climate – until recently.

This LHMP Update is concerned with human-induced climate change that has been rapidly warming the Earth at rates unprecedented in the last 1,000 years. Since industrialization began in the 19th century, the burning of fossil fuels (coal, oil, and natural gas) at escalating quantities has released vast amounts of carbon dioxide and other greenhouse gases responsible for trapping heat in the atmosphere, increasing the average temperature of the Earth.

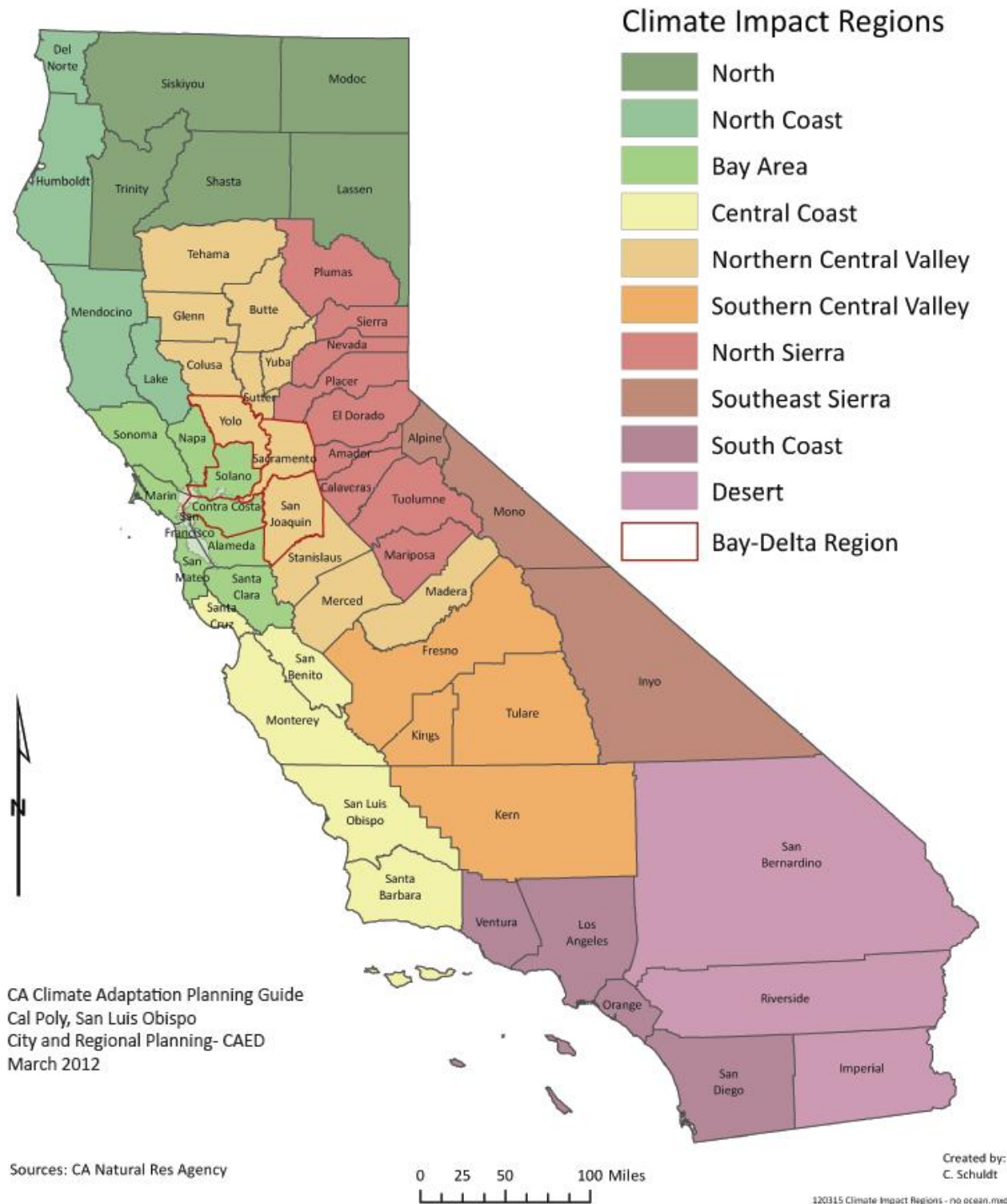
In Plumas County, the HMPC noted that each year it seems to get a bit warmer. California's Adaptation Planning Guide (APG): Understanding Regional Characteristics has divided California into 11 different regions based on political boundaries, projected climate impacts, existing environmental setting, socioeconomic factors and regional designations. Plumas County falls within the North Sierra Region characterized as a sparsely settled mountainous region where the region's economy is primarily tourism-based. The region is rich in natural resources, biodiversity, and is the source for the majority of water used by the state. Table 4-52 provides a summary of Cal-Adapt Climate Projections for the North Sierra Valley Region.

Table 4-52 North Sierra Region and Plumas County – Cal-Adapt Climate Projections

| Effect | Ranges |
|-------------------------------|--|
| Temperature Change, 1990-2100 | January increase in average temperatures: 2.5 °F to 4°F by 2050 and 6°F to 7°F by 2100. The largest changes are observed in the southern part of the region. July increase in average temperatures: 4 °F to 5°F by 2050 and 10°F by the end of the century, with the greatest change in the northern part of the region. (Modeled average temperatures; high emissions scenario) |
| Precipitation | Precipitation decline is projected throughout the region. The amount of decrease varies from 3 to 5 inches by 2050 and 6 inches to more than 10 inches by 2100, with the larger rainfall reductions projected for the southern portions of the region. (Community Climate System Model Version 3 (CCSM3) climate model; high carbon emissions scenario) |
| Heat wave | Heat waves are defined as five consecutive days over 83 °F to 97°F depending on location. By 2050, the number of heat waves per year is expected to increase by two. A dramatic increase in annual heat waves is expected by 2100, eight to 10 more per year. |
| Snowpack | Snowpack levels are projected to decline dramatically in many portions of the region. In southern portions of the region, a decline of nearly 15 inches in snowpack levels - a more than 60 percent drop - is projected by 2090. (CCSM3 climate model; high carbon emissions scenario) |
| Wildfire | Wildfire risk is projected to increase in a range of 1.1 to 10.5 times throughout the region, with the highest risks expected in the northern and southern parts of the region. (Geophysical Fluid Dynamics Laboratory (GFDL) climate model; high carbon emissions scenario) |

Source: Cal-Adapt 2017/2023.

Figure 4-63 Plumas County – Climate Impact Regions



Location and Extent

Climate change is a global phenomenon. It is expected to affect the whole of the County. There is no scale to measure the extent of climate change. Climate change exacerbates other hazard, such as drought, extreme

heat, flooding, wildfire, and others. The speed of onset of climate change is very slow. The duration of climate change is not yet known but is feared to be tens to hundreds of years.

Past Occurrences

Disaster Declaration History

Climate change has never been directly linked to any declared disasters, as shown in Table 4-4.

NCDC Events

The NCDC does not track climate change events.

Hazard Mitigation Planning Committee Events

While the HMPC noted that climate change is of concern, no specific climate change incidents could be recalled. HMPC members noted that the strength of storms does seem to be increasing, and the temperatures seem to be getting hotter. The HMPC also noted that snow levels seem to be higher (or larger) each year, and the recent atmospheric river winter rains were more intense. In addition, the Plumas County Air Quality District noted that within the last five years, Plumas County has experienced extreme droughts that have affected the health of the forest. The lack of rain led to the Bark Beetle infestation, causing thousands upon thousands of trees to die. This has led to large areas of Plumas County to be declared high fire hazard zones as well. The combined effects of the drought, decline in the health of the forest, temperature changes, and wildfires in and around neighboring counties, much contributed to climate change, have also steered our way to poor air quality.

Likelihood of Future Occurrence

Highly Likely – Climate change is virtually certain to continue without immediate and effective global action. According to NASA, 2024 was one of the hottest years on record. Without significant global action to reduce greenhouse gas emissions, the United Nations Intergovernmental Panel on Climate Change (IPCC) concludes in its Sixth Assessment Synthesis Report (2022) that average global temperatures are likely to exceed 1.5°C by the end of the 21st century, with consequences for people, assets, economies and ecosystems, including risks from heat stress, storms and extreme precipitation, inland and coastal flooding, landslides, air pollution, drought, water scarcity, sea level rise and storm surges.

Climate Scenarios

The United Nations IPCC developed several greenhouse gas (GHG) emissions scenarios based on differing sets of assumptions about future economic growth, population growth, fossil fuel use, and other factors. The emissions scenarios range from “business-as-usual” (i.e., minimal change in the current emissions trends) to more progressive (i.e., international leaders implement aggressive emissions reductions policies). Each of these scenarios leads to a corresponding GHG concentration, which is then used in climate models to examine how the climate may react to varying levels of GHGs. Climate researchers use many global climate models to assess the potential changes in climate due to increased GHGs.

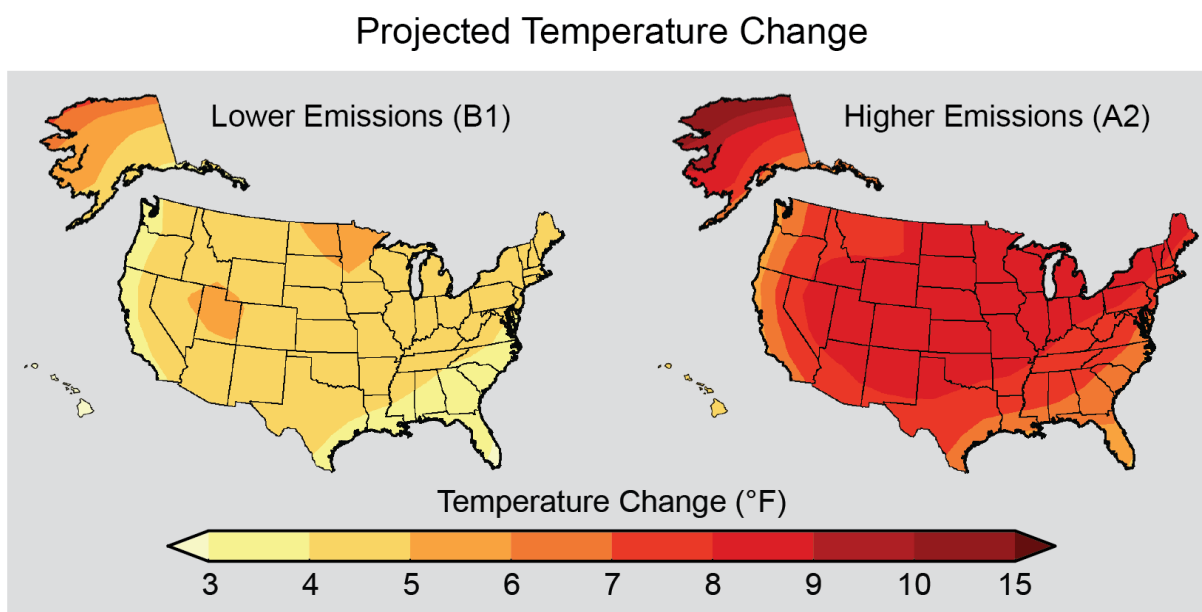
Key Uncertainties Associated with Climate Projections

- Climate projections and impacts, like other types of research about future conditions, are characterized by uncertainty. Climate projection uncertainties include but are not limited to:
 - ✓ Levels of future greenhouse gas concentrations and other radiatively important gases and aerosols,
 - ✓ Sensitivity of the climate system to greenhouse gas concentrations and other radiatively important gases and aerosols,
 - ✓ Inherent climate variability, and
 - ✓ Changes in local physical processes (such as afternoon sea breezes) that are not captured by global climate models.

Even though precise quantitative climate projections at the local scale are characterized by uncertainties, the information provided can help identify the potential risks associated with climate variability/climate change and support long term mitigation and adaptation planning.

Maps show projected change in average surface air temperature in the later part of this century (2071-2099) relative to the later part of the last century (1970-1999) under a scenario that assumes substantial reductions in heat trapping gases and a higher emissions scenario that assumes continued increases in global emissions. These are shown in Figure 4-64.

Figure 4-64 Projected Temperature Change – Lower and Higher Emissions Scenario



Source: National Climate Assessment

According to the California Natural Resource Agency (CNRA), climate change is already affecting California and is projected to continue to do so well into the foreseeable future. Current and projected changes include increased temperatures, sea level rise, a reduced winter snowpack altered precipitation patterns, and more frequent storm events. Over the long term, reducing greenhouse gases can help make these changes less severe, but the changes cannot be avoided entirely. Unavoidable climate impacts can

result in a variety of secondary consequences including detrimental impacts on human health and safety, economic continuity, ecosystem integrity and provision of basic services.

The CNRA's 2021 CAS (as well as the 2024 Draft CAS) delineated how climate change may impact and exacerbate natural hazards in the future, including wildfires, extreme heat, floods, and drought:

- Climate change is expected to lead to increases in the frequency, intensity, and duration of extreme heat events and heat waves in Plumas County and the rest of California, which are likely to increase the risk of mortality and morbidity due to heat-related illness and exacerbation of existing chronic health conditions. Those most at risk and vulnerable to climate-related illness are the elderly, individuals with chronic conditions such as heart and lung disease, diabetes, and mental illnesses, infants, the socially or economically disadvantaged, and those who work outdoors.
- Higher temperatures will melt the Sierra snowpack earlier and drive the snowline higher, resulting in less snowpack to supply water to California users.
- Droughts are likely to become more frequent and persistent in the 21st century.
- Intense rainfall events, periodically ones with larger than historical runoff, will continue to affect California with more frequent and/or more extensive flooding.
- Storms and snowmelt may coincide and produce higher winter runoff from the landward side, while accelerating sea-level rise will produce higher storm surges during coastal storms. Together, these changes may increase the probability of floods and levee and dam failures, along with creating issues related to saltwater intrusion.
- Warmer weather, reduced snowpack, and earlier snowmelt can be expected to increase wildfire through fuel hazards and ignition risks. These changes can also increase plant moisture stress and insect populations, both of which affect forest health and reduce forest resilience to wildfires. An increase in wildfire intensity and extent will increase public safety risks, property damage, fire suppression and emergency response costs to government, watershed and water quality impacts, vegetation conversions and habitat fragmentation.

Vulnerability to Climate Change

Vulnerability—High

Climate change adaptation is a key priority of the State of California. The 2023 State of California Multi-Hazard Mitigation Plan stated that climate change is already affecting California. Sea levels have risen by as much as seven inches along the California coast over the last century, increasing erosion and pressure on the state's infrastructure, water supplies, and natural resources. The State has also seen increased average temperatures, more extreme hot days, fewer cold nights, a lengthening of the growing season, shifts in the water cycle with less winter precipitation falling as snow, and earlier runoff of both snowmelt and rainwater in the year. In addition to changes in average temperatures, sea level, and precipitation patterns, the intensity of extreme weather events is also changing.

The whole of the County is at some measure of vulnerability to climate change. An assessment of a community's vulnerability to this hazard begins with an understanding of local exposure to unincorporated Plumas County. This is included in the Local Concerns section below. After that, vulnerability is discussed in multiple sections that detail how this hazard can affect both the entire Plumas County Planning Area as well as the unincorporated portions of Plumas County. How the hazard affects the other participating

jurisdictions can be found in their respective annexes to this LHMP Update. These sections below include assets at risk, impacts, and how future development can be affected by this hazard.

Local Concerns (unincorporated Plumas County)

The unincorporated County has specific concerns regarding this hazard. These concerns form a portion of the basis for the mitigation strategy and mitigation actions that seek to reduce risk and vulnerability to this hazard.

Anthropogenic and other greenhouse gasses will continue to cause more extreme climate change conditions unless steps are taken to minimize greenhouse gases and carbon footprints. The County's roadways, infrastructure in flood zones, disadvantaged communities, agriculture sector and sensitive species habitat are among the most vulnerable to climate change impacts.

Climate change threatens the food security and economic viability of agriculture in Plumas County. Drought, flood, and severe weather are all poised to intensify as climate change continues to impact California. Agricultural practices need updating to become resilient and can be part of the solution to climate change in our region.

CAL FIRE noted that wildfires pose several significant public health concerns. Here are some of the chief local concerns:

- Respiratory Issues: Wildfire smoke contains fine particulate matter (PM2.5) that can penetrate deep into the lungs and even enter the bloodstream, exacerbating conditions like asthma, bronchitis, and chronic obstructive pulmonary disease (COPD).
- Cardiovascular Problems: Exposure to wildfire smoke can increase the risk of heart attacks, arrhythmias, and other cardiovascular issues.
- Vulnerable Populations: Certain groups, such as children, the unhoused, the elderly, pregnant women, and those with pre-existing health conditions, are more susceptible to the health impacts of wildfire smoke.
- Mental Health: The stress and trauma from experiencing wildfires and displacement can lead to mental health issues like anxiety, depression, and post-traumatic stress disorder (PTSD).
- Long-term Health Effects: Prolonged exposure to wildfire smoke can have lasting health impacts, including increased rates of respiratory infections and other chronic conditions.
- Emergency Room Visits and Hospitalizations: Increased air pollution from wildfires can lead to a rise in emergency room visits and hospitalizations for respiratory and cardiovascular issues which could overcome our small rural hospital's ability to care for patients.

Local concerns for Portola and the Special Districts can be found under the Local Concerns heading in each respective jurisdictional annex to this LHMP Update.

Assets at Risk

Assets at risk from climate change include people and populations; structures; critical infrastructure and vulnerable uses (with community lifelines); natural, historic, and cultural resources; and economic assets

and community activities of value. These are discussed in the following sections for the Plumas County Planning Area and unincorporated Plumas County.

Additionally, for each hazard in the FEMA National Risk Index in Plumas County, the relevant portions of the hazard analysis done by FEMA is presented below. This includes the Hazard Risk Index Rating, Expected Annual Loss Values, Exposure Values, and the Historic Loss Ratio Rating. These are presented for the Plumas County Planning Area as a whole.

People and Populations

Climate change affects people and populations within a community, especially those climate change issues related to increases in temperature over time. While all populations can be affected by temperature extremes, populations particularly vulnerable include the very old and very young, medically fragile people, people without means of shelter (and air conditioning) or transportation, people who are socially isolated and other socially vulnerable or underserved populations (as shown in Special Populations discussion in Section 4.2). Acclimatization to heat may help reduce risks from heat waves in the healthy general population but may not be sufficient to protect those with underlying issues and lack of resources.

Structures

Climate change, on its own, does not generally impact structures. However, structures in areas of increased wildfire, drought, extreme heat, or flood areas exacerbated by the effects of climate change would be at increased risk, as described throughout this LHMP. Due to the slow onset of climate change, many structures in the County are expected to undergo improvements and adapt over time to a new climate normal.

Critical Infrastructure and Vulnerable Uses

As with structures, critical and vulnerable facilities in areas of increased wildfire, flood areas, or in other hazard areas exacerbated by climate change, would be at increased risk. Climate change is expected to increase the general vulnerability of critical and vulnerable facilities to natural hazards. Due to the slow onset of climate change, critical and vulnerable facilities and community lifelines in the County are expected to undergo improvements and adapt over time to a new climate normal.

Natural, Historic, and Cultural Resources

The rivers, streams, and open space areas of the County supports rich biodiversity, including many special-status species. These are all at risk from the effects of climate change. In addition, if heat changes wildfire patterns, all areas (on land) of the County are at increased risk from fire – including natural, historic, and cultural resources. Furthermore, if climate change exacerbates the drought hazard, areas of wetlands in the County may dry up temporarily, which could damage habitat areas for waterfowl and other species that depend on these areas.

FEMA NRI Hazard Vulnerability Assessment

Climate change is not an NRI hazard; therefore, no data is presented.

Impacts from Climate Change

The APG: Understanding Regional Characteristics identified the following impacts specific to the North Sierra region in which the Plumas County Planning Area is part of:

- Temperature increases
- Decreased precipitation
- Reduced snowpack
- Reduced tourism
- Ecosystem change
- Sensitive species stress
- Increased wildfire

Secondary impacts include changes in precipitation patterns, the global water cycle, melting glaciers and ice caps, and rising sea levels. According to the IPCC, climate change will “increase the likelihood of severe, pervasive and irreversible impacts for people and ecosystems” if unchecked.

Through changes to oceanic and atmospheric circulation cycles and increasing heat, climate change affects weather systems around the world. Climate change increases the likelihood and exacerbates the severity of extreme weather – more frequent or intense storms, floods, droughts, and heat waves. The 2023 State of California Hazard Mitigation Plan noted that there are direct and secondary impacts:

- Direct Impacts
 - ✓ Increase in average temperature
 - ✓ Changes in annual precipitation
- Secondary Impacts
 - ✓ Increased frequency, intensity, and duration of extreme heat days and heat waves/events
 - ✓ Increased flooding
 - ✓ Increased wildfire
 - ✓ Loss of snowpack and decreased water supplies

Consequences for human society include loss of life and injury, damaged infrastructure, long-term health effects, loss of agricultural crops, disrupted transport and freight, and more. Climate change is not a discrete event but a long-term hazard, the effects of which communities are already experiencing.

In addition to these sources, the 2023 State of California Hazard Mitigation Plan noted that according to California’s Fourth Climate Change Assessment, the state will experience the following climate impacts:

- Annual average daily high temperatures are expected to rise by 2.7 °F by 2040, 5.8°F by 2070, and 8.8°F by 2100 compared to observed and modeled historical conditions. These changes are statewide averages.
- Heat waves are projected to become longer, more intense, and more frequent.
- Warming temperatures are expected to increase soil moisture loss and lead to drier conditions. Summer dryness may become prolonged, with soil drying beginning earlier in the spring and lasting longer into the fall and winter.
- Droughts are likely to become more frequent and persistent through 2100.

- The strength of the most intense precipitation and storm events affecting California is expected to increase.
- Snowpack levels are projected to decline significantly by 2100 due to reduced snowfall and faster snowmelt.
- Marine layer clouds are projected to decrease.
- Extreme wildfires (i.e., fires larger than 24,710 acres) would occur 50 percent more frequently. The maximum area burned statewide may increase 178 percent by the end of the century.
- Sea level rise is expected to continue to increase beach, cliff, and bluff erosion.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the County may be affected in the future by climate change (which was discussed in the hazard profile section above), changes in population patterns, and changes in land use and development. The influencing effects of these factors on this hazard are discussed further in the Future Conditions/Future Development discussion below.

Future Conditions/Future Development

This section provides a discussion of how future conditions will influence or affect the hazard over time and also discusses future development relative to each hazard.

Future Conditions

Future conditions may be affected by climate change, changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. Findings on this for Plumas County include the following:

- As climate change continues to accelerate over time, climate related impacts to the County will continue to increase.
- Climate change can influence population growth in the County over time. While the County is expected to decrease, the County could see population fluctuations as a result of climate impacts relative to those experienced in other regions, and these fluctuations are expected to impact demand for housing and other development. While there are currently no formal studies of specific migration patterns expected to impact the County region, climate-induced migration was recognized within the UNFCCC Conference of Parties Paris Agreement of 2015 and is expected to be the focus of future studies. So, while changes in population and population patterns are not expected to increase the impacts associated with this hazard, climate change may instead influence future population growth in the County.
- Land use planning should be proactive to address future hazard conditions. The increasing severity and frequency of storms and other weather events due to the changing climate should be taken into account while considering land use planning for the County. Ensuring that regulatory requirements, such as building codes, are updated and followed will help reduce future impacts to this hazard.

Future Development

Future development considerations should be ongoing and proactive. Ensuring that comprehensive land use planning is conducted, regulatory requirements, such as building codes, are followed, and varying needs for different demographic groups with intersecting identities that reside within the County are considered can help to make for a more disaster resilient community.

4.3.8. Dam Failure

Hazard Profile

This hazard profile contains multiple sections that detail how this hazard can affect the Plumas County Planning Area. These sections include a hazard/problem description; description of location and extent; past occurrences of this hazard; likelihood of future occurrence; and how climate change can affect or influence this hazard.

Hazard/Problem Description

Dams are manmade structures built for a variety of uses including flood protection, power generation, agriculture, water supply, and recreation. When dams are constructed for flood protection, they are usually engineered to withstand a flood with a computed risk of occurrence. For example, a dam may be designed to contain a flood at a location on a stream that has a certain probability of occurring in any one year. If prolonged periods of rainfall and flooding occur that exceed the design requirements, that structure may be overtopped or fail. Overtopping is the primary cause of earthen dam failure in the United States.

Dam failures can also result from any one or a combination of the following causes:

- Earthquake
- Inadequate spillway capacity resulting in excess overtopping flows
- Internal erosion caused by embankment or foundation leakage, or piping or rodent activity
- Improper design
- Improper maintenance
- Negligent operation
- Failure of upstream dams on the same waterway

In general, there are three types of dams: concrete arch or hydraulic fill, earth and rockfill, and concrete gravity. Each type of dam has different failure characteristics. A concrete arch or hydraulic fill dam can fail almost instantaneously; the flood wave builds up rapidly to a peak then gradually declines. An earth-rockfill dam fails gradually due to erosion of the breach; a flood wave will build gradually to a peak and then decline until the reservoir is empty. A concrete gravity dam can fail instantaneously or gradually with a corresponding buildup and decline of the flood wave.

The CA DWR Division of Safety of Dams (DSOD) has jurisdiction over impoundments that meet certain capacity and height criteria. Embankments that are less than six feet high and impoundments that can store less than 15 acre-feet are non-jurisdictional. Additionally, dams that are less than 25 feet high can impound up to 50 acre-feet without being jurisdictional. FEMA and CA DWR DSOD assign hazard potential classifications to dams within the State that provides information on the potential impact should a dam fail. The following two factors are considered when assigning hazard ratings: existing land use and land use controls (zoning) downstream of the dam. FEMA categorizes the downstream hazard potential into three categories in increasing severity: Low, Significant, and High. DSOD adds a fourth category of Extremely High. Dams are classified in four categories that identify the potential hazard to life and property:

- **Extremely High Hazard** – Expected to cause considerable loss of human life or would result in an inundation area with a population of 1,000 or more.
- **High Hazard** – Expected to cause loss of at least one human life.
- **Significant Hazard** – No probable loss of human life but can cause economic loss, environmental damage, impacts to critical facilities, or other significant impacts.
- **Low Hazard** – No probable loss of human life and low economic and environmental losses. Losses are expected to be principally limited to the owner's property.

Location and Extent

According to data provided by Plumas County, CA DWR DSOD, there are 22 dams in Plumas County that were constructed for flood control, storage, treatment impoundments, electrical generation, and recreational purposes. One dam outside the County (Indian Ole in Lassen County – a high hazard dam) could also affect areas inside the County. Of the 23 dams that could affect the County, 1 is rated as Extremely High Hazard, 16 are rated as High Hazard, 4 are rated as Significant Hazard, and 2 are rated as Low Hazard. Table 4-53 gives information on each of the dams in the County, and the dams outside the County that could affect areas in Plumas County.

AT THE MEETINGS IT WAS NOTED THAT THERE ARE LOCAL NAMES FOR SOME OF THE DAMS BELOW. WE WENT WITH DSOD NAME (AS WE HAD DONE LAST TIME). IS THERE A DESIRE TO RENAME ANY OF THESE?

Plumas County
Local Hazard Mitigation Plan Update
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Table 4-53 Plumas County – Dam Inventory (both Inside and Outside the County)

| Name | River/Stream | Hazard Classification | Owner | Dam Type | Capacity (acre-ft) | Structural Height (ft) | Year Built |
|-----------------------------|--------------------------|-----------------------|---|----------------|--------------------|------------------------|------------|
| Inside Plumas County | | | | | | | |
| Antelope | Indian Creek | High | CA DWR | Earth | 22,566 | 113 | 1964 |
| Bidwell Lake** | Canyon Creek | High | Indian Valley Community Services District | Earth and Rock | 5,200 | 35 | 1865 |
| Bucks Diversion | Brush Creek | High | PG&E | Earth | 5,843 | 99 | 1928 |
| Bucks Storage | Brush Creek | High | PG&E | Rockfill | 103,000 | 122 | 1928 |
| Butt Valley | Butt Creek | High | PG&E | Earth | 49,800 | 106 | 1924 |
| Caribou Afterbay | North Fork Feather River | High | PG&E | Earth and Rock | 2,400 | 164 | 1959 |
| Chester Diversion | North Fork Feather River | High | Central Valley Flood Protection Board | Earth | 7 | 47 | 1975 |
| Cresta | North Fork Feather River | High | PG&E | Gravity | 4,400 | 103 | 1949 |
| Eureka | Eureka Creek | Significant | California Dept. of Parks and Recreation | Earth | 220 | 29 | 1866 |
| Frenchman | Last Chance Creek | High | CA DWR | Earth | 55,477 | 139 | 1961 |
| Grizzly Creek | Big Grizzly Creek | High | Private | Gravity | 140 | 39 | 1915 |
| Grizzly Forebay | Grizzly Creek | High | PG&E | Arch | 1,112 | 92 | 1928 |
| Grizzly Valley | Big Grizzly Creek | High | CA DWR | Earth and Rock | 83,000 | 115 | 1966 |
| Lake Almanor | North Fork Feather River | Extremely High | PG&E | Earth | 1,308,000 | 130 | 1927 |
| Little Grass Valley | South Fork Feather River | High | South Feather Water and Power Agency | Rockfill | 74,730 | 210 | 1961 |
| Long Lake | Gray Eagle Creek | Significant | Graeagle Water Company | Rockfill | 1,478 | 12 | 1938 |
| Lower Three Lakes | Feather River | Significant | PG&E | Rockfill | 525 | 32 | 1928 |

| Name | River/Stream | Hazard Classification | Owner | Dam Type | Capacity (acre-ft) | Structural Height (ft) | Year Built |
|--------------------------------|---------------------------|-----------------------|--------------------------------------|-------------------------|--------------------|------------------------|------------|
| Rock Creek | North Fork Feather River | High | PG&E | Gravity | 4,660 | 120 | 1950 |
| Silver Lake | Silver Creek | High | Soper Wheeler Company | Earth and Rock | 650 | 21 | 1906 |
| Slate Creek Diversion | Slate Creek | Low | South Feather Water and Power Agency | Arch | 643 | 72 | 1961 |
| South Fork Diversion | South Fork Feather River | Low | South Feather Water and Power Agency | Earth | 88 | 70 | 1961 |
| Taylor Lake | Tributary of Indian Creek | Significant | Nature Conservancy | Earth | 380 | 14 | 1929 |
| Dams Outside the County | | | | | | | |
| Indian Ole (Lassen County) | Hamilton Creek | High | PG&E | Flashboard and Buttress | 24,800 | 26 | 1924 |

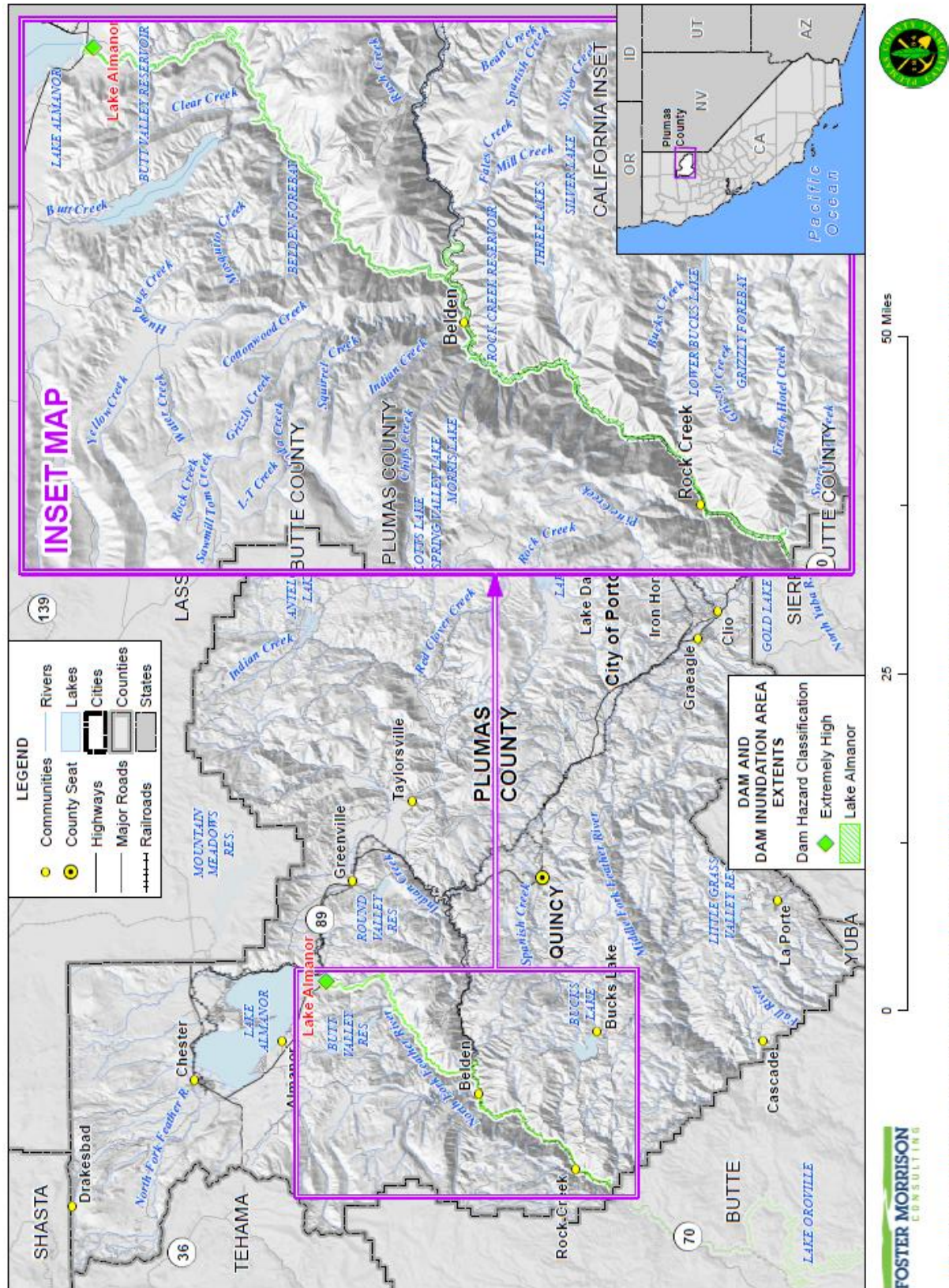
Source: DSOD/Cal OES/NID Dam Status 1/25, National Performance of Dams Program

*One Acre Foot=326,000 gallons

**this dam is locally known as Round Valley

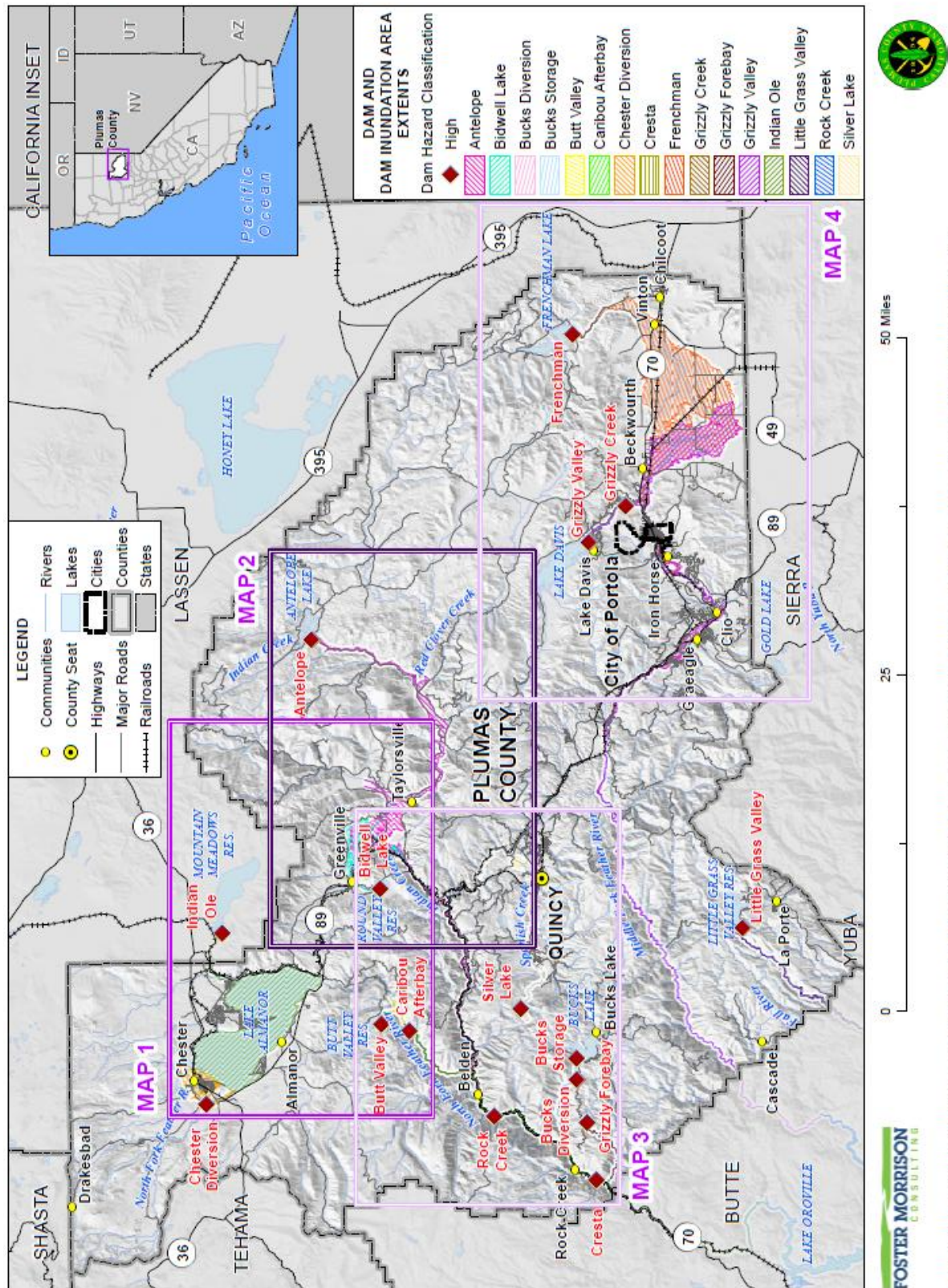
Once a list of dams was established, dam inundation layers were obtained from DSOD in GIS. Only extremely high and high hazard dams were analyzed for this LHMP due to the potential for these dams to cause loss of life in the Plumas County Planning Area should a dam failure occur. Dams with an inundation area in the Plumas County Planning Area are shown on Figure 4-66 for extremely high hazard dams, and Figure 4-67 for high hazard dams. All extremely high and high hazard dams had available inundation mapping. Due to the size of Plumas County, inset maps derived from Figure 4-67 were created to zoom in on areas of dam inundation. These are shown from Figure 4-68 through Figure 4-71. Geographic flood extents as shown on the dam inundation maps are detailed by dam in Table 4-54 for both extremely high and high hazard dams. As shown, only the unincorporated County has areas located in the extremely high hazard dam inundation areas. The high hazard dam inundation zones are located in the unincorporated County, as well as in Portola. Information on the City of Portola can be found in its annex to this Plan.

Figure 4-66 Plumas County Planning Area – Extremely High Hazard Dam Inundation Areas



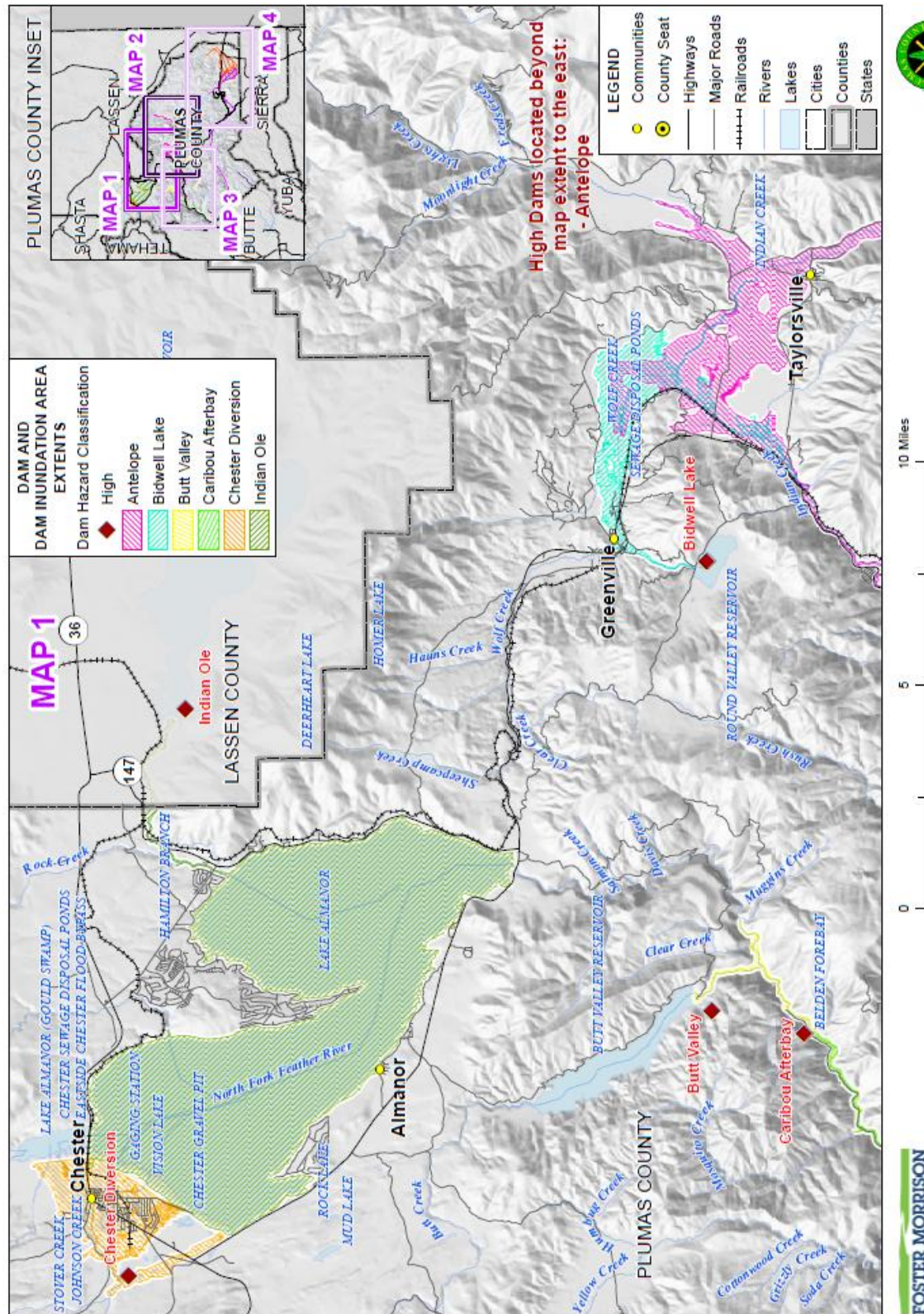
Data Source: Cal OES Dam Status 3/2025, DWR DSOD (updated 1/2025; data downloaded 3/2025), Plumas County GIS, Cal-Atlas, Map Date: 4/18/2025.

Figure 4-67 Plumas County Planning Area – High Hazard Dam Inundation Areas (Overview and Map Insets)



Data Source: Cal OES Dam Status 3/2025, DWR DSOD (updated 1/2025; data downloaded 3/2025), Plumas County GIS, Cal-Atlas; Map Date: 4/18/2025.

Figure 4-68 Plumas County Planning Area – High Hazard Dam Inundation Areas (Map Inset 1)



Data Source: Cal OES Dam Status 3/2025, DWR DSOD (updated 1/2025; data downloaded 3/2025), Plumas County GIS, Cal-Atlas, Map Date: 4/18/2025.

Figure 4-69 Plumas County Planning Area – High Hazard Dam Inundation Areas (Map Inset 2)

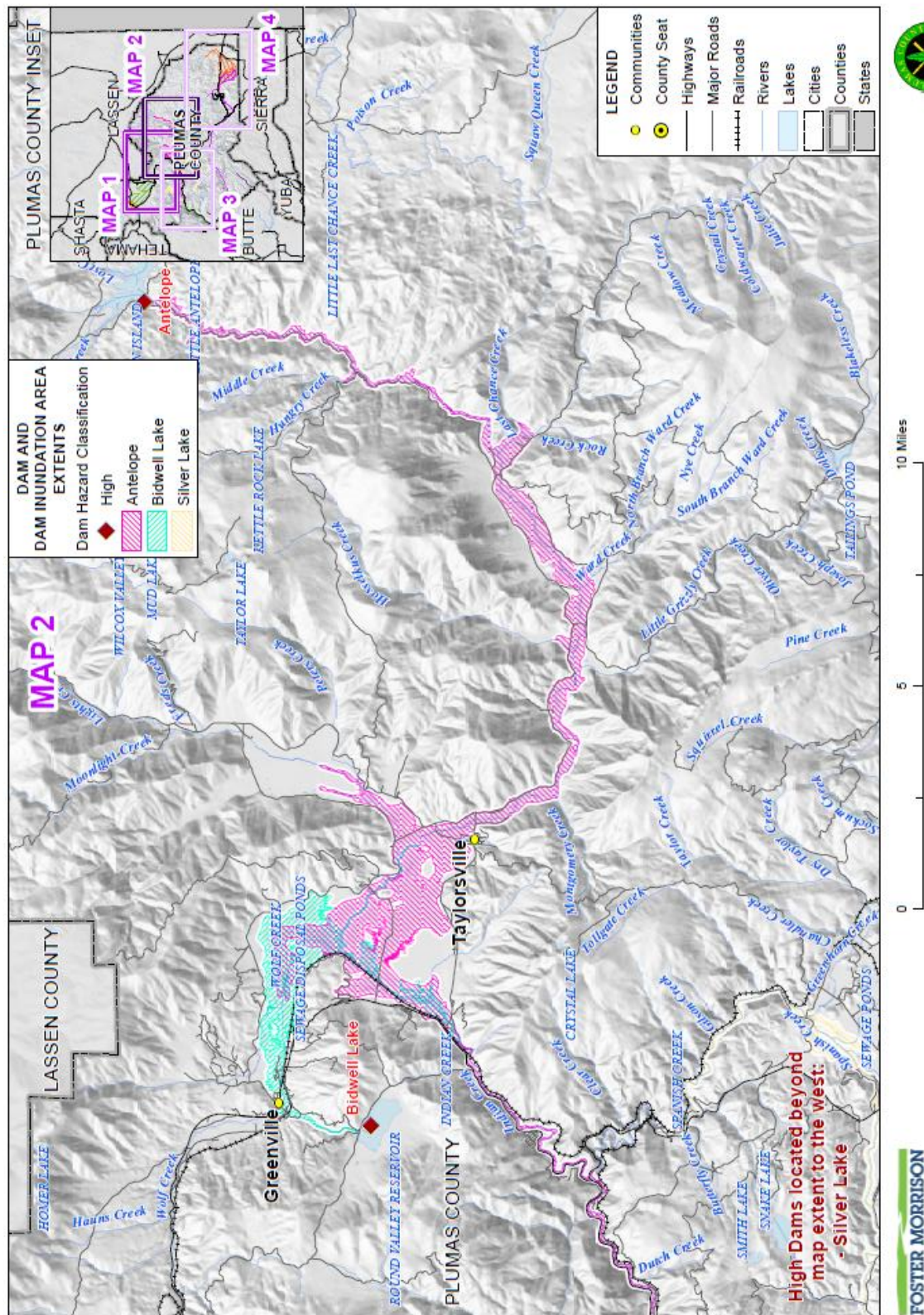
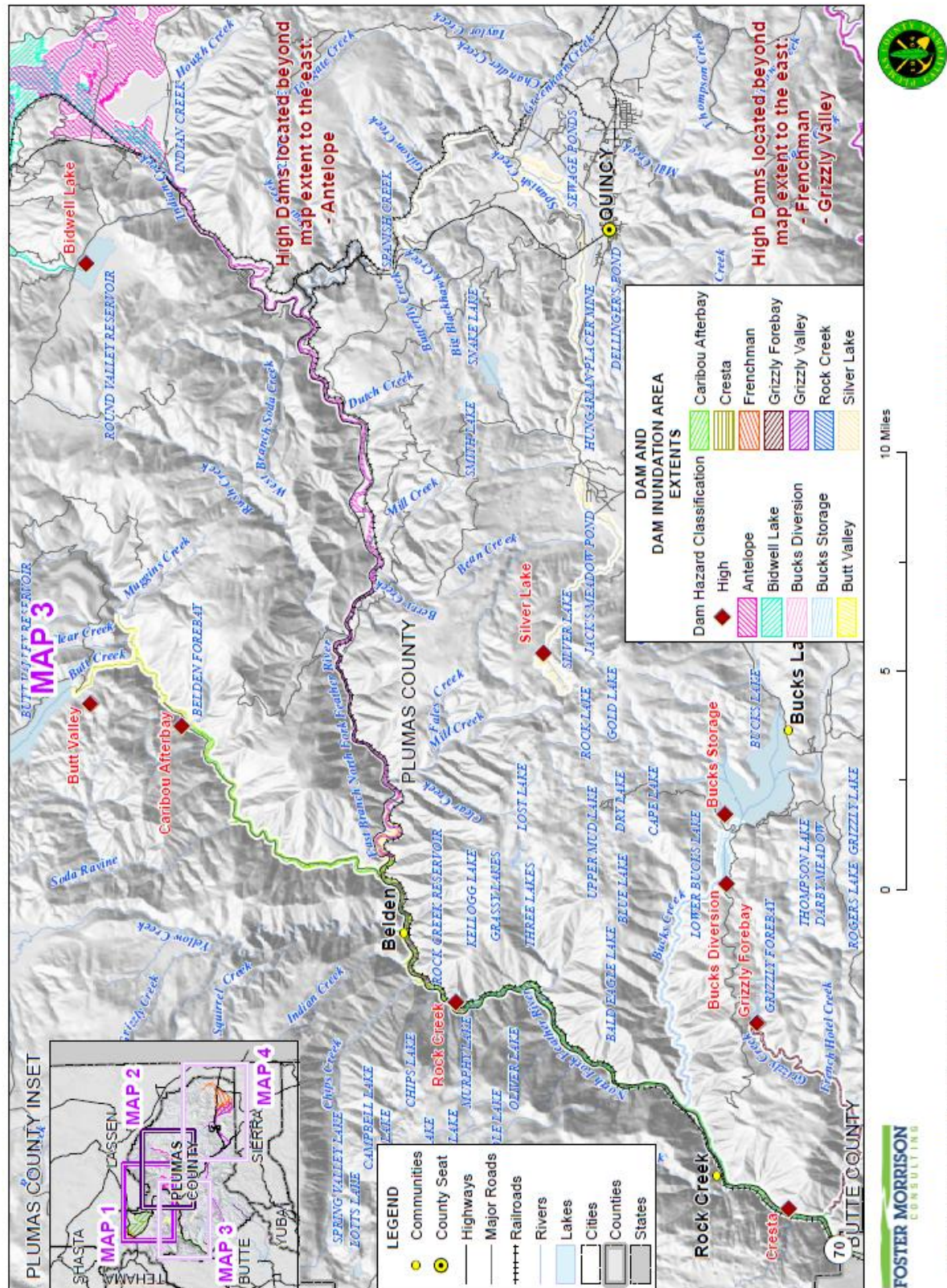


Figure 4-70 Plumas County Planning Area – High Hazard Dam Inundation Areas (Map Inset 3)



Data Source: Cal OES Dam Status 3/2025, DWR DSOD (updated 1/2025; data downloaded 3/2025), Plumas County GIS, Cal-Atlas; Map Date: 4/18/2025.

4)



Data Source: Cal OES Dam Status 3/2025, DWR DSOD (updated 1/2025; data downloaded 3/2025), Plumas County GIS, Cal-Atlas; Map Date: 4/18/2025.

Table 4-54 Plumas County Planning Area–Geographical Dam Inundation Extents

| Dam Inundation Area | Total Acres | % of Total Acres | Improved Acres | % of Total Improved Acres | Unimproved Acres | % of Total Unimproved Acres |
|-----------------------------------|-------------|------------------|----------------|---------------------------|------------------|-----------------------------|
| Extremely High Hazard Dams | | | | | | |
| Unincorporated County | | | | | | |
| Lake Almanor | 2,355 | 0.14% | 19 | 0.02% | 2,337 | 0.15% |
| High Hazard Dams | | | | | | |
| City of Portola | | | | | | |
| Frenchman | 78 | 2.2% | 5 | 0.2% | 73 | 5.8% |
| Grizzly Creek | 61 | 1.7% | 4 | 0.2% | 57 | 4.5% |
| Grizzly Valley | 234 | 6.7% | 33 | 1.5% | 202 | 16.1% |
| Unincorporated County | | | | | | |
| Antelope | 9,462 | 0.6% | 2,607 | 2.9% | 6,855 | 0.4% |
| Bidwell Lake* | 2,660 | 0.2% | 509 | 0.6% | 2,151 | 0.1% |
| Bucks Diversion | 622 | 0.04% | 2 | 0.002% | 621 | 0.04% |
| Bucks Storage | 833 | 0.05% | 2 | 0.002% | 831 | 0.05% |
| Butt Valley | 1,648 | 0.10% | 10 | 0.01% | 1,638 | 0.1% |
| Caribou Afterbay | 983 | 0.06% | 7 | 0.01% | 976 | 0.06% |
| Chester Diversion | 2,781 | 0.2% | 654 | 0.7% | 2,127 | 0.1% |
| Cresta | 44 | 0.003% | 0 | 0.0% | 44 | 0.003% |
| Frenchman | 34,051 | 2.0% | 16,764 | 18.5% | 17,287 | 1.1% |
| Grizzly Creek | 609 | 0.04% | 81 | 0.1% | 528 | 0.03% |
| Grizzly Forebay | 192 | 0.01% | 0 | 0.0% | 192 | 0.01% |
| Grizzly Valley | 16,282 | 1.0% | 3,052 | 3.4% | 13,230 | 0.8% |
| Indian Ole | 25,743 | 1.5% | 5 | 0.01% | 25,738 | 1.6% |
| Little Grass Valley | 523 | 0.03% | 0 | 0.0% | 523 | 0.03% |
| Rock Creek | 571 | 0.03% | 1 | 0.001% | 571 | 0.04% |
| Silver Lake | 971 | 0.06% | 299 | 0.3% | 672 | 0.04% |

Source: DSOD/Cal OES/NID Dam Status 01/25

*this dam is locally known as Round Valley

There is no scale with which to measure dam failure, only a scale to measure dam failure vulnerability based on size of dam and proximity to development. Dam failure may range from a small breach to a total failure. While a dam may fill slowly with runoff from winter storms, a dam break can have a very quick speed of onset. The duration of dam failure is not long – only as long as it takes to empty the reservoir of water the dam held back.

For dam overtopping, the speed of onset is somewhat slower than that of a dam break, and the duration is longer (as evidenced in the 2017 Oroville Dam event). The Plumas County Planning Area would be affected for as long as the flood waters from the dam failure takes to drain downstream.

Past Occurrences

Disaster Declaration History

There have been no disaster declarations related to dam failure in Plumas County, as shown in Table 4-4.

NCDC Events

There have been no NCDC dam failure events in Plumas County.

National Performance of Dams Program Events

The National Performance of Dams Program at Stanford University tracks dam failures. A search of the National Performance of Dams Program database showed no past dam failure events in Plumas County.

Hazard Mitigation Planning Committee Events

No events of dam failure were noted to have occurred in Plumas County.

Likelihood of Future Occurrence

Unlikely—No dam failure events have occurred in the County. Further, based on historical data and input from the HMPC, it is unlikely that major dam failure event will occur in Plumas County. There is concern that many of the State’s older dams, including those in Plumas County, could start experiencing problems associated with aging infrastructure and deferred maintenance issues.

It is likely that climate change will increase the chance of future occurrence as well as future impacts. More information on climate change and dam failure can be found in the next section. More information on future impacts can be found in the Future Conditions/Future Development section of the Vulnerability Assessment below.

Climate Change and Dam Failure

The 2023 California State Hazard Mitigation Plan noted that modeling described in California’s Fourth Climate Change Assessment projects less frequent but more extreme daily precipitation. Year-to-year precipitation will become more volatile, and the number of dry years will increase by mid-century. As the climate continues to warm, atmospheric rivers will carry more moisture, and extreme precipitation may increase. Climate model projections show a tendency for the northern part of the State to become wetter. Increases in both precipitation and heat causing snow melt in areas upstream of dams could increase the potential for dam failure and uncontrolled releases in Plumas County.

Vulnerability Assessment

Vulnerability—Extremely High

Dam failure flooding can occur as the result of a partial or complete collapse of an impoundment. Dam failures often result from prolonged rainfall and flooding. An earthquake event can also contribute to a

dam failure. The primary danger associated with dam failure is the high velocity flooding of those properties downstream of the dam. A dam failure can range from a small, uncontrolled release to a catastrophic failure. Vulnerability to dam failures is generally confined to the areas subject to inundation downstream of the facility. Secondary losses would include loss of the multi-use functions of the facility and associated revenues that accompany those functions. Dam failure flooding would vary by community depending on which dam fails and the nature and extent of the dam failure and associated flooding.

The whole of the Planning Area has some measure of vulnerability to dam failure. An assessment of a community's vulnerability to this hazard begins with an understanding of local exposure to unincorporated Plumas County. This is included in the Local Concerns section below. After that, vulnerability is discussed in multiple sections that detail how this hazard can affect both the entire Plumas County Planning Area as well as the unincorporated portions of Plumas County. How the hazard affects the other participating jurisdictions can be found in their respective annexes to this LHMP Update. These sections below include assets at risk, impacts, and how future development can be affected by this hazard.

Local Concerns (unincorporated Plumas County)

The unincorporated County has specific concerns regarding this hazard. These concerns form a portion of the basis for the mitigation strategy and mitigation actions that seek to reduce vulnerabilities to this hazard.

WHAT SPECIFIC LOCAL CONCERNS DOES THE COUNTY HAVE? SPECIFIC VULNERABILITY CONCERNS? WHICH AREAS ARE MOST LIKELY AFFECTED? WHICH AREAS WILL MITIGATION EFFORTS FOCUS ON?

Local concerns for Portola and the Special Districts can be found under the Local Concerns heading in each respective jurisdictional annex to this LHMP Update.

Assets at Risk from Dam Failure

Assets at risk from dam failure include people and populations; structures; critical facilities and infrastructure; and natural, historic, and cultural resources. These are discussed in the following sections for the Plumas County Planning Area and unincorporated Plumas County.

Additionally, for each hazard in the FEMA National Risk Index in Plumas County, the relevant portions of the hazard analysis done by FEMA is presented below. This includes the Hazard Risk Index Rating, Expected Annual Loss Values, Exposure Values, and the Historic Loss Ratio Rating. These are presented for the Plumas County Planning Area as a whole.

Methodology (Location, Parcels, and Structures)

In order to analyze people and populations, structures, and critical facilities at risk in dam inundation areas, GIS was used to quantify those values. The 2024 Plumas County Parcel/Assessor Data was provided by Plumas County and was used as the basis for the inventory of assessed values for both improved and unimproved parcels within the Plumas County Planning Area. The dam inundation areas, obtained from DSOD, were then overlaid on the parcel layer. For the purposes of this analysis, if the dam inundation layer intersected any portion of a parcel polygon, the entire parcel was considered to be in the dam inundation

area. The parcels were segregated and analyzed in this fashion for the entire Planning Area. This analysis was performed on extremely high and high hazard dam inundation areas only. No analyses for significant, low or unknown hazard classification dams analysis were performed.

This dam inundation analysis can be misleading since there are many large polygons throughout the County.

All extremely high and high classification dams in the County have mapped dam inundation areas. Those dams, their hazard classification, mapping status, and whether they inundate areas in Plumas County are shown on Table 4-55.

Table 4-55 Plumas County Planning Area – Dam Inundation Mapping Status and Availability

| Dam Number | Source County | Cal OES Dam Inventory | | DSOD Dam Inundation Data | | Mapped | Plumas County Affected (analyzed) |
|------------|---------------|-----------------------|------------------------------|--------------------------|---------------------|--------|-----------------------------------|
| | | Dam Inventory | Previous Plan Classification | DSOD Data Available | DSOD Classification | | |
| 1 | Plumas County | Lake Almanor | Extremely High | Lake Almanor | Extremely High | Yes | Yes |
| 2 | Plumas County | Antelope | High | Antelope | High | Yes | Yes |
| 3 | Plumas County | Bidwell Lake | High | Bidwell Lake | High | Yes | Yes |
| 4 | Plumas County | Bucks Diversion | High | Bucks Diversion | High | Yes | Yes |
| 5 | Plumas County | Bucks Storage | Extremely High | Bucks Storage | High | Yes | Yes |
| 6 | Plumas County | Butt Valley | High | Butt Valley | High | Yes | Yes |
| 7 | Plumas County | Caribou Afterbay | High | Caribou Afterbay | High | Yes | Yes |
| 8 | Plumas County | Chester Diversion | High | Chester Diversion | High | Yes | Yes |
| 9 | Plumas County | Cresta | High | Cresta | High | Yes | Yes |
| 10 | Plumas County | Frenchman | High | Frenchman | High | Yes | Yes |
| 11 | Plumas County | Grizzly Creek | High | Grizzly Creek | High | Yes | Yes |
| 12 | Plumas County | Grizzly Forebay | High | Grizzly Forebay | High | Yes | Yes |
| 13 | Plumas County | Grizzly Valley | High | Grizzly Valley | High | Yes | Yes |
| 14 | Lassen County | Indian Ole | High | Indian Ole | High | Yes | Yes |
| 15 | Plumas County | Little Grass Valley | High | Little Grass Valley | High | Yes | Yes |

| Dam Number | Source County | Cal OES Dam Inventory | | DSOD Dam Inundation Data | | Mapped | Plumas County Affected (analyzed) |
|------------|---------------|-----------------------|------------------------------|--------------------------|------------------------------------|--------|-----------------------------------|
| | | Dam Inventory | Previous Plan Classification | DSOD Data Available | DSOD Classification | | |
| 16 | Plumas County | Rock Creek | High | Rock Creek | High | Yes | Yes |
| 17 | Plumas County | Silver Lake | High | Silver Lake | High | Yes | Yes |
| 18 | Plumas County | Eureka | Significant | Eureka | Significant | Yes | No |
| 19 | Plumas County | Long Lake | Significant | Long Lake | No DSOD Inundation/Class Available | No | No |
| 20 | Plumas County | Lower Three Lakes | Significant | Lower Three Lakes | Significant | Yes | No |
| 21 | Plumas County | Taylor Lake | Significant | Taylor Lake | No DSOD Inundation/Class Available | No | No |
| 22 | Plumas County | Slate Creek Diversion | Low | Slate Creek Diversion | No DSOD Inundation/Class Available | No | No |
| 23 | Plumas County | South Fork Diversion | Low | South Fork Diversion | No DSOD Inundation/Class Available | No | No |

Source: Cal OES/DSOD

People and Populations

All people and populations located in dam inundation areas are vulnerable to dam failure. Certain vulnerable populations may be at increased risk to dam failure, especially during a large event with minimal advance notice. These vulnerable populations may include: the unhoused, those with limited mobility, and those that lack the resources to leave the area.

Plumas County residents that live in these dam inundation areas are often the most vulnerable. Not only are the residents at risk, but their homes and contents are all at risk, compounding the impacts associated with significant hazard events. To further evaluate the impact to the Plumas County Planning Area's residential populations located in these hazard areas, a separate analysis was performed to determine residential populations in the dam inundation areas. The DSOD dam inundation areas were overlayed on the parcel layer and linked to Assessor Data. Those residential parcel polygons that intersect the dam inundation areas were counted and multiplied by the Census Bureau average household factors for each jurisdiction. This is shown in Table 4-56.

Table 4-56 Plumas County Planning Area – Residential Population in Extremely High and High Hazard Dam Inundation Area by Jurisdiction

| Dam Inundation Area | City of Portola | | Unincorporated Plumas County | |
|-----------------------------------|------------------------------|------------|------------------------------|------------|
| | Improved Residential Parcels | Population | Improved Residential Parcels | Population |
| Extremely High Hazard Dams | | | | |
| Lake Almanor | 0 | 0 | 8 | 19 |
| High Hazard Dams | | | | |
| Antelope | 0 | 0 | 170 | 406 |
| Bidwell Lake | 0 | 0 | 45 | 108 |
| Bucks Diversion | 0 | 0 | 0 | 0 |
| Bucks Storage | 0 | 0 | 0 | 0 |
| Butt Valley | 0 | 0 | 3 | 7 |
| Caribou Afterbay | 0 | 0 | 2 | 5 |
| Chester Diversion | 0 | 0 | 1,023 | 2,445 |
| Cresta | 0 | 0 | 0 | 0 |
| Eureka | 0 | 0 | 0 | 0 |
| Frenchman | 13 | 30 | 108 | 258 |
| Grizzly Creek | 12 | 27 | 29 | 69 |
| Grizzly Forebay | 0 | 0 | 0 | 0 |
| Grizzly Valley | 82 | 188 | 396 | 946 |
| Indian Ole (Lassen County) | 0 | 0 | 143 | 342 |
| Little Grass Valley | 0 | 0 | 0 | 0 |
| Rock Creek | 0 | 0 | 0 | 0 |
| Silver Lake | 0 | 0 | 64 | 153 |

Source: Cal OES, DSOD, 2024 Plumas County Parcel/Assessor Data, 2023 US Census American Community Survey Average Household Size – City of Portola (2.29); Unincorporated Plumas County (2.39).

Structures

Many structures in the Plumas County Planning Area have some measure of risk to dam failure. Dam failure flooding can affect the built environment of many locations in the Plumas County Planning Area. Structures in dam inundation areas are at risk and depending on flood depths, can range from slight damage to total inundation. Analysis by extremely high hazard dam and high hazard dam follows.

Extremely High Hazard Dam Analysis

Parcel counts, land, and improved values (i.e., those with a structure improvement on the parcel), personal property, estimated content replacement values, and total values that fall within each extremely high hazard dam inundation areas in the Planning Area are presented below by dam. For the extremely high hazard dam inundation areas, only the unincorporated County is affected. Breakdowns of parcel counts by property

use in each inundation are for the incorporated jurisdictions in the County are shown in their respective annexes to this LHMP Update. Analysis is presented in the following tables.

- Table 4-57 shows the summary counts and values of parcels in all extremely high hazard dam inundation areas in the Plumas County Planning Area. It should be noted that only the unincorporated County is affected by extremely high hazard dam inundations.
- Table 4-58 shows the count and value of parcels in the Lake Almanor Dam inundation area detailed by property use for the unincorporated County.

Table 4-57 Plumas County Planning Area – Summary Counts and Values of Parcels and Structures in Extremely High Hazard Dam Inundation Area by Dam

| Dam Inundation Area | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|---------------------|--------------------|-----------------------|------------------|--------------------------|-------------------------|--------------------------|-------------|
| Lake Almanor | 47 | 12 | \$1,493,588 | \$2,266,764 | \$62,488 | \$2,049,844 | \$5,872,684 |

Source: Cal OES/DSOD, 2024 Plumas County Parcel/Assessor Data

Table 4-58 Unincorporated Plumas County – Count and Value of Parcels and Structures in Extremely High Hazard Dam Inundation Area (Lake Almanor) by Property Use

| Dam Inundation Area/ Property Use | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|---|--------------------|-----------------------|--------------------|--------------------------|-------------------------|--------------------------|--------------------|
| Lake Almanor | | | | | | | |
| Agricultural | 2 | | \$55,771 | \$0 | \$0 | \$0 | \$55,771 |
| Commercial | 4 | 3 | \$109,485 | \$1,736,350 | \$56,350 | \$1,736,350 | \$3,638,535 |
| Federal Lands | 9 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 2 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Institutional | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Miscellaneous | 1 | 0 | \$3,716 | \$0 | \$0 | \$0 | \$3,716 |
| Recreational | 1 | 1 | \$122,330 | \$96,574 | \$638 | \$96,574 | \$316,116 |
| Residential | 22 | 8 | \$1,202,286 | \$433,840 | \$5,500 | \$216,920 | \$1,858,546 |
| ROW/Utilities | 6 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Unincorporated Plumas County Total | 47 | 12 | \$1,493,588 | \$2,266,764 | \$62,488 | \$2,049,844 | \$5,872,684 |

Source: Cal OES/DSOD, 2024 Plumas County Parcel/Assessor Data

High Hazard Dam Analysis

Parcel counts, land, and improved values (i.e., those with a structure improvement on the parcel), personal property values, estimated content replacement values, and total values that fall within each high hazard

dam inundation areas in the Planning Area are presented below by dam. For the high hazard dam inundation areas, both the City of Portola (Frenchman, Grizzley Creek, Grizzly Valley) as well as the unincorporated County is affected. The results are presented in tables below by:

- Table 4-59 shows the shows the summary counts and values of parcels in all high hazard dam inundation areas. This table includes summaries for both the unincorporated County, as well as the City of Portola.
- Table 4-60 shows the count and value of parcels in each high hazard dam inundation area detailed by property use for the unincorporated County.

More information on dam inundations affecting the City of Portola is shown in their annex to this LHMP Update.

Table 4-59 Plumas County Planning Area – Summary Counts and Values of Parcels and Structures in High Hazard Dam Inundation Area by Dam

| Dam Inundation Area | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|---------------------|--------------------|-----------------------|------------------|--------------------------|-------------------------|--------------------------|---------------|
| Antelope | 445 | 203 | \$32,907,880 | \$41,089,602 | \$2,946,487 | \$24,732,037 | \$101,676,006 |
| Bidwell Lake | 276 | 63 | \$16,141,238 | \$12,518,086 | \$773,289 | \$9,227,265 | \$38,659,878 |
| Bucks Diversion | 7 | 1 | \$64,771 | \$44,198 | \$0 | \$44,198 | \$153,167 |
| Bucks Storage | 10 | 1 | \$64,771 | \$44,198 | \$0 | \$44,198 | \$153,167 |
| Butt Valley | 32 | 6 | \$588,715 | \$1,940,477 | \$56,350 | \$1,838,414 | \$4,423,956 |
| Caribou Afterbay | 23 | 5 | \$211,447 | \$1,874,126 | \$56,350 | \$1,805,238 | \$3,947,161 |
| Chester Diversion | 1,496 | 1,167 | \$73,477,181 | \$200,553,635 | \$25,417,370 | \$121,650,730 | \$421,098,916 |
| Cresta | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Frenchman* | 487 | 187 | \$47,205,467 | \$43,065,368 | \$2,913,406 | \$30,157,820 | \$123,342,061 |
| Grizzly Creek* | 188 | 59 | \$11,183,050 | \$14,622,880 | \$65,215 | \$10,508,935 | \$36,380,080 |
| Grizzly Forebay | 6 | 0 | \$59,280 | \$0 | \$0 | \$0 | \$59,280 |
| Grizzly Valley* | 1,207 | 667 | \$78,302,639 | \$136,953,183 | \$914,730 | \$90,820,304 | \$306,990,856 |
| Indian Ole | 193 | 143 | \$70,765,788 | \$74,205,539 | \$3,608 | \$37,102,770 | \$182,077,705 |
| Little Grass Valley | 7 | 0 | \$86,653 | \$0 | \$0 | \$0 | \$86,653 |
| Rock Creek | 8 | 1 | \$64,771 | \$44,198 | \$0 | \$44,198 | \$153,167 |
| Silver Lake | 122 | 64 | \$8,144,051 | \$10,846,489 | \$49,550 | \$5,859,745 | \$24,899,835 |

Source: Cal OES/DSOD, 2024 Plumas County Parcel/Assessor Data

* Affect the City of Portola and the unincorporated County

Table 4-60 Unincorporated Plumas County– Count and Value of Parcels and Structures in High Hazard Dam Inundation Area by Dam and Property Use

| Dam Inundation Area/ Property Use | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|-----------------------------------|--------------------|-----------------------|---------------------|--------------------------|-------------------------|--------------------------|----------------------|
| Antelope | | | | | | | |
| Agricultural | 76 | 21 | \$10,400,951 | \$3,369,109 | \$89,560 | \$3,369,109 | \$17,228,729 |
| Commercial | 10 | 8 | \$1,142,392 | \$3,834,150 | \$193,933 | \$3,834,150 | \$9,004,625 |
| Federal Lands | 16 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 17 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 7 | 2 | \$483,334 | \$446,826 | \$0 | \$670,239 | \$1,600,399 |
| Institutional | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Miscellaneous | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 3 | 2 | \$82,464 | \$277,561 | \$40,139 | \$277,561 | \$677,725 |
| Residential | 280 | 170 | \$20,798,739 | \$33,161,956 | \$2,622,855 | \$16,580,978 | \$73,164,528 |
| ROW/Utilities | 35 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Total | 445 | 203 | \$32,907,880 | \$41,089,602 | \$2,946,487 | \$24,732,037 | \$101,676,006 |
| Bidwell Lake | | | | | | | |
| Agricultural | 22 | 6 | \$4,673,292 | \$1,382,310 | \$20,260 | \$1,382,310 | \$7,458,172 |
| Commercial | 24 | 8 | \$1,658,161 | \$4,161,251 | \$662,673 | \$4,161,251 | \$10,643,336 |
| Federal Lands | 2 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 11 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 8 | 2 | \$384,681 | \$57,661 | \$0 | \$86,492 | \$528,834 |
| Institutional | 1 | 0 | \$27,886 | \$0 | \$0 | \$0 | \$27,886 |
| Miscellaneous | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 4 | 2 | \$99,018 | \$277,561 | \$40,139 | \$277,561 | \$694,279 |
| Residential | 175 | 45 | \$9,298,200 | \$6,639,303 | \$50,217 | \$3,319,652 | \$19,307,372 |
| ROW/Utilities | 28 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Total | 276 | 63 | \$16,141,238 | \$12,518,086 | \$773,289 | \$9,227,265 | \$38,659,878 |
| Bucks Diversion | | | | | | | |
| Agricultural | 2 | 0 | \$55,771 | \$0 | \$0 | \$0 | \$55,771 |
| Commercial | 1 | 1 | \$9,000 | \$44,198 | \$0 | \$44,198 | \$97,396 |
| Federal Lands | 2 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Institutional | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Miscellaneous | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |

| Dam Inundation Area/ Property Use | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|-----------------------------------|--------------------|-----------------------|------------------|--------------------------|-------------------------|--------------------------|--------------------|
| Residential | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| ROW/Utilities | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Total | 7 | 1 | \$64,771 | \$44,198 | \$0 | \$44,198 | \$153,167 |
| Bucks Storage | | | | | | | |
| Agricultural | 2 | 0 | \$55,771 | \$0 | \$0 | \$0 | \$55,771 |
| Commercial | 1 | 1 | \$9,000 | \$44,198 | \$0 | \$44,198 | \$97,396 |
| Federal Lands | 2 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Institutional | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Miscellaneous | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Residential | 3 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| ROW/Utilities | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Total | 10 | 1 | \$64,771 | \$44,198 | \$0 | \$44,198 | \$153,167 |
| Butt Valley | | | | | | | |
| Agricultural | 2 | 0 | \$55,771 | \$0 | \$0 | \$0 | \$55,771 |
| Commercial | 4 | 3 | \$109,485 | \$1,736,350 | \$56,350 | \$1,736,350 | \$3,638,535 |
| Federal Lands | 9 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Institutional | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Miscellaneous | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Residential | 10 | 3 | \$423,459 | \$204,127 | \$0 | \$102,064 | \$729,650 |
| ROW/Utilities | 6 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Total | 32 | 6 | \$588,715 | \$1,940,477 | \$56,350 | \$1,838,414 | \$4,423,956 |
| Caribou Afterbay | | | | | | | |
| Agricultural | 2 | 0 | \$55,771 | \$0 | \$0 | \$0 | \$55,771 |
| Commercial | 4 | 3 | \$109,485 | \$1,736,350 | \$56,350 | \$1,736,350 | \$3,638,535 |
| Federal Lands | 6 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Institutional | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Miscellaneous | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |

| Dam Inundation Area/ Property Use | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|-----------------------------------|--------------------|-----------------------|---------------------|--------------------------|-------------------------|--------------------------|----------------------|
| Recreational | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Residential | 5 | 2 | \$46,191 | \$137,776 | \$0 | \$68,888 | \$252,855 |
| ROW/Utilities | 5 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Total | 23 | 5 | \$211,447 | \$1,874,126 | \$56,350 | \$1,805,238 | \$3,947,161 |
| Chester Diversion | | | | | | | |
| Agricultural | 13 | 0 | \$297,165 | \$0 | \$0 | \$0 | \$297,165 |
| Commercial | 163 | 121 | \$17,051,266 | \$35,160,368 | \$24,614,834 | \$35,160,368 | \$111,986,836 |
| Federal Lands | 3 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 33 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 19 | 13 | \$1,454,167 | \$2,954,682 | \$671 | \$4,432,023 | \$8,841,543 |
| Institutional | 16 | 9 | \$307,206 | \$1,412,790 | \$11,680 | \$1,412,790 | \$3,144,466 |
| Miscellaneous | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 1 | 1 | \$53,060 | \$265,302 | \$0 | \$265,302 | \$583,664 |
| Residential | 1,187 | 1,023 | \$54,314,317 | \$160,760,493 | \$790,185 | \$80,380,247 | \$296,245,242 |
| ROW/Utilities | 60 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Total | 1,496 | 1,167 | \$73,477,181 | \$200,553,635 | \$25,417,370 | \$121,650,730 | \$421,098,916 |
| Cresta | | | | | | | |
| Agricultural | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Commercial | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Federal Lands | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Institutional | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Miscellaneous | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Residential | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| ROW/Utilities | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Total | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Frenchman | | | | | | | |
| Agricultural | 90 | 36 | \$17,901,349 | \$7,132,959 | \$2,470,258 | \$7,132,959 | \$34,637,525 |
| Commercial | 23 | 16 | \$2,097,396 | \$5,229,719 | \$46,465 | \$5,229,719 | \$12,603,299 |
| Federal Lands | 16 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 32 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 1 | 0 | \$83,626 | \$0 | \$0 | \$0 | \$83,626 |
| Institutional | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |

| Dam Inundation Area/ Property Use | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|-----------------------------------|--------------------|-----------------------|---------------------|--------------------------|-------------------------|--------------------------|----------------------|
| Miscellaneous | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 7 | 5 | \$798,618 | \$1,727,948 | \$0 | \$1,727,948 | \$4,254,514 |
| Residential | 203 | 108 | \$23,913,007 | \$24,844,657 | \$380,018 | \$12,422,329 | \$61,560,011 |
| ROW/Utilities | 44 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Total | 418 | 165 | \$44,793,996 | \$38,935,283 | \$2,896,741 | \$26,512,955 | \$113,138,975 |
| Grizzly Creek | | | | | | | |
| Agricultural | 2 | 0 | \$147,112 | \$0 | \$0 | \$0 | \$147,112 |
| Commercial | 15 | 9 | \$1,310,886 | \$2,433,410 | \$5,500 | \$2,433,410 | \$6,183,206 |
| Federal Lands | 4 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 13 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 1 | 0 | \$83,626 | \$0 | \$0 | \$0 | \$83,626 |
| Institutional | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Miscellaneous | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 2 | 2 | \$138,946 | \$1,305,609 | \$0 | \$1,305,609 | \$2,750,164 |
| Residential | 68 | 29 | \$7,447,841 | \$7,371,019 | \$43,050 | \$3,685,510 | \$18,547,420 |
| ROW/Utilities | 19 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Total | 125 | 40 | \$9,128,411 | \$11,110,038 | \$48,550 | \$7,424,529 | \$27,711,528 |
| Grizzly Forebay | | | | | | | |
| Agricultural | 2 | 0 | \$59,280 | \$0 | \$0 | \$0 | \$59,280 |
| Commercial | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Federal Lands | 3 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Institutional | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Miscellaneous | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Residential | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| ROW/Utilities | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Total | 6 | 0 | \$59,280 | \$0 | \$0 | \$0 | \$59,280 |
| Grizzly Valley | | | | | | | |
| Agricultural | 43 | 11 | \$6,190,243 | \$1,837,037 | \$103,680 | \$1,837,037 | \$9,967,997 |
| Commercial | 64 | 45 | \$6,309,222 | \$15,256,180 | \$113,595 | \$15,256,180 | \$36,935,177 |
| Federal Lands | 16 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 53 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 24 | 17 | \$2,243,403 | \$2,399,030 | \$190 | \$3,598,545 | \$8,241,168 |

| Dam Inundation Area/ Property Use | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|-----------------------------------|--------------------|-----------------------|---------------------|--------------------------|-------------------------|--------------------------|----------------------|
| Institutional | 1 | 1 | \$9,399 | \$175,873 | \$0 | \$175,873 | \$361,145 |
| Miscellaneous | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 53 | 34 | \$2,404,275 | \$5,183,330 | \$36,430 | \$5,183,330 | \$12,807,365 |
| Residential | 595 | 396 | \$52,209,444 | \$85,627,475 | \$253,480 | \$42,813,738 | \$180,904,137 |
| ROW/Utilities | 69 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Total | 919 | 504 | \$69,365,986 | \$110,478,925 | \$507,375 | \$68,864,703 | \$249,216,989 |
| Indian Ole | | | | | | | |
| Agricultural | 5 | 0 | \$201,864 | \$0 | \$0 | \$0 | \$201,864 |
| Commercial | 4 | 0 | \$371,757 | \$0 | \$0 | \$0 | \$371,757 |
| Federal Lands | 5 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Institutional | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Miscellaneous | 3 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Residential | 159 | 143 | \$70,192,167 | \$74,205,539 | \$3,608 | \$37,102,770 | \$181,504,084 |
| ROW/Utilities | 16 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Total | 193 | 143 | \$70,765,788 | \$74,205,539 | \$3,608 | \$37,102,770 | \$182,077,705 |
| Little Grass Valley | | | | | | | |
| Agricultural | 2 | 0 | \$82,644 | \$0 | \$0 | \$0 | \$82,644 |
| Commercial | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Federal Lands | 4 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Institutional | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Miscellaneous | 1 | 0 | \$4,009 | \$0 | \$0 | \$0 | \$4,009 |
| Recreational | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Residential | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| ROW/Utilities | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Total | 7 | 0 | \$86,653 | \$0 | \$0 | \$0 | \$86,653 |
| Rock Creek | | | | | | | |
| Agricultural | 2 | 0 | \$55,771 | \$0 | \$0 | \$0 | \$55,771 |
| Commercial | 1 | 1 | \$9,000 | \$44,198 | \$0 | \$44,198 | \$97,396 |
| Federal Lands | 3 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |

| Dam Inundation Area/ Property Use | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|-----------------------------------|--------------------|-----------------------|--------------------|--------------------------|-------------------------|--------------------------|---------------------|
| Industrial | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Institutional | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Miscellaneous | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Residential | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| ROW/Utilities | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Total | 8 | 1 | \$64,771 | \$44,198 | \$0 | \$44,198 | \$153,167 |
| Silver Lake | | | | | | | |
| Agricultural | 10 | 4 | \$1,336,802 | \$856,234 | \$49,550 | \$856,234 | \$3,098,820 |
| Commercial | 3 | 1 | \$186,866 | \$16,767 | \$0 | \$16,767 | \$220,400 |
| Federal Lands | 8 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 4 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Institutional | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Miscellaneous | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Residential | 90 | 59 | \$6,620,383 | \$9,973,488 | \$0 | \$4,986,744 | \$21,580,615 |
| ROW/Utilities | 7 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Total | 122 | 64 | \$8,144,051 | \$10,846,489 | \$49,550 | \$5,859,745 | \$24,899,835 |

Source: Cal OES/DSOD, 2024 Plumas County Parcel/ Assessor Data

Critical Facilities and Infrastructure

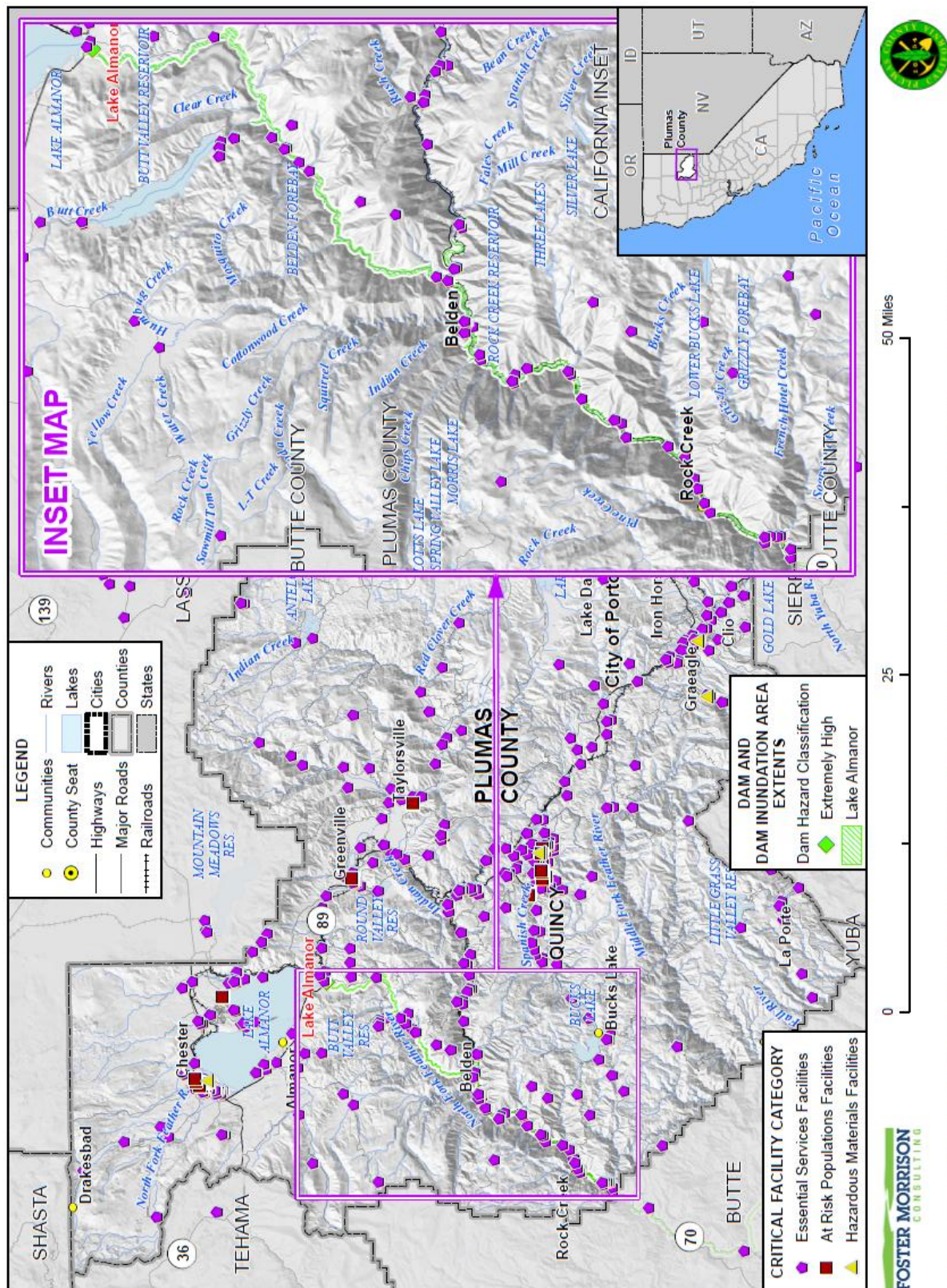
Dam failure presents a threat to critical facilities and infrastructure. For example, transportation routes, including bridges and highways, are vulnerable to dam inundation and have the potential to be unpassable and even destroyed, creating isolation and supply chain issues. Those critical facilities that are most vulnerable are those that are already in poor condition and would not be able to withstand a large water surge. The following GIS analysis identifies critical facilities and infrastructure at risk to dam inundation flooding, separated out by extremely high hazard and high hazard dams.

Extremely High Hazard Dam Inundation Analysis

Dam failure presents a threat to critical facilities and infrastructure. The following analysis discusses critical facilities and infrastructure. A separate analysis was performed on the critical facility inventory in the Plumas County Planning Area to determine critical facilities in extremely high hazard dam inundation areas. Using GIS, the DSOD extremely high hazard dam inundation areas were overlayed on the critical facility GIS layer. Figure 4-72 shows critical facilities, as well as the extremely high hazard dam inundation areas. Table 4-61 details critical facilities by extremely high hazard dam inundation areas by facility type and count for the Planning Area. Details of critical facility category, type, name and address by extremely

high hazard dam inundation areas are listed in Appendix G. As shown, 47 critical facilities fall in the extremely high hazard dam inundation area, all of which are located in the unincorporated County.

Figure 4-72 Plumas County Planning Area – Critical Facilities in Extremely High Hazard Dam Inundation Areas (Overview Map with Inset)



Data Source: Cal OES Dam Status 3/2025, DWR DSOD (updated 1/2025; data downloaded 3/2025), Plumas County GIS, Cal-Atlas; Map Date: 9/9/2025.

Table 4-61 Plumas County Planning Area – Critical Facilities in Extremely High Hazard Dam Inundation Zones by Jurisdiction and Critical Facility Category

| Jurisdiction / Extremely High Hazard Dam Inundation Area | Critical Facility Category | Facility Count |
|--|---|----------------|
| Portola | | |
| Outside of Extremely High Hazard Dam Inundation Area | Essential Services Facilities | 16 |
| | At Risk Populations Facilities | 8 |
| | Hazardous Materials Facilities | 0 |
| | Outside of Extremely High Hazard Dam Inundation Area Total | 24 |
| Portola Total | | 24 |
| Unincorporated Plumas County | | |
| Extremely High Hazard Dam Inundation Area | Essential Services Facilities | 47 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | Extremely High Hazard Dam Inundation Area Total | 47 |
| Outside of Extremely High Hazard Dam Inundation Area | Essential Services Facilities | 782 |
| | At Risk Populations Facilities | 33 |
| | Hazardous Materials Facilities | 4 |
| | Outside of Extremely High Hazard Dam Inundation Area Total | 819 |
| Unincorporated Plumas County Total | | 866 |
| Unincorporated Butte County | | |
| Extremely High Hazard Dam Inundation Area | Essential Services Facilities | 2 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | Extremely High Hazard Dam Inundation Area Total | 2 |
| Outside of Extremely High Hazard Dam Inundation Area | Essential Services Facilities | 2 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | Outside of Extremely High Hazard Dam Inundation Area Total | 2 |
| Unincorporated Butte County Total | | 4 |
| Unincorporated Lassen County | | |
| Outside of Extremely High Hazard Dam Inundation Area | Essential Services Facilities | 34 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |

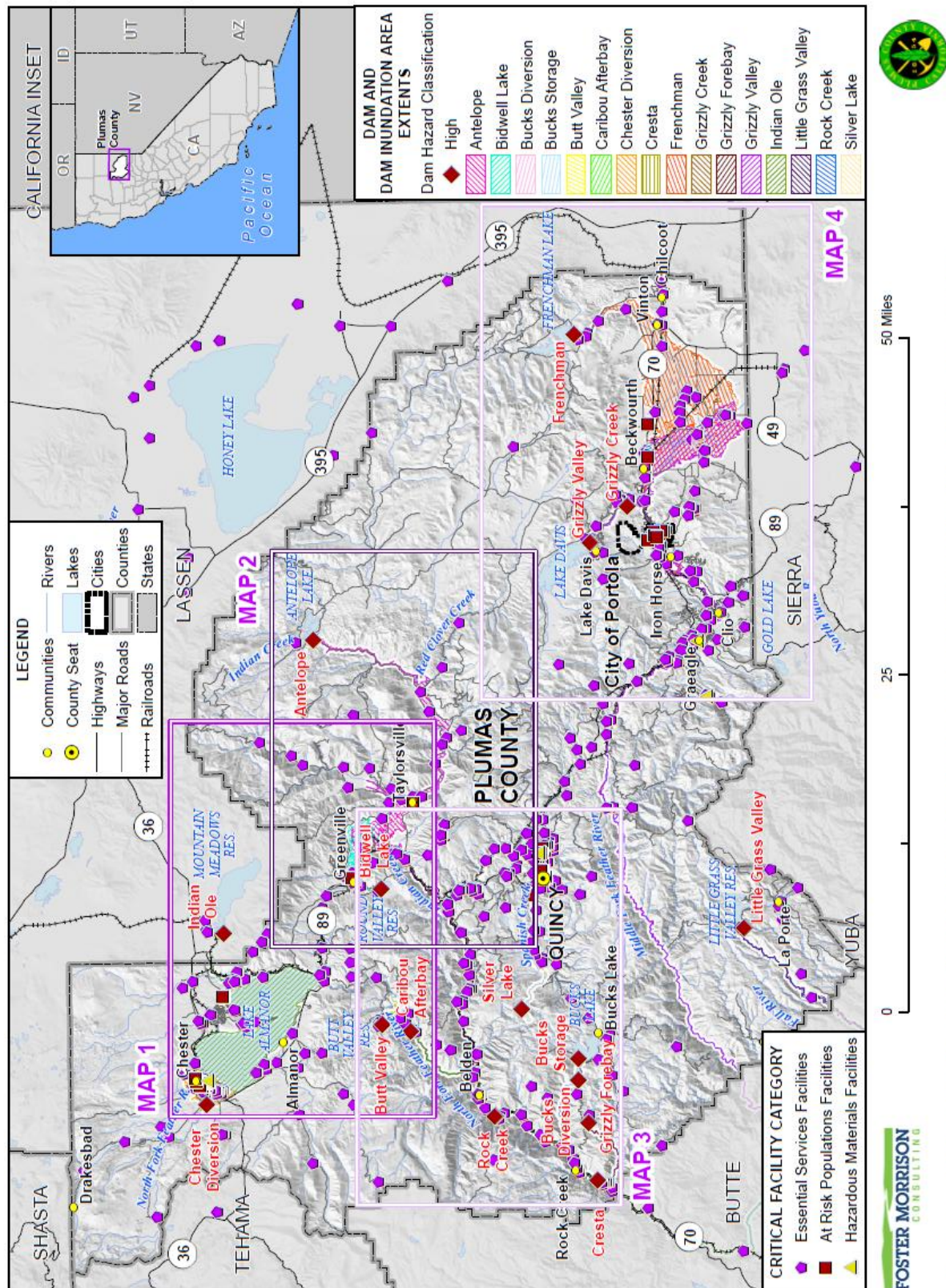
| Jurisdiction / Extremely High Hazard Dam Inundation Area | Critical Facility Category | Facility Count |
|--|---|----------------|
| | Outside of Extremely High Hazard Dam Inundation Area Total | 34 |
| Unincorporated Lassen County Total | | 34 |
| Unincorporated Sierra County | | |
| Outside of Extremely High Hazard Dam Inundation Area | Essential Services Facilities | 4 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | Outside of Extremely High Hazard Dam Inundation Area Total | 4 |
| Unincorporated Sierra County Total | | 4 |
| Unincorporated Tehama County | | |
| Outside of Extremely High Hazard Dam Inundation Area | Essential Services Facilities | 2 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | Outside of Extremely High Hazard Dam Inundation Area Total | 2 |
| Unincorporated Tehama County Total | | 2 |
| | | |
| Grand Total | | 934 |

Source: Cal OES/DSOD; Plumas County GIS

High Hazard Dam Inundation Analysis

Dam failure presents a threat to critical facilities and infrastructure. The following analysis discusses critical facilities and infrastructure. A separate analysis was performed on the critical facility inventory in the Plumas County Planning Area to determine critical facilities in high hazard dam inundation areas. Using GIS, the DSOD high hazard dam inundation areas were overlayed on the critical facility GIS layer. Figure 4-73 shows critical facilities, as well as the high hazard dam inundation areas. Figure 4-74 through Figure 4-77 show the zoomed inset maps from Figure 4-73. Table 4-62 details critical facilities by high hazard dam inundation areas by facility type and count for the Planning Area. Details of critical facility category, type, name and address by high hazard dam inundation areas are listed in Appendix G. As shown, 8 critical facilities that fall in the high hazard dam inundation area are located in the City of Portola, 186 in the unincorporated County, and 3 in the surrounding counties.

Figure 4-73 Plumas County Planning Area – Critical Facilities in Extremely High Hazard Dam Inundation Areas (Overview Map)



Data Source: Cal OES Dam Status 3/2025, DWR DSOD (updated 1/2025; data downloaded 3/2025), Plumas County GIS, Cal-Atlas, Map Date: 9/9/2025.

Figure 4-74 Plumas County Planning Area – Critical Facilities in High Hazard Dam Inundation Areas (Map Inset 1)

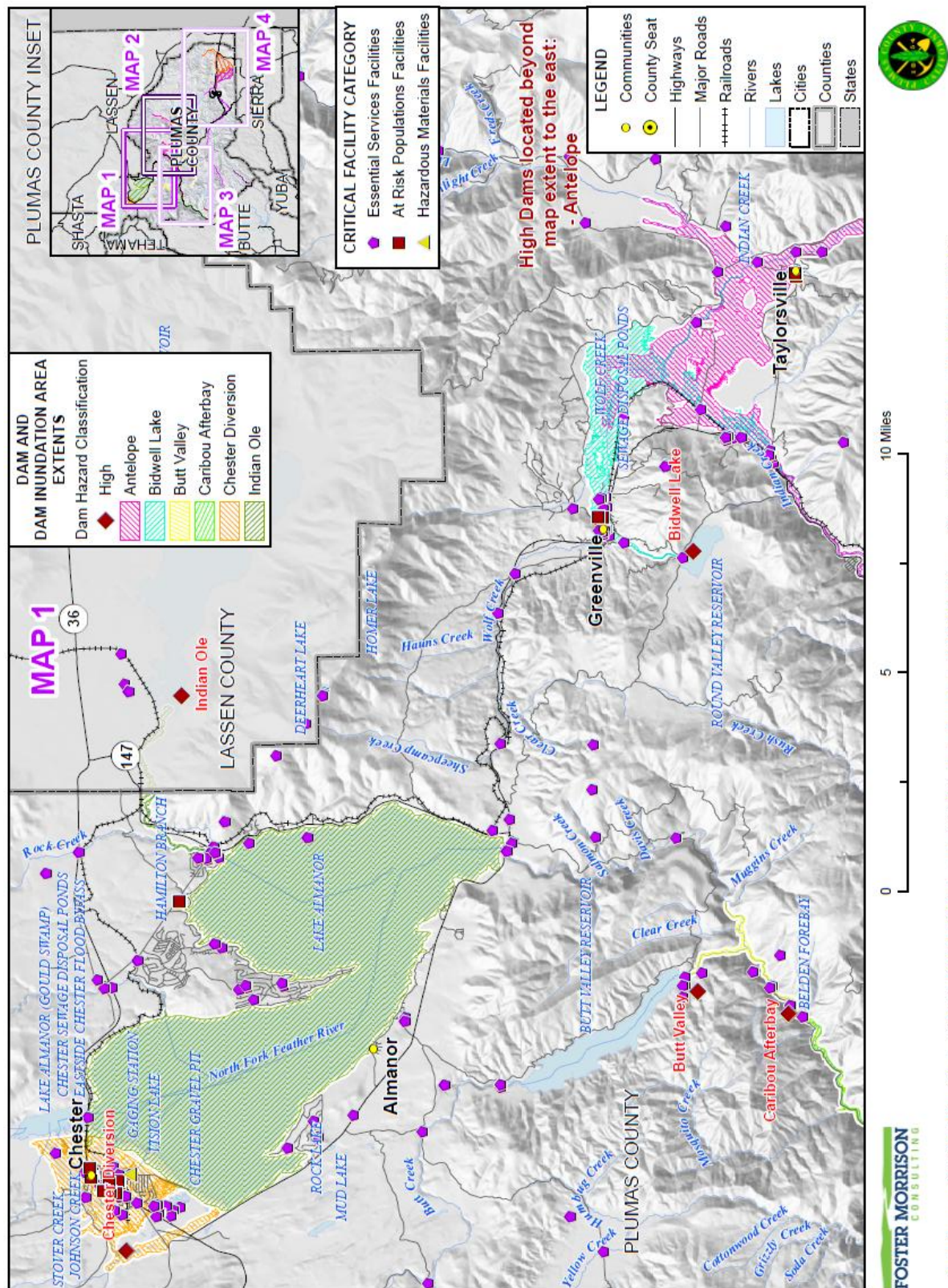
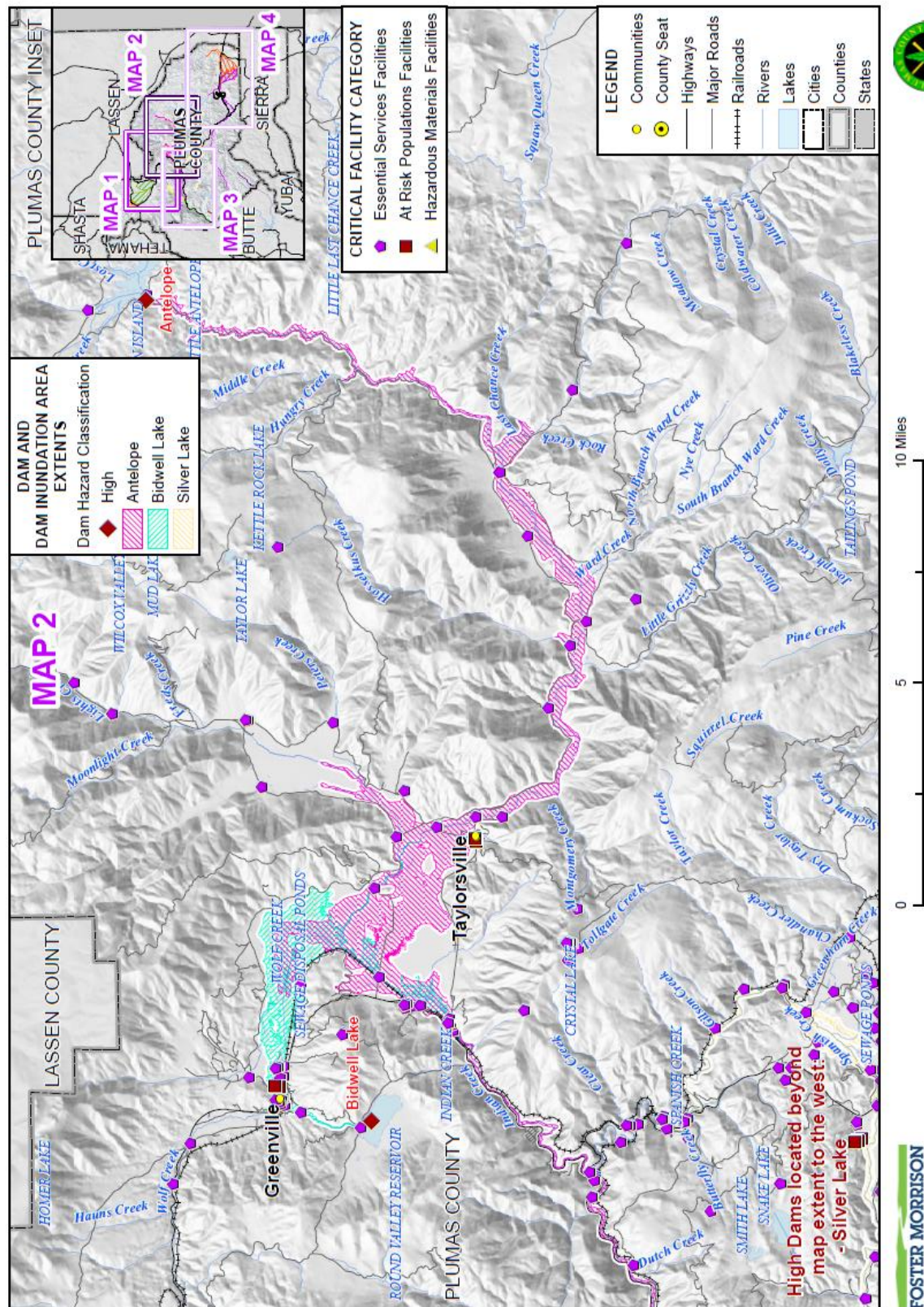


Figure 4-75 Plumas County Planning Area – Critical Facilities in High Hazard Dam Inundation Areas (Map Inset 2)



Plumas County
Local Hazard Mitigation Plan Update
November 2025



Plumas County
Local Hazard Mitigation Plan Update
November 2025



Table 4-62 Plumas County Planning Area – Critical Facilities in Extremely High Hazard Dam Inundation Zones by Jurisdiction and Critical Facility Category

| Jurisdiction / High Hazard Dam Inundation Area | Critical Facility Category | Facility Count |
|--|---|----------------|
| Portola | | |
| High Hazard Dam Inundation Area | Essential Services Facilities | 7 |
| | At Risk Populations Facilities | 1 |
| | Hazardous Materials Facilities | 0 |
| | High Hazard Dam Inundation Area Total | 8 |
| Outside of High Hazard Dam Inundation Area | Essential Services Facilities | 9 |
| | At Risk Populations Facilities | 7 |
| | Hazardous Materials Facilities | 0 |
| | Outside of High Hazard Dam Inundation Area Total | 16 |
| Portola Total | | 24 |
| Unincorporated Plumas County | | |
| High Hazard Dam Inundation Area | Essential Services Facilities | 172 |
| | At Risk Populations Facilities | 13 |
| | Hazardous Materials Facilities | 1 |
| | High Hazard Dam Inundation Area Total | 186 |
| Outside of High Hazard Dam Inundation Area | Essential Services Facilities | 657 |
| | At Risk Populations Facilities | 20 |
| | Hazardous Materials Facilities | 3 |
| | Outside of High Hazard Dam Inundation Area Total | 680 |
| Unincorporated Plumas County Total | | 866 |
| Unincorporated Butte County | | |
| High Hazard Dam Inundation Area | Essential Services Facilities | 3 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | High Hazard Dam Inundation Area Total | 3 |
| Outside of High Hazard Dam Inundation Area | Essential Services Facilities | 1 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | Outside of High Hazard Dam Inundation Area Total | 1 |
| Unincorporated Butte County Total | | 4 |
| Unincorporated Lassen County | | |
| Outside of High Hazard Dam Inundation Area | Essential Services Facilities | 34 |

| Jurisdiction / High Hazard Dam Inundation Area | Critical Facility Category | Facility Count |
|--|---|----------------|
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | Outside of High Hazard Dam Inundation Area Total | 34 |
| Unincorporated Lassen County Total | | 34 |
| Unincorporated Sierra County | | |
| Outside of High Hazard Dam Inundation Area | Essential Services Facilities | 4 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | Outside of High Hazard Dam Inundation Area Total | 4 |
| Unincorporated Sierra County Total | | 4 |
| Unincorporated Tehama County | | |
| Outside of High Hazard Dam Inundation Area | Essential Services Facilities | 2 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | Outside of High Hazard Dam Inundation Area Total | 2 |
| Unincorporated Tehama County Total | | 2 |
| | | |
| Grand Total | | 934 |

Source: Cal OES/DSOD, Plumas County GIS

Natural, Historic, and Cultural Resources

A major dam failure event and associated flooding could have a devastating impact on the Plumas County Planning Area. Large flood events can affect all natural, historic, and cultural resources that lie in the dam inundation areas. There are a number of ways floodwaters associated with a dam failure event can impact natural resources and the environment. Wildlife habitats can be destroyed by floodwaters. Contaminated floodwater can pollute rivers and habitats. Silt and sediment can destroy natural areas. Riverbanks and natural levées can be eliminated as rivers reach bankfull capacity. Rivers can be widened, and deposition can increase downstream. Trees can be uprooted by high-velocity water flow. Plants that survive the initial flood may die due to being inundated with water. Historic structures and cultural resources may also be significantly affected and even destroyed. Generally, the impacts are associated with damage to these structures within the inundated areas, but other cultural resources such as those associated with Native Americans and old tribal areas can also be disturbed, damaged, and lost during extreme flood events.

FEMA NRI Hazard Vulnerability Assessment

Dam failure is not an NRI hazard; therefore, no data is presented.

Impacts from Dam Failure

Impacts to the Plumas County Planning Area from dam failure flooding could be extensive and widespread and include loss of life and injury, flooding and damage to property and structures, damage to critical facilities and infrastructure, loss of natural resources, and all other flood related impacts. Additionally, mass evacuations and associated economic losses can also be significant.

Other impacts associated with dam failure include landslides, bank erosion, and destruction of habitat. Dam failures can cause downstream flooding and can transport large volumes of sediment and debris and contaminants from the floodwaters. Other environmental impacts can include contamination from septic system failures and releases of contaminants from hazardous materials facilities, contamination of potable water supplies; changes in configurations of streams; loss of wildlife habitats; and degradation of wetlands. A large dam failure event could have significant and catastrophic impacts.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the County may be affected in the future by climate change (which was discussed in the hazard profile section above), changes in population patterns, and changes in land use and development. The influencing effects of these factors on this hazard are discussed further in the Future Conditions/Future Development discussion below.

Future Conditions/Future Development

This section provides a discussion of how future conditions will influence or affect the hazard over time and also discusses future development relative to each hazard.

Future Conditions

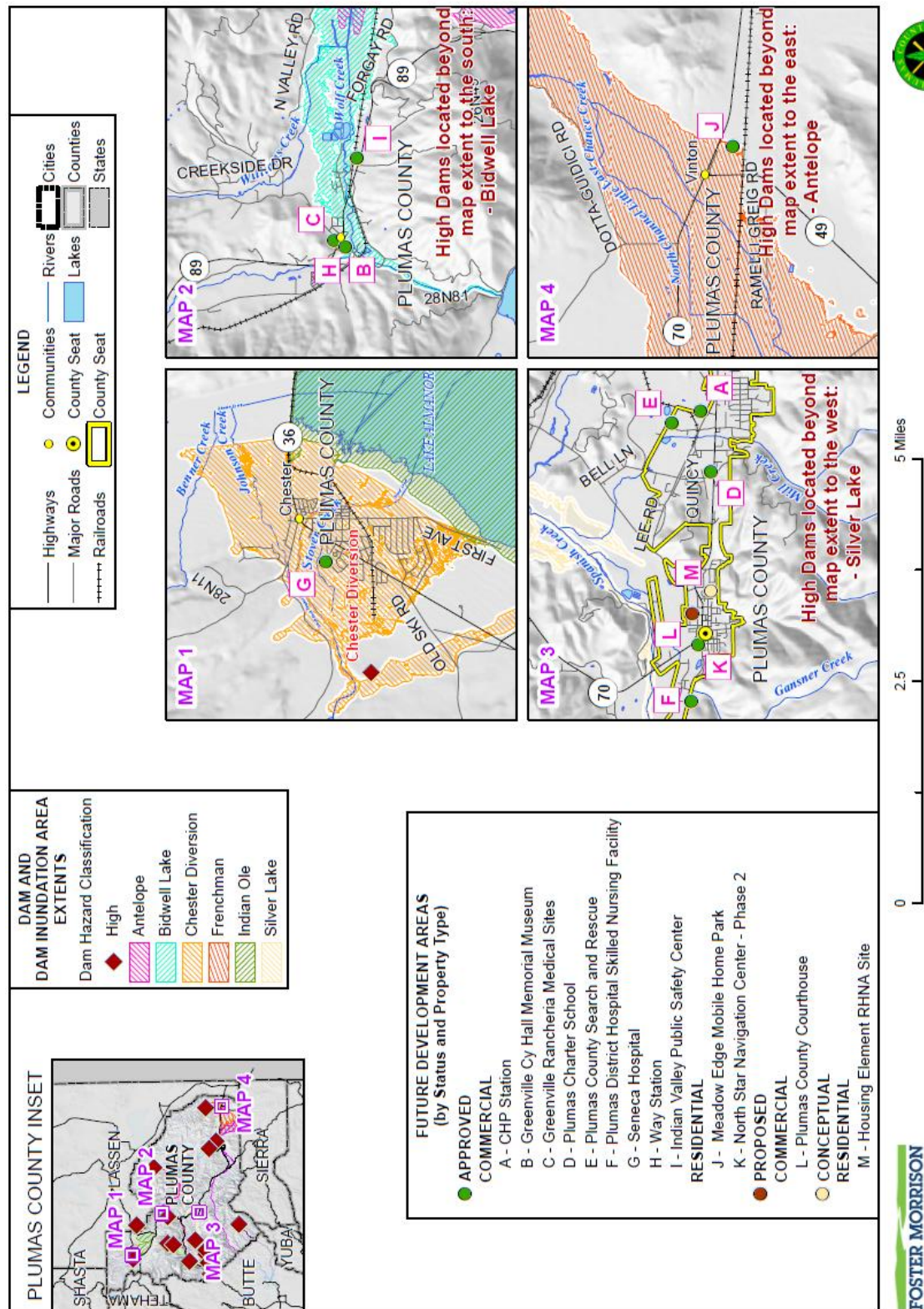
Future conditions may be affected by climate change, changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. Findings on this for Plumas County include the following:

- Climate change is likely to exacerbate future rain and storm conditions and associated impacts and vulnerability of the County to dam failure.
- Population in Plumas County is expected to slightly decrease. Vulnerable population groups could face disproportionate effects from a dam failure and should be planned for. Changes in population and population patterns may or may not increase the impacts and vulnerability of the County to this hazard depending on the location and nature of growth and continued planning for future hazard conditions.
- Land use planning should be proactive to address future hazard conditions. Locating new development, structures, and critical facilities and infrastructure within or near areas of dam failure risk may put additional development at risk. However, County building codes are in effect to partially reduce this risk and should be updated as necessary to continue to address future dam failure conditions. Thus, depending on the location of new development and adherence to protective building codes, changes in land use and development may or may not increase the impacts and associated vulnerabilities of the County to this hazard.

GIS Analysis

Plumas County provided 13 future development areas which were used as the basis for the inventory of future development for the unincorporated County. These were mapped in GIS. Only high hazard dam inundation areas affect future development in the County. As such, no extremely high hazard or significant hazard dam mapping or analysis is presented. Figure 4-78 shows the locations of the future development areas overlayed on the high hazard dam inundation areas. 2 dams intersect the future development areas. Future development affected by the Chester Diversion Dam is detailed in Table 4-63, while future development affected by Frenchman Dam is detailed in Table 4-64.

Figure 4-78 Unincorporated Plumas County – Future Development Areas in High Hazard Dam Inundation Areas



Data Source: Cal OES Dam Status 3/2025, DWR DSOD (updated 1/2025; data downloaded 3/2025), Plumas County GIS, Cal-Atlas; Map Date: 11/3/2025.

Table 4-63 Unincorporated Plumas County – Future Development Areas in Chester Diversion Dam Inundation Area by Parcels and Acres

| Dam Hazard Inundation Areas / Future Development Status and Type | Site / Map ID and Future Development Name | Total Parcel Count | Improved Parcel Count | Unimproved Parcel Count | Total Acres | Total Improved Acres | Total Unimproved Acres |
|--|---|--------------------|-----------------------|-------------------------|--------------|----------------------|------------------------|
| Chester Diversion | | | | | | | |
| Approved | | | | | | | |
| Commercial | G - Seneca Hospital | 1 | 0 | 1 | 11.80 | 0.00 | 11.80 |
| Chester Diversion Total | | 1 | 0 | 1 | 11.80 | 0.00 | 11.80 |

Source: Cal OES, DSOD, Plumas County GIS

Table 4-64 Unincorporated Plumas County – Future Development Areas in Frenchman Dam Inundation Area by Parcels and Acres

| Dam Hazard Inundation Areas / Future Development Status and Type | Site / Map ID and Future Development Name | Total Parcel Count | Improved Parcel Count | Unimproved Parcel Count | Total Acres | Total Improved Acres | Total Unimproved Acres |
|--|---|--------------------|-----------------------|-------------------------|--------------|----------------------|------------------------|
| Frenchman | | | | | | | |
| Approved | | | | | | | |
| Residential | J - Meadow Edge Mobile Home Park | 1 | 1 | 0 | 42.74 | 42.74 | 0.00 |
| Frenchman Total | | 1 | 1 | 0 | 42.74 | 42.74 | 0.00 |

Source: Cal OES, DSOD, Plumas County GIS

Future Development

Future development considerations should be ongoing and proactive. Ensuring that comprehensive land use planning is conducted, regulatory requirements, such as building codes, are followed, and varying needs for different demographic groups with intersecting identities that reside within the County are considered can help to make for a more resilient community. Although new growth and development corridors would fall in the area flooded by a dam failure, given the limited potential of total dam failure and the large area that a dam failure would affect, development in the dam inundation area will continue to occur.

4.3.9. Drought and Water Shortage (w/Tree Mortality)

Hazard Profile

This hazard profile contains multiple sections that detail how this hazard can affect the Plumas County Planning Area. These sections include a hazard/problem description; description of location and extent; past occurrences of this hazard; likelihood of future occurrence; and how climate change can affect or influence this hazard.

Hazard/Problem Description

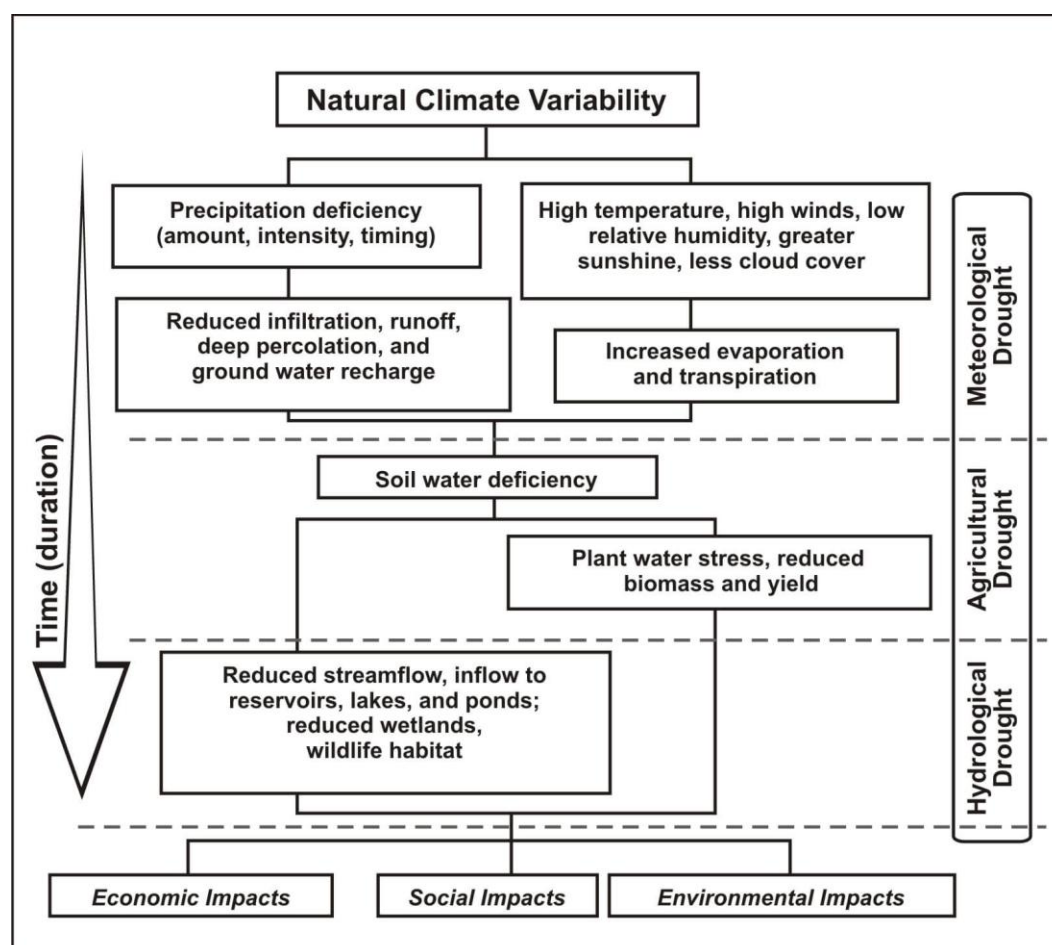
Drought

Drought is a gradual phenomenon. Although droughts are sometimes characterized as emergencies, they differ from typical emergency events. Most natural disasters, such as floods or forest fires, occur relatively rapidly and afford little time for preparing for disaster response. Droughts occur slowly, over a multi-year period, and it is often not obvious or easy to quantify when a drought begins and ends.

Drought is a complex issue involving (see Figure 4-79) many factors—it occurs when a normal amount of precipitation and snow is not available to satisfy an area’s usual water-consuming activities. Drought can often be defined regionally based on its effects:

- **Meteorological drought** is usually defined by a period of below average water supply.
- **Agricultural drought** occurs when there is an inadequate water supply to meet the needs of the state’s crops and other agricultural operations such as livestock.
- **Hydrological drought** is defined as deficiencies in surface and subsurface water supplies. It is generally measured as streamflow, snowpack, and as lake, reservoir, and groundwater levels.
- **Socioeconomic drought** occurs when a drought impacts health, well-being, and quality of life, or when a drought starts to have an adverse economic impact on a region.

Figure 4-79 Causes and Impacts of Drought

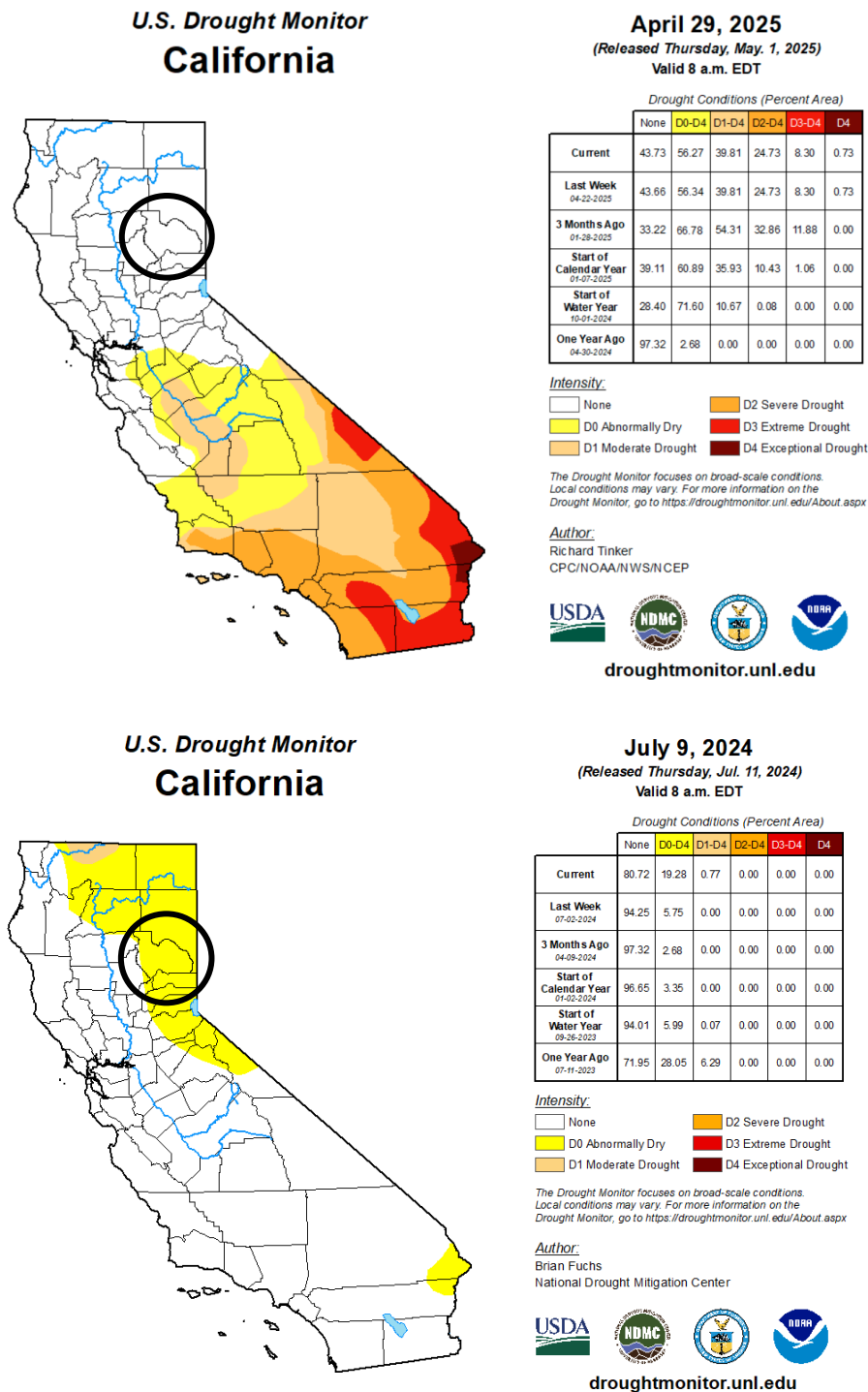


Source: National Drought Mitigation Center (NDMC)

Location and Extent of Drought

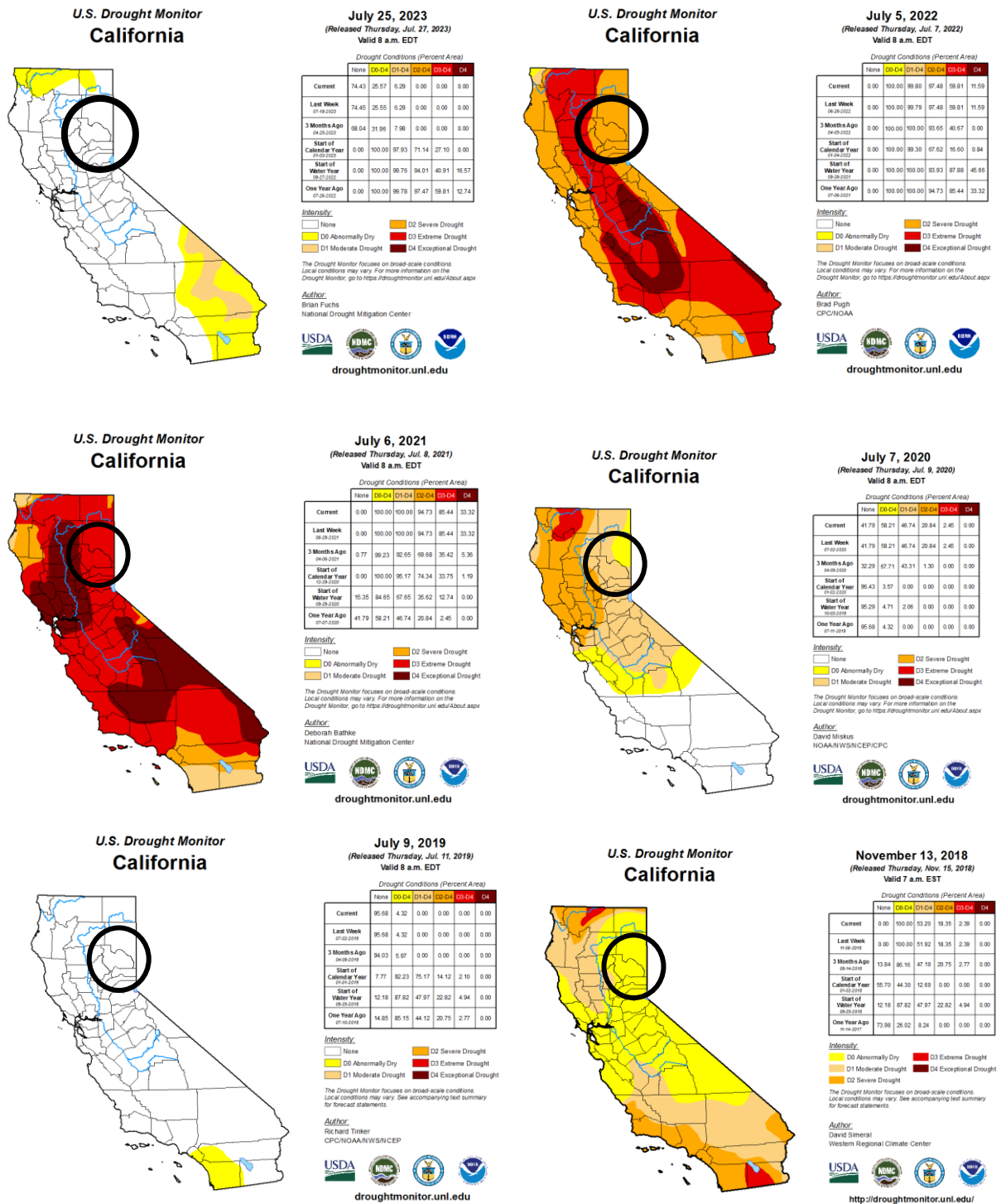
Drought is a regional phenomenon that affects the entire Plumas County Planning Area. Drought in the United States is monitored by the National Integrated Drought Information System (NIDIS). A major component of this portal is the U.S. Drought Monitor. The Drought Monitor concept was developed jointly by the NOAA's Climate Prediction Center, the NDMC, and the USDA's Joint Agricultural Weather Facility in the late 1990s as a process that synthesizes multiple indices, outlooks and local impacts, into an assessment that best represents current drought conditions. The final outcome of each Drought Monitor is a consensus of federal, state, and academic scientists who are intimately familiar with the conditions in their respective regions. A snapshot of the current (and 2024) drought conditions in California and the Plumas County Planning Area can be found in Figure 4-80. Snapshots from 2014 to 2023 are shown in Figure 4-81 and Figure 4-82. As seen in these figures and related data, the Planning Area has been in and out of drought over the past ten years since the last drought started in 2014.

Figure 4-80 Plumas County Planning Area – Current (2025) and 2024 Drought Status



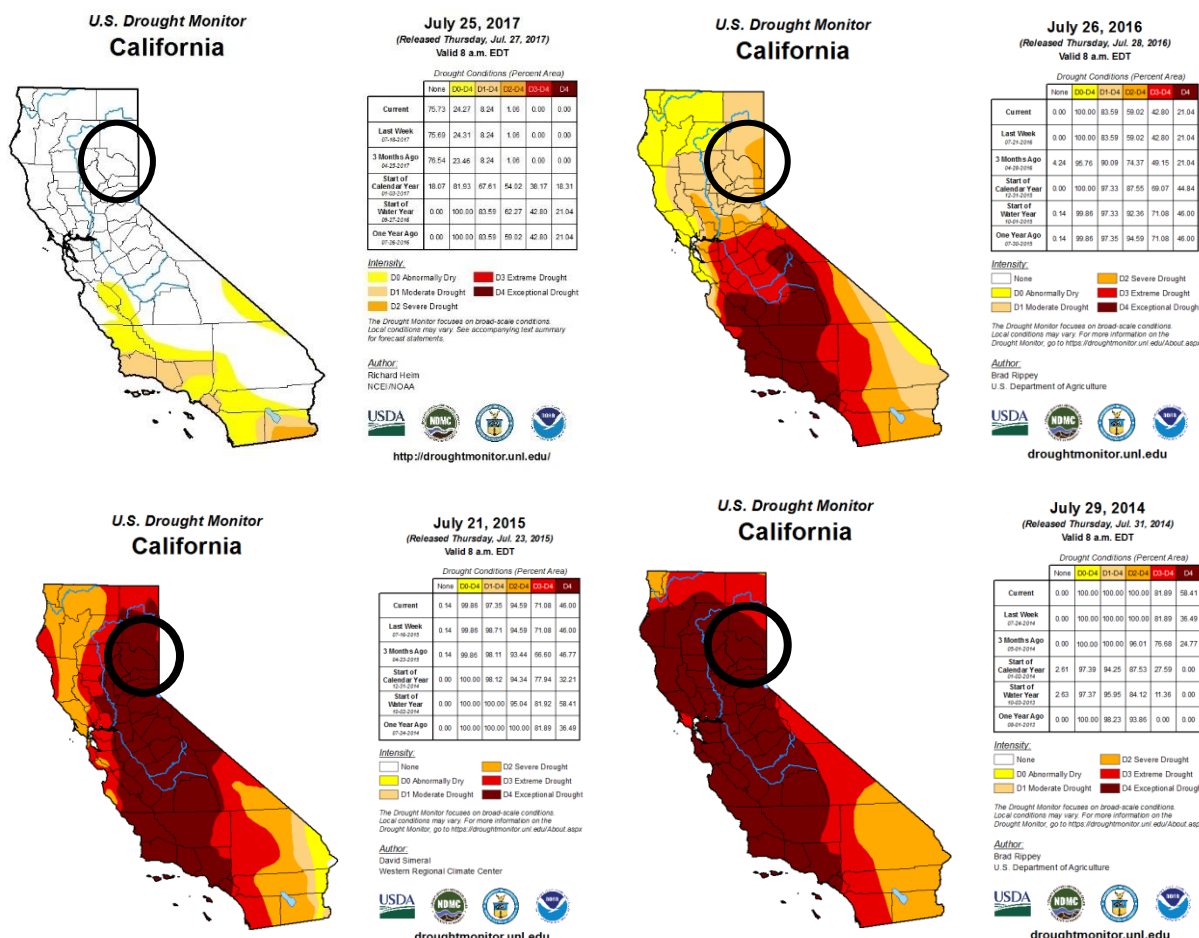
Source: US Drought Monitor

Figure 4-81 Previous Drought Status in Plumas County (2018-2023)



Source: US Drought Monitor

Figure 4-82 Previous Drought Status in Plumas County (2014-2017)



Source: US Drought Monitor

Cal DWR says the following about drought:

One dry year does not normally constitute a drought in California. California's extensive system of water supply infrastructure—its reservoirs, groundwater basins, and inter-regional conveyance facilities—mitigates the effect of short-term dry periods for most water users. Defining when a drought begins is a function of drought impacts to water users. Hydrologic conditions constituting a drought for water users in one location may not constitute a drought for water users elsewhere, or for water users having a different water supply. Individual water suppliers may use criteria such as rainfall/runoff, amount of water in storage, or expected supply from a water wholesaler to define their water supply conditions.

The drought issue in California is further compounded by water rights. Water is a commodity possessed under a variety of legal doctrines. The prioritization of water rights between domestic uses, farming and federally protected fish habitats in California further contributes to this issue.

As shown on the previous figures, drought is tracked by the US Drought Monitor. The Drought Monitor includes a scale to measure drought intensity:

- None
- D0 (Abnormally Dry)
- D1 (Moderate Drought)
- D2 (Severe Drought)
- D3 (Extreme Drought)
- D4 (Exceptional Drought)

Drought has a slow onset and long duration. Drought is not initially recognized as a problem because it normally originates in what is considered good weather, which typically includes a dry late spring and summer in Mediterranean climates, such as in California. This is particularly true in Northern California where drought impacts are delayed for most of the population by the wealth of stored surface and ground water. The drought complications normally appear more than a year after a drought begins. The most direct and likely most difficult drought impact to quantify is to local economies, especially agricultural economies. Drought has the potential to affect the entire Plumas County Planning Area.

Water Shortage

Northern Sacramento Valley counties, including Plumas County, generally have sufficient groundwater and surface water supplies to mitigate even the severest droughts of the past century. Many other areas of the State, however, also place demands on these water resources during severe drought. Water supply in the County is discussed in the below sections.

2035 Plumas County General Plan Water Resources Element

The 2035 Plumas County General Plan Water Resources Element noted that the amount of precipitation received throughout the watershed varies but greatly contributes to the significant amount of water available in the County and throughout the region. The Sierra Crest, centrally located within Plumas County, acts as a barrier to storm systems between the western and eastern portions of the County. The western side of the Sierra Nevada Mountains receives over 90 inches of precipitation annually while the area east of the Sierra Crest receives only 11 inches. Snowpack levels in the County's higher elevation areas serve as natural water reservoirs for surface water that becomes available as the snow melts and drains into the regional waterway system.

Plumas County Flood Control and Water Conservation District

The HMPC noted that the Plumas County Flood Control and Water Conservation District (PCFCWCD) is one of the 29 State Water Contractors within the State of California. The PCFCWCD has annual entitlements to 2,700-acre feet of water from the State Water project with 3 water customers. Water customers include City of Portola, Grizzly Ranch Golf Club and Grizzly Lake CSD. The project water is transported from Lake Davis by Grizzly Valley Pipeline to the Lake Davis Water Treatment plant and transported to City of Portola through the pipeline. Grizzly Ranch Golf Club has an intake pump on Grizzly Creek and pumps the water for irrigating the golf course. City of Portola currently purchases 946 acre-feet, Grizzly Golf Club 250 Acre-feet and Grizzly Lake CSD purchases 57 acre-feet. Grizzly Lake currently

does not use the entitlement but could in the future access the water by building a pipeline from the Lake Davis treatment plant. Grizzly Lake CSD currently pumps groundwater, and Portola utilizes a natural spring seasonally. Over 1,400 acre-feet annual entitlement is currently available for sale but not utilized due to lack of customers.

Upper Feather River Watershed

The Upper Feather River watershed covers a majority of the County (98%), which is about 72% of the watershed. The tributaries of the Upper Feather River watershed drain over 2 million acres of land in the Sierra Nevada Mountains, flowing southwest into Lake Oroville in neighboring Butte County. The Upper Feather River watershed is divided into four main branches with respective watersheds: the West Branch, the North Fork, the Middle Fork and the South Fork of the Feather River. The North Fork Feather River drainage area is the largest drainage area in the watershed covering approximately 1.4 million acres and contributing a yearly average flow of over 2.3 million acre-feet of water to Lake Oroville. The South Fork Feather River drainage is the smallest of the four drainage areas and contributes an average of over 189,000 acre-feet to Lake Oroville each year. The Upper Feather River watershed serves as an important supply of surface water resources. Water has been a valuable export from Plumas County since the State Water Project (SWP) located its main storage facility fed by the Feather River at Lake Oroville. This watershed supplies 3.2 million acre-feet per year for downstream urban, industrial and agricultural use as part of the State Water Project and delivers water to 29 agencies. The State Water Project also operates three reservoirs in Plumas County; Antelope Lake, Frenchman Lake and Lake Davis, which flow into Lake Oroville.

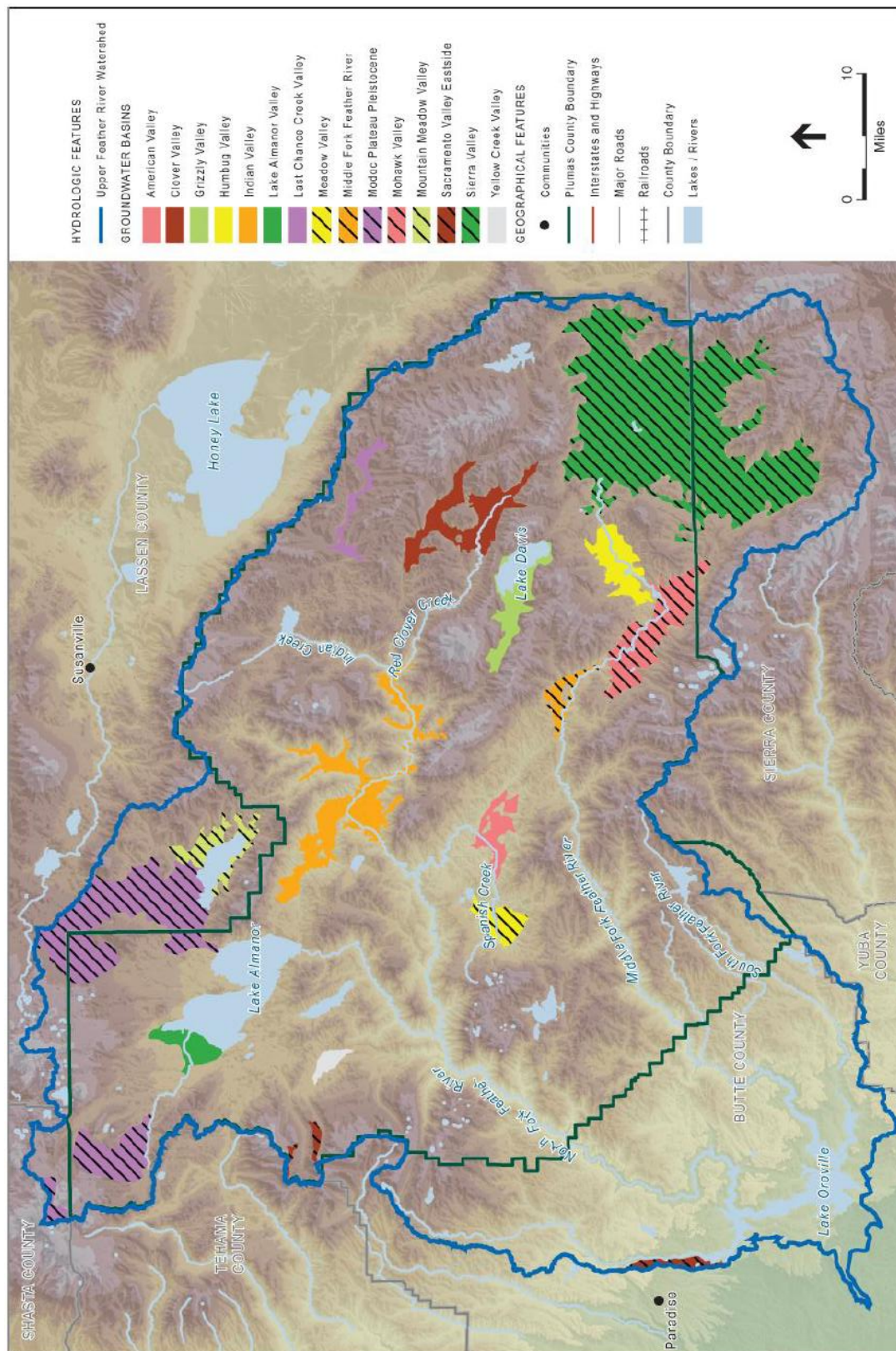
The main stems of the Upper Feather River watershed in addition to many of the tributaries exhibit some level of degradation, primarily due to human activities. The east side of the County experiences much more erosion than the west side, which greatly affects surface water quality. Timber harvesting, water diversion, irrigation practices, road and railroad construction, grazing and mining have all contributed to in-stream water quality issues, such as increased sediment transport, that impact aquatic life and riparian vegetation.

Plumas County Groundwater Basins

Plumas County contains fourteen groundwater basins, which are primarily located in the valleys on the east side of the Sierra Crest. These groundwater basins are also shown Figure 4-83. Sierra Valley is the largest groundwater basin, covering 125,250 acres, and underlies the Middle Fork of the Feather River. The smallest groundwater basin identified in the figure is Yellow Creek Valley Groundwater Basin covering 2,310 acres. Some of the County's groundwater basins have been depleted as a result of high extraction rates and slow recharge. For example, the Sierra Valley groundwater basin has experienced significant declines due to human activity and agricultural practices.

Groundwater quality is currently monitored in nine of the County's groundwater basins. Groundwater quality in the County varies by basin. Water quality in the Sierra Valley basin is primarily affected by geothermal activity which causes the groundwater to contain high concentrations of boron, fluoride, iron and sodium. Some wells within the Sierra Valley Sub-Basin also exhibit high levels of arsenic and manganese. Localized groundwater quality has been influenced in some areas by the use of septic systems.

Figure 4-83 Plumas County – Hydrologic Features



Source: Plumas County General Plan Water Resources Element

Plumas County Drought Plan (SB552)

We have some data in the folder. This is an in-process plan. This discusses all the small water suppliers. We are to get an updated version so we can pull from it. It will include state smalls, there is a good map, etc.

Location and Extent of Water Shortage

Since water shortage generally happens on a regional scale, the entirety of the Plumas County Planning Area is at risk. There is no established scientific scale to measure water shortage. The speed of onset of water shortage tends to be lengthy. The duration of water shortage can vary, depending on the severity of the drought that accompanies it and the status of the water sources going into the drought. The extent of the drought considers several factors, including the nature, source, and reliability of water. While drought conditions persist, the Planning Area has generally sufficient water supply from water supplies, which lessens the extent of water shortage impacts in the Planning Area.

Past Occurrences

Disaster Declaration History

There have been 1 state and 1 federal disaster declarations for Plumas County. These are shown on Table 4-65. More information on USDA disaster declarations from drought (13 events) can be found in Table 4-51 in the Past Occurrences in Section 4.3.6.

Table 4-65 Plumas County – Federal and State Drought Disaster Declarations 1950-2025

| Disaster Type | State Declarations | | Federal Declarations | |
|---------------|--------------------|-------|----------------------|-------|
| | Count | Years | Count | Years |
| Drought | 1 | 2014 | 1 | 1997 |

Source: Cal OES, FEMA

NCDC Events

There have been 2 NCDC drought events in Plumas County. This is shown on Table 4-66.

*Table 4-66 NCDC Drought Events for Plumas County 1993-7/31/2024**

| Event Type | Number of Events | Deaths | Deaths (indirect) | Injuries | Injuries (indirect) | Property Damage | Crop Damage |
|------------|------------------|--------|-------------------|----------|---------------------|-----------------|-------------|
| Drought | 2 | 0 | 0 | 0 | 0 | \$50,000 | \$0 |

Source: NCDC

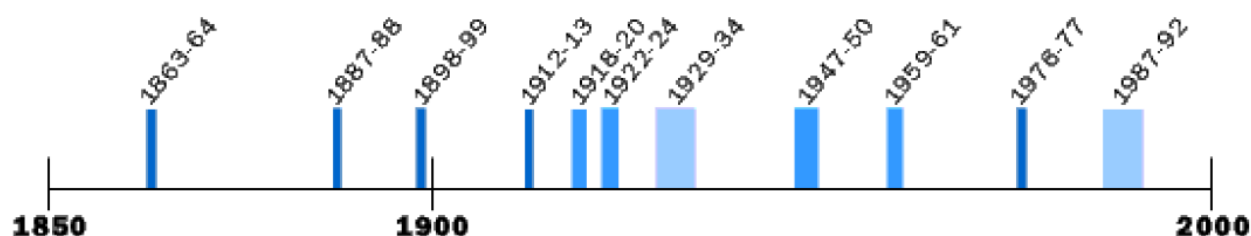
*Note: Losses reflect totals for all impacted areas, some of which fell outside of Plumas County

CA DWR Events (with Hazard Mitigation Planning Committee Input)

This section is not separated by events since the 2019/2020 LHMPs since much of it covers multiple year droughts.

Historically, California has experienced multiple severe droughts. According to the DWR, droughts exceeding three years are relatively rare in Northern California, the source of much of the State’s developed water supply. Figure 4-84 depicts California’s Multi-Year Historical Dry Periods, 1850-2000. The 1929-34 drought established the criteria commonly used in designing storage capacity and yield of large northern California reservoirs. Figure 4-85 compares the 1929-34 drought to the 1976-77, 1987-92, 2007-09, and 2012-2016 droughts.

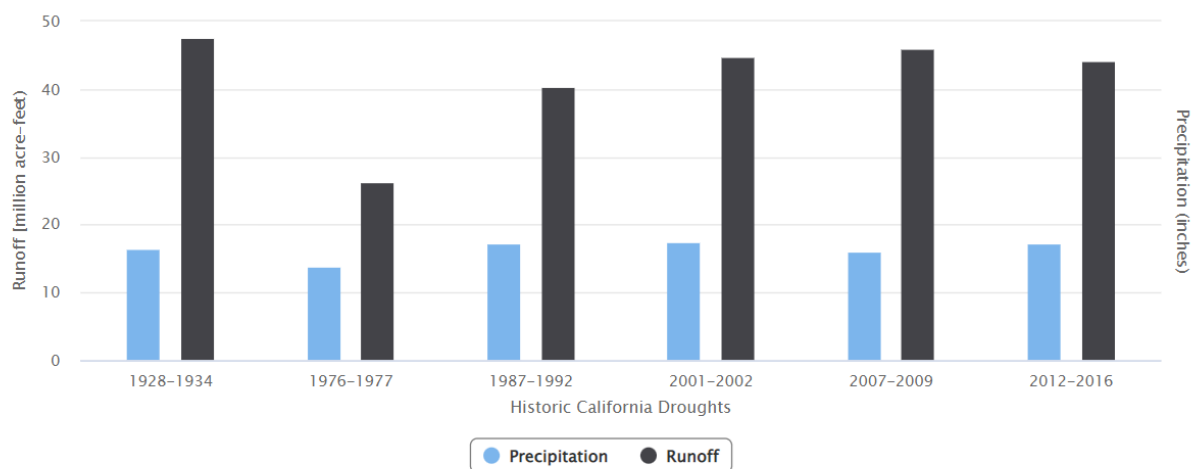
Figure 4-84 California’s Multi-Year Historical Dry Periods, 1850-2000



Source: Cal DWR

Notes: Dry periods prior to 1900 estimated from limited data; covers dry periods of statewide or major regional extent

Figure 4-85 Average Annual Runoff and Precipitation for Historic Droughts



Click and drag across the graph to zoom.
Roll over graph lines for specific values.
Click legend to toggle graph lines on and off.

Highcharts.com

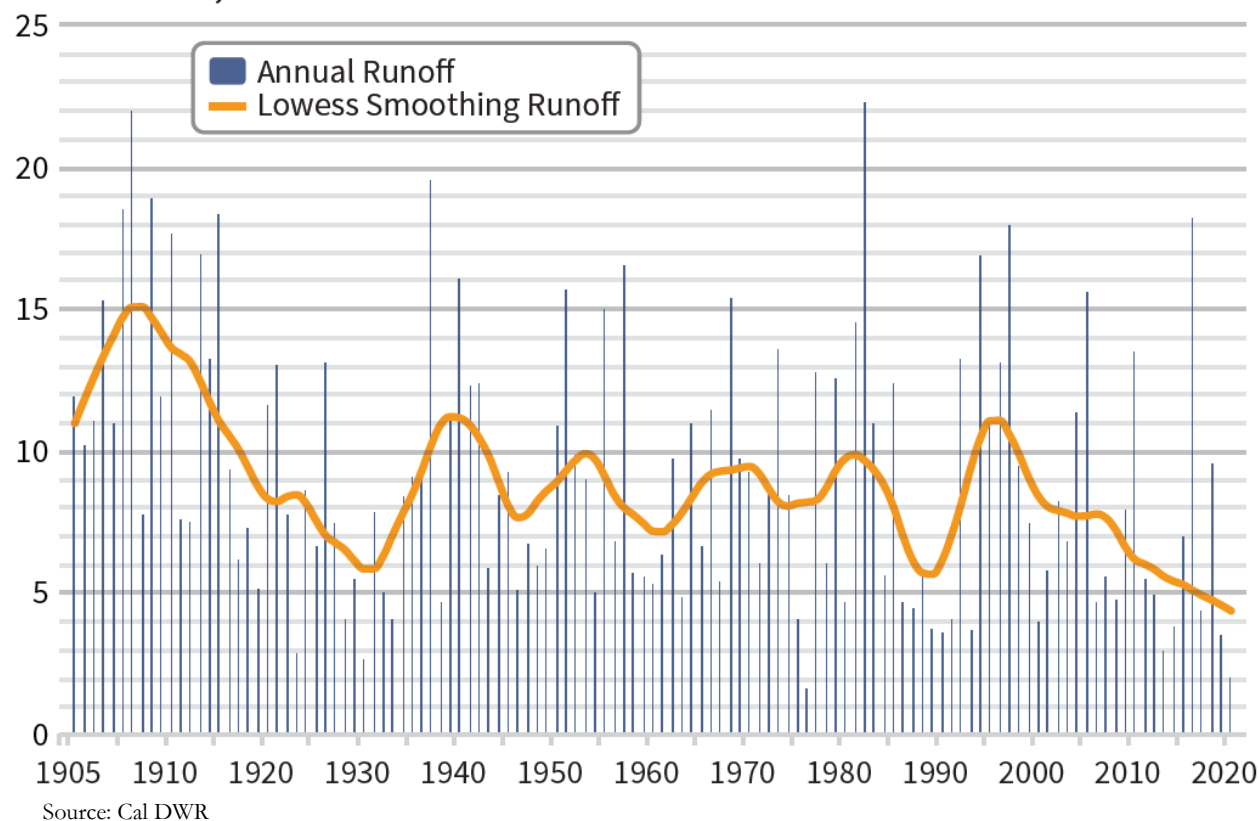
Runoff and precipitation conditions for California’s six historical droughts. The most severe drought both in terms of precipitation and runoff was the drought of 1976-77. However, because it was just a two-year drought, the water supply impacts were not as severe as those associated with the longer duration droughts because shorter droughts can be partially mitigated by surface and groundwater storage.

Source: CA DWR – 2012-2016 California Drought: Historical Perspective (<https://ca.water.usgs.gov/california-drought/california-drought-comparisons.html>)

Figure 4-86 depicts runoff for the State from 1905 to 2021. This gives a historical context for the 2014-2021 drought to compare against past droughts.

Figure 4-86 Annual California Runoff –1905 to 2021

Annual Runoff, in inches



The 2018 and 2023 California State Hazard Mitigation Plan discussed the major droughts from 1900 to 2022. The discussion below appends to the tables and figures above.

The 1975-1977 Drought

From November 1975 through November 1977, California experienced one of its most severe droughts. Although people in many areas of the state are accustomed to very little precipitation during the growing season (April to October), they expect it in the winter. In 1976 and 1977, the winters brought only one-half and one-third of normal precipitation, respectively. Most surface storage reservoirs were substantially drained in 1976, leading to widespread water shortages when 1977 turned out to be even drier.

The 1987-1992 Drought

From 1987 to 1992, California again experienced a serious drought due to low precipitation and run-off levels. The hardest-hit region was the Central Coast, roughly from San Jose to Ventura. In 1988, 45 California counties experienced water shortages that adversely affected about 30 percent of the state's population, much of the dry-farmed agriculture, and over 40 percent of the irrigated agriculture. Fish and wildlife resources suffered, recreational use of lakes and rivers decreased, forestry losses and fires increased, and hydroelectric power production decreased. In February 1991, DWR and Cal OES surveyed drought conditions in all 58 California counties and found five main problems: extremely dry rangeland,

irrigated agriculture with severe surface water shortages and falling groundwater levels, widespread rural areas where individual and community supplies were going dry, urban area water rationing at 25 to 50 percent of normal usage, and environmental impacts.

Storage in major reservoirs had dropped to 54 percent of average, the lowest since 1977. The shortages led to stringent water rationing and severe cutbacks in agricultural production, including threats to survival of permanent crops such as trees and vines. Fish and wildlife resources were in critical shape as well. Not since the 1928-1934 drought had there been such a prolonged dry period. In response to those conditions, the Governor established the Drought Action Team. This team almost immediately created an emergency drought water bank to develop a supply for four critical needs: municipal and industrial uses, agricultural uses, protection of fish and wildlife, and carryover storage for 1992. The large-scale transfer program, which involved over 800,000 acre-feet of water, was implemented in less than 100 days with the help and commitment of the entire water community and established important links between state agencies, local water interests, and local governments for future programs.

The 2007-2009 Drought

Water years 2007-2009 were collectively the 15th driest three-year period for DWR's eight-station precipitation index, which is a rough indicator of potential water supply availability to the State Water Project (SWP) and Central Valley Project (CVP). Water year 2007 was the driest single year of that drought and fell within the top 20 percent of dry years based on computed statewide runoff. In June 2008, a state emergency proclamation was issued due to water shortage in selected Central Valley counties. In February 2009, for the first time in its history, the State of California proclaimed a statewide drought. The state placed unprecedented restrictions on CVP and SWP diversions from the Delta to protect listed fish species, a regulatory circumstance that exacerbated the impacts of the drought for water users.

The greatest impacts of the 2007–2009 drought were observed in the CVP service area on the west side of the San Joaquin Valley, where hydrologic conditions combined with reduced CVP exports resulted in substantially reduced water supplies (50 percent supplies in 2007, 40 percent in 2008, and 10 percent in 2009) for CVP south-of Delta agricultural contractors. Small communities on the west side highly dependent on agricultural employment were especially affected by land fallowing due to lack of irrigation supplies, as well as by factors associated with current economic recession. The coupling of the drought and economic recession necessitated emergency response actions related to social services, such as food banks and unemployment assistance.

The 2012-Current Drought (which is ongoing after a pause in 2017 and 2023)

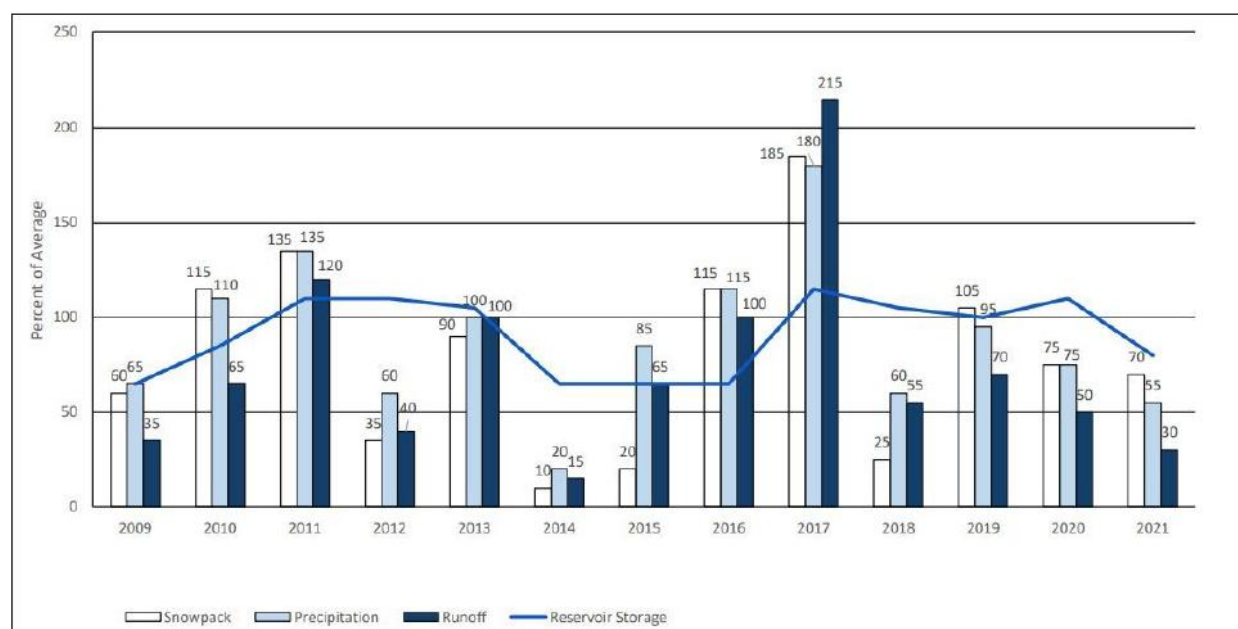
The statewide drought of 2012-2017, which is still ongoing, will be remembered as one of the most severe and costliest droughts of record in California. The drought that spanned water years 2012 through 2017 included the driest four-year statewide precipitation on record (2012-2015) and the smallest Sierra-Cascades snowpack on record (2015, with 5 percent of average). It was marked by extraordinary heat: 2014, 2015, and 2016 were California's first, second, and third warmest years in terms of statewide average temperatures. By the time the drought was declared officially over in April 2017, the state had expended \$6.6 billion in drought response and mitigation programs and had been declared a federal disaster area. This coincides with many of the drought declarations from the USDA (discussed in more detail in Section

4.3.6 above). The HMPC reported that fire danger in 2013 and 2014 reached record levels as the drought produced dry, highly flammable fuel loads. The HMPC also noted that multiple tree mortality declarations were issued in 2020, 2021, 2023, and 2024 from the elevated risk to tree mortality from drought.

Water Shortage

Figure 4-87 illustrates several indicators commonly used to evaluate water conditions in California. The percent of average values are determined by measurements made in each of the ten major hydrologic regions. The chart describes water conditions in California between 2009 and 2021. The chart illustrates the cyclical nature of weather patterns in California.

Figure 4-87 Water Supply Conditions, 2009 to 2021



Source: 2023 State of California Hazard Mitigation Plan

Beginning in 2012, snowpack levels in California dropped dramatically. 2015 estimates place snowpack as 5 percent of normal levels. Snowpack measurements have been kept in California since 1950 and nothing in the historic record comes close to 2015's severely depleted level. The previous record for the lowest snowpack level in California, 25 percent of normal, was set both in 1976-77 and 2013-2014. In "normal" years, the snowpack supplies about 30 percent of California's water needs, according to the California Department of Water Resources. Snowpack levels began to increase in 2016, and in 2017 snowpack increased to the largest in 22 years, according to the State Department of Water Resources. In late 2017 and early 2018, drought conditions began to return to California but have been dampened by periods of above average rainfall in the first part of 2019. Snowpack stayed low until the winters of 2021/2022 and 2022/2023 when atmospheric rivers caused heavy rains and snows in the area. Snowpack has been relatively normal since then.

The Sierra Valley Groundwater District provided graphs of District water levels from 1980 to 2016. These can be seen on Figure 4-88, Figure 4-89, and Figure 4-90.

Figure 4-88 Plumas County – Loyalton Water Levels 1980-2016

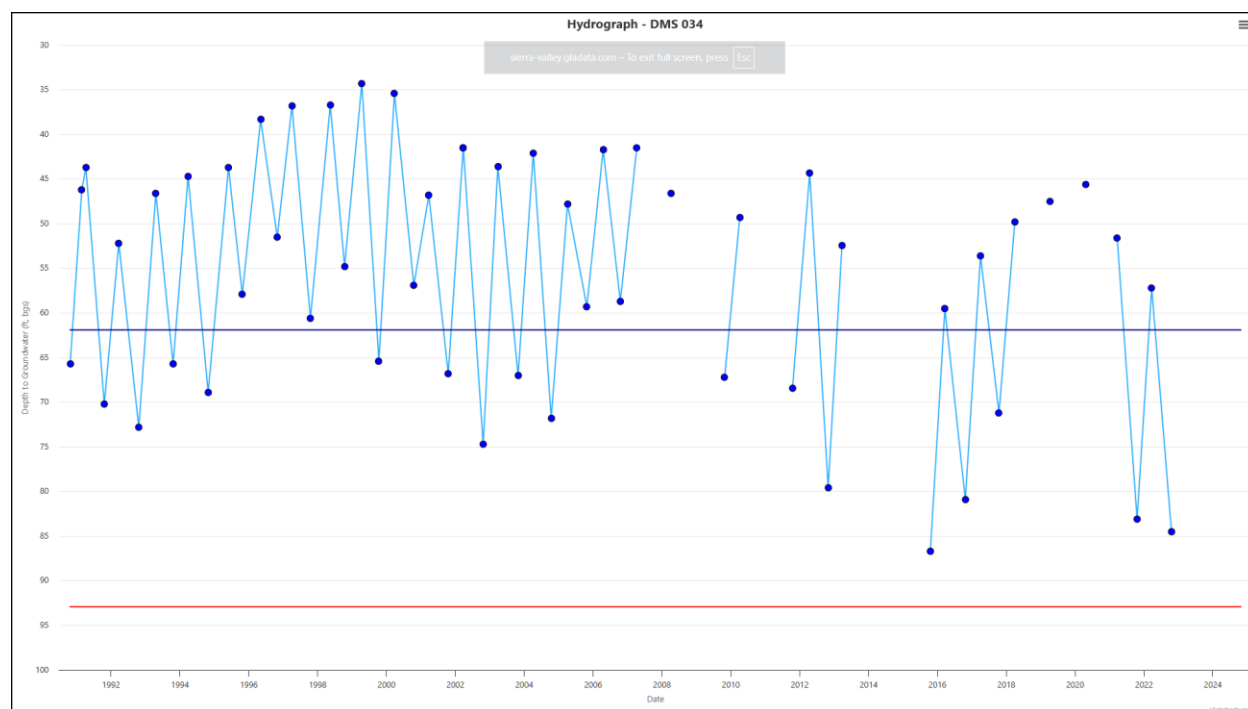


Figure 4-89 Plumas County – Vinton Water Levels 1980-2016

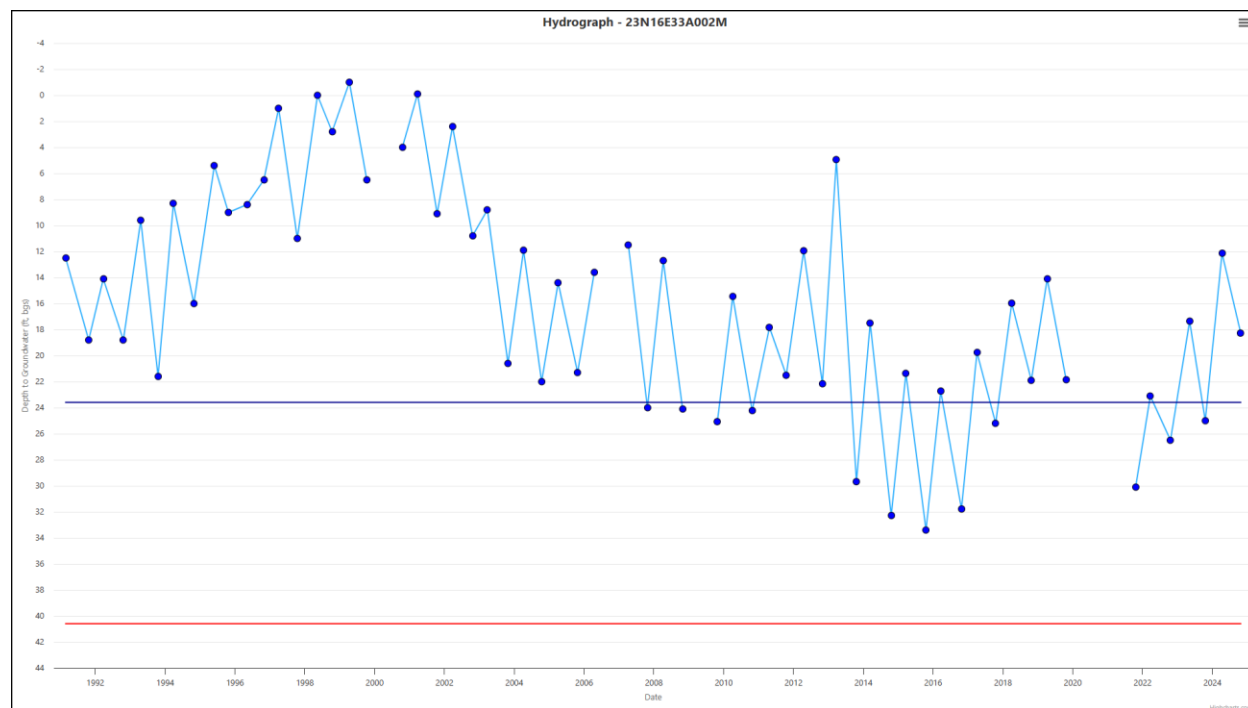
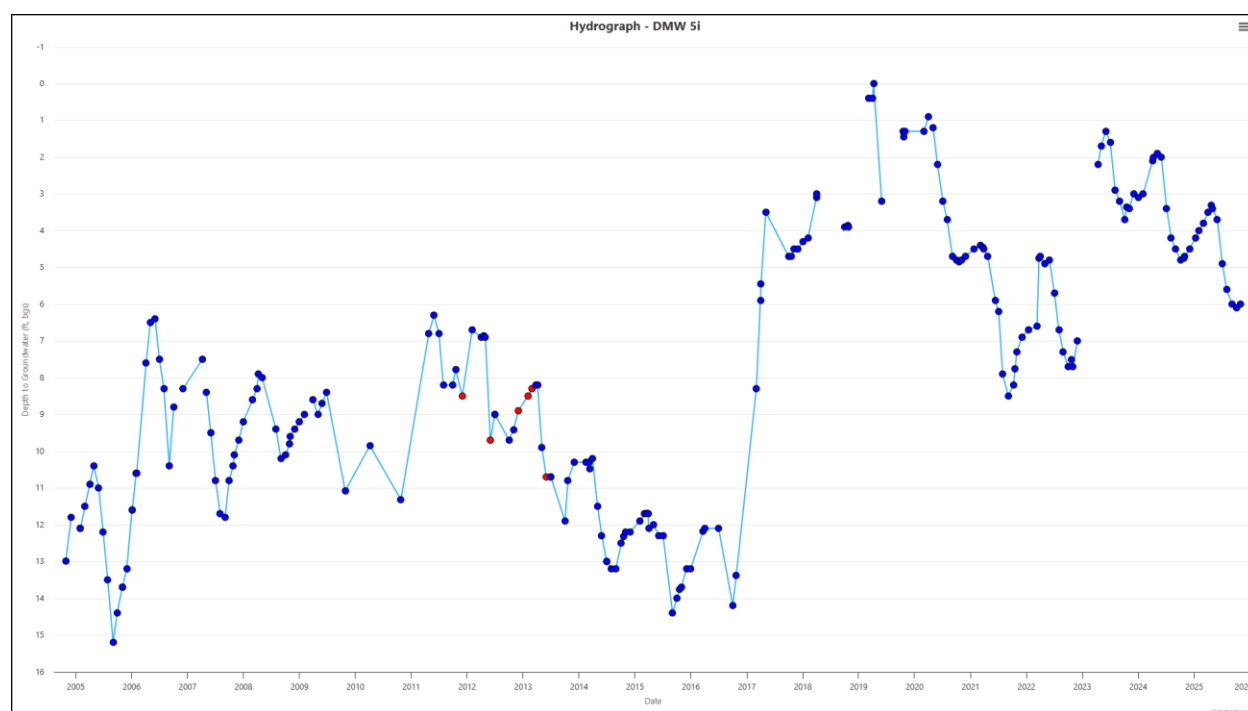


Figure 4-90 Plumas County – Chilcoot Water Levels 1980-2016



Source: Sierra Valley Groundwater District. Retrieved 5/2/2025.

Likelihood of Future Occurrence

Drought

Likely—Historical drought data for the Plumas County Planning Area indicate there have been 5 significant droughts in the last 87 years. This equates to a drought every 16.4 years on average or a 6.1 percent chance of a drought in any given year. Based on this data and given the multi-year length of droughts and future climate change affects, the Plumas County Planning Area determined that future drought occurrence continues to be likely.

Water Shortage

Occasional — Recent historical data for water shortage indicates that Plumas County may at some time be at risk to both short and prolonged periods of water shortage. Based on this it is possible that water shortages will affect the County in the future during extreme drought conditions. However, to date, Plumas County has continued to have relatively consistent water supply.

It is likely that climate change will increase the chance of future occurrence as well as future impacts. More information on climate change and drought and water shortage can be found in the next section. More information on future impacts can be found in the Future Conditions/Future Development section of the Vulnerability Assessment below.

Climate Change and Drought and Water Shortage

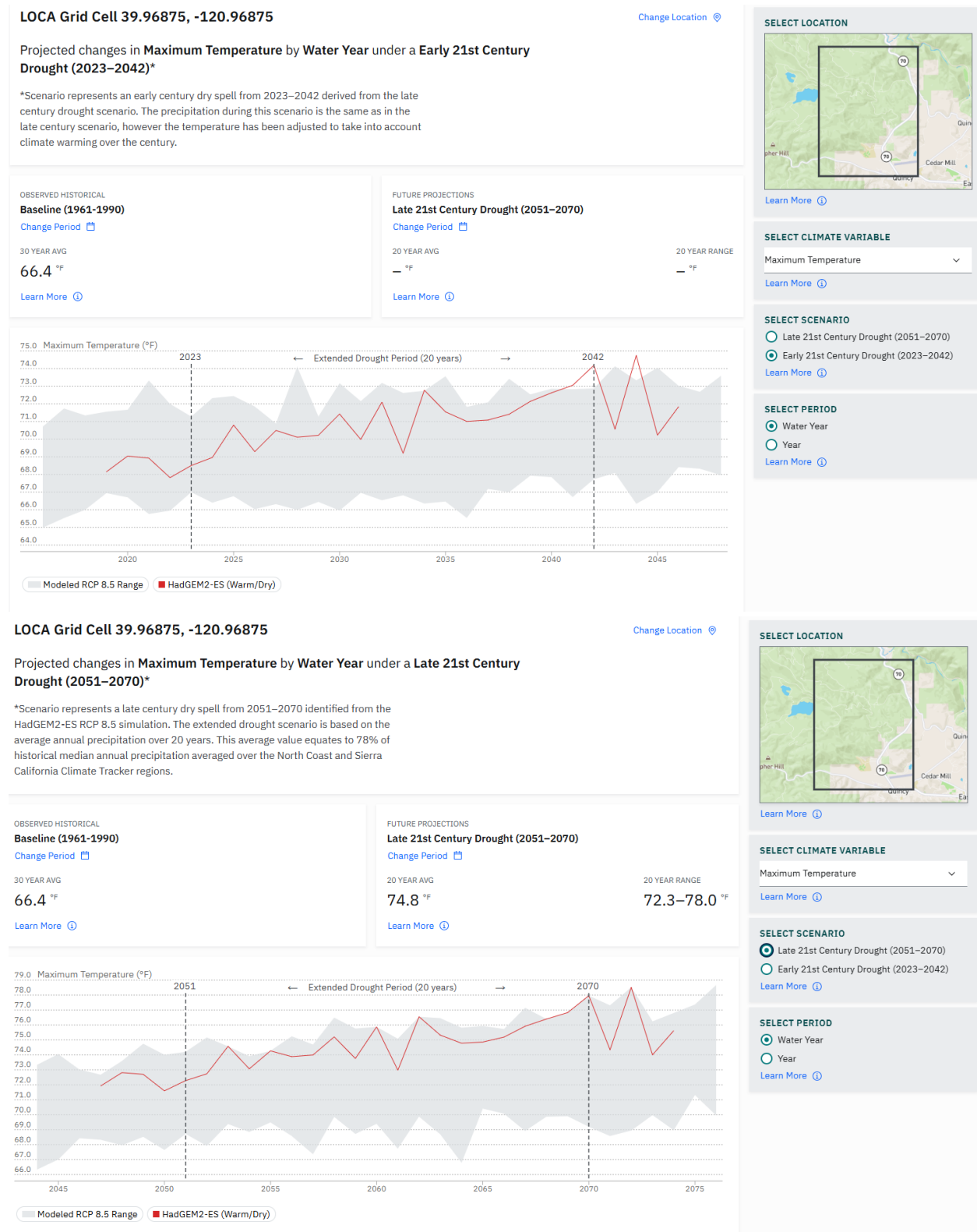
Climate scientists studying California find that drought conditions are likely to become more frequent and persistent over the 21st century due to climate change. The experiences of California during recent years underscore the need to examine more closely the state's water storage, distribution, management, conservation, and use policies. The 2021 CAS (as well as the Draft 2024 CAS) stresses the need for public policy development addressing long term climate change impacts on water supplies. The CAS notes that climate change is likely to significantly diminish California's future water supply, stating that: California must change its water management and uses because climate change will likely create greater competition for limited water supplies needed by the environment, agriculture, and cities.

A 2018 report from the Public Policy Institute of California noted that thousands of Californians – mostly in rural, small, disadvantaged communities – already face acute water scarcity, contaminated groundwater, or complete water loss. Climate change would make these effects worse.

Cal-Adapt has modeled future risk of drought. Recent research suggests that extended drought occurrence (“mega-drought”) could become more pervasive in future decades. This tool explores data for two 20-year drought scenarios (using the quad that contains the City of Portola in Figure 4-91) derived from LOCA downscaled meteorological and hydrological simulations – one for the earlier part of the 21st century, and one for the latter part:

- The upper chart represents a mid-century dry spell from 2023-2042 identified from the HadGEM2-ES RCP 8.5 simulation. The extended drought scenario is based on the average annual precipitation over 30 years. This average value equates to 66.4% of historical median annual precipitation averaged over the North Coast and Sierra California Climate Tracker regions.
- The lower chart represents a late century dry spell from 2051–2070 identified from the HadGEM2-ES RCP 8.5 simulation. The extended drought scenario is based on the average annual precipitation over 20 years. This average value equates to 74.4% of historical median annual precipitation averaged over the North Coast and Sierra California Climate Tracker regions.

Figure 4-91 Plumas County Planning Area – Future Extended Drought Scenarios



LOCA Grid Cell 39.96875, -120.96875

[Change Location](#)

Projected changes in **Maximum Temperature by Water Year** under a **Late 21st Century Drought (2051–2070)***

*Scenario represents a late century dry spell from 2051–2070 identified from the HadGEM2-ES RCP 8.5 simulation. The extended drought scenario is based on the average annual precipitation over 20 years. This average value equates to 78% of historical median annual precipitation averaged over the North Coast and Sierra California Climate Tracker regions.

OBSERVED HISTORICAL
Baseline (1961–1990)
[Change Period](#)

30 YEAR AVG
66.4 °F
[Learn More](#)

FUTURE PROJECTIONS
Late 21st Century Drought (2051–2070)
[Change Period](#)

20 YEAR AVG
74.8 °F
20 YEAR RANGE
72.3–78.0 °F
[Learn More](#)

SELECT LOCATION

[Learn More](#)

SELECT CLIMATE VARIABLE

Maximum Temperature

[Learn More](#)

SELECT SCENARIO

☒ Late 21st Century Drought (2051–2070)

☐ Early 21st Century Drought (2023–2042)

[Learn More](#)

SELECT PERIOD

☒ Water Year

☐ Year

[Learn More](#)

Source: Cal Adapt – Extended Drought Scenarios (retrieved 2/26/2025)

Vulnerability Assessment

Vulnerability—High

Based on historical information, the occurrence of drought in California, including the Plumas County Planning Area, is cyclical, driven by weather patterns. Drought has occurred in the past and will occur in the future. Periods of actual drought with adverse impacts can vary in duration, and the period between droughts can be extended. Although an area may be under an extended dry period, determining when it becomes a drought is based on impacts to individual water users. The vulnerability to drought may vary and include reduction in water supply, turf losses, impacts to natural resources, and an increase in dry fuels and tree dieback.

Tree Mortality and Drought

One of the specific impacts of drought in the Plumas County Planning Area is the increased risk to trees from beetle kill and other insects, pathogens and parasites, and other tree mortality and die back issues. Drought weakens trees and makes them more susceptible to insect infestation and other pathogens. Insects, such as bark beetles and others, frequently attack trees weakened by drought, disease, injuries, or other factors that may stress the tree. These insects and other pathogens can contribute to the decline and eventual death of trees throughout the Planning Area, especially in those areas on the west where the elevations increase.

The tree mortality and dieback problem are a high priority because of the issue of hazardous trees and increased wildfire hazard in the wildland areas and the potential for worsening conditions and expansion into other forested sites in future years. Fuel loading and fire potential are greater in stands as compared to healthy stands due to the higher proportion of dead and dying material. Removal of dead and dying trees near structures, powerlines, and roadways is also a high priority because of the immediate falling hazard.

University of California, Berkeley's Department of Environmental Science, Policy, and Management (ESPM) was commissioned in 2021 to investigate the symptoms and possible causes of the dieback. Preliminary results show that the dieback is driven mostly by environmental stressors, including but not limited to drought, predisposing trees to disease caused by opportunistic pathogens. The report includes best management practices to limit the spread of pathogens. It is important to continue investigating the causes of the tree mortality and dieback to help Planning Area jurisdictional staff track changes over time, recognize where other areas may potentially be susceptible to tree mortality, and apply appropriate best management practices.

Under current drought conditions, competition for resources within forested areas will likely continue to intensify with greater stress increasing tree susceptibility to insect damage and disease and ultimately increase mortality.

In all vegetation types, drought extends the length of the fire season because of its effect on live and dead fuel moisture, with critical low fuel moisture levels occurring early in spring or summer and extending at least through the first significant rains that typically come in late fall.

The whole of the Planning Area has some measure of vulnerability to drought and water shortage. An assessment of a community's vulnerability to this hazard begins with an understanding of local exposure to unincorporated Plumas County. This is included in the Local Concerns section below. After that, vulnerability is discussed in multiple sections that detail how this hazard can affect both the entire Plumas County Planning Area as well as the unincorporated portions of Plumas County. How the hazard affects the other participating jurisdictions can be found in their respective annexes to this LHMP Update. These sections below include assets at risk, impacts, and how future development can be affected by this hazard.

Local Concerns (unincorporated Plumas County)

The unincorporated County has specific concerns regarding this hazard. These concerns form a portion of the basis for the mitigation strategy and mitigation actions that seek to reduce vulnerabilities to this hazard.

The County noted that PSPS events, or severe storm events that knock out power, can cause water to stop being pumped by water companies or by individual wells in the County. PSPS events are usually not long-lasting, but severe weather can knock the power out for five to seven days. Water shortage can cause tree mortality issues in the County.

Plumas County is developing a County Drought Resilience Plan to help prepare state small water systems and domestic wells for future droughts and water shortages. Being prepared helps reduce hardships and improves our community's water supply resiliency. That plan noted that there are several areas in the County with more advanced water shortage vulnerability. This can be seen on Figure 4-92.

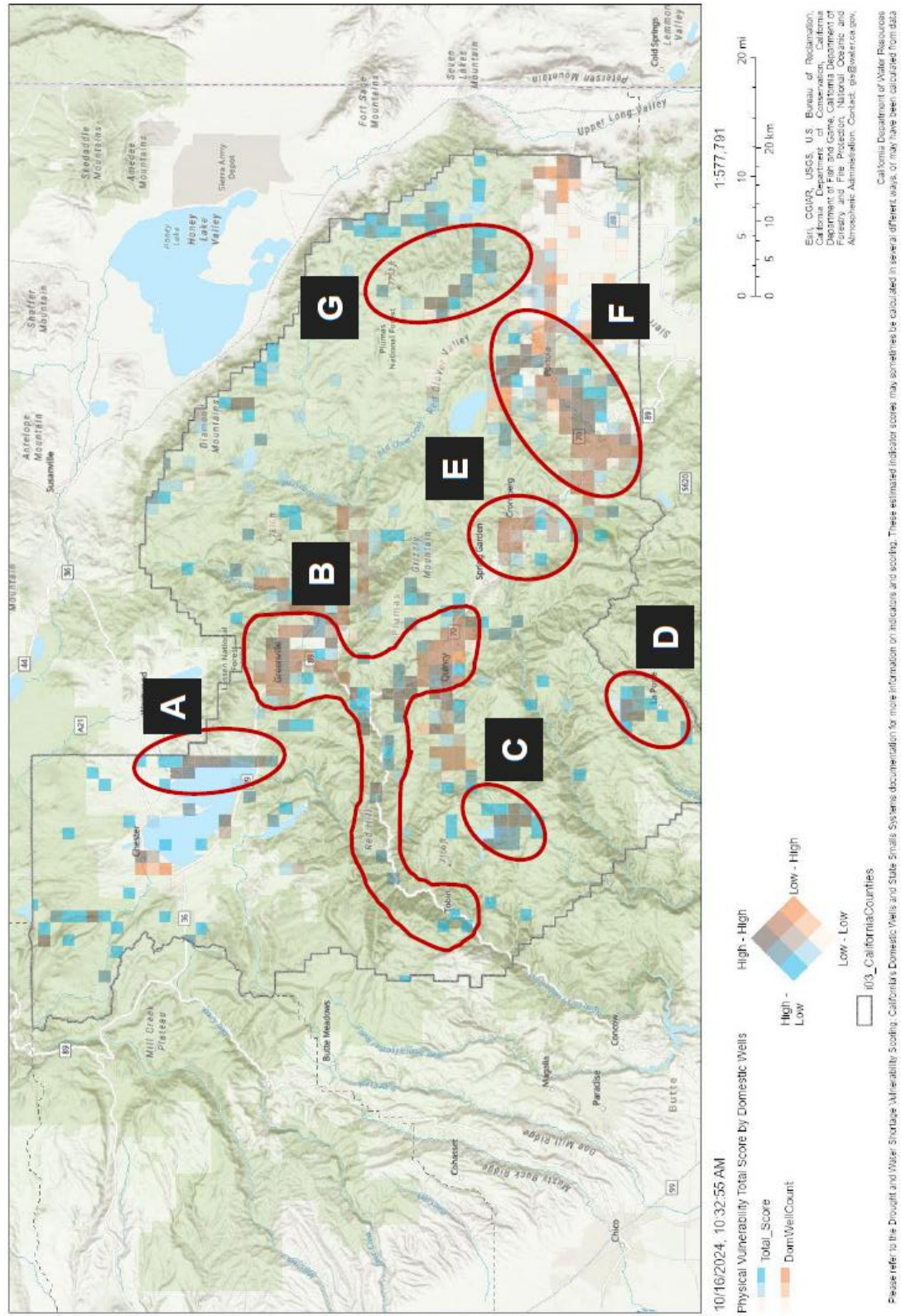
This includes the areas shown on Table 4-67.

Table 4-67 Plumas County Drought Task Force Risk Assessment Findings

| Group | Regions with Water Shortage Vulnerability and Domestic Wells/SSWSs | Vulnerability Drivers | Social Vulnerability |
|-------|--|---|----------------------|
| A | Warner Valley and East of Lake Almanor | <ul style="list-style-type: none"> Wildfire hazard Fractured rock area Multiple dry years | Low/Medium |
| B | Feather River Canyon from Greenville to Quincy, Tobin | <ul style="list-style-type: none"> Wildfire hazard Fractured rock area Multiple dry years Water quality and water supply issues Unhoused population | Medium/High |
| C | Bucks Lake/Meadow Valley | <ul style="list-style-type: none"> Dry well susceptibility in fractured rock area Seasonal population (small population in the winter, larger population in the summer) | Low/Medium |
| D | La Porte | <ul style="list-style-type: none"> Dry well susceptibility in fractured rock area Seasonal population (small population in the winter, larger population in the summer) | Low/Medium |
| E | Cromberg/Sloat | <ul style="list-style-type: none"> High density of domestic wells Multiple dry years Wildfire hazard | Medium |
| F | Lake Davis and Southwest of Portola (Iron Horse) | <ul style="list-style-type: none"> Water quality and water supply issues Dry well susceptibility in fractured rock area Wildfire hazard | Medium/High |
| G | Dixie Valley and Frenchman Lake | <ul style="list-style-type: none"> Water supply – no surface water supply Wildfire risk Dry well susceptibility in fractured rock areas Lacking key infrastructure (e.g., electricity/power) Seasonal population | Medium |

Source: Plumas County Drought Task Force

Figure 4-92 Plumas County Planning Area – Regions with Water Shortage Vulnerability



Local concerns for Portola and the Special Districts can be found under the Local Concerns heading in each respective jurisdictional annex to this LHMP Update.

Assets at Risk

Assets at risk from drought and water shortage include people and populations; structures; critical facilities and infrastructure; and natural, historic, and cultural resources. These are discussed in the following sections for the Plumas County Planning Area and unincorporated Plumas County.

Additionally, for each hazard in the FEMA National Risk Index in Plumas County, the relevant portions of the hazard analysis done by FEMA is presented below. This includes the Hazard Risk Index Rating, Expected Annual Loss Values, Exposure Values, and the Historic Loss Ratio Rating. These are presented for the Plumas County Planning Area as a whole.

People and Populations

The people and populations of the Plumas County Planning Area are not directly affected by general drought conditions; although, their turfed areas, trees, and other water-depending resources can all be affected. In extreme drought conditions, however, residents and other populations within the Planning Area may be vulnerable to drought and water shortage issues. Wells can go dry. Drought and water shortage can lead to an increase in wildfires threatening Planning Area residents. Water shortages can have an effect on all populations in the Planning Area but often have a greater effect on the unhoused and other vulnerable populations that may be unable to access and afford clean drinking water during shortages. During periods of drought as the costs of water usage may increase, those who are economically disadvantaged may be unable to afford the increased costs of potable water.

Structures

Structures have a limited vulnerability to drought and water shortage. It is the secondary hazard of drought (wildfire) which causes risks to structures. Drought can also stress trees, causing die off. These trees may fall on structures adjacent to them.

Critical Facilities and Infrastructure

Most critical facilities and infrastructure have a limited vulnerability to drought and water shortage. Should drought conditions be severe enough to cause water shortage reliability issues, some facilities and infrastructure may be affected. Water and wastewater systems may be impacted during times of reduced water supply and need to employ contingencies to remain functional and fully operational. Other water-dependent systems may also be adversely affected. Further, the secondary hazard of drought (increased tree mortality and potential for spread of urban fires and wildfire) can pose a significant risk to critical facilities and infrastructure. Drought can also stress trees, causing die off. Dead and weakened trees may fall on critical infrastructure adjacent to them and impact power lines and other utilities, often causing power outages. Fallen trees can also temporarily block roads and access which can impact first responders in an emergency.

Natural, Historic, and Cultural Resources

Drought and water shortage can have a significant impact on natural resources. Water levels in reservoirs and lakes may be reduced, and a loss of wetlands and marsh areas may occur. Severe drought conditions can contribute to an increase in erosion of soils and lead to poor soil quality. Further, all of the trees in the Planning Area are at risk to drought impacts and a reduction in water supply. These trees provide a wealth of social and environmental benefits to Planning Area residents and visitors, from shade and beauty to air quality, carbon reduction and stormwater management. Increased tree mortality during extended droughts can be substantial and widespread. This potential increase in tree mortality in the Planning Area can also add to the available fuel which can exacerbate the spread of wildfires. Drought can devastate crops and dry out pastures, dry out forests and critical habitat areas, and reduce food and water available for wildlife and livestock. Additionally, drought conditions can also cause soil to compact and not absorb water well, potentially making an area more susceptible to flooding. It is unlikely that drought and water shortage would have a significant impact on historic and cultural resources in the Planning Area unless they are impacted by a drought precipitated wildfire event.

FEMA NRI Hazard Vulnerability Assessment

The HMPC looked at the FEMA NRI for additional specific data on Plumas County's vulnerability to drought. The NRI contains data and analysis for 18 separate natural hazards, including drought. As shown in Table 4-68, drought could cause a total of \$371,450 in expected annual losses, with a historic loss rating of relatively moderate. Drought has a relatively low rating for social vulnerability and a relatively high community resilience, with a risk index score of 87.4 out of 100. According to the NRI, there have been 1,400 drought events between the years 2000-2021 with an average of 61 events per year.

Table 4-68 Plumas County Planning Area – Drought Vulnerability Ratings from FEMA NRI

| NRI Hazard | Hazard Risk Index Rating | Expected Annual Loss Values (total)** | Exposure Value (total)*** | Historic Loss Ratio Rating |
|------------|--------------------------|---------------------------------------|---------------------------|----------------------------|
| Drought | 87.4 | \$371,450 | \$3,622,270 | Relatively moderate |

Source: FEMA NRI Report

*Hazard Risk Index is calculated using data for only a single hazard type, and reflects a communities expected annual loss value, community risk factors, and the adjustment factor used to calculate the risk value.

**Expected annual loss represents the average economic loss in dollars resulting from natural hazards each year.

***Exposure is a natural hazard consequence factor that is the representative value of buildings, populations, or agriculture potentially exposed to a natural hazard occurrence.

Additional information on the FEMA NRI can be found in Section 4.2 and Appendix H.

Impacts from Drought and Water Shortage

The vulnerability to drought is Countywide, but impacts may vary and include reduction in water supply and an increase in dry fuels. The potential for a reduction in water supply during drought conditions generally leads to both mandated and voluntary conservation measures during extended droughts. During these times, the costs of water can also increase. Also of concern, the increased dry fuels and fuel loads associated with drought conditions can result in an increased fire danger. In areas of extremely dry fuels,

the intensity and speed of fires can be significant. Water supply and flows for fire suppression can also be an issue during extended droughts. Drought that occurs during periods of extreme heat and high winds can be a contributing factor to PSPS events to be declared in the Planning Area. More information on PSPS can be found above in Section 4.3.

Other qualitative impacts associated with drought in the Plumas County Planning Area are those related to water intensive activities such as municipal usage, commerce, tourism, and recreation use. With more precipitation likely falling as rain instead of snow and warmer temperatures causing decreased snowfall to melt faster and earlier, water supply is likely to become more unreliable. In addition, drought and water shortage is predicted to become more common. This means less water available for use over the long run, and additional challenges for water supply reliability, especially during periods of extended drought.

Drought Impact Reporter

Drought impacts are wide-reaching and may be economic, environmental, and/or societal. Tracking drought impacts can be difficult. The Drought Impact Reporter from the NDMC is a useful reference tool that compiles reported drought impacts nationwide. Table 4-69 show drought impacts for County from 1850 to May 2025. The data represented is skewed, with the majority of these impacts from records within the past ten years.

Table 4-69 Plumas County Drought Impacts 1850-5/1/2025

| Category | Plumas County Number of Impacts |
|------------------------------------|---------------------------------|
| Agriculture | 28 |
| Business and Industry | 11 |
| Energy | 8 |
| Fire | 16 |
| Plants & Wildlife | 30 |
| Relief, Response, and Restrictions | 69 |
| Society and Public Health | 28 |
| Tourism and Recreation | 13 |
| Water Supply and Quality | 67 |
| Total | 270 |

Source: National Drought Mitigation Center. Retrieved 5/1/2025.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the County may be affected in the future by climate change (which was discussed in the hazard profile section above), changes in population patterns, and changes in land use and development. The influencing effects of these factors on this hazard are discussed further in the Future Conditions/Future Development discussion below.

Future Conditions/Future Development

This section provides a discussion of how future conditions will influence or affect the hazard over time and also discusses future development relative to each hazard.

Future Conditions

Future conditions may be affected by climate change, changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. Findings on this for Plumas County include the following:

- Climate change is likely to exacerbate future drought conditions and associated impacts and vulnerability of the County to drought and water shortage.
- Future population growth should be considered as having more or less people in a community and can affect the overall hazard vulnerability to the County. Population growth in Plumas County is expected to decrease. Plumas County has access to large quantities of water through its groundwater as well as surface water. However, any future population growth in the County will add additional pressure to water companies during periods of drought and water shortage. Water companies will need to continue to plan for and add infrastructure capacity for population growth. As the population grows, the nature and makeup of populations will shift and change along with it. Vulnerable and underserved populations, such as those with low incomes and the unhoused that might not always have access to affordable clean water, will need to be considered as future development continues, since they may experience a disproportionate impact from drought and water shortage. Potential population growth will be a challenge not only with regard to Plumas County's water access for agricultural production, but state- and nation-wide with regard to food production. Should the County see a growth in population, it will increase the vulnerability and impacts to the County from this hazard.
- Land use planning should be proactive to address future hazard conditions. If the County begins to grow, more cropland may be taken out of production to provide housing to accommodate for population growth. As Plumas County's agricultural lands are reduced, it seems likely that there would be less of a competing demand for water. However, more development will also require an increase in water supply and associated infrastructure. Changes in land use and development may or may not increase the impacts and associated vulnerabilities of the County to this hazard depending on where and how this future growth occurs.

Future Development

Future development considerations should be ongoing and proactive. Ensuring that comprehensive land use planning is conducted, regulatory requirements, such as building codes, are followed, and varying needs for different demographic groups with intersecting identities that reside within the County are considered can help to make for a more resilient community.

4.3.10. Earthquake

Hazard Profile

This hazard profile contains multiple sections that detail how this hazard can affect the Plumas County Planning Area. These sections include a hazard/problem description; description of location and extent; past occurrences of this hazard; likelihood of future occurrence; and how climate change can affect or influence this hazard.

Hazard/Problem Description

An earthquake is caused by a sudden slip on a fault. Stresses in the earth's outer layer push the sides of the fault together. Stress builds up, and the rocks slip suddenly, releasing energy in waves that travel through the earth's crust and cause the shaking that is felt during an earthquake. Earthquakes can cause structural damage, injury, and loss of life, as well as damage to infrastructure networks, such as water, power, gas, communication, and transportation. Earthquakes may also cause collateral emergencies including dam and levee failures, seiches, hazmat incidents, fires, avalanches, and landslides. The degree of damage depends on many interrelated factors. Among these are: the magnitude, focal depth, distance from the causative fault, source mechanism, duration of shaking, high rock accelerations, type of surface deposits or bedrock, degree of consolidation of surface deposits, presence of high groundwater, topography, and the design, type, and quality of building construction. This section briefly discusses issues related to types of seismic hazards.

Ground Shaking

Ground shaking is motion that occurs as a result of energy released during faulting. The damage or collapse of buildings and other structures caused by ground shaking is among the most serious seismic hazard. Damage to structures from this vibration, or ground shaking, is caused by the transmission of earthquake vibrations from the ground to the structure. The intensity of shaking and its potential impact on buildings is determined by the physical characteristics of the underlying soil and rock, building materials and workmanship, earthquake magnitude and location of epicenter, and the character and duration of ground motion.

Actual ground breakage generally affects only those buildings directly over or nearby the fault. Ground shaking generally has a much greater impact over a greater geographical area than ground breakage. The amount of breakage and shaking is a function of earthquake magnitude, type of bedrock, depth and type of soil, general topography, and groundwater. As with most communities in Northern California near active faults, much of Plumas County could be susceptible to moderate to more violent ground shaking.

Seismic Structural Safety

Older buildings constructed before building codes were established, and even newer buildings constructed before earthquake-resistance provisions were included in the codes, are the most likely to be damaged during an earthquake. Buildings one or two stories high of wood-frame construction are considered to be one of the most structurally resistant to earthquake damage. Older masonry buildings without seismic reinforcement (unreinforced masonry) and soft story buildings are the most susceptible to the type of structural failure that causes injury or death.

The susceptibility of a structure to damage from ground shaking is also related to the underlying foundation material. A foundation of rock or very firm material can intensify short-period motions which affect low-rise buildings more than tall, flexible ones. A deep layer of water-logged soft alluvium can cushion low-rise buildings, but it can also accentuate the motion in tall buildings. The amplified motion resulting from softer alluvial soils can also severely damage older masonry buildings.

Other potentially dangerous conditions include but are not limited to: building architectural features that are not firmly anchored, such as parapets and cornices; roadways, including column and pile bents and abutments for bridges and overcrossings; and above-ground storage tanks and their mounting devices. Such features could be damaged or destroyed during strong or sustained ground shaking.

Liquefaction Potential

Liquefaction is a process whereby soil is temporarily transformed to a fluid formed during intense and prolonged ground shaking. Areas most prone to liquefaction are those that are water saturated (e.g., where the water table is less than 30 feet below the surface) and consist of relatively uniform sands that are loose to medium density. In addition to necessary soil conditions, the ground acceleration and duration of the earthquake must be of sufficient energy to induce liquefaction.

Liquefaction during major earthquakes can cause severe damage to structures on level ground as a result of settling, tilting, or floating. Such damage occurred in San Francisco on bay-filled areas during the 1989 Loma Prieta earthquake, even though the epicenter was several miles away. If liquefaction occurs in or under a sloping soil mass, the entire mass may flow toward a lower elevation. Also, of particular concern in terms of developed and newly developing areas are fill areas that have been poorly compacted.

No known liquefaction areas exist in Plumas County.

Landslide/Debris Flows

Landslides can occur as a result of horizontal seismic inertia induced in the slopes by the ground shaking. The most common earthquake-induced landslides include shallow, disrupted landslides such as rock falls, rockslides, and soil slides. Debris flows are created when surface soil on steep slopes becomes totally saturated with water. Once the soil liquefies, it loses the ability to hold together and can flow downhill at very high speeds, taking vegetation and/or structures with it. Slide risks increase after an earthquake during a wet winter. This is discussed in the vulnerability section below, and as a stand-alone hazard in Section 4.3.13.

Settlement

Settlement can occur in poorly consolidated soils during ground shaking. During settlement, the soil materials are physically rearranged by the shaking to result in a less stable alignment of the individual minerals. Settlement of sufficient magnitude to cause significant structural damage is normally associated with rapidly deposited alluvial soils or improperly founded or poorly compacted fill. These areas are known to undergo extensive settling with the addition of irrigation water, but evidence due to ground shaking is not available.

Fire Following Earthquake

Fire ignitions and spread following a major earthquake can further compound the potentially catastrophic impacts of a large earthquake event. Fire following earthquake is a major hazard in earthquake-prone areas which are densely developed and have high inventories of wood frame buildings. The capability of fire departments to combat fires following an earthquake is impacted by the regional nature of an earthquake,

damage to transportation and water supply systems, and the potential failure of telecommunications. A local fire department may suffer impacts to its personnel, buildings, equipment, and communications systems. Moreover, fewer resources are immediately available as mutual aid – due to the commitment of nearby fire departments responding to the earthquake within their own jurisdictions. Transportation system damage may adversely impact the mobilization of off-duty personnel and fire and rescue mutual aid resources from unaffected areas. Maneuvering fire crews within the affected areas of the earthquake may be impeded by debris or damage to roads and bridges. Additionally, the municipal water supply system which ordinarily supports firefighting operations is likely to be impacted.

Fire following earthquake is an issue that could impact any California community that experiences an earthquake – both urban and rural. According to the FM Global Insurance company, “Fires after earthquakes commonly initiate from electrical or fuel related sources because their use is widespread. In the US, natural gas is a factor 15 to 50 percent of the time, and electrical ignitions account for 40 percent or more of post-earthquake wildfires. Ignitable liquid spills, chemical reactions, and the contact of combustibles with heat sources have also initiated or contributed to many fires after earthquakes.”

Location and Extent

California is seismically active because it sits on the boundary between two of the earth’s tectonic plates. Most of the state - everything east of the San Andreas Fault - is on the North American Plate. The cities of Monterey, Santa Barbara, Los Angeles, and San Diego are on the Pacific Plate, which is constantly moving northwest past the North American Plate. The relative rate of movement is about two inches per year. The San Andreas Fault is considered the boundary between the two plates, although some of the motion is taken up on faults as far away as central Utah.

Faults

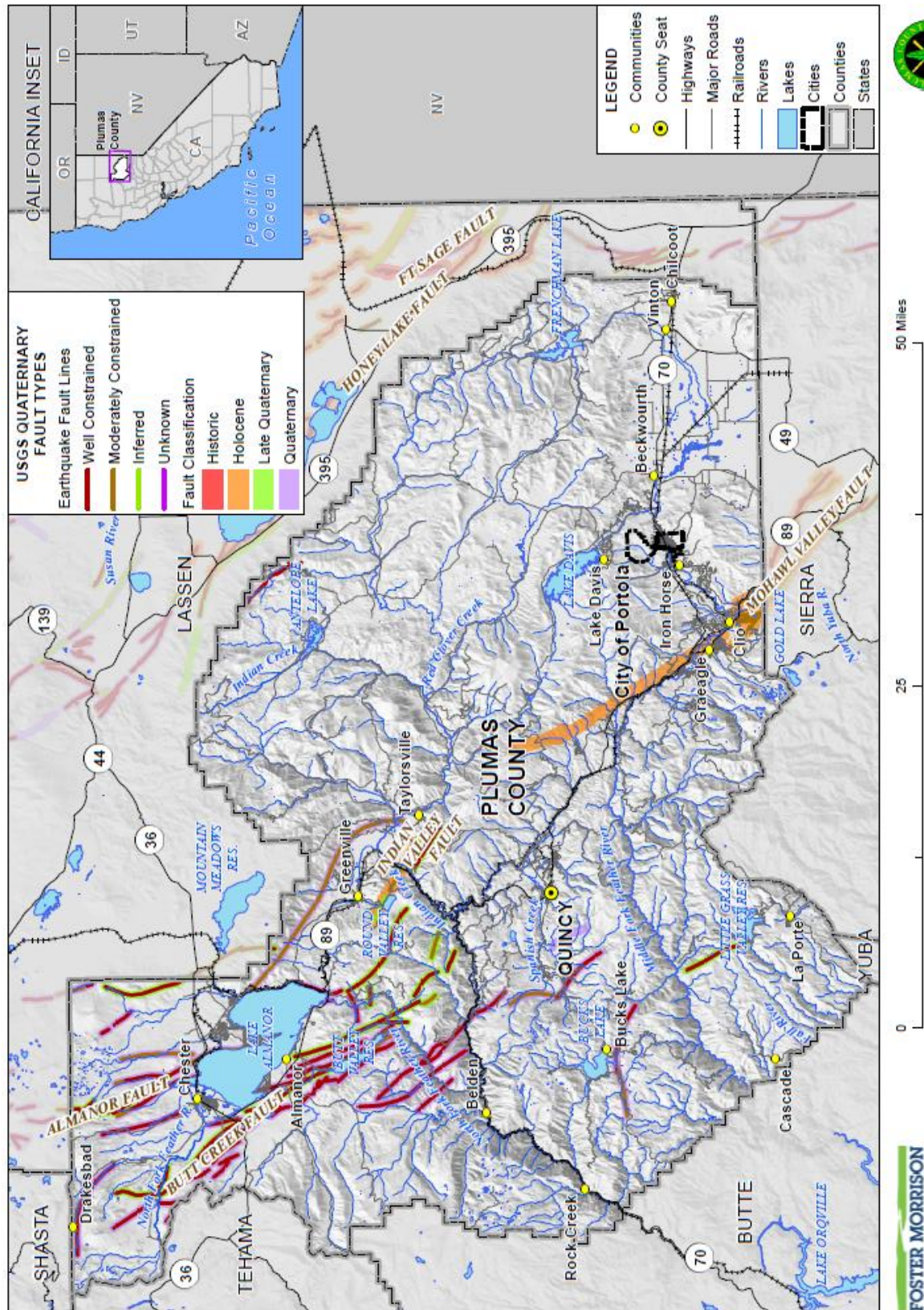
A fault is defined as “a fracture or fracture zone in the earth’s crust along which there has been displacement of the sides relative to one another.” For the purpose of planning there are two types of faults, active and inactive. Active faults have experienced displacement in historic time, suggesting that future displacement may be expected. Inactive faults show no evidence of movement in recent geologic time, suggesting that these faults are dormant. This does not mean, however, that faults having no evidence of surface displacement within the last 11,000 years are necessarily inactive. For example, the 1975 Oroville earthquake, the 1983 Coalinga earthquake, and the 1987 Whittier Narrows earthquake occurred on faults not previously recognized as active. Potentially active faults are those that have shown displacement within the last 1.6 million years (Quaternary). An inactive fault shows no evidence of movement in historic (last 200 years) or geologic time, suggesting that these faults are dormant.

Two types of fault movement represent possible hazards to structures in the immediate vicinity of the fault: fault creep and sudden fault displacement. Fault creep, a slow movement of one side of a fault relative to the other, can cause cracking and buckling of sidewalks and foundations even without perceptible ground shaking. Sudden fault displacement occurs during an earthquake event and may result in the collapse of buildings or other structures that are found along the fault zone when fault displacement exceeds an inch or two. The only protection against damage caused directly by fault displacement is to prohibit construction in the fault zone.

The 2035 Plumas County General Plan Public Health and Safety Element noted that the risk of seismic hazards to residents of Plumas County is based on the approximate location of earthquake faults within and outside of the County. Several potentially active faults pass through Plumas County. The Almanor Fault, Butt Creek Fault Zone, and the Mohawk Valley Fault traverse the County. The Indian Valley Fault is also considered an active fault located within the County. Additionally, the Honey Lake and Fort Sage Faults are two active faults located east of the County that may pose a risk to the County Planning Area.

Figure 4-93 shows fault locations in and near Plumas County. The HMPC noted that an area of concern for the County is the Sierra Valley.

Figure 4-93 Faults in and near Plumas County



Data Source: CGS Alquist Priolo Earthquake Fault Zones 2015, USGS Quaternary Faults (July 17, 2014), Plumas County GIS, Cal-Atlas, Map Date: 4/18/2025.

The amount of energy released during an earthquake is usually expressed as a magnitude and is measured directly from the earthquake as recorded on seismographs. An earthquake's magnitude is expressed in whole numbers and decimals (e.g., 6.8). Seismologists have developed several magnitude scales. One of the first was the Richter Scale, developed in 1932 by the late Dr. Charles F. Richter of the California Institute of Technology. The Richter Magnitude Scale is used to quantify the magnitude or strength of the seismic energy released by an earthquake. Another measure of earthquake severity is intensity. Intensity is an expression of the amount of shaking at any given location on the ground surface (see Table 4-70). Seismic shaking is typically the greatest cause of losses to structures during earthquakes.

Table 4-70 Modified Mercalli Intensity (MMI) Scale

| MMI | Felt Intensity |
|------|---|
| I | Not felt except by a very few people under special conditions. Detected mostly by instruments. |
| II | Felt by a few people, especially those on upper floors of buildings. Suspended objects may swing. |
| III | Felt noticeably indoors. Standing automobiles may rock slightly. |
| IV | Felt by many people indoors; by a few outdoors. At night, some people are awakened. Dishes, windows, and doors rattle. |
| V | Felt by nearly everyone. Many people are awakened. Some dishes and windows are broken. Unstable objects are overturned. |
| VI | Felt by everyone. Many people become frightened and run outdoors. Some heavy furniture is moved. Some plaster falls. |
| VII | Most people are alarmed and run outside. Damage is negligible in buildings of good construction, considerable in buildings of poor construction. |
| VIII | Damage is slight in specially designed structures, considerable in ordinary buildings, and great in poorly built structures. Heavy furniture is overturned. |
| IX | Damage is considerable in specially designed buildings. Buildings shift from their foundations and partly collapse. Underground pipes are broken. |
| X | Some well-built wooden structures are destroyed. Most masonry structures are destroyed. The ground is badly cracked. Considerable landslides occur on steep slopes. |
| XI | Few, if any, masonry structures remain standing. Rails are bent. Broad fissures appear in the ground. |
| XII | Virtually total destruction. Waves are seen on the ground surface. Objects are thrown in the air. |

Source: Multi-Hazard Identification and Risk Assessment, FEMA 1997

Other Hazards

Earthquakes can also cause landslides and dam failures. Earthquakes may cause landslides (discussed in Section 4.3.13), particularly during the wet season, in areas of high water or saturated soils. Finally, earthquakes can cause dams to fail (see Section 4.3.7 Dam Failure). Earthquakes can also cause levees to fail.

Past Occurrences

Disaster Declaration History

There have been no disaster declarations in the County related to earthquakes, as shown on Table 4-4.

NCDC Events

Earthquake events are not tracked by the NCDC database.

USGS Events

The USGS National Earthquake Information Center database contains data on earthquakes in the Plumas County area. Table 4-71 shows the approximate distances earthquakes can be felt away from the epicenter. According to the table, a magnitude 5.0 earthquake could be felt up to 90 miles away. The USGS database was searched for magnitude 5.0 or greater on the Richter Scale within 90 miles of the City of Portola in Plumas County. These 43 results are detailed in Table 4-72.

Table 4-71 Approximate Relationships between Earthquake Magnitude and Intensity

| Richter Scale Magnitude | Maximum Expected Intensity (MM)* | Distance Felt (miles) |
|-------------------------|----------------------------------|-----------------------|
| 2.0 - 2.9 | I – II | 0 |
| 3.0 - 3.9 | II – III | 10 |
| 4.0 - 4.9 | IV – V | 50 |
| 5.0 - 5.9 | VI – VII | 90 |
| 6.0 - 6.9 | VII – VIII | 135 |
| 7.0 - 7.9 | IX – X | 240 |
| 8.0 - 8.9 | XI – XII | 365 |

*Modified Mercalli Intensity Scale.

Source: USGS Earthquake Intensity Zonation and Quaternary Deposits, Miscellaneous Field Studies Map 9093, 1977.

*Table 4-72 Magnitude 5.0 Earthquakes or greater within 90 Miles of Plumas County**

| Date | Richter Magnitude | Location |
|------------|-------------------|-------------------------------------|
| 5/12/2023 | 5.16 | 4 km NW of Canyon dam, CA |
| 5/11/2023 | 5.48 | Lake Almanor Earthquake |
| 5/24/2013 | 5.69 | 10 km WNW of Greenville, California |
| 4/26/2008 | 5.1 | 1 km NW of Mogul, Nevada |
| 8/10/2001 | 5.2 | Northern California |
| 11/26/1998 | 5.1 | 7 km NW of Redding, CA |
| 11/28/1980 | 5.1 | Northern California |
| 2/22/1979 | 5.3 | Northern California |
| 11/27/1976 | 5 | Northern California |
| 8/2/1975 | 5.2 | Northern California |
| 8/2/1975 | 5.1 | Northern California |
| 8/1/1975 | 5.7 | 0 km WSW of Palermo, California |
| 4/29/1968 | 5 | Northern California |
| 9/12/1966 | 5.91 | Northern California |
| 4/1/1959 | 5.6 | Northern California |

| Date | Richter Magnitude | Location |
|------------|-------------------|---|
| 9/26/1953 | 5.3 | Nevada |
| 3/22/1953 | 5 | Northern California |
| 5/9/1952 | 5.1 | Nevada |
| 12/14/1950 | 5.6 | Northern California |
| 3/20/1950 | 5.5 | Lassen Peak area, California |
| 12/29/1948 | 6 | Northern California |
| 7/7/1946 | 5 | Lassen Peak area, California |
| 3/30/1943 | 5.3 | Northern California |
| 12/17/1942 | 5.1 | Northern California |
| 12/3/1942 | 5.5 | Nevada |
| 2/8/1940 | 5.7 | Northern California |
| 4/24/1914 | 6.4 | Nevada |
| 2/18/1914 | 6 | Nevada |
| 6/23/1909 | 5.7 | Northern California |
| 3/3/1909 | 5 | Northern California |
| 6/20/1889 | 5.9 | Northern California |
| 4/29/1888 | 5.9 | Northern California |
| 6/3/1887 | 6.3 | Nevada |
| 1/31/1885 | 5.7 | Northern California |
| 1/7/1881 | 5.6 | Near Red Bluff, California |
| 7/10/1877 | 5.5 | Lake Tahoe area, California-Nevada border |
| 1/24/1875 | 6.2 | South of Janesville, California |
| 12/27/1869 | 6.2 | Near Carson City, Nevada |
| 12/27/1869 | 6.4 | Northwest of Virginia City, Nevada |
| 5/30/1868 | 6 | Near Virginia City, Nevada |
| 3/15/1860 | 6.5 | East of Reno, Nevada |
| 9/3/1857 | 6 | California-Nevada Border east of Truckee |
| 1/25/1855 | 5.5 | Sierra County, California |

Source: USGS, National Earthquake Information Center

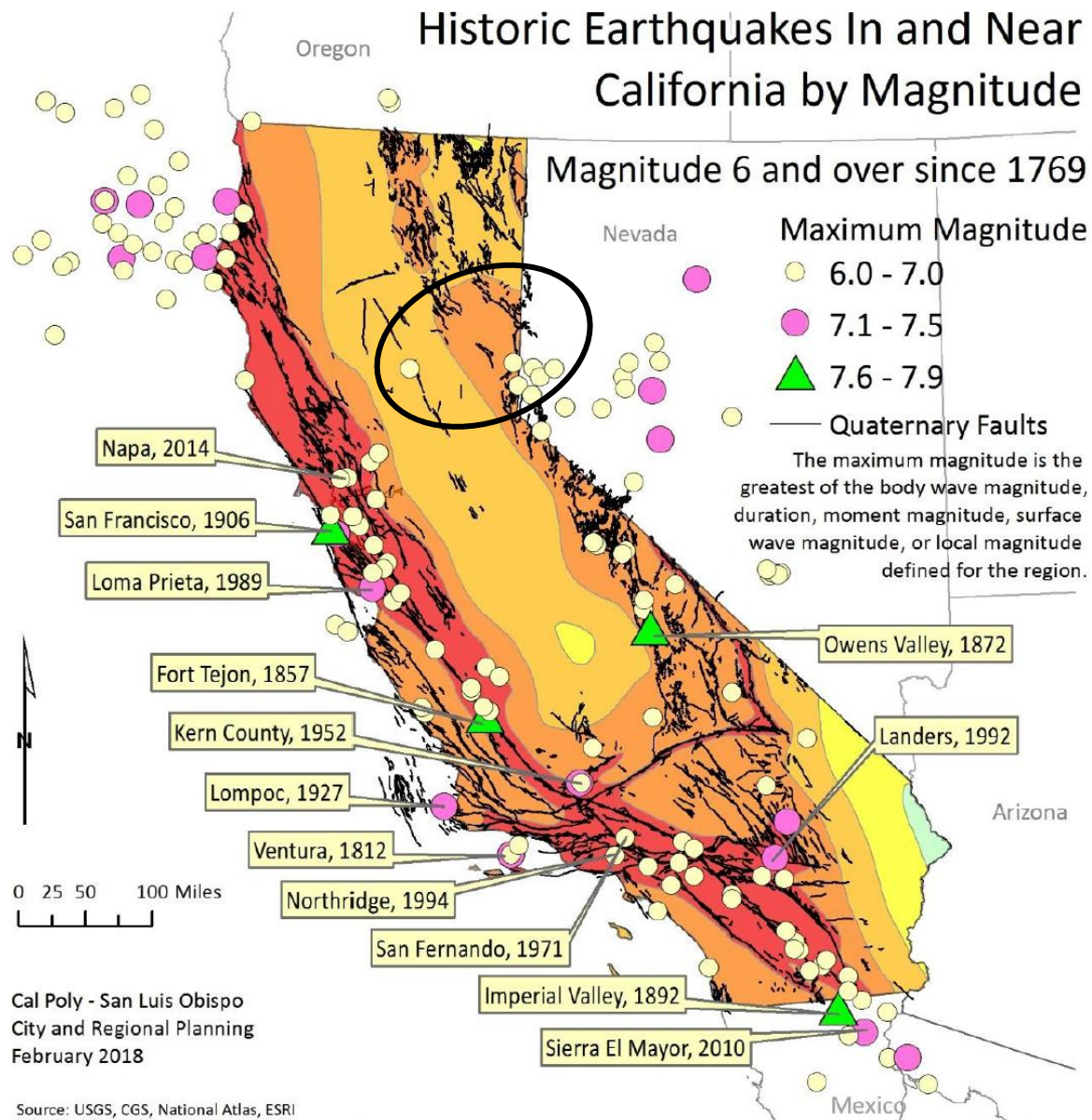
*Search dates 1950 – March 31, 2025

Figure 4-94 shows major historical earthquakes in California from 1769 to 2017. Since 2017, California has experienced four additional 6.0 or greater earthquakes:

- 2022 - 6.4 Ferndal
- 2021 - 6.0 Antelope Valley
- 2019 - 6.4 and 7.1 Ridgecrest

None of these earthquakes (over 6.0) since 2017 have affected the Plumas County Planning Area.

Figure 4-94 Historic Earthquakes in California 1769 to 2017



Source: USGS, CGS, National Atlas, ESRI

Shaking intensity on the background image is derived from the 2% in 50 year (2,500 year) peak ground acceleration on bedrock using ShakeMap criteria. The maximum magnitude is the greatest of the body wave magnitude, duration, moment magnitude, surface wave magnitude, or local magnitude defined for the region. Quaternary faults are believed to be sources of M>6 earthquakes during the last 1.6 million years.

Created by: C. Scholdt (draft 6.A--Historic Earthquakes in and Near California.mxd)

| MMI | Damage | Effects |
|------|-------------------|--|
| X | Very Heavy | Some well-built, wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent. |
| IX | Heavy | Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations. |
| VIII | Moderate to Heavy | Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. |
| VII | Moderate | Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken. |
| VI | Light | Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight. |
| V | Very Light | Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop. |

Source: 2023 State of California Multi-Hazard Mitigation Plan

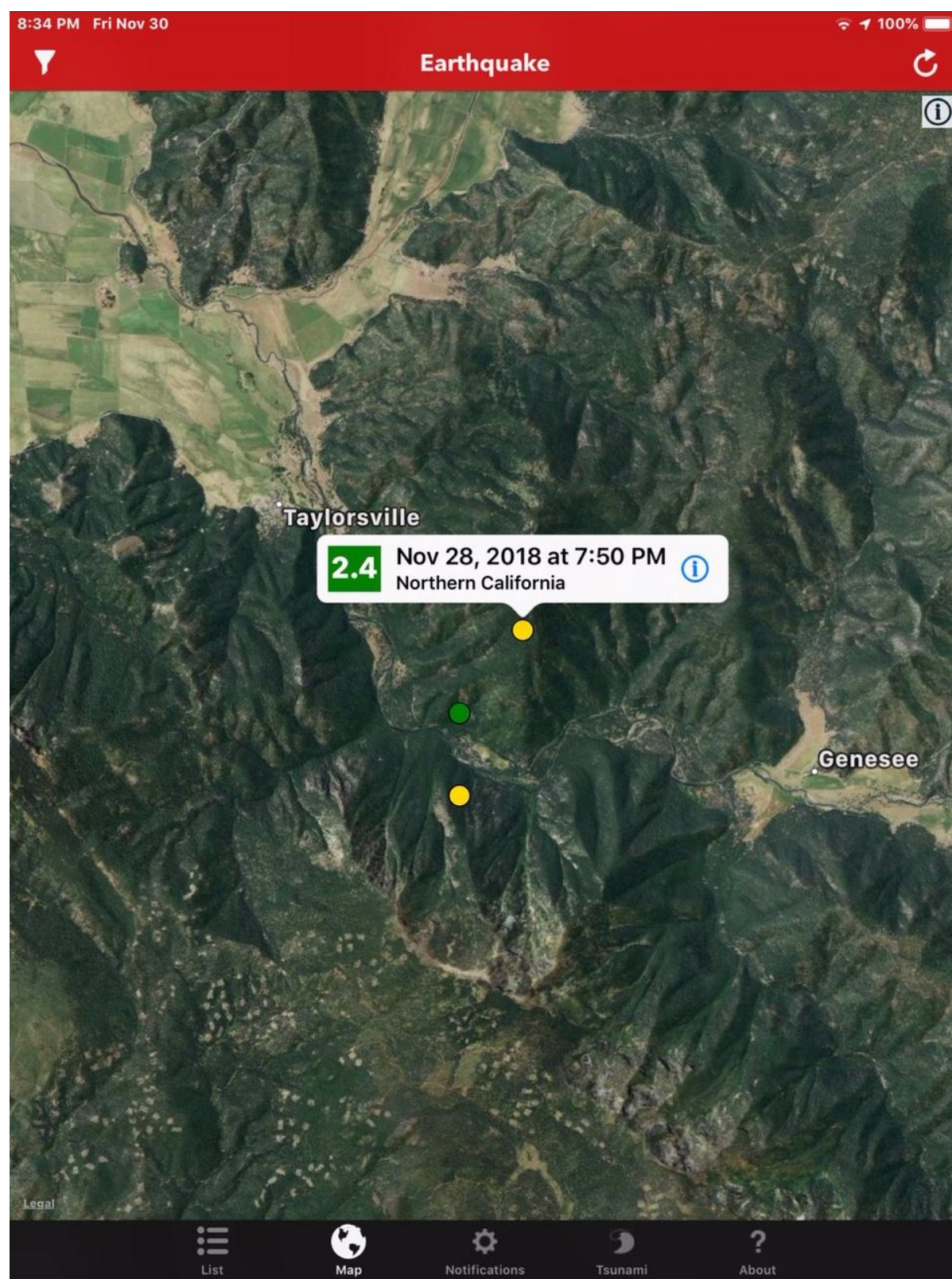
Hazard Mitigation Planning Committee Events

This section separates events since the 2019/2020 LHMPs and those before 2019.

Events since 2019/2020 LHMP

In **November of 2019**, a small cluster of earthquakes ranging from 2.5 to 3.3 on the Richter Scale occurred near Taylorsville. No damages occurred, but the earthquakes were felt.

Figure 4-95 Taylorsville Earthquakes



Source: Plumas County

May 2023 – a 5.5m earthquake was noted at 15:19 and a 5.2m quake on May 12th at 02:18. Aftershocks were ongoing through 5/13/2023. Seneca Healthcare noted that it conducted a complete facility assessment with no issues noted. Seneca experienced no damage but did prepare for facility evacuation in the event of further quakes causing damage to the facility and roadways. Plumas Pines Resort had the biggest damages.

April 4-5, 2024 – Senecal Healthcare noted earthquakes near Belden in Plumas County – a total of seven earthquakes the largest being 4.4m between the hours of 1834 on 4/4/24 thru 4/5/25 @0346. Assessment showed no issues at Seneca Healthcare due to Earthquakes.

Events before 2019

The HMPC noted that during past regional earthquake events, Plumas County has experienced groundshaking. In addition, in some instances, nearby earthquake events have caused cracking in the plaster on walls and in windowsills.

The HMPC member from Viera Ranch noted that on **August 1, 1975**, the Oroville earthquake occurred in nearby Butte County. There was strong shaking noted in Quincy. Other events noted by this member include:

- **December 24, 1992** – an earthquake of 5.6 magnitude hit, causing ground shaking in Quincy.
- **January 16, 1993** – a small earthquake was felt in Quincy.
- **August 13, 1994** – a small earthquake of 3.0 magnitude was felt in Quincy.
- **June 8, 1995** – an earthquake of 4.1 was felt in the Cromberg area.
- **February 1, 1996** – a small earthquake was felt in Quincy.
- **November 5, 1997** – a 4.8 earthquake was felt in the Spring Garden Area.
- **June 5, 2001** – a small earthquake was felt in Quincy.
- **June 10, 2001** – a 5.5 earthquake was felt. It was centered in Portola. The County Courthouse was checked for cracks.
- **January 7, 2003** – a 2.8 earthquake was felt in Quincy.

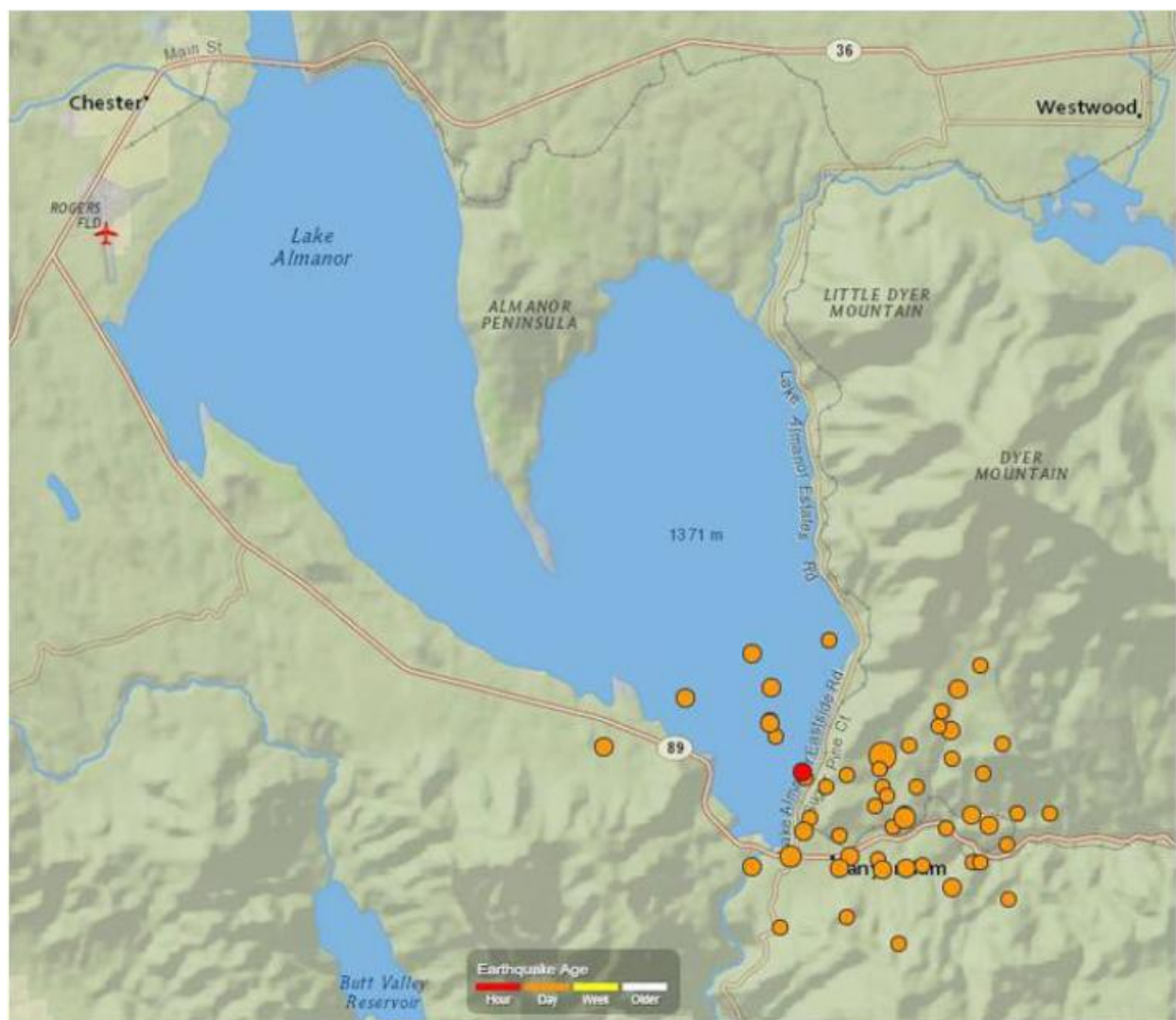
2013 – As shown on Table 4-72, a series of earthquakes occurred near Lake Almanor on May 24, 2013. The series of earthquakes included a 5.7 magnitude earthquake near Canyon Dam, near the southern end of Lake Almanor. See Figure 4-96 for location of the May 24th earthquake series. Injuries were reported and damage to infrastructure and homes were sustained. Lake Almanor Mutual Water Company sustained a water main rupture which resulted in water supply loss, and 600 PG&E customers on the Lake Almanor peninsula lost power.

A USGS Report on this event noted that Felt intensity among the communities around Lake Almanor appeared to vary significantly. Lake Almanor West, Lake Almanor Country Club, and Hamilton Branch experienced $\text{MMI} \geq 7$, whereas other communities around the lake experienced $\text{MMI} \leq 6$; the maximum observed intensity was MMI 8, in Lake Almanor West. Damage in the high intensity areas consisted of broken and collapsed chimneys, ruptured pipes, and some damage to foundations and to structural elements within houses. Although this shaking damage is not usually expected for an Mw 5.7 earthquake, the intensities at Lake Almanor Country Club correlate with the peak ground acceleration (38 percent g) and peak ground velocity (30 centimeters per second) recorded by the California Strong Motion Instrumentation Program accelerometer located at the nearby Lake Almanor Fire Station. The intensity distribution for the

three hardest hit areas (LAW, LACC, and HB) appears to increase as the azimuth from epicenter to the intensity sites approaches the fault strike. The small communities of Almanor and Prattville on the southwestern shore of Lake Almanor experienced somewhat lower intensities. The town of Canyon Dam experienced a lower intensity as well, despite its location up-dip of the earthquake rupture.

As a result of the 5.7 event, Plumas County BOS instituted an emergency proclamation. This provides businesses and homeowners official documentation in potential damage claim activity. Over one million dollars in damages were reported and over 50 homes in the Lake Almanor basin were impacted. Broken or toppled chimneys were the most common report, however broken water lines caused flooding and water damage. At least one residential structure was shifted off its foundation as a result of ground shaking. Figure 4-97 depicts damage to a home in the Lake Almanor area.

Figure 4-96 Plumas County – May 2013 Canyon Dam Earthquakes



Source: USGS

Figure 4-97 Plumas County – Home Damaged by Canyon Dam Earthquake



Source: Plumas County

Figure 4-98 shows interior damage done to a house in the Lake Almanor Country Club area. Figure 4-99 shows a water tank. The earthquake caused a coupling to break, spilling 50,000 gallons of water before the LACC Mutual Water Company shut off the leak. Figure 4-100 shows the exterior of a house where a chimney collapsed.

Figure 4-98 Damage at Home in Lake Almanor Country Club Area



Source: Chapman, K., Gold, M.B., Boatwright, J., Sipe, J., Quitariano, V., Dreger, D., and Hardebeck, J., 2016, Faulting, damage, and intensity in the Canyon dam earthquake of May 23, 2013: U.S. Geological Survey Open-File Report 2016-1145, 49 p., <http://dx.doi.org/10.3133/ofr20161145>.

Figure 4-99 Water Tank in Lake Almanor Country Club Area



Source: Chapman, K., Gold, M.B., Boatwright, J., Sipe, J., Quitariano, V., Dreger, D., and Hardebeck, J., 2016, Faulting, damage, and intensity in the Canyon dam earthquake of May 23, 2013: U.S. Geological Survey Open-File Report 2016-1145, 49 p., <http://dx.doi.org/10.3133/ofr20161145>.

Figure 4-100 Chimney Collapse at a Home in Lake Almanor Country Club Area



Source: Chapman, K., Gold, M.B., Boatwright, J., Sipe, J., Quitariano, V., Dreger, D., and Hardebeck, J., 2016, Faulting, damage, and intensity in the Canyon Dam earthquake of May 23, 2013: U.S. Geological Survey Open-File Report 2016-1145, 49 p., <http://dx.doi.org/10.3133/ofr20161145>.

Likelihood of Future Occurrence

Unlikely (major earthquake); Likely (minor earthquake)— A few sizeable earthquakes have been recorded within the County. The possibility of an earthquake is an ever-present phenomenon in California

and Plumas County. The combination of plate tectonics and associated California coastal mountain range building geology essentially guarantees earthquake as a result of the periodic release of tectonic stresses.

It is likely that climate change will not affect the chance of future occurrence as well as future impacts. More information on climate change and earthquake can be found below the Mapping of Future Occurrences section. More information on future impacts can be found in the Future Conditions/Future Development section of the Vulnerability Assessment below.

Mapping of Future Occurrences

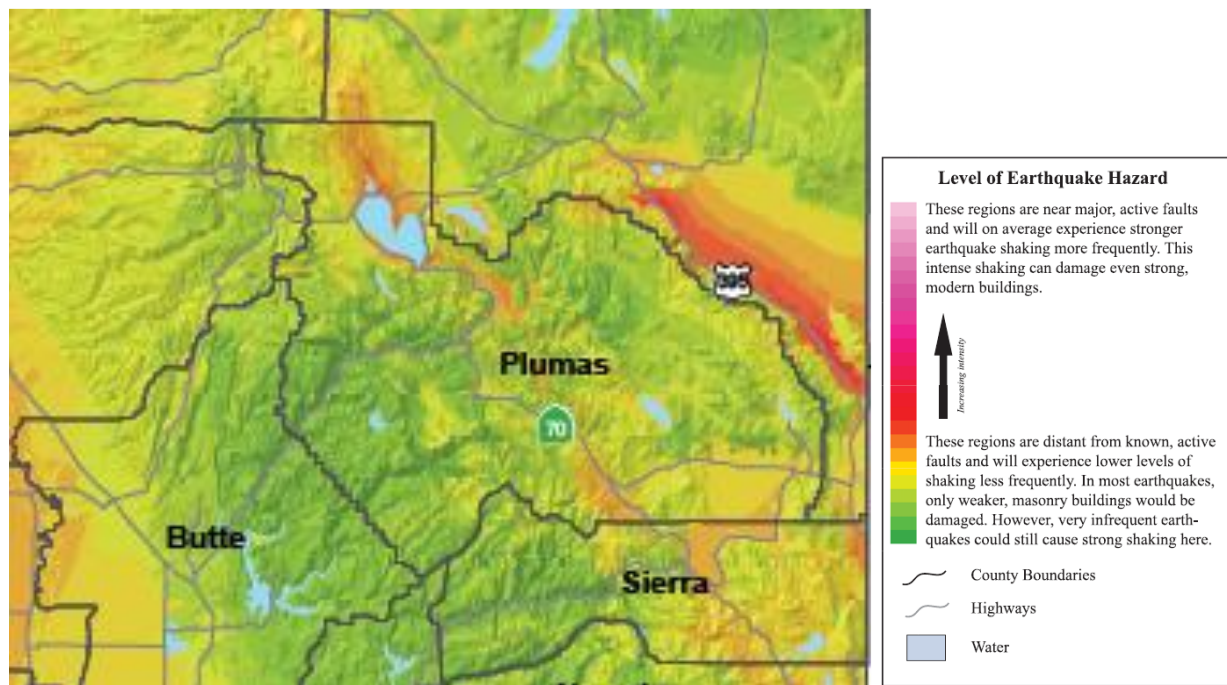
Mapping of future occurrences is presented in the following sections:

- CGS Analysis
- UCERF Analysis

CGS Analysis

Maps indicating the maximum expectable intensity of ground shaking for the County are available through several sources. Figure 4-101, prepared in 2016 by the California Division of Mines and Geology, shows the expected relative intensity of ground shaking and damage in California from anticipated future earthquakes. The shaking potential is calculated as the level of ground motion that has a 2% chance of being exceeded in 50 years, which is the same as the level of ground-shaking with about a 2,500-year average repeat time. Although the greatest hazard is in areas of highest intensity as shown on the map, no region is immune from potential earthquake damage.

Figure 4-101 Maximum Expectable Earthquake Intensity – 2% Chance in 50 Years

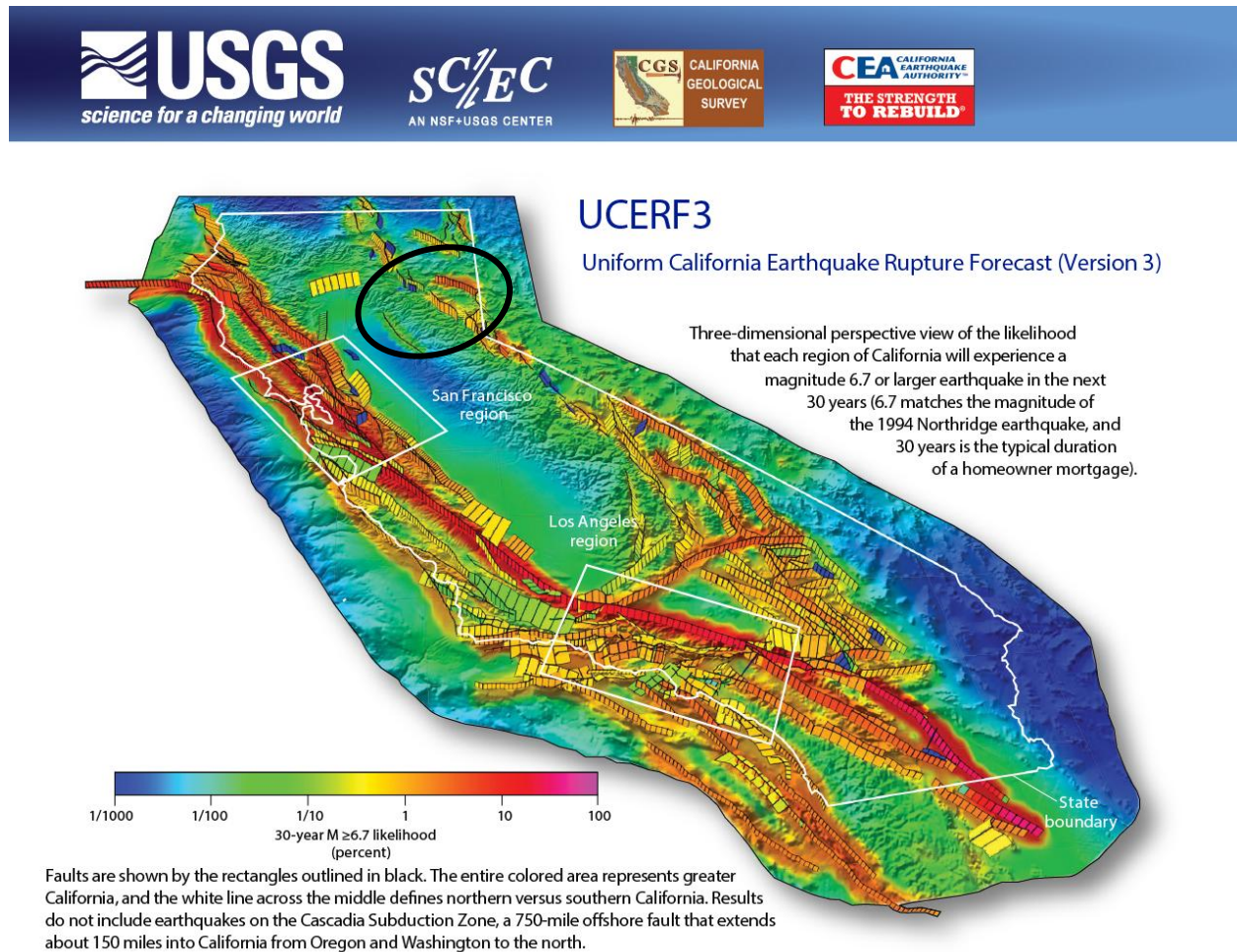


Source: California Division of Mines and Geology (2016)

UCERF Analysis

In 2014, the USGS and the California Geological Survey (CGS) released the time-dependent version of the Uniform California Earthquake Rupture Forecast (UCERF III) model. The UCERF III results have helped to reduce the uncertainty in estimated 30-year probabilities of strong ground motions in California. The UCERF map is shown in Figure 4-102 and indicates that Plumas County has a low to moderate risk of earthquake occurrence.

Figure 4-102 Probability of Earthquake Magnitudes Occurring in 30 Year Time Frame



Source: United States Geological Survey Open File Report 2015-3009

Climate Change and Earthquake

Climate change is unlikely to increase earthquake frequency or strength.

Vulnerability Assessment

Vulnerability—High

Earthquake vulnerability is primarily based on population and the built environment. Urban areas in high seismic hazard zones are the most vulnerable, while more rural areas, such as Plumas County are less vulnerable. The primary impacts of concern are life safety and property damage. Several faults are in and near the Plumas County Planning Area, and seismic hazard mapping indicates that the Planning Area has low to moderate seismic hazard potential. Depending on the location and magnitude of an earthquake event, some degree of structural damage due to stronger seismic shaking could be expected.

An assessment of a community's vulnerability to this hazard begins with an understanding of local exposure to unincorporated Plumas County. This is included in the Local Concerns section below. After that, vulnerability is discussed in multiple sections that detail how this hazard can affect both the entire Plumas County Planning Area as well as the unincorporated portions of Plumas County. How the hazard affects the other participating jurisdictions can be found in their respective annexes to this LHMP Update. These sections below include assets at risk, impacts, and how future development can be affected by this hazard.

Local Concerns (unincorporated Plumas County)

The unincorporated County has certain specific concerns regarding this hazard. These concerns form a portion of the basis for the mitigation strategy and mitigation actions that seek to reduce vulnerabilities to this hazard.

Seismic events can have particularly negative effects on older buildings constructed of URM, including materials such as brick, concrete and stone. The Uniform Building Code (UBC) identifies four seismic zones in the United States. The zones are numbered one through four, with Zone 4 representing the highest level of seismic hazard. The UBC establishes more stringent construction standards for areas within Zones 3 and 4. All of California lies within either Zone 3 or Zone 4. Plumas County is within the less hazardous Zone 3. The County Building Department does not track or keep an inventory of URM buildings. The first building permit was issued in 1959, and at that time they were issued by the Assessor's office. The Building Department did not come into existence until 1968 and at that time the 1967 edition of the Uniform Building Code was in force. Under the 67 UBC Chapter 24, all habitable structures constructed of masonry were required to be reinforced. It would be safe to assume that prior to the existence of the Building Department in 1968, any structure built of masonry may not be reinforced.

The HMPC noted that an area of concern for the County is the Sierra Valley.

Local concerns for Portola and the Special Districts can be found under the Local Concerns heading in each respective jurisdictional annex to this LHMP Update.

Assets at Risk

Assets at risk from earthquake include people and populations; structures; critical facilities and infrastructure and community lifelines; natural, historic, and cultural resources; and economic assets and

community activities of value. These are discussed in the following sections for the Plumas County Planning Area and unincorporated Plumas County.

Additionally, for each hazard in the FEMA National Risk Index in Plumas County, the relevant portions of the hazard analysis done by FEMA is presented below. This includes the Hazard Risk Index Rating, Expected Annual Loss Values, Exposure Values, and the Historic Loss Ratio Rating. These are presented for the Plumas County Planning Area as a whole.

People and Populations

All people and populations are at risk from earthquake shaking and other subhazards related to an earthquake event. Those at heightened risk include:

- The unsheltered
- Infants and children under age five and their caregivers
- Elderly (65 and older)
- Individuals with disabilities
- Individuals dependent on medical equipment
- Individuals with impaired mobility

The greatest risk to people and populations from earthquake is death and injury. More information on people and populations at risk to earthquake shaking events can be seen in the Hazus scenarios developed for this LHMP and described in the Hazus Analysis section below.

Structures

All structures in the Plumas County Planning Area are vulnerable to earthquakes, depending on the severity and location of the shake. Older buildings, unreinforced masonry and soft story buildings are at a much greater risk to earthquakes. More information on structures at risk can be seen in the Hazus scenarios below.

Critical Facilities and Infrastructure

Earthquakes present a tremendous threat to critical facilities and infrastructure. More information on structures at risk can be seen in the Hazus scenarios below.

Natural, Historic, and Cultural Resources

The 2023 State Hazard Mitigation Plan noted that environmental problems from earthquakes can be numerous. Earthquakes can significantly damage surrounding habitats. It is also possible for earthquakes to reroute streams, which can change the water quality, possibly damaging habitat and feeding areas. Streams fed by groundwater and/or springs may dry up because of changes in underlying geology. Another threat to the environment from earthquakes is the potential release of hazardous materials. Historical and cultural resources are at risk, often due to their age and construction types. The Hazus scenarios below are relatively silent on the vulnerability to natural, historic, and cultural resources, but impacts to these resources could be long lasting.

Hazus Analysis

Earthquake losses will vary across the Plumas County Planning Area depending on the source and magnitude of the event. To further evaluate potential losses associated with earthquake activity in the Planning Area, four Hazus-MH earthquake scenarios were run for this 2025 LHMP Update as detailed below.

FEMA's Hazus model, utilizing GIS technology, estimates potential losses from earthquakes by analyzing the built environment, including buildings, infrastructure, and population, along with hazard data and damage functions. The model incorporates inventory information about buildings, infrastructure (roads, utilities, etc.), and population to assess the potential impact of a hazard. It uses hazard-specific data, such as earthquake intensity and employs damage functions that relate the intensity of the hazard to the level of damage to buildings and infrastructure based on research and historical data. By combining the inventory, hazard, and damage function data, HAZUS estimates the potential losses in terms of direct physical damage, induced damage, and direct losses (e.g., building damage, debris generation, casualty rates, economic impacts). The results of HAZUS analysis can be used to identify vulnerable areas, prioritize mitigation actions, and develop disaster preparedness plans.

Hazus-MH 6.1 was utilized to model earthquake losses for the County. Level 1 analyses were run, meaning that only the default data was used and not supplemented with local building inventory or hazard data. This is a planning level analysis.

HAZUS Level 1 Runs

These events were chosen from data gathered from the Plumas County General Plan Safety Element and the USGS' seismic scenarios catalog. For deterministic Hazus scenarios, a single scenario event is selected based on a specific fault, the epicenter location, and the potential magnitude of the event.

Table 4-73 Hazus Scenario Data from the USGS Earthquake Hazards Program Catalog

| Hazus Fault Info | Hazus Catalog Information |
|--------------------------------|---|
| Earthquake Fault | Great Valley 3 |
| Epicenter | 38.757000, -121.877000 |
| Epicenter Location Description | Approximately 80 miles to the southwest of Plumas County |
| Scenario | Great Valley 03a Dunnigan Hills |
| Ruptures | Great Valley 03a Dunnigan Hills |
| Magnitude | 6.53 |
| MMI | 8.42 |
| Event ID | bssc2014greatvalley03adunnig_m6p53_se |
| URL | https://earthquake.usgs.gov/scenarios/eventpage/bssc2014greatvalley03adunnig_m6p53_se/origin/detail |
| Earthquake Fault | Hat Creek-McArthur-Mayfield |
| Epicenter | 41.001, -121.477 |

| Hazus Fault Info | Hazus Catalog Information |
|--------------------------------|---|
| Epicenter Location Description | Approximately 40 miles to the north/northwest of Plumas County |
| Scenario | HC-MAC-MAY 7.29 |
| Ruptures | Hat Creek-McArthur-Mayfield |
| Magnitude | 7.29 |
| MMI | 8.58 |
| Event ID | bssc2014hatcreekmcarthurmayf_m7p29_se |
| URL | https://earthquake.usgs.gov/scenarios/eventpage/bssc2014hatcreekmcarthurmayf_m7p29_se |
| Earthquake Fault | Honey Lake |
| Epicenter | 40.174400, -120.289001 |
| Epicenter Location Description | Approximately 5 miles to the northeast of Plumas County |
| Scenario | HONEY LAKE 7.03 |
| Ruptures | Honey Lake |
| Magnitude | 7.03 |
| MMI | 8.72 |
| Event ID | bssc2014honeylake2011cfmshaw_m7p03_se |
| URL | https://earthquake.usgs.gov/scenarios/eventpage/bssc2014honeylake2011cfmshaw_m7p03_se/executive |
| Earthquake Fault | Warm Springs Valley |
| Epicenter | 39.955002, -119.803001 |
| Epicenter Location Description | Approximately 19 miles to the east of Plumas County |
| Scenario | Warm Springs Valley 6.92 |
| Ruptures | Warm Springs Valley fault zone |
| Magnitude | 6.92 |
| MMI | 8.74 |
| Event ID | bssc20141605_m6p92_se |
| URL | https://earthquake.usgs.gov/scenarios/eventpage/bssc20141605_m6p92_se/executive |

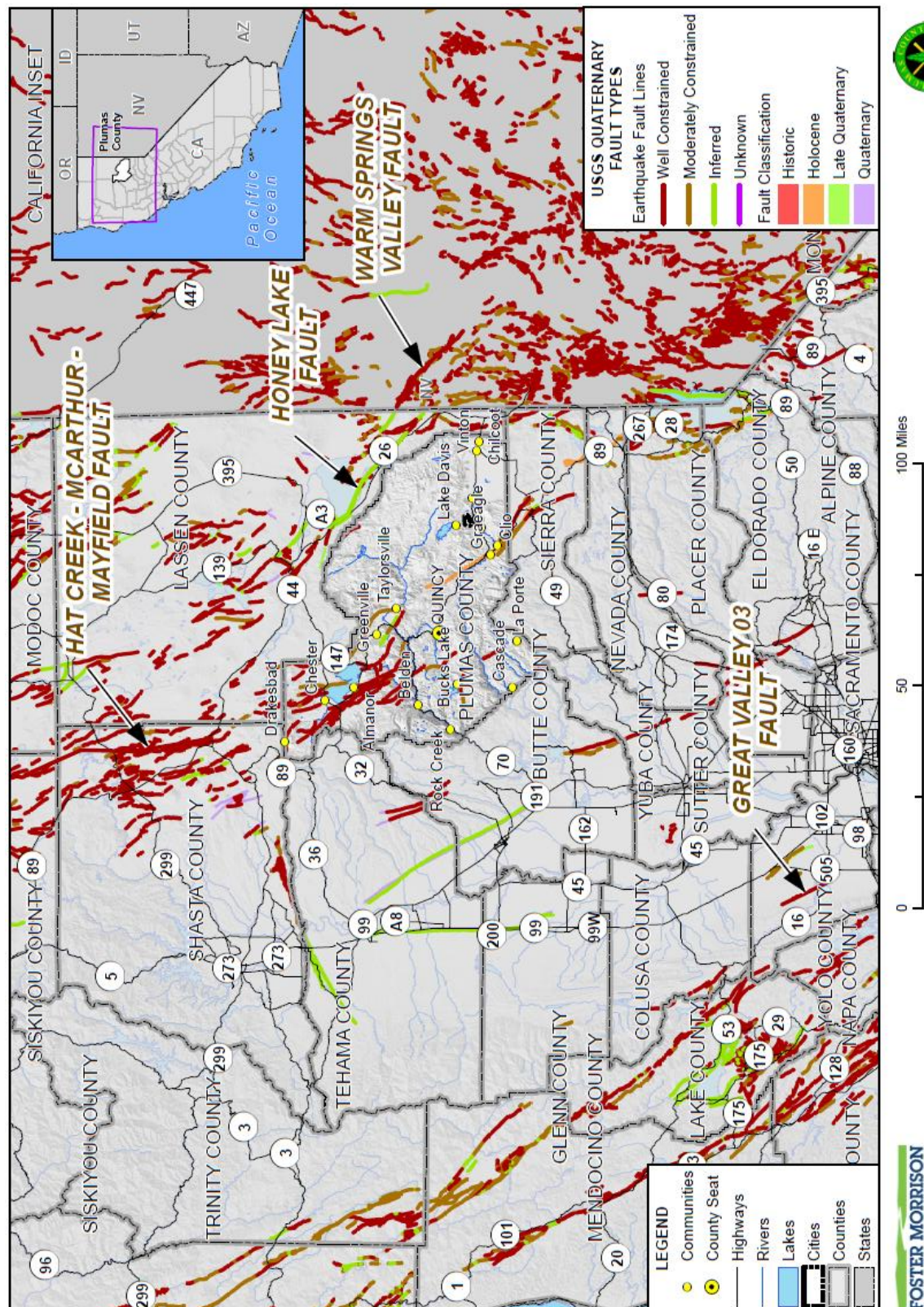
Source: Hazus 6.1

The earthquake scenarios are selected for analysis based on the earthquake fault availability in the FEMA Hazus-MH 6.1 Tool and the corresponding earthquake scenario availability through the USGS Earthquake Hazards Program Data Catalog.

The earthquake faults of concern noted in the 2020 Plumas County LHMP and the County Safety Element were available in the USGS Catalog but were not available in Hazus and therefore were not available for analysis. These faults include: Almanor, Butte Creek, Fort Sage, Indian Valley, and Mohawk Valley.

These Hazus scenarios can be seen on Figure 4-103 and are captured in totality in Appendix I. Summary Hazus results follow the Figure, and include summary tables of all Hazus scenario runs and a Hazus scenario comparison table.

Figure 4-103 Plumas County Planning Area – Hazus Earthquake Faults and Epicenter Locations



Data Source: CGS Alquist Priolo Earthquake Fault Zones 2015, USGS Quaternary Faults (July 17, 2014), Hazus-MH 6.1, Plumas County GIS, Cal-Atlas; Map Date: 4/29/2025.

Great Valley (03A) Fault 6.53 Hazus Scenario

The results of this deterministic scenario are captured in Table 4-74. Key losses included the following:

- Total economic loss estimated for the earthquake was \$0, which includes building losses and lifeline losses based on the Hazus-MH inventory.
- The total building-related losses were 0.00 (millions of dollars); 0% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 0% of the total loss.
- No buildings in the County were at least moderately damaged. No buildings were completely destroyed.
- Before the earthquake, the region had 87 hospital beds available for use. On the day of the earthquake, the model estimates that 86 hospital beds (almost 100%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 100% of the beds will be back in service. By 30 days, 100% will be operational.
- Regardless of the time of the earthquake, none had casualties.
- No households experienced a loss of potable water the first day after the earthquake.
- No households experienced a loss of electricity the first day after the earthquake.

Table 4-74 Plumas County Planning Area – Great Valley 3 Fault 6.53 Magnitude Scenario Results

| Type of Impact | Great Valley 3 6.53 Magnitude Deterministic Scenario |
|--|---|
| Total Buildings Damaged (based on 16,000 buildings) | Slight: 0 Moderate: 0 Extensive: 0 Complete: 0 |
| Building and Income Related Losses | \$0 |
| Total Economic Losses (Includes building, income and lifeline losses) | \$1,800,000 |
| Casualties (Based on 2 a.m. time of occurrence) | Without requiring hospitalization: 0 Requiring hospitalization: 0 Life threatening: 0 Fatalities: 0 |
| Casualties (Based on 2 p.m. time of occurrence) | Without requiring hospitalization: 0 Requiring hospitalization: 0 Life threatening: 0 Fatalities: 0 |
| Casualties (Based on 5 p.m. time of occurrence) | Without requiring hospitalization: 0 Requiring hospitalization: 0 Life threatening: 0 Fatalities: 0 |
| Damage to Transportation Systems | None with at least moderate damage |
| Damage to Essential Facilities | None with at least moderate damage |
| Damage to Utility Systems | There are no electrical power facilities with at least moderate damage. 1 potable water line breaks, 1 wastewater line breaks, and 0 natural gas line breaks. |

| Type of Impact | Great Valley 3 6.53 Magnitude Deterministic Scenario | |
|---|--|--|
| Households without Power/Water Service (Based on 9,216 total households) | Power loss, Day 1: 0 Power loss, Day 3: 0 Power loss, Day 7: 0 Power loss, Day 30: 0 Power loss, Day 90: 0 | Water loss, Day 1: 0 Water loss, Day 3: 0 Water loss, Day 7: 0 Water loss, Day 30: 0 Water loss, Day 90: 0 |
| Displaced Households | 0 displaced households | |
| Shelter Requirements | 0 persons | |
| Debris Generation | 0 tons | |

Source: Hazus 6.1

Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. Hazus uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimates that there will be 0 ignitions that will burn about 0.00 sq. mi 0.00 % of the region's total area.). The model also estimates that the fires will displace about 0 people and burn about 0 (millions of dollars) of building value.

Figure 4-104 shows the peak ground acceleration due to the Great Valley 6.53 earthquake. Figure 4-105 shows the total losses by census tract in Plumas County due to the Great Valley 6.53 earthquake.

HAZUS LEGEND

- Hazus Epicenter
- Earthquake Fault

ShakeMap for PGA

| |
|--------------------------|
| Not Felt (< 0.2 %g) |
| Weak (0.2 - 1.4 %g) |
| Light (1.4 - 3.9 %g) |
| Moderate (3.9 - 9.2 %g) |
| Strong (9.2 - 18 %g) |
| Very Strong (18 - 34 %g) |
| Severe (34 - 65 %g) |
| Violent (65 - 124 %g) |
| Extreme (> 124 %g) |

LEGEND

- Communities
- County Seat
- Highways
- Major Roads
- ++++ Railroads
- Rivers
- Lakes
- Cities
- Counties
- States

CALIFORNIA INSET

OR ID UT AZ NV CA

Plumas County

Pacific Ocean

GREAT VALLEY 03 FAULT (Magnitude 6.53)

38°75'000", -121°87'000"

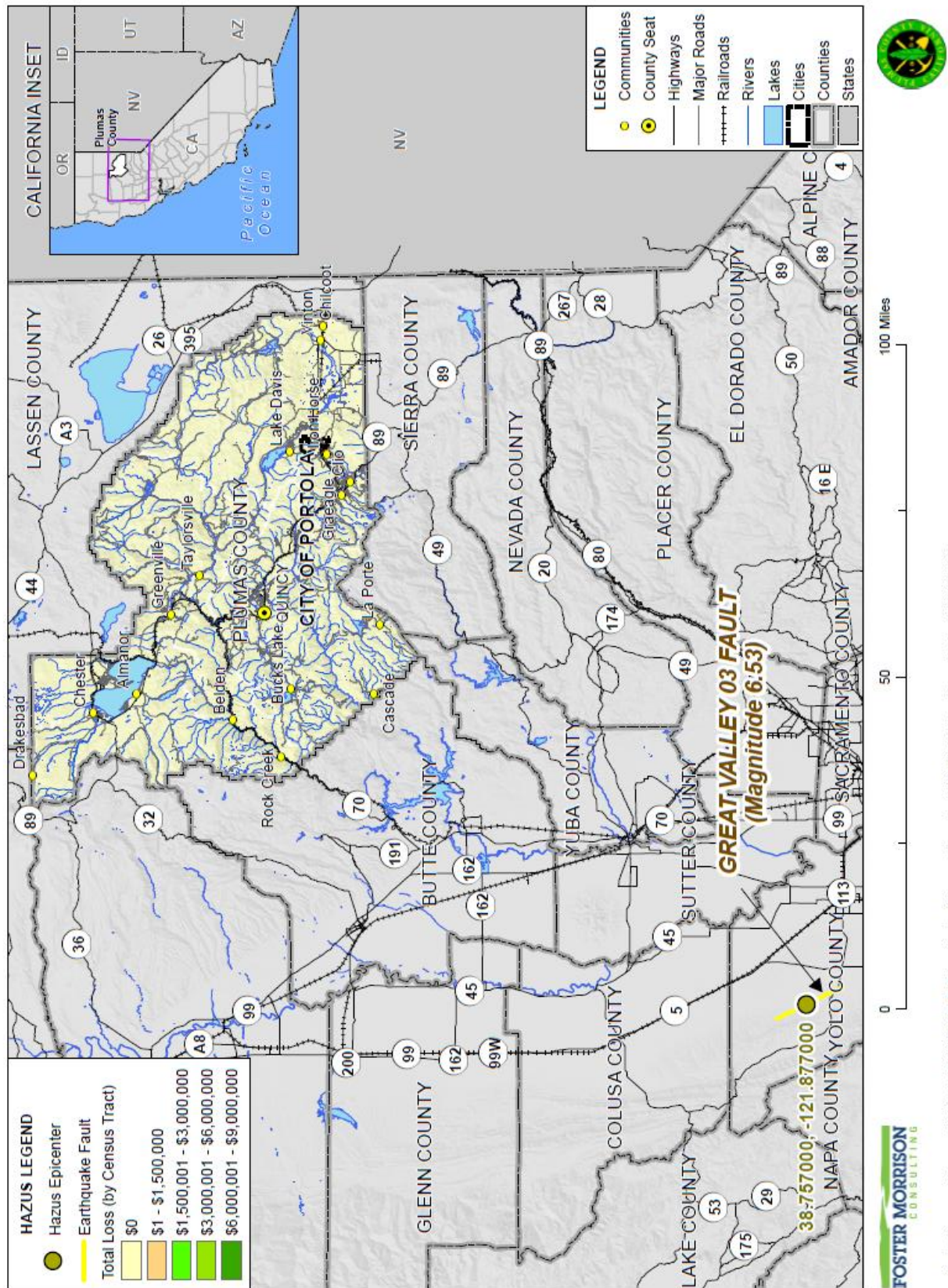
0 50 100 Miles

Counties: LASSEN COUNTY, PLUMAS COUNTY, SIERRA COUNTY, NEVADA COUNTY, PLACER COUNTY, EL DORADO COUNTY, AMADOR COUNTY, BUTTE COUNTY, YUBA COUNTY, SUTTER COUNTY, COLUSA COUNTY, LAKE COUNTY, YOLO COUNTY, SACRAMENTO COUNTY, ALPINE COUNTY.

Cities: Chester, Almaror, Greenville, Taylorville, Rock Creek, Bucks Lake, Quincy, La Porte, Cascade, Graceland, Chico, Winton, Chilcot.

Highways: 89, 44, 36, 32, 99, 70, 191, 162, 45, 99W, 162, 99, 53, 29, 175, 5, 45, 70, 49, 174, 80, 20, 89, 267, 28, 89, 50, 88, 16E, 99, 113, 4.

Figure 4-105 Plumas County Planning Area – Great Valley 6.53 Magnitude Hazus Total Loss



Hazus Hat Creek-McArthur-Mayfield Fault 7.29 Hazus Scenario

The results of this deterministic scenario are captured in Table 4-75. Key losses included the following:

- Total economic loss estimated for the earthquake was \$154,050,000, which includes building losses and lifeline losses based on the Hazus-MH inventory.
- The total building-related losses were 19.96 (millions of dollars); 15% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies, which made up over 57% of the total loss.
- 72 buildings in the County were at least moderately damaged. No buildings were completely destroyed.
- Before the earthquake, the region had 87 hospital beds available for use. On the day of the earthquake, the model estimates that only 82 hospital beds (95%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 99.00% of the beds will be back in service. By 30 days, 100% will be operational.
- Regardless of the time of the earthquake, none had casualties.
- No households experienced a loss of potable water the first day after the earthquake.
- No households experienced a loss of electricity the first day after the earthquake.

Table 4-75 Plumas County Planning Area – Hat Creek-McArthur-Mayfield 7.29 Magnitude Scenario Results

| Type of Impact | Hat Creek-McArthur-Mayfield 7.29 Magnitude Deterministic Scenario |
|--|---|
| Total Buildings Damaged (based on 16,000 buildings) | Slight: 454 Moderate: 68 Extensive: 4 Complete: 0 |
| Building and Income Related Losses | \$19,390,000 |
| Total Economic Losses (Includes building, income and lifeline losses) | \$154,050,000 |
| Casualties (Based on 2 a.m. time of occurrence) | Without requiring hospitalization: 1 Requiring hospitalization: 0 Life threatening: 0 Fatalities: 0 |
| Casualties (Based on 2 p.m. time of occurrence) | Without requiring hospitalization: 1 Requiring hospitalization: 0 Life threatening: 0 Fatalities: 0 |
| Casualties (Based on 5 p.m. time of occurrence) | Without requiring hospitalization: 1 Requiring hospitalization: 0 Life threatening: 0 Fatalities: 0 |
| Damage to Transportation Systems | None with at least moderate damage |
| Damage to Essential Facilities | None with at least moderate damage |
| Damage to Utility Systems | There would be no electrical power facility with at least moderate damage. 17 potable water line breaks, 9 wastewater line breaks, and 3 natural gas line breaks. |

| Type of Impact | Hat Creek-McArthur-Mayfield 7.29 Magnitude Deterministic Scenario | |
|---|--|--|
| Households without Power/Water Service (Based on 9,216 total households) | Power loss, Day 1: 0 Power loss, Day 3: 0 Power loss, Day 7: 0 Power loss, Day 30: 0 Power loss, Day 90: 0 | Water loss, Day 1: 0 Water loss, Day 3: 0 Water loss, Day 7: 0 Water loss, Day 30: 0 Water loss, Day 90: 0 |
| Displaced Households | 1 displaced household | |
| Shelter Requirements | 0 persons | |
| Debris Generation | 2,000 tons | |

Source: Hazus 6.1

Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. Hazus uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimates that there will be 0 ignitions that will burn about 0.00 sq. mi 0.00 % of the region's total area.). The model also estimates that the fires will displace about 0 people and burn about 0 (millions of dollars) of building value.

Figure 4-106 shows the peak ground acceleration due to the Hat Creek-McArthur-Mayfield 7.29 earthquake. Figure 4-107 shows the total losses by census tract in Plumas County due to the Hat Creek-McArthur-Mayfield 7.29 earthquake.

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Honey Lake 7.03 Hazus Scenario

The results of this probabilistic scenario are captured in Table 4-76. Key losses included the following:

- Total economic loss estimated for the earthquake was \$179,640,000, which includes building losses and lifeline losses based on the Hazus-MH inventory.
- The total building-related losses were 50.87 (millions of dollars); 15% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies, which made up over 54% of the total loss.
- 17 buildings in the County were at least moderately damaged. No buildings were completely destroyed.
- Before the earthquake, the region had 87 hospital beds available for use. On the day of the earthquake, the model estimates that only 81 hospital beds (93%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 99% of the beds will be back in service. By 30 days, 100% will be operational.
- Regardless of the time of the earthquake, none had casualties.
- No households experienced a loss of potable water the first day after the earthquake.
- No households experienced a loss of electricity the first day after the earthquake.

Table 4-76 Plumas County Planning Area – Honey Lake 7.03 Magnitude Deterministic Scenario Results

| Type of Impact | Honey Lake 7.03 Magnitude Deterministic Scenario |
|--|---|
| Total Buildings Damaged (based on 16,000 buildings) | Slight: 1,047 Moderate: 198 Extensive: 16 Complete: 1 |
| Building and Income Related Losses | \$50,870,000 |
| Total Economic Losses (Includes building, income and lifeline losses) | \$179,640,000 |
| Casualties (Based on 2 a.m. time of occurrence) | Without requiring hospitalization: 2 Requiring hospitalization: 0 Life threatening: 0 Fatalities: 0 |
| Casualties (Based on 2 p.m. time of occurrence) | Without requiring hospitalization: 3 Requiring hospitalization: 0 Life threatening: 0 Fatalities: 0 |
| Casualties (Based on 5 p.m. time of occurrence) | Without requiring hospitalization: 2 Requiring hospitalization: 0 Life threatening: 0 Fatalities: 0 |
| Damage to Transportation Systems | None with at least moderate damage |
| Damage to Essential Facilities | None with at least moderate damage |
| Damage to Utility Systems | There are no electrical power facilities with at least moderate damage. 38 potable water line breaks, 19 wastewater line breaks, and 6 natural gas line breaks. |

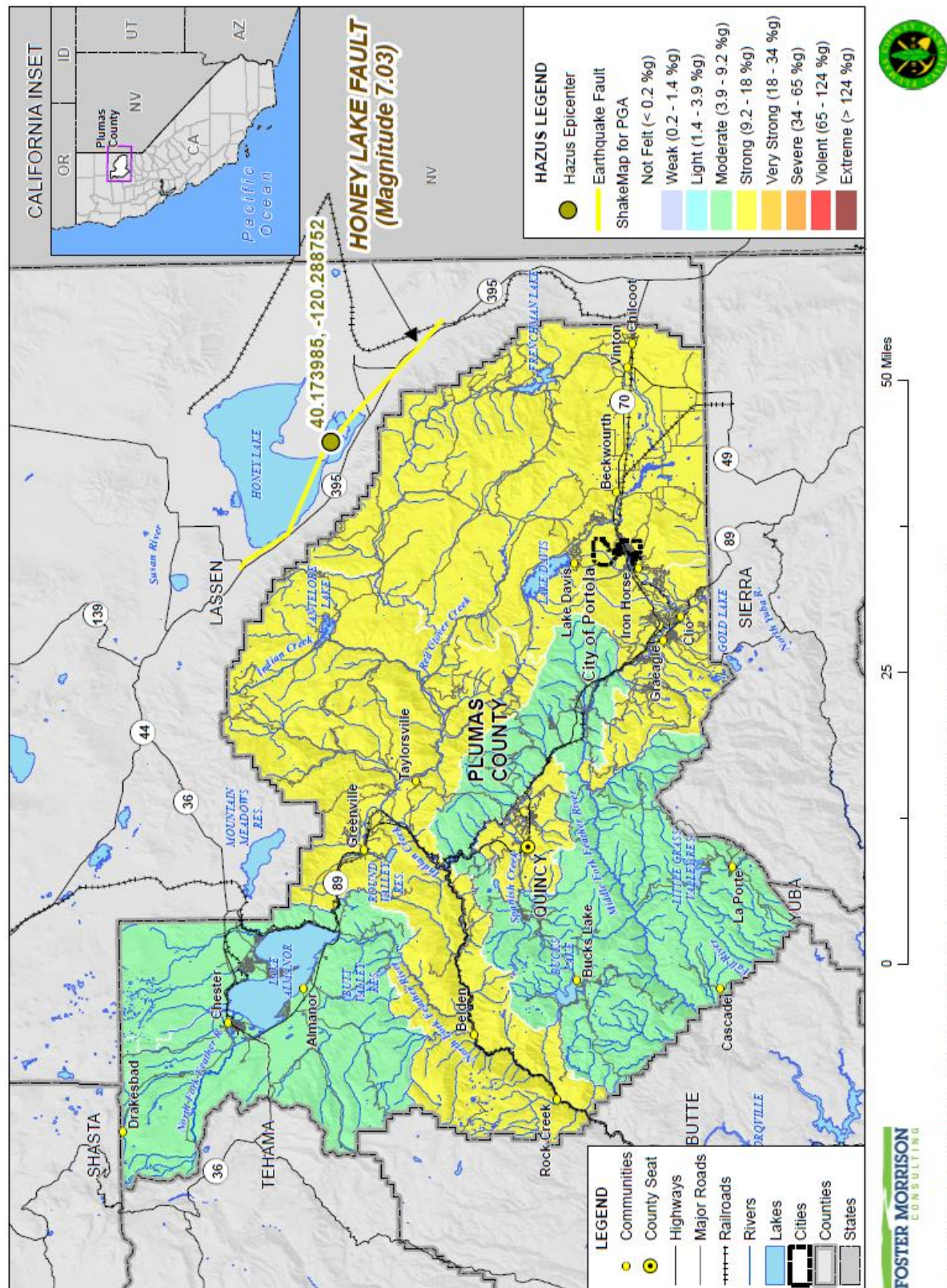
| Type of Impact | Honey Lake 7.03 Magnitude Deterministic Scenario | |
|---|--|--|
| Households without Power/Water Service (Based on 9,216 total households) | Power loss, Day 1: 0 Power loss, Day 3: 0 Power loss, Day 7: 0 Power loss, Day 30: 0 Power loss, Day 90: 0 | Water loss, Day 1: 0 Water loss, Day 3: 0 Water loss, Day 7: 0 Water loss, Day 30: 0 Water loss, Day 90: 0 |
| Displaced Households | 5 displaced households | |
| Shelter Requirements | 2 persons | |
| Debris Generation | 5,000 tons | |

Source: Hazus 6.1

Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. Hazus uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimates that there will be 0 ignitions that will burn about 0.00 sq. mi 0.00 % of the region's total area.). The model also estimates that the fires will displace about 0 people and burn about 0 (millions of dollars) of building value.

Figure 4-104 shows the peak ground acceleration due to the Honey Lake 7.03 earthquake. Figure 4-109 shows the total losses by census tract in Plumas County due to the Honey Lake 7.03 earthquake.

Figure 4-108 Plumas County Planning Area – Honey Lake 7.03 Magnitude Hazus Peak Ground Acceleration



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Warm Springs Valley 6.92 Hazus Scenario

The results of this probabilistic scenario are captured in Table 4-76. Key losses included the following:

- Total economic loss estimated for the earthquake was \$31,200,000, which includes building losses and lifeline losses based on the Hazus-MH inventory.
- The total building-related losses were 15.16 (millions of dollars); 17% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies, which made up over 52% of the total loss.
- 71 buildings in the County were at least moderately damaged. No buildings were completely destroyed.
- Before the earthquake, the region had 87 hospital beds available for use. On the day of the earthquake, the model estimates that only 84 hospital beds (98%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 100% of the beds will be back in service. By 30 days, 100% will be operational.
- Regardless of the time of the earthquake, none had casualties.
- No households experienced a loss of potable water the first day after the earthquake.
- No households experienced a loss of electricity the first day after the earthquake.

Table 4-77 Plumas County Planning Area – Warm Springs Valley 6.92 Magnitude Deterministic Scenario Results

| Type of Impact | Warm Springs Valley 6.92 Magnitude Deterministic Scenario |
|--|---|
| Total Buildings Damaged (based on 16,000 buildings) | Slight: 374 Moderate: 66 Extensive: 5 Complete: 0 |
| Building and Income Related Losses | \$15,160,000 |
| Total Economic Losses (Includes building, income and lifeline losses) | \$31,200,000 |
| Casualties (Based on 2 a.m. time of occurrence) | Without requiring hospitalization: 1 Requiring hospitalization: 0 Life threatening: 0 Fatalities: 0 |
| Casualties (Based on 2 p.m. time of occurrence) | Without requiring hospitalization: 1 Requiring hospitalization: 0 Life threatening: 0 Fatalities: 0 |
| Casualties (Based on 5 p.m. time of occurrence) | Without requiring hospitalization: 1 Requiring hospitalization: 0 Life threatening: 0 Fatalities: 0 |
| Damage to Transportation Systems | None with at least moderate damage |
| Damage to Essential Facilities | None with at least moderate damage |
| Damage to Utility Systems | There are no electrical power facilities with at least moderate damage. 14 potable water line breaks, 7 wastewater line breaks, and 2 natural gas line breaks. |

| Type of Impact | Warm Springs Valley 6.92 Magnitude Deterministic Scenario | |
|---|--|--|
| Households without Power/Water Service (Based on 9,216 total households) | Power loss, Day 1: 0 Power loss, Day 3: 0 Power loss, Day 7: 0 Power loss, Day 30: 0 Power loss, Day 90: 0 | Water loss, Day 1: 0 Water loss, Day 3: 0 Water loss, Day 7: 0 Water loss, Day 30: 0 Water loss, Day 90: 0 |
| Displaced Households | 1 displaced household | |
| Shelter Requirements | 0 persons | |
| Debris Generation | 2,000 tons | |

Source: Hazus 6.1

Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. Hazus uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimates that there will be 0 ignitions that will burn about 0.00 sq. mi 0.00 % of the region's total area.). The model also estimates that the fires will displace about 0 people and burn about 0 (millions of dollars) of building value.

Figure 4-104 shows the peak ground acceleration due to the Warm Springs Valley 6.92 earthquake. Figure 4-109 shows the total losses by census tract in Plumas County due to the Warm Spring Valley 6.92 earthquake.

HAZUS LEGEND

- Hazus Epicenter
- Earthquake Fault
- ShakeMap for PGA
 - Not Felt (< 0.2 %g)
 - Weak (0.2 - 1.4 %g)
 - Light (1.4 - 3.9 %g)
 - Moderate (3.9 - 9.2 %g)
 - Strong (9.2 - 18 %g)
 - Very Strong (18 - 34 %g)
 - Severe (34 - 65 %g)
 - Violent (65 - 124 %g)
 - Extreme (> 124 %g)

LEGEND

- Communities
- County Seat
- Highways
- Major Roads
- ++++ Railroads
- Rivers
- Lakes
- Cities
- Counties
- States

WARM SPRINGS VALLEY FAULT (Magnitude 6.92)

PLUMAS COUNTY

QUINCY

TEHAMA

BUTTE

SIERRA

YUBA

SHASTA

LASSEN

UT

AZ

CA

NV

OR

ID

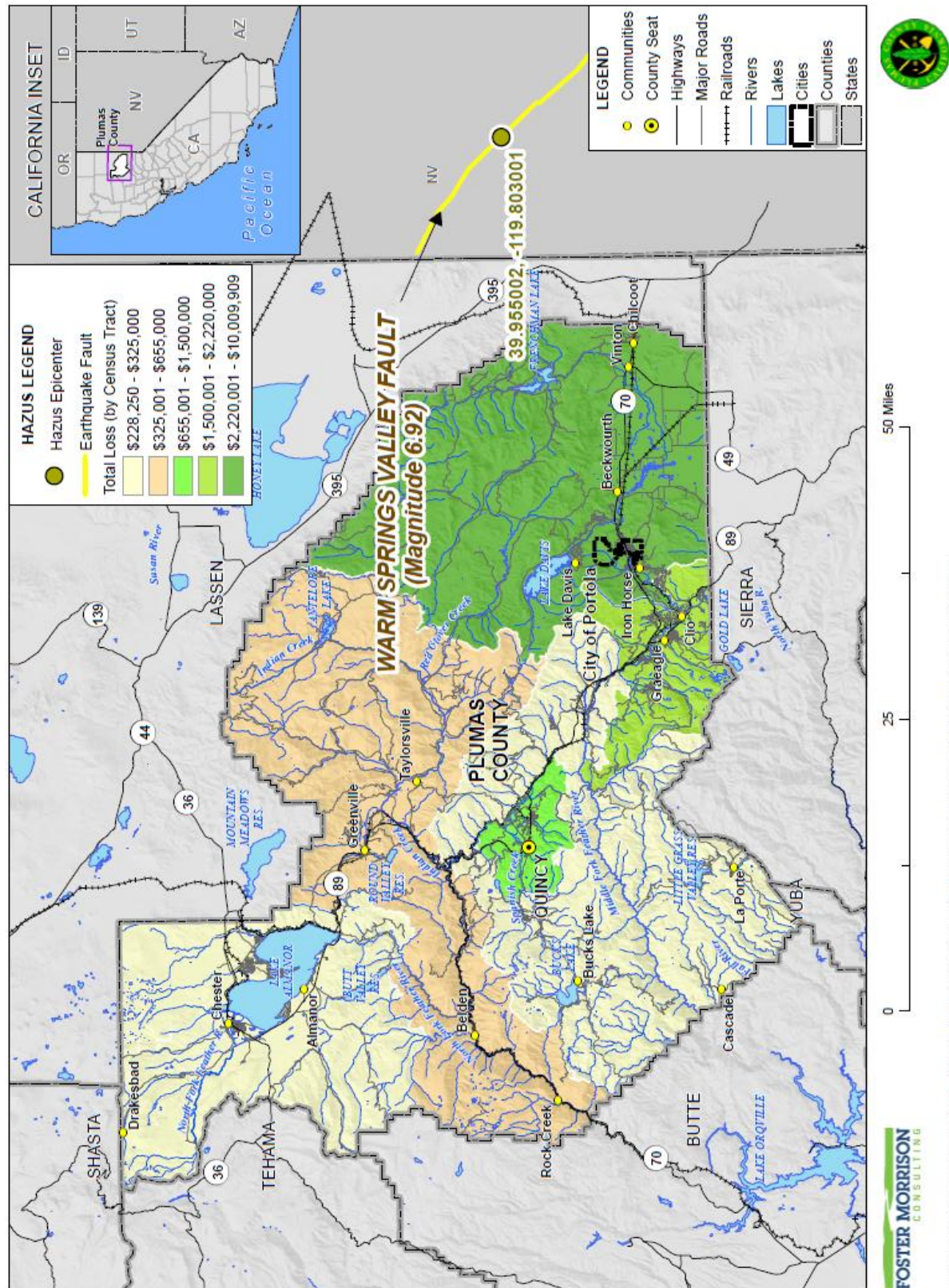
Plumas County

Pacific Ocean

Scale: 0 to 50 Miles

FOSTER MORRISON CONSULTING

Figure 4-111 Plumas County Planning Area – Warm Springs Valley 6.92 Magnitude Hazus Total Loss



Data Source: Hazus-MH 6.1, USGS ShakeMap Data, Plumas County GIS, Cal-Atlas; Map Date: 4/28/2025.

Hazus Scenario Comparisons

A comparison of the results of the four deterministic scenarios is shown on Table 4-78.

Table 4-78 Plumas County Planning Area – Comparison of Hazus Scenarios

| Type of Impact | Great Valley 3 6.53 Magnitude Deterministic Scenario | Hat Creek-McArthur-Mayfield 7.29 Magnitude Deterministic Scenario | Honey Lake 7.03 Magnitude Deterministic Scenario | Warm Springs Valley Magnitude 6.92 Deterministic Scenario |
|---|--|--|--|--|
| Total Buildings Damaged (based on 16,000 buildings) | Slight: 0 Moderate: 0 Extensive: 0 Complete: 0 | Slight: 454 Moderate: 68 Extensive: 4 Complete: 0 | Slight: 1,047 Moderate: 198 Extensive: 16 Complete: 1 | Slight: 374 Moderate: 66 Extensive: 5 Complete: 0 |
| Building and Income Related Losses | \$0 | \$19,390,000 | \$50,870,000 | \$15,160,000 |
| Total Economic Losses (Includes building, income and lifeline losses) | \$1,800,000 | \$154,050,000 | \$179,640,000 | \$31,200,000 |
| Casualties (Based on 2 a.m. time of occurrence) | Without requiring hospitalization: 0 Requiring hospitalization: 0 Life threatening: 0 Fatalities: 0 | Without requiring hospitalization: 1 Requiring hospitalization: 0 Life threatening: 0 Fatalities: 0 | Without requiring hospitalization: 2 Requiring hospitalization: 0 Life threatening: 0 Fatalities: 0 | Without requiring hospitalization: 1 Requiring hospitalization: 0 Life threatening: 0 Fatalities: 0 |
| Casualties (Based on 2 p.m. time of occurrence) | Without requiring hospitalization: 0 Requiring hospitalization: 0 Life threatening: 0 Fatalities: 0 | Without requiring hospitalization: 1 Requiring hospitalization: 0 Life threatening: 0 Fatalities: 0 | Without requiring hospitalization: 3 Requiring hospitalization: 0 Life threatening: 0 Fatalities: 0 | Without requiring hospitalization: 1 Requiring hospitalization: 0 Life threatening: 0 Fatalities: 0 |
| Casualties (Based on 5 p.m. time of occurrence) | Without requiring hospitalization: 0 Requiring hospitalization: 0 Life threatening: 0 Fatalities: 0 | Without requiring hospitalization: 1 Requiring hospitalization: 0 Life threatening: 0 Fatalities: 0 | Without requiring hospitalization: 2 Requiring hospitalization: 0 Life threatening: 0 Fatalities: 0 | Without requiring hospitalization: 1 Requiring hospitalization: 0 Life threatening: 0 Fatalities: 0 |
| Damage to Transportation Systems | None with at least moderate damage | None with at least moderate damage | None with at least moderate damage | None with at least moderate damage |
| Damage to Essential Facilities | None with at least moderate damage | None with at least moderate damage | None with at least moderate damage | None with at least moderate damage |
| Damage to Utility Systems | There are no electrical power facilities with at least moderate | There would be no electrical power facility with at least moderate | There are no electrical power facilities with at least | There are no electrical power facilities with at least |

| Type of Impact | Great Valley 3 6.53 Magnitude Deterministic Scenario | | Hat Creek-McArthur-Mayfield 7.29 Magnitude Deterministic Scenario | | Honey Lake 7.03 Magnitude Deterministic Scenario | | Warm Springs Valley Magnitude 6.92 Deterministic Scenario | |
|--|--|--|--|--|--|--|--|--|
| | damage. 1 potable water line breaks, 1 wastewater line breaks, and 0 natural gas line breaks. | | damage. 17 potable water line breaks, 9 wastewater line breaks, and 3 natural gas line breaks. | | moderate damage. 38 potable water line breaks, 19 wastewater line breaks, and 6 natural gas line breaks. | | moderate damage. 14 potable water line breaks, 7 wastewater line breaks, and 2 natural gas line breaks. | |
| Households without Power/Water Service (Based on 9,216 total households) | Power loss, Day 1: 0 Power loss, Day 3: 0 Power loss, Day 7: 0 Power loss, Day 30: 0 Power loss, Day 90: 0 | Water loss, Day 1: 0 Water loss, Day 3: 0 Water loss, Day 7: 0 Water loss, Day 30: 0 Water loss, Day 90: 0 | Power loss, Day 1: 0 Power loss, Day 3: 0 Power loss, Day 7: 0 Power loss, Day 30: 0 Power loss, Day 90: 0 | Water loss, Day 1: 0 Water loss, Day 3: 0 Water loss, Day 7: 0 Water loss, Day 30: 0 Water loss, Day 90: 0 | Power loss, Day 1: 0 Power loss, Day 3: 0 Power loss, Day 7: 0 Power loss, Day 30: 0 Power loss, Day 90: 0 | Water loss, Day 1: 0 Water loss, Day 3: 0 Water loss, Day 7: 0 Water loss, Day 30: 0 Water loss, Day 90: 0 | Power loss, Day 1: 0 Power loss, Day 3: 0 Power loss, Day 7: 0 Power loss, Day 30: 0 Power loss, Day 90: 0 | Water loss, Day 1: 0 Water loss, Day 3: 0 Water loss, Day 7: 0 Water loss, Day 30: 0 Water loss, Day 90: 0 |
| Displaced Households | 0 displaced households | | 1 displaced household | | 5 displaced households | | 1 displaced household | |
| Shelter Requirements | 0 persons | | 0 persons | | 2 persons | | 0 persons | |
| Debris Generation | 0 tons | | 2,000 tons | | 5,000 tons | | 2,000 tons | |

Source: Hazus 6.1

FEMA NRI Hazard Vulnerability Assessment

The HMPC looked at the FEMA NRI for additional specific data on Plumas County's vulnerability to earthquakes. The NRI contains data and analysis for 18 separate natural hazards, including earthquakes. As shown in Table 4-79, earthquakes could cause a total of \$5,576,231 in expected annual losses, with a historic loss rating of relatively high. Earthquake has a relatively low rating for social vulnerability and a relatively high community resilience, with a risk index score of 93.6 out of 100. According to the NRI, there have been 0 earthquake events during the 2021 dataset with a 0.63% annual chance per year.

Table 4-79 Plumas County Planning Area – Earthquake Vulnerability Ratings from FEMA NRI

| NRI Hazard | Hazard Risk Index Rating | Expected Annual Loss Values (total)** | Exposure Value (total)*** | Historic Loss Ratio Rating |
|------------|--------------------------|---------------------------------------|---------------------------|----------------------------|
| Earthquake | 93.6 | \$5,576,231 | \$237,969,269,000 | Relatively high |

Source: FEMA NRI Report

*Hazard Risk Index is calculated using data for only a single hazard type, and reflects a communities expected annual loss value, community risk factors, and the adjustment factor used to calculate the risk value.

**Expected annual loss represents the average economic loss in dollars resulting from natural hazards each year.

***Exposure is a natural hazard consequence factor that is the representative value of buildings, populations, or agriculture potentially exposed to a natural hazard occurrence.

Additional information on the FEMA NRI can be found in Section 4.2 and Appendix H.

Impacts from Earthquake

Earthquakes can strike without warning and cause dramatic changes to the landscape of an area that can have devastating impacts on the built environment. The greatest impact is to life safety of Plumas County residents and visitors. Earthquakes can cause loss of life and injuries in affected areas. Other impacts to the Plumas County Planning Area would include damages to infrastructure such as roads, bridges, and dams; damages and loss of services to utilities and critical infrastructure, including those related to gas, power, water, wastewater and communication systems; and damages to structures and other development.

Earthquakes can also cause failure of dams, levees, and reservoirs. Facilities and land downslope from dams or water reservoirs or behind levees might be subject to flooding, if the dams, reservoirs, or levees fail as a result of an earthquake. The County has locations with significant flood risk that include facilities downslope from dams or reservoirs or behind levees.

Impacts that are not quantified, but can be anticipated in large future events, include:

- Injury and loss of life;
- Commercial and residential structural and property damage;
- Disruption of and damage to public infrastructure, utilities, and services;
- Damage to roads/bridges resulting in loss of mobility;
- Significant economic impact (jobs, sales, tax revenue) to the community; and
- Negative impact on commercial and residential property values

Impacts to identified assets at risk to this hazard and the overall vulnerability of the County may be affected in the future by climate change (which was discussed in the hazard profile section above), changes in population patterns, and changes in land use and development. The influencing effects of these factors on this hazard are discussed further in the Future Conditions/Future Development discussion below.

Future Conditions/Future Development

This section provides a discussion of how future conditions will influence or affect the hazard over time and also discusses future development relative to each hazard.

Future Conditions

Future conditions may be affected by climate change, changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. Findings on this for Plumas County include the following:

- Climate change is likely to have no effect on future earthquake conditions and associated impacts and vulnerability of the County.
- Population in Plumas County is expected to shrink. If this changes, any additional growth in the County would place additional populations at risk to earthquake. Vulnerable population groups could face disproportionate effects from an earthquake and should be planned for. Changes in population and population patterns may or may not increase the impacts and vulnerability of the County to this hazard depending on the location and nature of growth and continued planning for future hazard conditions.
- Land use planning should be proactive to address future hazard conditions. County building codes are in effect to reduce structure damage, including damage to critical facilities and infrastructure, and should be updated as necessary to continue to address future earthquake conditions. Depending on the location of new development and adherence to protective building codes, changes in land use and development may or may not increase the impacts and associated vulnerabilities of the County to this hazard.

Future Development

Future development considerations should be ongoing and proactive. Ensuring that comprehensive land use planning is conducted, regulatory requirements, such as building codes, are followed, and varying needs for different demographic groups with intersecting identities that reside within the County are considered can help to make for a more resilient community. Although new growth and development corridors would fall in the area affected by earthquake, given the small chance of major earthquake and the building codes in effect, development in the earthquake area will continue to occur.

4.3.11. Flood: 1%/0.2% Annual Chance (w/levee failure)

Hazard Profile

This hazard profile contains multiple sections that detail how this hazard can affect the Plumas County Planning Area. These sections include a hazard/problem description; description of location and extent;

past occurrences of this hazard; likelihood of future occurrence; and how climate change can affect or influence this hazard.

Hazard/Problem Description

Flooding is the rising and overflowing of a body of water onto normally dry land. Floods are among the costliest natural disasters in terms of human hardship and economic loss nationwide. Floods can cause substantial damage to structures, landscapes, and utilities and can cause life safety issues. Floods can be extremely dangerous. Six inches of moving water can knock over a person given a strong current. A car will float in less than two feet of moving water and can be swept downstream into deeper waters. Floods kill more people trapped in vehicles than anywhere else.

During a flood, people can also suffer heart attacks or electrocution due to electrical equipment short outs. Floodwaters can transport large objects downstream which can damage or remove stationary structures, such as dam spillways. Ground saturation can result in instability, collapse, or other damage. Objects can also be buried or destroyed through sediment deposition. Floodwaters can also break utility lines and interrupt services. Standing water can cause damage to crops, roads, foundations, and electrical circuits. Direct impacts, such as drowning, can be limited with adequate warning and public education about what to do during floods. Where flooding occurs in populated areas, warning and evacuation will be of critical importance to reduce life and safety impacts from any type of flooding.

There are three primary types of freshwater flood events in the Plumas County Planning Area: riverine and lake, flash flooding, and urban stormwater. Regardless of the type of flood, the cause is often the result of severe weather and excessive rainfall, either in the flood area or upstream reaches.

- **Riverine flooding** – Riverine flooding, defined as when a watercourse exceeds its “bank-full” capacity, generally occurs as a result of prolonged rainfall, or rainfall that is combined with already saturated soils from previous rain events. This type of flood occurs in river systems whose tributaries may drain large geographic areas and include one or more independent river basins. The onset and duration of riverine floods may vary from a few hours to many days. Factors that directly affect the amount of flood runoff include precipitation amount, intensity and distribution, the amount of soil moisture, seasonal variation in vegetation, snow depth, and water-resistance of the surface due to urbanization. In the Plumas County Planning Area, riverine flooding is largely caused by heavy and continued rains, sometimes combined with snowmelt, and heavy flow from tributary streams. These intense storms can overwhelm the local waterways as well as the integrity of flood control structures. The warning time associated with slow rise floods assists in life and property protection.
- The term “**flash flood**” describes localized floods of great volume and short duration. In contrast to riverine flooding, this type of flood usually results from heavy rainfall on a relatively small drainage area. Precipitation of this sort usually occurs in the winter and spring. Flash floods often require immediate evacuation within the hour.
- **Stormwater/Urban** flood events have increased as land has been converted from fields or woodlands to roads and parking lots and lost its ability to absorb rainfall. Urbanization increases runoff by two to six times that of natural terrain. This is discussed in Section 4.3.12 below.

The Plumas County Planning Area is also at risk to flooding resulting from dam failure and levee failure. Dam failure flooding is discussed separately in Section 4.3.8 of this document. Levee failure is discussed

below. The potential for flooding can change and increase through various land use changes and changes to land surface, resulting in a change to the floodplain. Environmental changes can create localized flooding problems in and outside of natural floodplains by altering or confining natural drainage channels. These changes are most often created by human activity.

Levee Failure

A levee is a raised area that runs along the banks of a stream or canal. Levees reinforce the banks and help prevent flooding by containing higher flow events to the main stream channel. By confining the flow to a narrower stream channel, levees can also increase the speed of the water. Levees can be natural or man-made. A natural levee is formed when sediment settles on the stream bank, raising the level of the land around the stream.

Levees provide strong flood protection, but they are not failsafe. Levees are designed to protect against a specific flood level and could be overtopped during severe weather events or dam failure. Levees reduce, not eliminate, the risk to individuals and structures located behind them. A levee system failure or overtopping can create severe flooding and high-water velocities. It is important to remember that no levee provides protection from events for which it was not designed, and proper operation and maintenance are necessary to reduce the probability of failure.

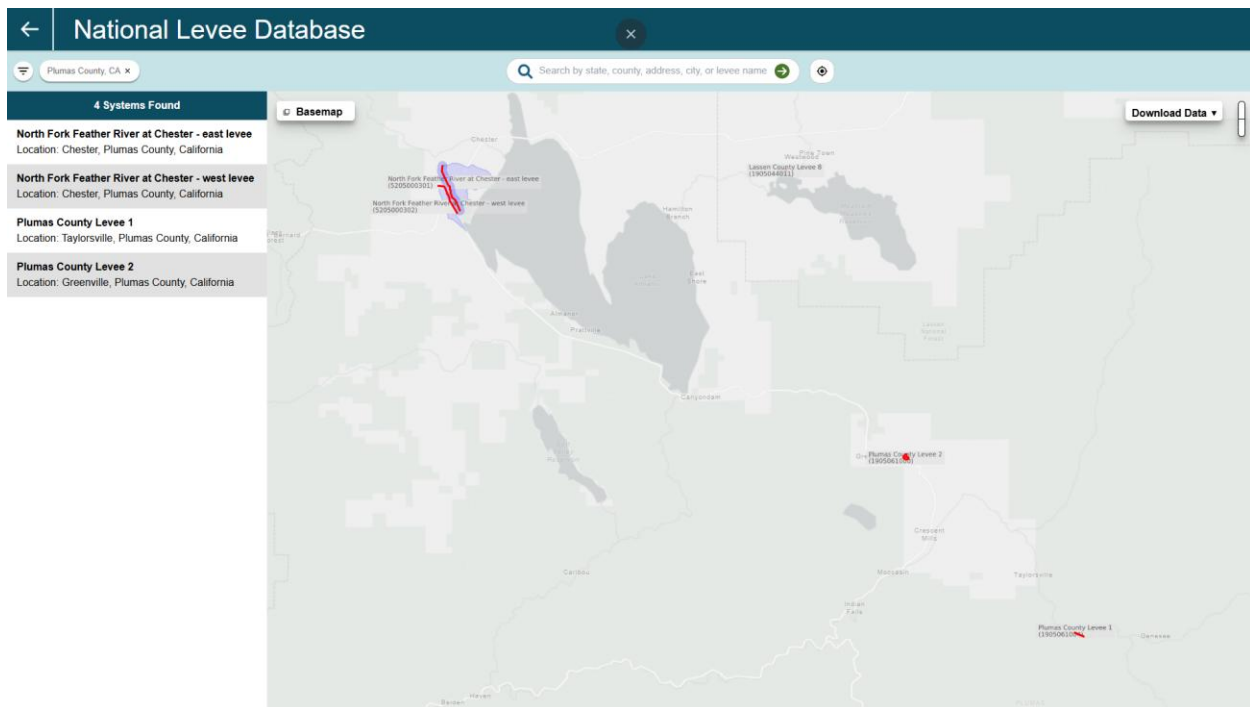
Levee Failure Extent

A search of the National Levee Database identified 3 leveed areas in Plumas County (as shown on Figure 4-112). These levees include:

- Plumas County Levee 1 - near Taylorsville as shown on Figure 4-113).
- Plumas County Levee 2 - near Greenville as shown on Figure 4-114).
- North Fork Feather River at Chester (near Chester) – East and West levees as shown on Figure 4-115 and Figure 4-116.

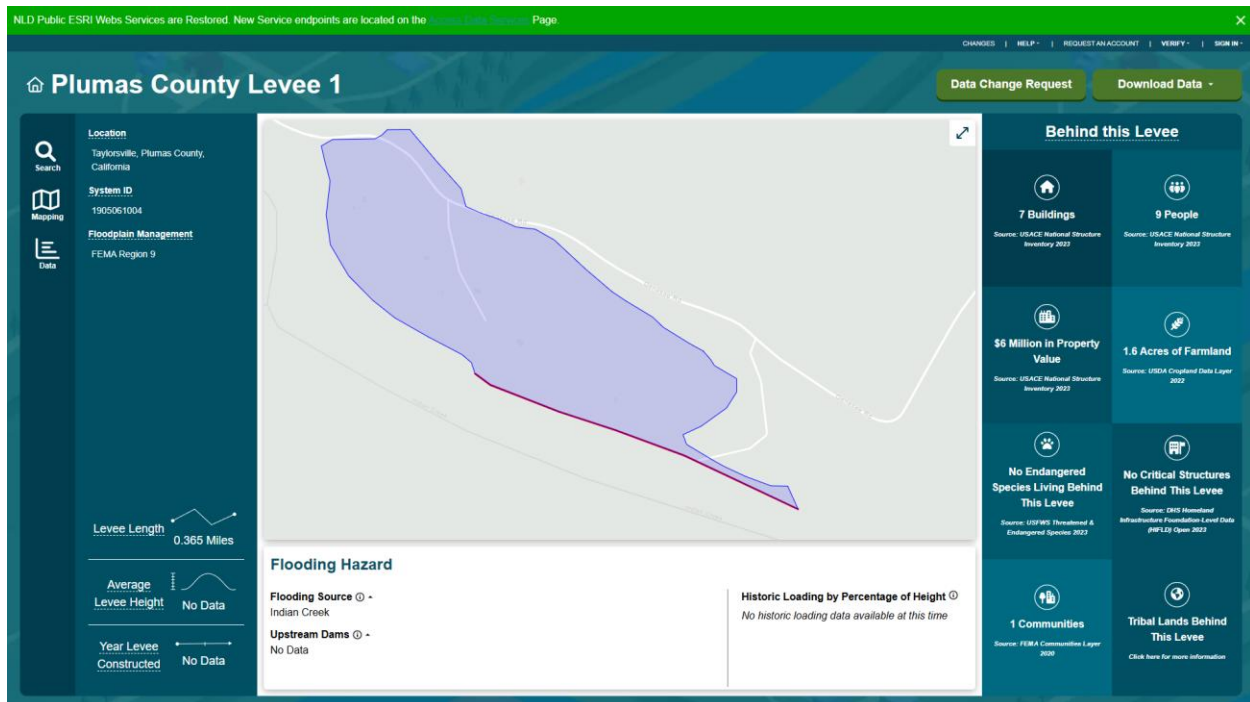
None of these 3 levees are certified as providing protection from the 1% annual chance or other flood. As such, no mapping of these areas is included in the Vulnerability Assessment below as part of the DFIRM analysis as no X-protected by levee flood zones are include in that dataset. However, the vulnerability of the County to these levees to is shown in the Vulnerability Assessment below from data obtained from the National Levee Database.

Figure 4-112 Plumas County – Levee Locations



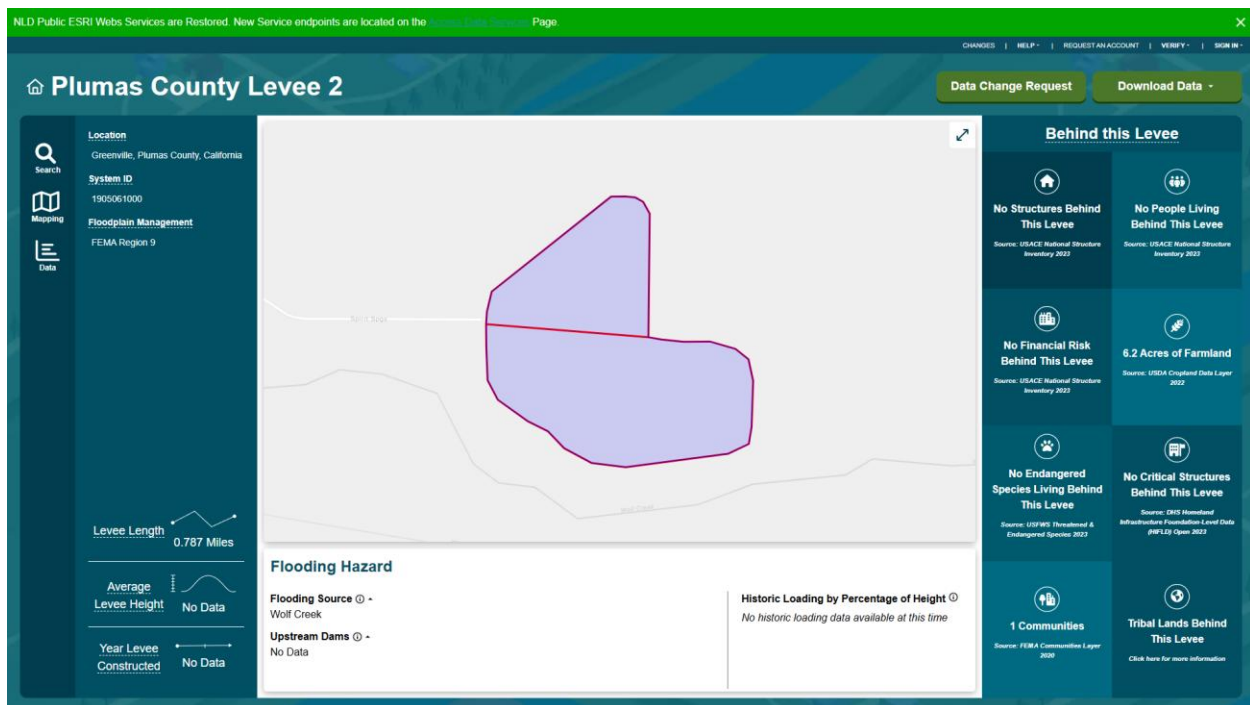
Source: National Levee Database

Figure 4-113 Plumas County – Levee 1



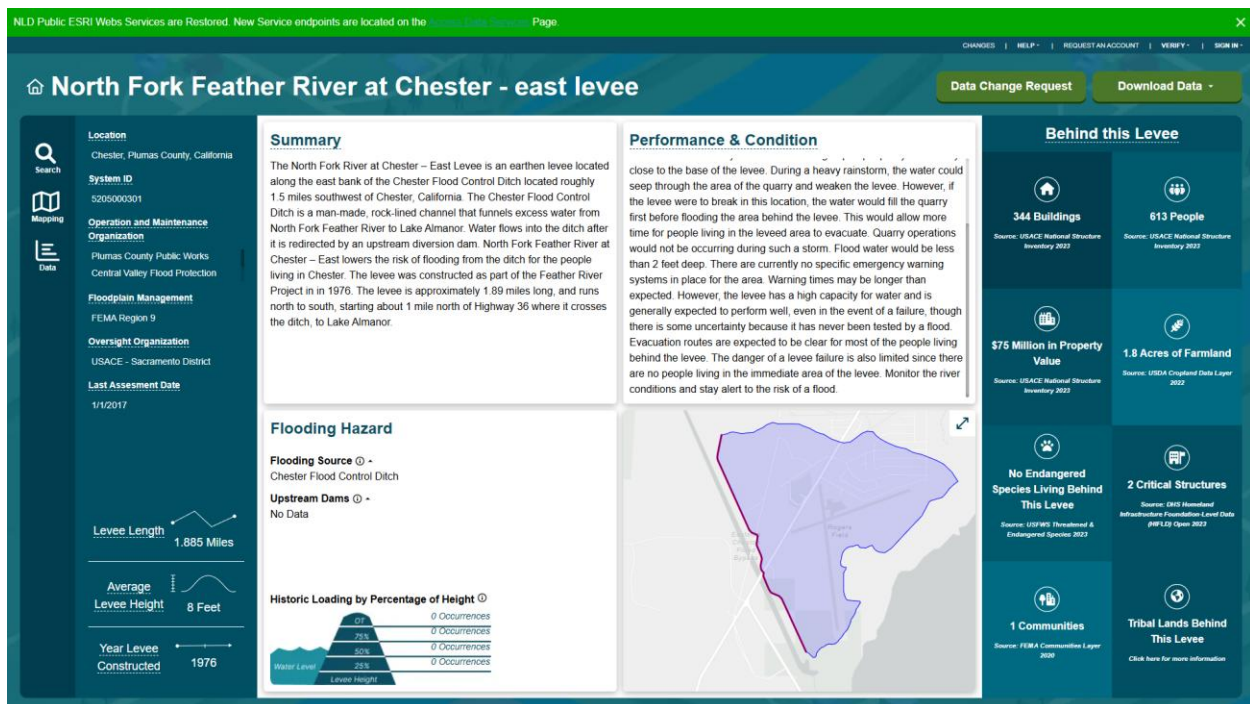
Source: National Levee Database

Figure 4-114 Plumas County – Levee 2



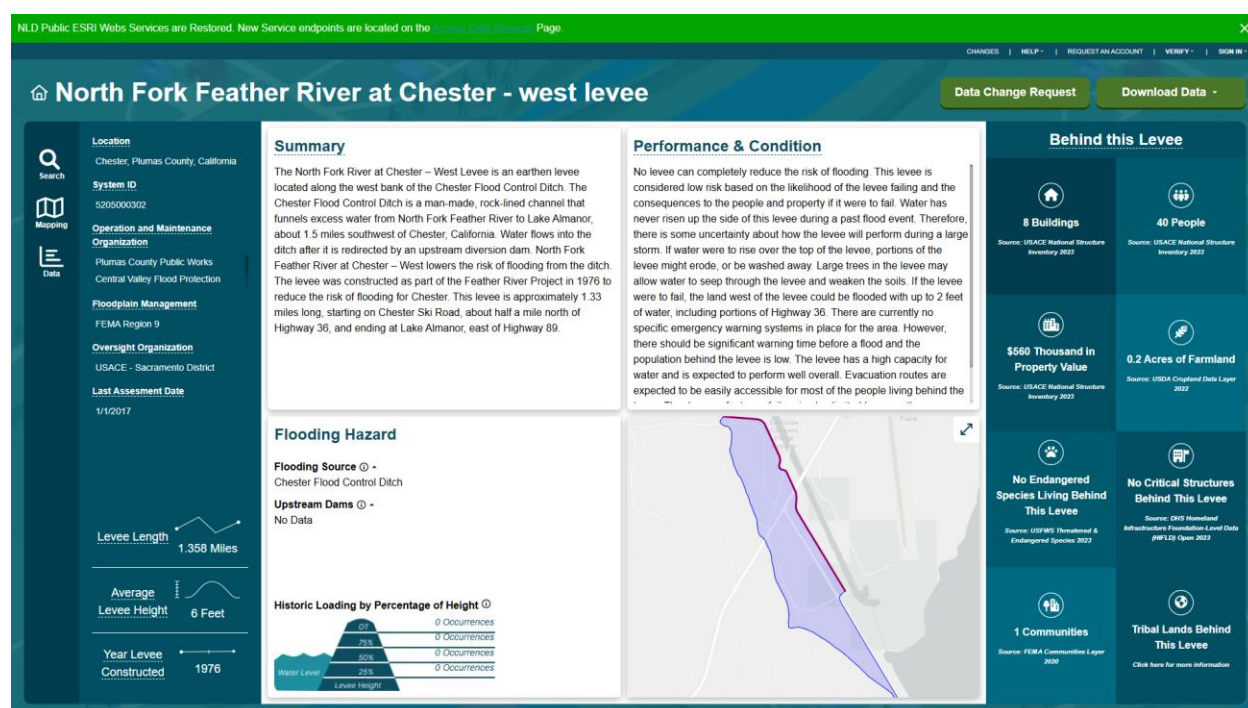
Source: National Levee Database

Figure 4-115 Plumas County – North Fork Feather River at Chester East Levee



Source: National Levee Database

Figure 4-116 Plumas County – North Fork Feather River at Chester West Levee



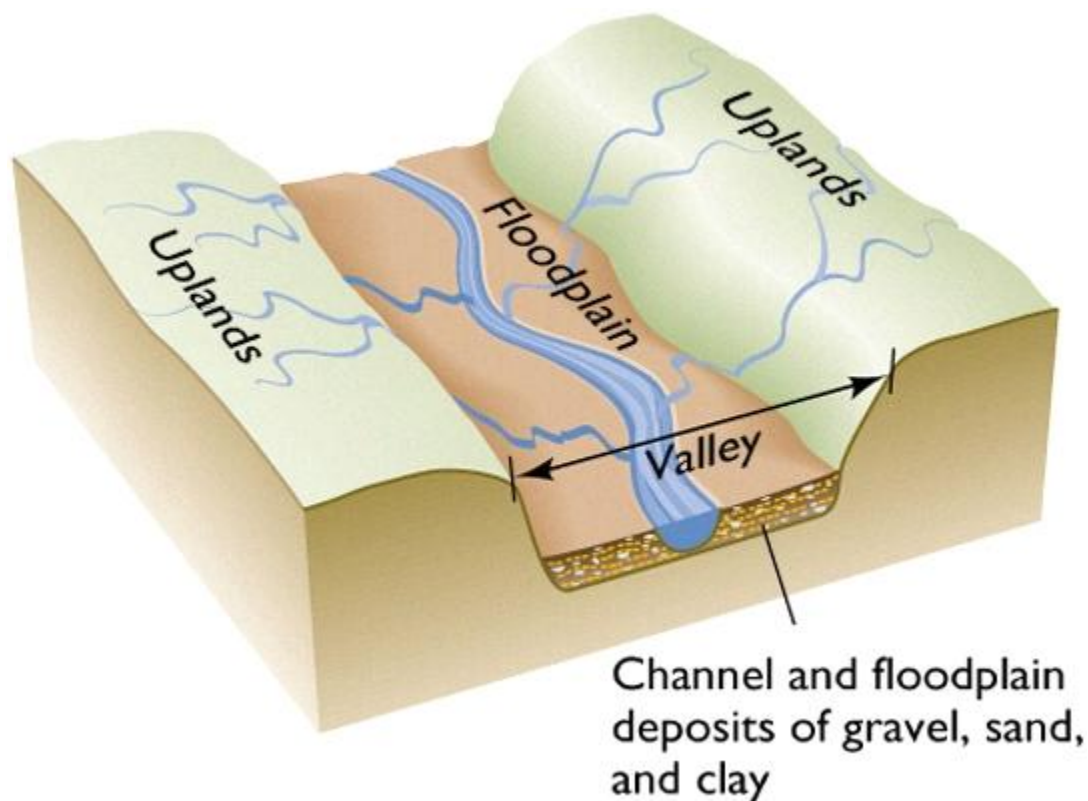
Source: National Levee Database

Location and Extent

Floodplains

The area adjacent to the channel is the floodplain (see Figure 4-117). Floodplains are illustrated on inundation maps, which show areas of potential flooding and water depths. In its common usage, the floodplain most often refers to that area that is inundated by the 1% annual chance (or 100-year) flood, the flood that has a one percent chance in any given year of being equaled or exceeded. The 1% annual chance flood is the national minimum standard to which communities regulate their floodplains through the National Flood Insurance Program. The 500-year flood is the flood that has a 0.2% chance of being equaled or exceeded in any given year.

Figure 4-117 Floodplain Schematic



Source: FEMA

According to the 2005 Flood Insurance Study for Plumas County, flooding in Plumas County may be caused by either general rainstorms or cloudburst storms. General rainstorms can occur from late fall to early spring, but mostly in the winter months of December through March. Cloudburst storms can be expected in the spring, summer, and fall. General rain floods resulting from prolonged heavy rainfall over tributary areas are characterized by high peak flows of moderate duration and by a large volume of runoff. Flooding is more severe when antecedent rainfall results in saturated ground conditions, when the ground is frozen and infiltration is minimal, or when rain on snow in the higher elevations adds snowmelt to rain flood runoff.

Cloudburst storms, sometimes lasting as long as 6 hours in the study areas, are high intensity storms that can produce floods characterized by high peak flows, short duration flood flows, and small runoff volume. In small drainage basins such as Portola Tributary, cloudbursts can produce peak flows substantially larger than those of general rainstorms.

The FIS also noted the following flood areas in the County.

- 1% annual chance flood flows on the Middle Fork Feather River are attributed to combined general rain/snowmelt runoff. The 1% annual chance flooding on Portola Tributary is a result of cloudburst storms.
- Flood elevations in Spanish Creek were high enough to necessitate failure scenarios of the embankments along Spanish Creek's right bank. Upstream of the SH 70/89 crossing, the failure of the

right bank of Spanish Creek causes flow into the Clear Stream drainage. This split flow is less than the natural peak from the Clear Stream drainage. The right embankment overflow downstream of the SH 70/89 crossing flows across the valley as sheetflow until it accumulates in the lower Nugget Creek drainage, creating the highest flow condition in this Nugget Creek reach. The last substantial out-of-bank flow from Spanish Creek fills the valley area just upstream of its confluence with Mill Creek, where the flood storage in this portion of the valley significantly attenuates the peak flows downstream in Spanish Creek. Each of these out-of-bank spills along Spanish Creek was analyzed independently of each other as a stand-alone scenario. This is because the spills could not concurrently occur as a worst-case condition.

- The Greenhorn Creek drainage is conveyed through a narrow valley with occasional division of flow at road crossings lacking capacity to convey the entire 100-year flow. Although the main channel does not contain the 100-year and 500-year (0.2-percent-annual-chance) flows, the right and left overbank flows are conveyed parallel and contiguous to Greenhorn Creek, except where a portion of the Greenhorn Creek flows spill into the lower reach of Thompson Creek. This spill is also parallel to Greenhorn Creek, downstream of the SH 70/89 crossing and upstream of the confluence of Greenhorn and Thompson Creeks. Although Greenhorn Creek flooding is not contained in the main channel, the overbank floodplain is generally shallower than Spanish Creek, and the floodplain storage was considered to have negligible effect on the calculated peak flow values.
- Gansner Creek flows out-of-bank from upstream of Bucks Lake Road until beyond its confluence with Clear Stream.
- Clear Stream spills into the upper reaches of the unnamed tributary at SH 70/89 and continues downstream with less than a 10-year capacity.
- Boyle Ravine spills most of its flow over its left bank just upstream of Alder Street and conveys less than a 10-year capacity until just upstream of its confluence with the unnamed tributary, where the Alder Street split flow returns.
- Nugget Creek spills overland and recombines several times within its studied reach upstream and downstream of SH 70/89. The worst-case flooding for the lower reach of Nugget Creek is when the right bank of Spanish Creek fails, and the overflow is conveyed through Nugget Creek.
- Mill Creek spills significant flows over the left bank at locations upstream of SH 70/89, Lee Road, and Bell Lane. These flows are recombined (ponded) upstream of Quincy Junction Road and are again split before reaching the lowest part of the Mill Creek drainage before combining with Spanish Creek. The worst-case flooding for Mill Creek downstream of Quincy Junction Road is when Spanish Creek flows out-of-bank and inundates the portion of the valley upstream of their confluence.
- Thompson Creek splits and recombines several times upstream of SH 70/89; most of its natural drainage spills into Greenhorn Creek just upstream of SH 70/89, before Greenhorn Creek reaches its peak flow.
- Chandler Creek and Taylor Creek spill out-of-bank before they reach Chandler Road. The spills then flow into Greenhorn Creek rather than returning to their respective channels.
- The unnamed tributary to Boyle Ravine appears to be sized to convey its local drainage area while acting as an outlet (overflow) path for the larger spills from the Clear Stream drainage.

The HMPC noted that the north end of Greenville in the Willow area there are flooding issues. The HMPC also noted that most of the stream channels of interest in this hazard planning have been significantly modified, or wholesale moved, to facilitate drainage, irrigation and/or road crossings. Much of this modification effort occurred between the 1890's and 1960's, pre-CEQA. These modifications generally initiated rapid channel incision, which in turn developed numerous gravel deposits and subsequent instream

gravel mining operations. The gravel mining mostly over-drafted the gravel supplies, leading to additional incision. By the late 1990's, California Department of Fish and Wildlife (CDFW) monitoring requirements shut down these operations, with the exception of Green Flat northwest of Meadow Valley. These channels are gradually trying to adjust to new sediment inputs, small and regular or large and episodic, often with abrupt catastrophic results.

There are three primary conditions that contribute to major flooding: high antecedent basin moisture; high intensity, long duration rainfall; and high water content snow at all elevations, compounded by high snow levels. 1986 had low antecedent basin moisture; long duration' high intensity rain, ~25 inches in 6 days; low snow water content, level 7,000 feet. 1997 had fully saturated antecedent moisture; long duration, low/moderate rainfall intensity, ~12 inches in 6 days; and high snow water content, 8" water in 22" of snow in Genesee (personal observation of HMPC members), snow level 10,000 feet. None of these events had all 3 components at max. When these components converge, it will be catastrophic for Plumas County, as well as everything downstream. The 1862 flood is probably the only analog. More information on these events can be found in the Past Occurrences section below.

Hydrologic Regions

According to Cal DWR, California has 10 hydrologic regions. Plumas County sits in the Sacramento hydrologic region. The Sacramento River hydrologic region covers approximately 17.4 million acres (27,200 square miles). The region includes all or large portions of Modoc, Siskiyou, Lassen, Shasta, Tehama, Glenn, Plumas, Butte, Colusa, Sutter, Yuba, Sierra, Nevada, Placer, Sacramento, El Dorado, Yolo, Solano, Lake, and Napa counties. Small areas of Alpine County are also within the region. Geographically, the region extends south from the Modoc Plateau and Cascade Range at the Oregon border, to the Sacramento-San Joaquin Delta. The Sacramento Valley, which forms the core of the region, is bounded to the east by the crest of the Sierra Nevada and southern Cascades and to the west by the crest of the Coast Range and Klamath Mountains. The Sacramento metropolitan area and surrounding communities form the major population center of the region. With the exception of Redding, cities and towns to the north, while steadily increasing in size, are more rural than urban in nature, being based in major agricultural areas.

A map of California's hydrological regions is provided in Figure 4-118.

Figure 4-118 California Hydrologic Regions



Source: California Department of Water Resources

The Plumas County Watersheds and Waterway System

Plumas County encompasses multiple rivers, streams, creeks, and associated watersheds. Plumas County is in the Feather River Watershed. Figure 4-119 illustrates the primary watersheds of Plumas County, as well as the primary waterways in the County.

Plumas County
Local Hazard Mitigation Plan Update
November 2025



Feather River Watershed

The Upper Feather River watershed encompasses 2.3 million acres in the northern Sierra Nevada, where that range intersects the Cascade Range to the north and the Diamond Mountains of the Great Basin and Range Province to the east. The watershed drains generally southwest to Lake Oroville, the largest reservoir of the State Water Project.

Land ownership in the Feather River Watershed is approximately 64 percent Federal, 1 percent State, and 35 percent private. Federal lands are managed primarily by the U.S. Forest Service (USFS) except for less than 1 percent of the watershed that is within Lassen Volcanic National Park and some Bureau of Land Management lands in the Sierra Valley watershed. The boundary of the watershed largely corresponds to the boundary of Plumas County but also includes portions of six neighboring counties.

Plumas County Flood Mapping

As part of the County's ongoing efforts to identify and manage their flood prone areas, Plumas County relies on a variety of different mapping efforts. What follows is a brief description of FEMA and CA DWR mapping efforts covering the Plumas County Planning Area.

FEMA Floodplain Mapping

FEMA established standards for floodplain mapping studies as part of the National Flood Insurance Program (NFIP). The NFIP makes flood insurance available to property owners in participating communities adopting FEMA-approved local floodplain studies, maps, and regulations. Floodplain studies that may be approved by FEMA include federally funded studies; studies developed by state, city, and regional public agencies; and technical studies generated by private interests as part of property annexation and land development efforts. Such studies may include entire stream reaches or limited stream sections depending on the nature and scope of a study. A general overview of floodplain mapping is provided in the following paragraphs. Details on the NFIP and mapping specific to the County are in Section 4.3 Vulnerability Assessment.

Flood Insurance Study (FIS)

The FIS develops flood-risk data for various areas of the community that will be used to establish flood insurance rates and to assist the community in its efforts to promote sound floodplain management. The current Plumas County FIS is dated March 2, 2005. This study covers both the unincorporated and incorporated areas of the County.

Flood Insurance Rate Map (FIRM)

The FIRM is designed for flood insurance and floodplain management applications. For flood insurance, the FIRM designates flood insurance rate zones to assign premium rates for flood insurance policies. For floodplain management, the FIRM delineates 1% and 0.2% annual chancer floodplains, floodways, and the locations of selected cross sections used in the hydraulic analysis and local floodplain regulation. The County FIRMs have been replaced by digital flood insurance rate maps (DFIRMs) as part of FEMA's Map Modernization program, which is discussed further below.

Letter of Map Revision (LOMR) and Map Amendment (LOMA)

LOMRs and LOMAs represent separate floodplain studies dealing with individual properties or limited stream segments that update the FIS and FIRM data between periodic FEMA publications of the FIS and FIRM.

Digital Flood Insurance Rate Maps (DFIRM)

As part of its Map Modernization program, FEMA is converting paper FIRMS to digital FIRMs, DFIRMS. These digital maps:

- Incorporate the latest updates (LOMRs and LOMAs);
- Utilize community supplied data;
- Verify the currency of the floodplains and refit them to community supplied basemaps;
- Upgrade the FIRMs to a GIS database format to set the stage for future updates and to enable support for GIS analyses and other digital applications; and
- Solicit community participation.

DFIRMs for Plumas County have been developed (dated March 2, 2005), are the most current effective DFIRMs for Plumas County, and are being used for the flood analysis for this LHMP Update. The DFIRM is shown in Figure 4-120 (with the individual inset maps shown as Figure 4-121, Figure 4-122, and Figure 4-123), and DFIRM flood zones are shown on Table 4-80.

LEGEND

- Communities
- Rivers
- Lakes
- Cities
- Counties
- States
- Highways
- Major Roads
- Railroads

FEMA DFIRM LEGEND

- 1% Annual Chance
 - Zone A
 - Zone AE: Regulatory Floodway
 - Zone AE
 - Zone AH
 - Zone AO
- 0.2% Annual Chance
 - Zone X (shaded)
 - Other Areas
 - Zone X (unshaded)
 - Zone D (unmapped)

Data Source: FEMA Effective DFIRM 03/02/2005 (NFHL 03/12/2025 database), Plumas County GIS, Cal-Atlas; Map Date: 5/2/2025.

Figure 4-121 Plumas County Planning Area – Map Inset 1 DFIRM Flood Zones

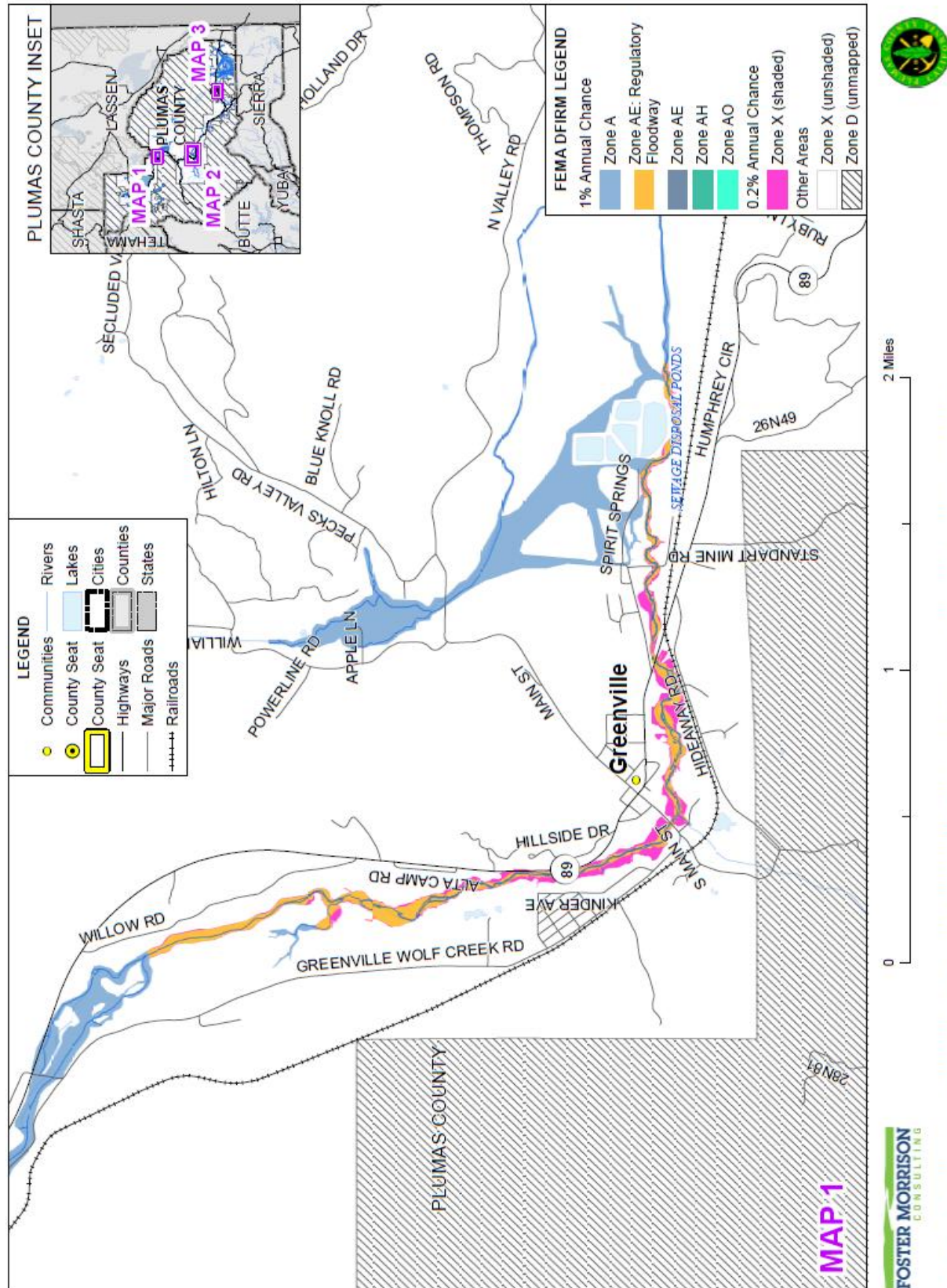


Figure 4-122 Plumas County Planning Area – Map Inset 2 DFIRM Flood Zones

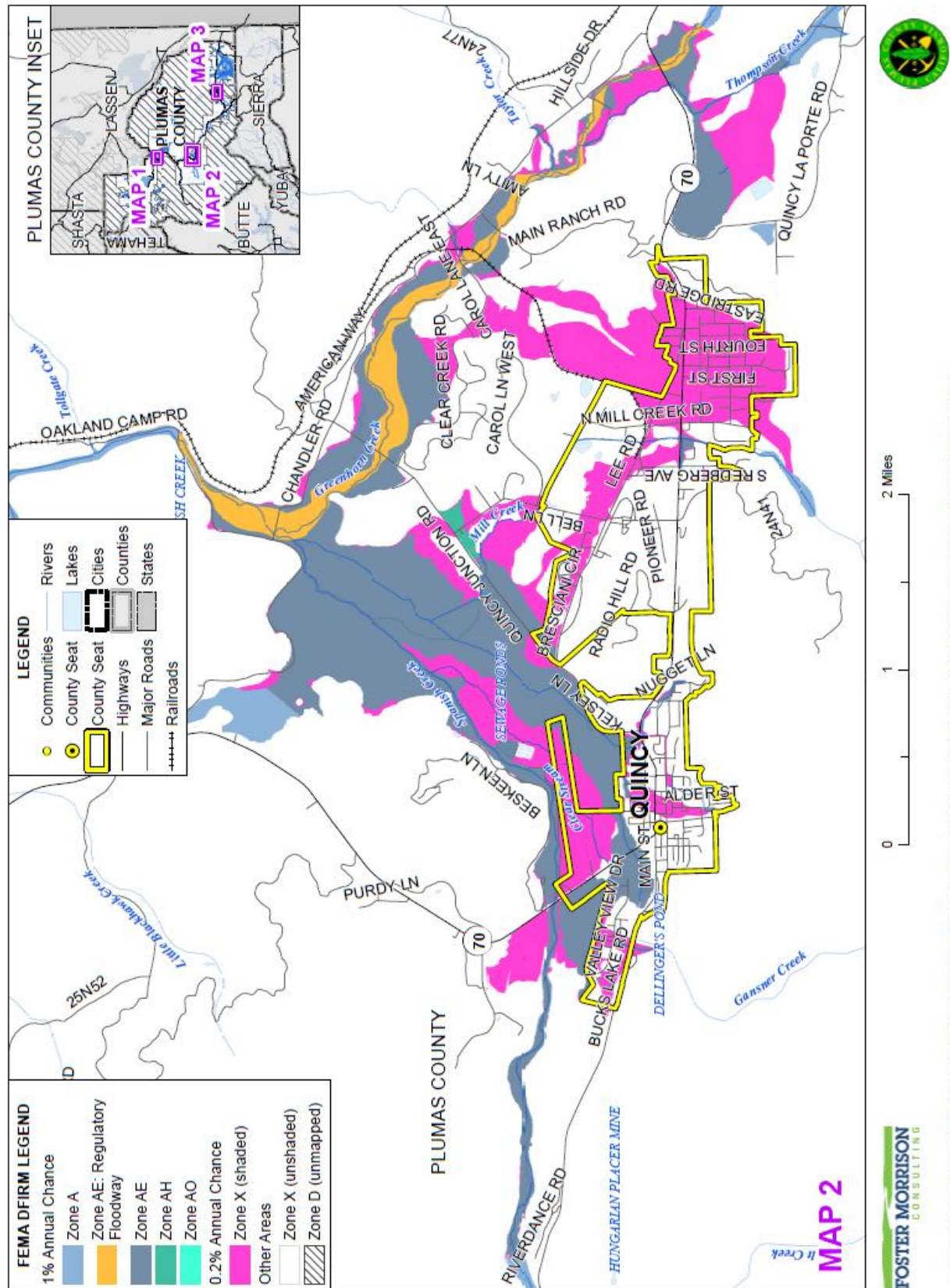


Figure 4-123 Plumas County Planning Area – Map Inset 3 DFIRM Flood Zones

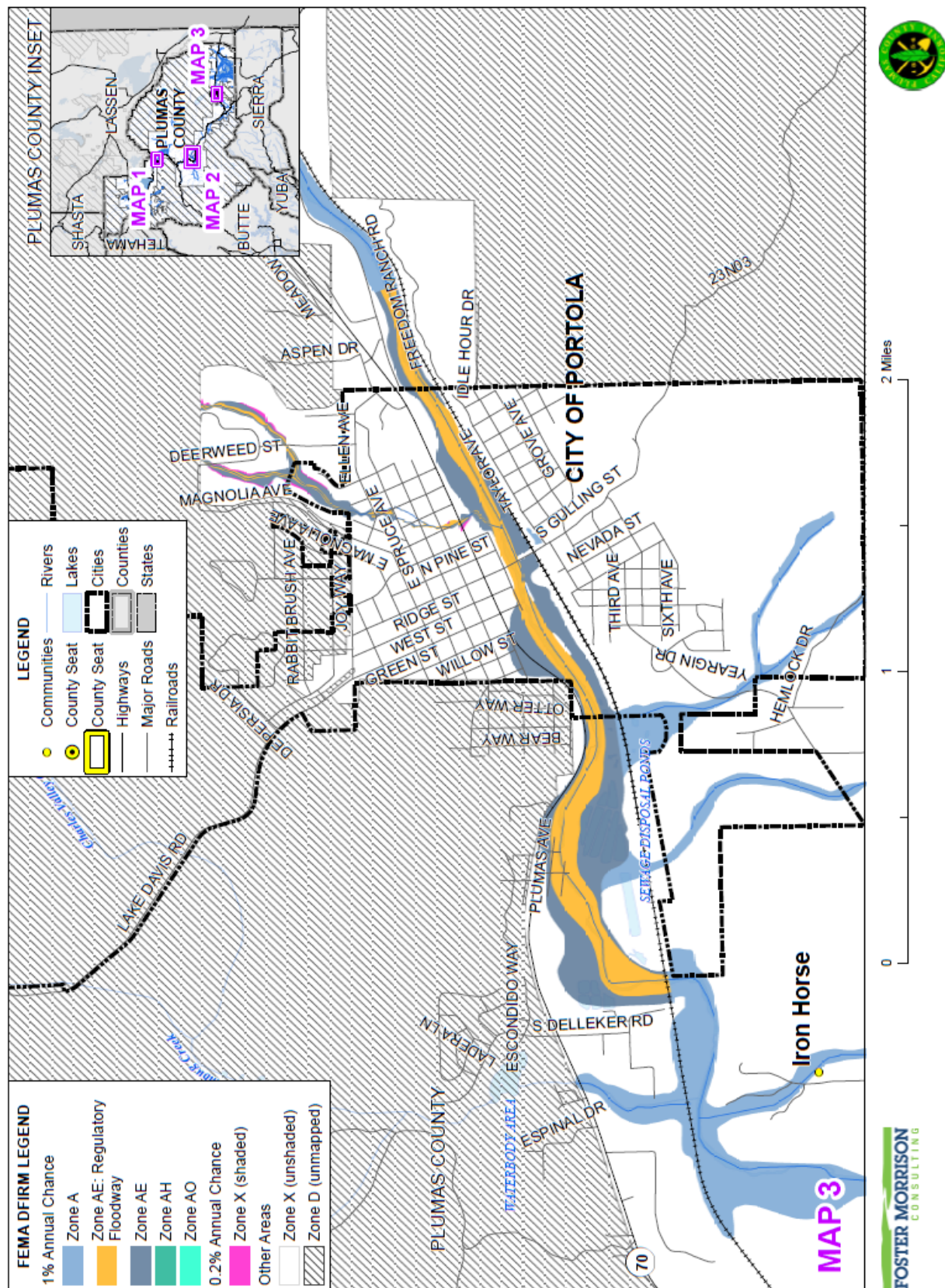


Table 4-80 Plumas County – FEMA DFIRM Flood Zones by Jurisdiction

| Flood Zone | Description | Present in City of Portola | Present in Unincorporated County |
|------------------------|---|----------------------------|----------------------------------|
| A | 1% annual chance flooding: No base flood elevations provided | X | X |
| AE | 1% annual chance flooding: Base flood elevations provided | X | X |
| AE Regulatory Floodway | 1% annual chance flood: Regulatory floodway; Base flood elevations provided | X | X |
| AH | 1% annual chance flood areas of shallow flooding between one to three feet deep. Regulatory floodway; Base flood elevations provided | | X |
| Shaded X | 0.2% annual chance flooding: The areas between the limits of the 1% annual chance flood and the 0.2-percent-annual-chance (or 500-year) flood | X | X |
| X (unshaded) | No flood hazard | X | X |

Source: FEMA 03/02/2005 DFIRM

California Floodplain Mapping

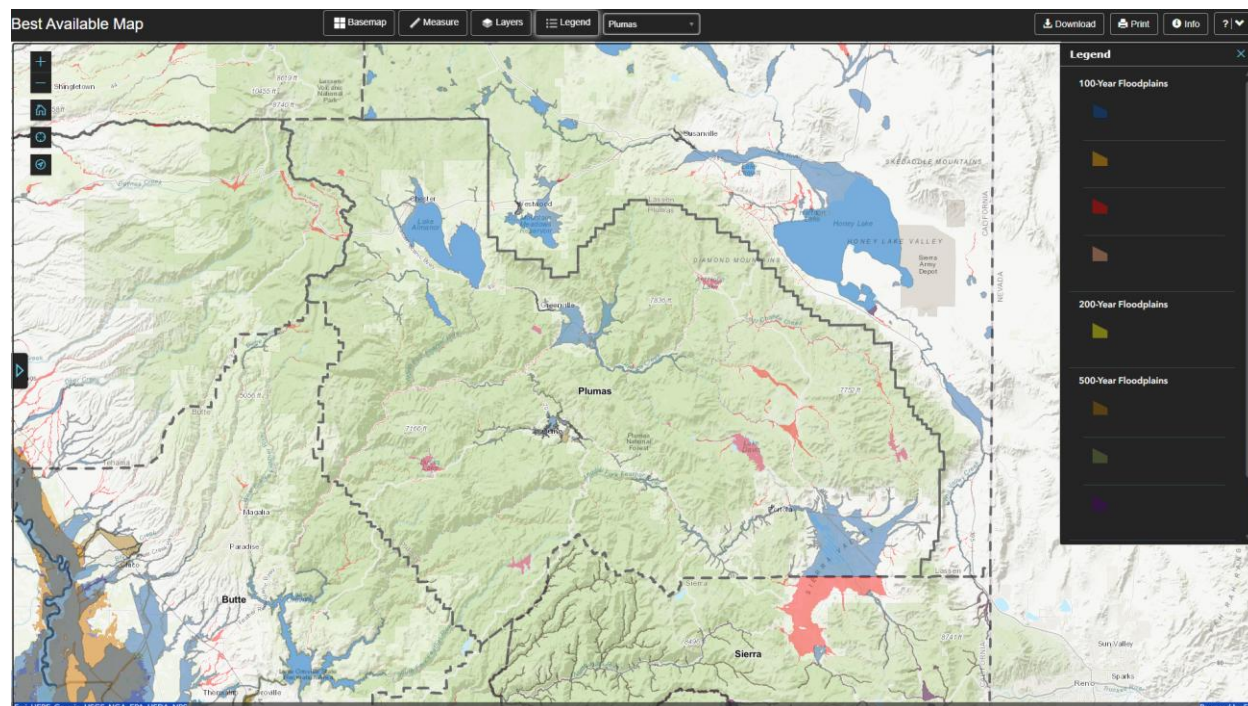
Also to be considered when evaluating the flood risks in Plumas County are various floodplain maps developed by the California DWR for various areas throughout California, and in the Sacramento-San Joaquin Valley cities and counties. The FEMA regulatory maps provide just one perspective on flood risks in Plumas County. Senate Bill 5 (SB 5), enacted in 2007, authorized Cal-DWR to develop the Best Available Maps (BAM) displaying 1% and 0.5% (200-year) annual chance floodplains for areas located within the Sacramento-San Joaquin (SAC-SJ) Valley watershed. This effort was completed by DWR in 2008. DWR has expanded the BAM to cover all counties in the State and to include 0.2% annual chance flood zones.

Different than the FEMA DFIRMs which have been prepared to support the NFIP and generally reflect only the 1% and 0.2% annual chance flood risks, the BAMs are provided for informational purposes and are intended to reflect current 1%, 0.5% (200-year) as applicable, and 0.2% annual chance flood risks using the best available data. The 100-year floodplain limits on the BAM are a composite of multiple 1% annual chance floodplain mapping sources. It is intended to show all currently identified areas at risk for a 100-year flood event, including FEMA's 1% annual chance flood zones. The BAM are comprised of different engineering studies performed by FEMA, Corps, and DWR for assessment of potential 1%, 0.5%, and 0.2% annual chance floodplain areas. These studies are used for different planning and/or regulatory applications, and for each flood frequency may use varied analytical and quality control criteria depending on the study type requirements.

The value in the BAMs is that they provide a bigger picture view of potential flood risk to the County than that provided in the FEMA DFIRMs. This provides the community and residents with an additional tool for understanding potential flood hazards not currently mapped as a regulated floodplain. Improved awareness of flood risk can reduce exposure to flooding for new structures and promote increased protection

for existing development. Informed land use planning will also assist in identifying levee maintenance needs and levels of protection. By including the FEMA 1% annual chance flood zone, it also supports identification of the need and requirement for flood insurance. Figure 4-124 shows the BAM for the Plumas County Planning Area.

Figure 4-124 Plumas County– Flood Awareness (Best Available) Map



Source: California DWR. Retrieved 3/5/2025.

Legend explanation: **Blue** - FEMA 100-Year, **Orange** – Local 100-Year (developed from local agencies), **Red** – DWR 100-year (Awareness floodplains identify the 100-year flood hazard areas using approximate assessment procedures.), **Pink** – USACE 100-Year (2002 Sac and San Joaquin River Basins Comp Study), **Yellow** – USACE 200-Year (2002 Sac and San Joaquin River Basins Comp Study), **Tan** – FEMA 500-Year, **Grey** – Local 500-Year (developed from local agencies), **Purple** – USACE 500-Year (2002 Sac and San Joaquin River Basins Comp Study).

Flood extents are usually measured in depths of flooding and area flooded. Expected flood depths in the Plumas County Planning Area vary. Flood durations in the County tend to be short to medium term, or until either the storm drainage system can catch up, or flood waters move downstream. Geographical extents of DFIRM flood zones for the Plumas County Planning area are summarized in Table 4-81. Details on the City of Portola and each Special District’s DFIRM flood extents can be found in their respective annexes to this LHMP Update.

Table 4-81 Plumas County Planning Area – Geographical Extent of FEMA DFIRM Flood Zones by Jurisdiction

| Jurisdiction / Flood Zone | Total Acres | % of Total Acres | Improved Acres | % of Total Improved Acres | Unimproved Acres | % of Total Unimproved Acres |
|---|------------------|------------------|----------------|---------------------------|------------------|-----------------------------|
| City of Portola | | | | | | |
| 1% Annual Chance Flood Hazard | 168 | 0.01% | 10 | 0.01% | 157 | 0.01% |
| 0.2% Annual Chance Flood Hazard | 1 | 0.0001% | 0.1 | 0.0001% | 1 | 0.00005% |
| Other Areas | 3,323 | 0.20% | 2,227 | 2.39% | 1,096 | 0.07% |
| City of Portola Total | 3,491 | 0.21% | 2,237 | 2.41% | 1,254 | 0.08% |
| Unincorporated Plumas County | | | | | | |
| 1% Annual Chance Flood Hazard | 84,609 | 5.06% | 23,036 | 24.77% | 61,573 | 3.90% |
| 0.2% Annual Chance Flood Hazard | 1,431 | 0.09% | 667 | 0.72% | 764 | 0.05% |
| Other Areas | 1,582,631 | 94.65% | 67,072 | 72.11% | 1,515,559 | 95.97% |
| Unincorporated Plumas County Total | 1,668,671 | 99.79% | 90,775 | 97.59% | 1,577,896 | 99.92% |
| | | | | | | |
| Grand Total | 1,672,162 | 100.00% | 93,013 | 100.00% | 1,579,150 | 100.00% |

Source: FEMA 03/02/2005 DFIRM

There is not a scientific scale or measurement system in place for levee failure. It is usually measured in area covered and depth of flooding. Maps showing inundation depths due to a levee failure in the County do not exist. The speed of onset is slow as the river rises, but if a levee fails the warning times are short for those in the inundation area. The duration of levee failure risk times can be hours to weeks, depending on the river flows that the levee holds back.

Past Occurrences

Disaster Declaration History

A list of federal and state disaster declarations for Plumas County from flooding, (including heavy rains and storms) is shown on Table 4-82.

Table 4-82 Plumas County – Federal and State Disaster Declaration from Flood 1950-2025

| Disaster Type | State Declarations | | Federal Declarations | |
|--|--------------------|---|----------------------|---|
| | Count | Years | Count | Years |
| Flood (including heavy rain and storm) | 22 | 1950, 1955, 1958 (twice), 1964, 1963, 1964, 1969, 1970 1980, 1986, 1993, 1992*, 1995 (twice*), 1996, 1997, 2006, 2017 (twice*), 2023 (twice*) | 19 | 1950, 1955, 1958 (twice), 1963, 1964, 1969, 1970, 1986, 1992 (twice), 1995 (twice), 1997, 2006*, 2017 (twice*), 2023 (twice*) |

Source: Cal OES, FEMA

*included a landslide component.

NCDC Events

The NCDC tracks flooding events for the County. Events have been tracked for flooding since 1993. Table 4-83 shows events in Plumas County since 1993.

Table 4-83 NCDC Flood Events in Plumas County 1993 to 7/31/2024*

| Event Type | Number of Events | Deaths | Deaths (indirect) | Injuries | Injuries (indirect) | Property Damage | Crop Damage |
|--------------|------------------|----------|-------------------|----------|---------------------|--------------------|-------------|
| Flash Flood | 3 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| Flood | 12 | 0 | 0 | 1 | 0 | \$3,140,000 | \$0 |
| Total | 15 | 0 | 0 | 1 | 0 | \$3,140,000 | \$ 0 |

Source: NCDC

*Note: Losses reflect totals for all impacted areas, much of which fell outside of Plumas County

Hazard Mitigation Planning Committee Events

These sections separate events since the 2019/2020 LHMPs and those before 2019.

Events since 2019/2020 LHMP

It was noted that there have been many atmospheric river events since 2017. These are shown on Table 4-84.

Table 4-84 Plumas County Planning Area – Atmospheric River Events and Floods 2017-2025

| Date/Timeframe of Atmospheric River Event | Portola Middle Fork River Gauge (feet above mean sea level) | Portola (or Lake Davis where Portola is not reported) Precipitation (inches) | Spanish Creek AB Blackhawk Creek at Keddie Stream Gauge (feet) | Spanish Creek AB Blackhawk Creek at Keddie Discharge (ft3/s) | Quincy Precipitation (inches) | Greenville Precipitation (inches) | Chester Precipitation (inches) |
|---|---|--|--|--|-------------------------------|-----------------------------------|--------------------------------|
| 2/5/2025 | | 7.90 | 10.19 | 8740.00 | 15.38 | 10.71 | 10.50 |
| 11/22-24/2024 | | 4.54 | 7.31 | 3780.00 | 15.64 | 11.68 | 9.86 |

| Date/Timeframe of Atmospheric River Event | Portola Middle Fork River Gauge (feet above mean sea level) | Portola (or Lake Davis where Portola is not reported) Precipitation (inches) | Spanish Creek AB Blackhawk Creek at Keddie Stream Gauge (feet) | Spanish Creek AB Blackhawk Creek at Keddie Discharge (ft ³ /s) | Quincy Precipitation (inches) | Greenville Precipitation (inches) | Chester Precipitation (inches) |
|---|---|--|--|---|-------------------------------|-----------------------------------|--------------------------------|
| 3/15-16/2023 | 4854.42 | 26.47 | 9.08 | 6680.00 | 49.71 | 37.76 | 34.49 |
| 2/1/2023 (snow event) | | 18.98 | 3.38 | 540.00 | 37.20 | 27.61 | 26.63 |
| 12/26/22 to 1/20/23 | | 10.64 | 7.67 | 4370.00 | 19.85 | 13.70 | 14.27 |
| 1/3/23 to 1/17/23 | | 7.14 | 7.67 | 4370.00 | 13.05 | 9.84 | 10.48 |
| 12/26/22 to 1/2/23 | | 3.24 | 6.53 | 2950.00 | 6.00 | 3.43 | 3.48 |
| October 17-26, 2021 | | 8.22 | 6.73 | 3160.00 | 12.00 | 9.72 | 6.36 |
| 2/14/2017-2/22/2017 | | 3.54 | 10.27 | 9000.00 | 9.38 | 7.01 | 5.02 |
| 2/1/2017 - 2/11/2017 | 4856.27 | 8.93 | 13.85 | 16700.00 | 13.15 | 11.15 | 7.55 |
| 01/17/2017 - 01/23/2017 | | 2.83 | 4.77 | 1470.00 | 5.27 | 5.49 | 4.04 |
| 01/02/2017 - 01/13/2017 | 4853.55 | 11.07 | 13.87 | 14300.00 | 16.86 | 11.97 | 8.28 |
| November 27-December 3, 2012 | | 7.65 | 10.44 | 5000.00 | 12.25 | 9.64 | 6.68 |

Source: Plumas County Volunteers Active in Disasters

It was also noted that in **2019** Indian Valley had snow on rain events that caused flooding.

CAN THE COUNTY PROVIDE INFORMATION ON AFFECTED AREAS AND DAMAGES RESULTING FROM FLOOD EVENTS OCCURRING SINCE THE 2020 LHMP – ESPECIALLY THOSE FROM THE 2023 STORM DECLARATIONS?

Events before 2019

Regional and localized flooding in Plumas County has been a continuous occurrence dating back to at least 1893 when Quincy experienced its first photographed flood, shown in Figure 4-125.

Figure 4-125 1893 Quincy Flooding



Source: Plumas County

Winter storms in **1986, 1995, 1997, 2017, and 2019** caused tremendous flood damage to properties and infrastructure throughout the Upper Feather River Watershed. Discharge values are from the historic USGS gage (#11401500) at the outlet of Indian Valley (**1906-1993** period of record). Subsequent values from Plumas Corp and/or USGS extrapolation. Recent flood values of note: **1986** (36,600 cfs); **1995** (24,000 cfs), **1997** (46,600 cfs); **2017** (greater than 1986, less than 1997). At ~25,000 cfs Arlington bridge is impassible, along with Stampfli Ln. and North Valley Road. Taylorsville and Genesee are isolated. At <30,000 cfs Genesee is isolated from Taylorsville. Those communities have no medical services. Minor floods occurred in the **1990s** in burn scar areas of the County. These were prevalent in the eastern margin by the escarpment.

1986

From February 8-20, **1986**, a large storm lasting 13 days precipitated rain and snow across Northern California. Plumas County was located within the interior of the storm extent and experienced tremendous rainfall, causing the ground to saturate and allowed surface water to flow freely. As rain fell over the county filling creeks and drainage ditches, it also flowed downhill through the Feather River system, incrementally adding more water to the lower elevation valleys and the river canyons. By the 11th day of the storm the capacity of the hydrologic system was exceeded, and extensive damage was experienced throughout Plumas County. The most visually impressive damage was found in the North Fork Feather River Canyon, along CA-70 and the Railroad, due to the large volume of water that was funneled through the canyon. A member

of the HMPC from Viera ranch noted that during this time, 22.08" of rain were recorded at their ranch. Quincy was effectively cut off. Highway 70 in Feather River Canyon was washed out.

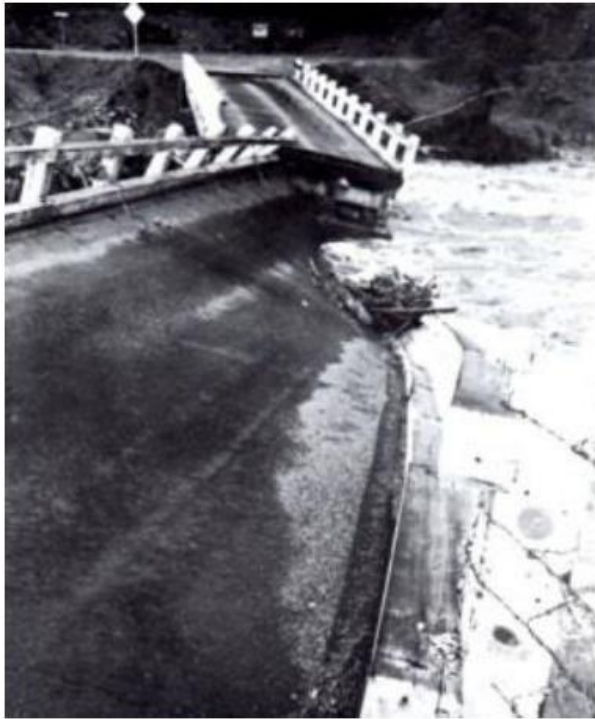
The flood damage was extensive, as numerous bridges were severely damaged or destroyed, large sections of roadway and railroad were wiped out (see Figure 4-126), bridges were destroyed (see Figure 4-127), many houses were flooded with over one foot of water, and debris was deposited in throughout Plumas County. Train service was disrupted for at least 3 days through the Feather River Canyon, and several state highways were temporarily out of commission to public traffic for several weeks. In addition, many residential wells were flooded.

Figure 4-126 1986 Railroad Bed Flood Damages



Source: The Storm of '86 by Robert Moon, Feather River Publishing, Quincy, CA 1986

Figure 4-127 Bridges Destroyed by Flooding – Indian Creek Bridge (left) and Mohawk Valley Bridge (right)

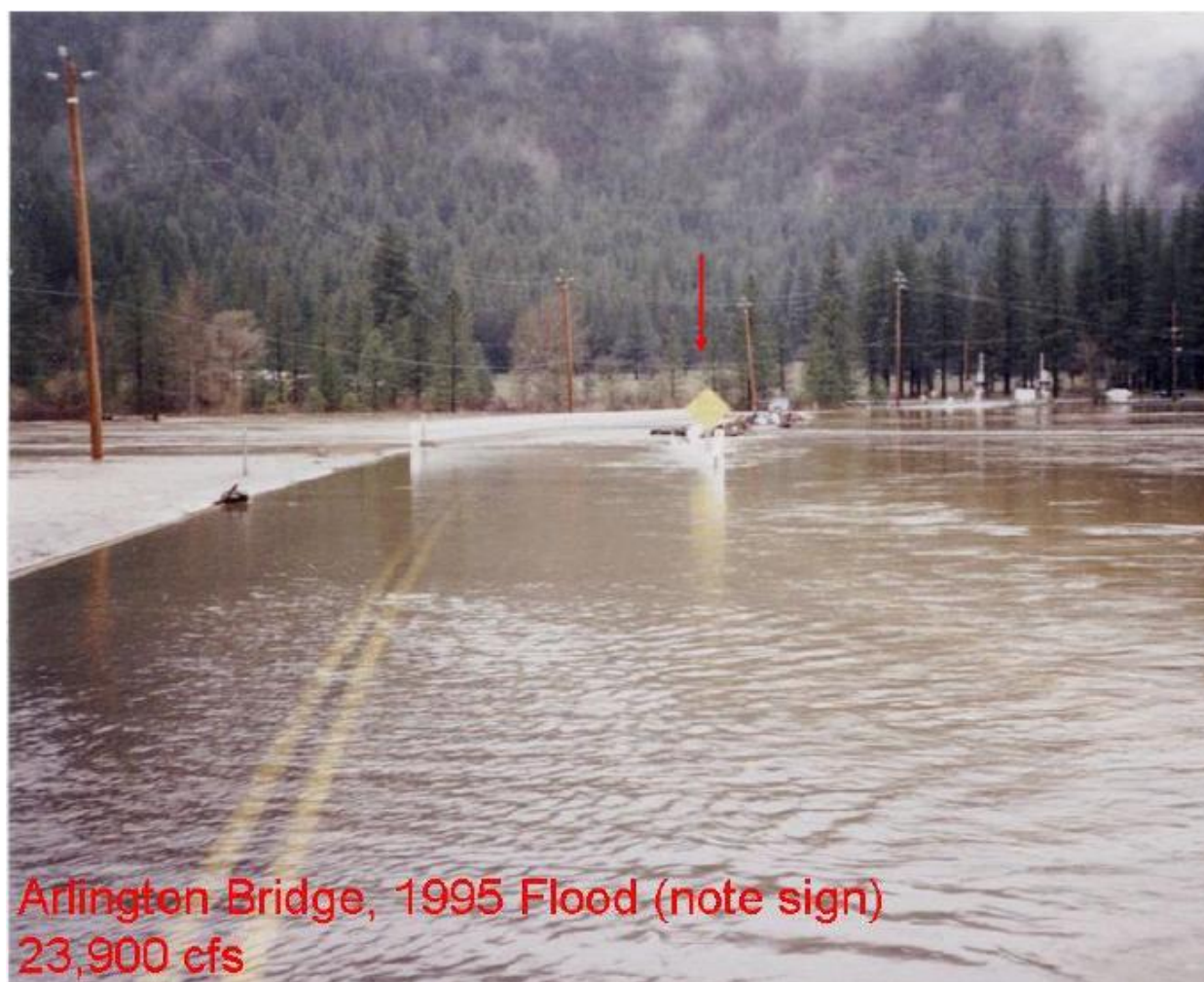


Source: The Storm of '86 by Robert Moon, Feather River Publishing, Quincy, CA 1986

1995

Heavy rains caused flooding in the County.

Figure 4-128 Plumas County – 1995 Flooding at Arlington Bridge



Source: HMPC member Jim Wilcox

1997

Winter storms in **late December 1996 through January 1997** poured tremendous amounts of rain throughout Plumas County. This was the biggest flood on record for the County. Such as in 1986, the ground became saturated, and the river system overflowed with excess water. On January 2nd the State declared a disaster and on January 4th a federal disaster was declared. The extent and severity of flooding and related damage exceeded the 1986 event throughout Plumas County, from the high-elevation valleys to the low-elevation river canyons. The type of damage experienced was similar to that in 1986. Examples can be seen in the following figures.

In the first image, the home was not flooded, but Indian Creek moved laterally several hundred feet in less than 24 hours to undermine the main structure and topple it into the channel. The remains of the garage followed a few days later. Homeowners reportedly had no flood insurance. The gravel bar on the left rapidly extended under sediment input from Little Grizzly Creek 1/3 mile upstream. The Indian Creek channel has radically shifted alignment in this area 3 times since 1977.

Figure 4-129 Erosion from Floodwaters Cause Home to fall into Indian Creek



Source: Feather River Bulletin, Wednesday January 29, 1997

Figure 4-130 Damage to Home in Genesee from 1997 Flood



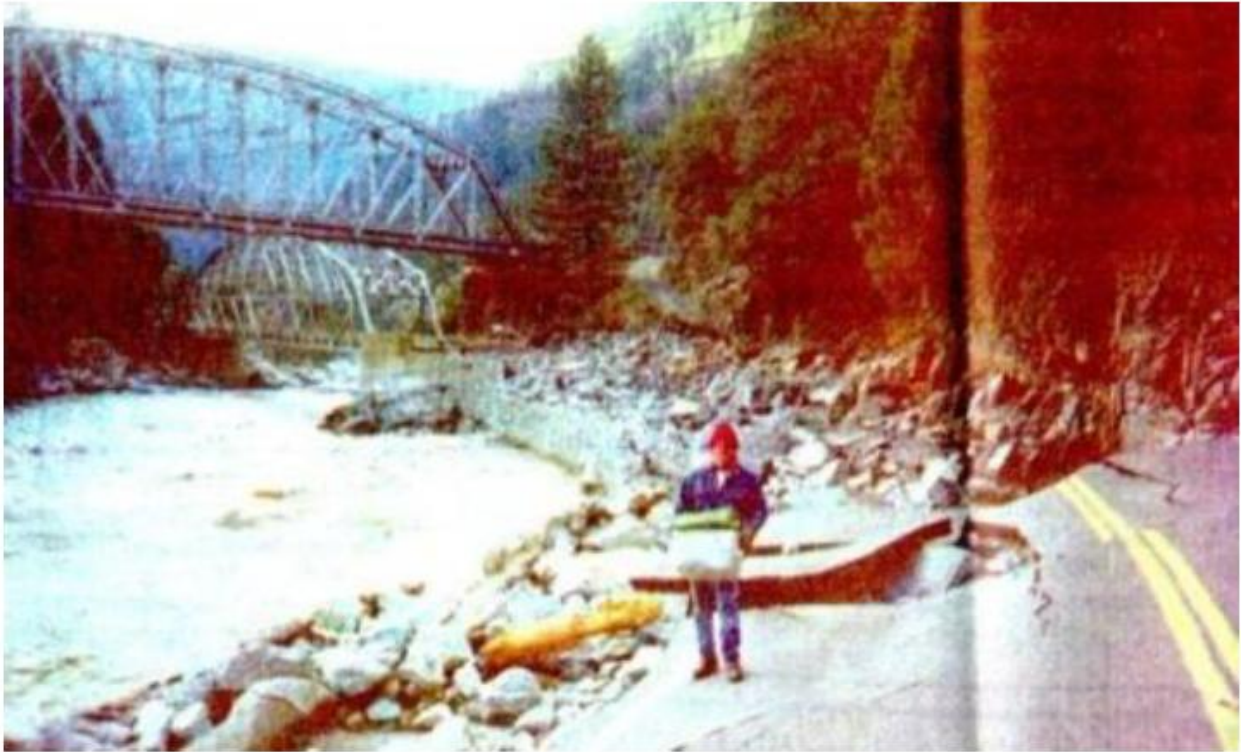
Source: Feather River Bulletin, Wednesday January 29, 1997

Figure 4-131 Sloat Bridge Damage from 1997 Flood



Source: Plumas County Road Department

Figure 4-132 Damage to CA-70 near Tobin



Source: Feather River Bulletin, Wednesday January 29, 1997

Figure 4-133 High Water Marks from 1986 and 1987 in North Fork Feather Canyon



Source: Plumas County

2017

January and February of 2017 brought heavy rains from atmospheric rivers that struck Plumas County, resulting in a federal disaster declaration (DR-4301).

Many damages occurred in the County. One area hit hard was the Plumas Eureka Community Services District. The District area saw flood damage to 26 condominiums, and two single family homes (see Figure 4-134). Erosion caused the loss of half a backyard requiring the owner to reinforce the riverbank bordering

the property (see Figure 4-135). Erosion to roads and water main right of way, damage to sewer pumps, debris removal from fallen trees occurred. Sewer service was shut down for 12 hours. There was also a road closure to flooded areas for 12 hours.

Figure 4-134 Plumas County 2017 Flooding in the Plumas Eureka Community Services District



Source: Plumas Eureka Community Services District

Figure 4-135 Erosion to Backyard of Home during 2017 Floods (left – during flood, right – after flood)



Source: Plumas Eureka Community Services District

Private property damage in the District came from both flooding and from fallen trees. Amount unknown, but one property owner stated that flood damage related costs exceeded \$120,000 of which he received \$67,000 for his claim. The District received \$12,189 from damages sustained.

Additionally, the HMPC noted that there were issues with **flooding of agriculture in 2017 and 2018**. In the Sierra Valley and Beckwourth areas, rains caused a 30% decrease in hay production and caused a 25% loss in calves. It was thought that \$200,000 in damages to hay and \$19,000 in damages to calves was suffered in both 2017 and 2018, respectively. Other areas of the Sierra Valley suffered field erosion and additional hay losses. \$1.6 million in hay was lost, and \$230,000 in damages was suffered from field erosion.

Figure 4-136 2017 Flooding – Arlington Bridge



Source: Plumas County Agriculture Commissioner

Figure 4-137 2017 Road Flooding



Source: Plumas County Agriculture Commissioner

Figure 4-138 2017 Flooding – Flooded Meadow



Source: Plumas County Agriculture Commissioner

Figure 4-139 2017 Flooding



Source: Plumas County Agriculture Commissioner

The HMPC noted that there were washouts near Laporte and Thompson Creek. These can be seen in Figure 4-140 and Figure 4-141.

Figure 4-140 Plumas County – LaPorte Road Washout



Source: Plumas County

Figure 4-141 Plumas County – Thompson Creek Washout



Source: Plumas County

Additionally, Plumas County Public Works kept a tally of damages from the **2017 storms**:

- 2017 Storm Damage Debris Removal:
 - ✓ CR 507 Johnsville-Mccrea Road
 - ✓ CR 423 Big Creek Road
 - ✓ Lindan Channel next to CR QU30, Lindan Avenue
 - ✓ CR TV03, Thompson Street
 - ✓ CR 112, North Valley Rd. at Lights Creek (Br. No. 9C-0012)
 - ✓ CR 207, Arlington Road at Hough Creek
 - ✓ CR 206, Stampfli Lane Br. 9C-0053
 - ✓ CR 207C, Old Arlington Road
 - ✓ CR CM08, Wagon Road
 - ✓ CR 317, Rush Creek Road
 - ✓ CR 511, Quincy-Laporte Rd. (LaPorte - to Yuba Co. line)
 - ✓ CR 311, Section - Old Red Bluff Road, Br. 9C-0052
 - ✓ CR 414, Bucks Lake Road at Clear Creek
 - ✓ CR 517, Mt. Tomba Road.
 - ✓ CR 202, Greenville-Wolf Creek Rd.
 - ✓ CR 404A, Oakland Camp Road
 - ✓ CR 511, From the M.F.F.R. to Silver Tip
 - ✓ CR 511, From Silver Tip to Laporte
 - ✓ CR 219, Williams Valley Rd
 - ✓ CR 312, Chester-Warner Valley Road, Br. 9C-0050 at Warner Creek
- 2017 Storm Damage Unplug Culverts / Culvert Washouts:
 - ✓ CR 507 Johnsville-Mccrea Road
 - ✓ Mill Creek next to Maintenance yard
 - ✓ CR 423 Big Creek Road
 - ✓ CR 520, Little Bear Road at Bonta Creek
 - ✓ CR CM03, Main St. in Crescent Mills
 - ✓ CR 115, Clio-State 40A Road at Willow Creek
 - ✓ CR 306, Seneca Road at Davis Creek
 - ✓ CR 420, Blackhawk Road
 - ✓ CR 408, West's Ranch Road
 - ✓ CR 529, Gill Ranch Road
 - ✓ CR 308, Humboldt Road
 - ✓ CR 516, Mohawk Vista Drive
 - ✓ CR 403, Mt. Hough-Crystal Lake Road
 - ✓ CR 532, Harrison Road
 - ✓ CR 507, Johnsville-McCrea Road
 - ✓ CR 301, Highlands Road
- 2017 Storm Damage Road Washouts:
 - ✓ CR 507 Johnsville-Mccrea Road
 - ✓ CR 420 Blackhawk

- ✓ CR 305, Prattville - Butt Reservoir Road
 - ✓ CR 124, Rocky Point Road
 - ✓ CR 103, Dotta Guidici Road
 - ✓ CR 304, Rich Bar Rd.
 - ✓ CR 417, Butterfly Valley - Twain Rd.
 - ✓ CR 303A, Howells Road (February Storm)
 - ✓ CR 510, Radio Hill Road
 - ✓ CR 202A, Setzer Camp Road at Wolf Creek, Br. No, 9C-0131
 - ✓ CR 306, Seneca Road at Owl Creek
 - ✓ CR402A, Old State Highway
 - ✓ CR 214, North Arm Road, Br 9C-0143 (Peters Creek)
 - ✓ CR 118, Harriet Lane
 - ✓ CR 107, Dyson Lane
 - ✓ CR 108, Beckwourth-Loyalton Road
 - ✓ CR 404, Chandler Road
 - ✓ CR 206, Stampfli Lane (road - not the bridges)
 - ✓ CR 303A, Howells Road (January Storm)
- 2017 Storm Damage Bank Failure / Streambank Erosion:
- ✓ CR 409, Beskeen Lane
 - ✓ CR 509B, Sloat-Poplar Valley Road Bridge Rock Slope Bank Repair

Likelihood of Future Occurrence

1% Annual Chance Flood

Occasional— The 1% annual chance flood (100-year) is the flood that has a 1 percent chance of being equaled or exceeded in any given year. This, by definition, makes the likelihood of future occurrence occasional. However, the 100-year flood could occur more than once in a relatively short period of time.

0.2% Annual Chance Flood

Unlikely—The 0.2% annual chance flood (500-year) is the flood that has a 0.2 percent chance of being equaled or exceeded in any given year. This, by definition, makes the likelihood of future occurrence unlikely.

It is likely that climate change will increase the chance of future occurrence as well as future impacts. More information on climate change and flood can be found in the next section. More information on future impacts can be found in the Future Conditions/Future Development section of the Vulnerability Assessment below.

Climate Change and Flood

Climate change and its effect on flooding is discussed using three sources:

- 2021 CAS

- Cal-Adapt
- National Center for Atmospheric Research

California Climate Adaptation Strategy

According to the 2021 CAS (as well as the 2024 Draft CAS), climate change may affect flooding in California and the Planning Area. While average annual rainfall may increase or decrease slightly, the intensity of individual rainfall events is likely to increase during the 21st century. It is possible that average soil moisture and runoff could decline, however, due to increasing temperatures, evapotranspiration rates, and spacing between rainfall events. Reduced snowpack and increased number of intense rainfall events are likely to put additional pressure on water infrastructure which could increase the chance of flooding associated with breaches or failures of flood control structures such as levees and dams.

Cal Adapt

Cal Adapt future precipitation projections were shown in Figure 4-57 in Section 4.3.4 Severe Weather: Heavy Rains and Storms. These could affect future flooding in the Plumas County Planning Area.

National Center for Atmospheric Research

Also, according to the National Center for Atmospheric Research in Boulder, Colorado, atmospheric rivers are likely to grow more intense in coming decades, as climate change warms the atmosphere enabling it to hold more water.

Vulnerability Assessment

Vulnerability—High

Historically, the Plumas County Planning Area has always been at risk to flooding during the rainy season from November through April. Historically, the Plumas County Planning Area has been at risk to flooding primarily during the winter and spring months when river systems in the County swell with heavy rainfall and snowmelt runoff. Normally, storm floodwaters are kept within defined limits by a variety of storm drainage and flood control measures. Occasionally, extended heavy rains result in floodwaters that exceed normal high-water boundaries and cause damage. Flooding has occurred both within the 1% and 0.2% annual chance floodplains and in other localized areas. The vulnerability of the County to severe flooding is high as it can result in significant life safety and property damage.

An assessment of a community's vulnerability to this hazard begins with an understanding of local exposure to unincorporated Plumas County. This is included in the Local Concerns section below. After that, vulnerability is discussed in multiple sections that detail how this hazard can affect both the entire Plumas County Planning Area as well as the unincorporated portions of Plumas County. How the hazard affects the other participating jurisdictions can be found in their respective annexes to this LHMP Update. These sections below include assets at risk, impacts, and how future development can be affected by this hazard.

Local Concerns (unincorporated Plumas County)

The unincorporated County has specific concerns regarding this hazard. These concerns form a portion of the basis for the mitigation strategy and mitigation actions that seek to reduce vulnerabilities to this hazard.

Overall Flood Concerns

Floods have been a part of Plumas County's historical past and will continue to be so in the County's future. During winter months, long periods of precipitation and the timing of that precipitation are critical in determining the threat of flood, and these characteristics further dictate the potential for widespread structural and property damages. Historically, much of the growth in the County has occurred adjacent to rivers or streams, resulting in significant damages to property, and losses from disruption of community activities during periods of flooding. Additional development in the watersheds of these streams affects both the frequency and duration of damaging floods through an increase in stormwater runoff. Other problems connected with flooding and stormwater runoff include erosion, sedimentation, degradation of water quality, losses of environmental resources, and certain health hazards.

Rain on snow events are also a concern in the County.

Wolf Creek Flooding

The County provided a 2025 County memo regarding an area of the County at risk from accelerated bank erosion. This is known locally as the Wolf Creek Phase 4 area. 2025 saw calls by residents in the area to the County stating concern about bank erosion issues in this area. This is a continuation of similar effects since Wolf Creek was captured by 4th Water Trough Creek in 1997. Now a deeply incised, confined channel, Wolf Creek is subject to periodic episodes of mineral and organic debris loading during high intensity rain/saturated soils/wind events. These loads are derived from both upstream and onsite sources, exacerbated by Dixie Fire effects. This is the reason Wolf Creek was included in the original LHMP process and a Hazard Mitigation grant application. This HMGP grant has been approved by FEMA, but a local match is still being sought. The worry here is a repeat of a previous incident in the County. Figure 4-129 above is a photo of a home that was victim of rapid channel migration of Indian Creek in Genesee in 1997. The channel moved laterally +400 ft. in 24 hrs. The home was never flooded, just undermined by bank erosion until it fell in. This type of local flood disaster is a threat in numerous places in Plumas County.

Two principal conditions stand out: the amount of catastrophic burn area above the reach under discussion, and the width of the original floodplain to the current floodplain (or lack thereof). Over time Wolf Creek will erode and deposit until a similarly expansive floodplain is developed. There are residents located in these areas

Local concerns for Portola and the Special Districts can be found under the Local Concerns heading in each respective jurisdictional annex to this LHMP Update.

Assets at Risk

Assets at risk from 1% and 0.2% annual chance floods include people and populations; structures; critical facilities and infrastructure; and natural, historic, and cultural resources. These are discussed in the following sections for the Plumas County Planning Area and unincorporated Plumas County.

Additionally, for each hazard in the FEMA National Risk Index in Plumas County, the relevant portions of the hazard analysis done by FEMA is presented below. This includes the Hazard Risk Index Rating, Expected Annual Loss Values, Exposure Values, and the Historic Loss Ratio Rating. These are presented for the Plumas County Planning Area as a whole.

Methodology (Parcel and Structures)

The Planning Area has mapped FEMA DFIRMs with flood hazard areas. GIS was used to determine the possible impacts of flooding within the Planning Area and how the risk varies across the Plumas County Planning Area. The following methodology was utilized in determining assets at risk to the 1% annual chance flood event and 0.2% annual chance flood event.

2024 Plumas County Parcel/Assessor Data was used as the basis for the Plumas County inventory of parcels, values, and acres. Plumas County has a FEMA effective DFIRM dated 3/27/2024, which was obtained from FEMA's National Flood Hazard Layer to perform the flood analysis. In some cases, there are parcels in multiple flood zones, such as Zone A, Zone X, or Shaded X. GIS was used to analyze the data. Since it is possible for any given parcel to intersect with multiple categories for purposes of this analysis, the most conservative (or highest risk) DFIRM flood zone that intersected each parcel was used to determine which flood zone to assign to each parcel. Once completed, the flood zone parcel layer was joined to the assessor data to determine the number of parcels and values falling within each DFIRM flood zone. Based on this approach, the flood zones for the Planning Area and unincorporated Plumas County were determined and further broken out by property use and included information on both land and improved values, personal property values, and estimated contents values. Improved parcels include those with improved structure values identified in the Plumas County Assessor's database. The property use categories for the Plumas County Planning Area (derived from general plan property use descriptions) were used to develop estimated content replacement values (CRV) that are potentially at loss from hazards, using FEMA Hazus methodologies as previously described in Section 4.2. The CRVs were added to the land, improved parcel, and personal property values.

The parcels and associated values were segregated and analyzed in this fashion to determine parcels, structures, and values at risk to the flood hazard for the Plumas County Planning Area. This flood analysis can be misleading since multiple classes may fall within one polygon, and there are many large polygons throughout the County.

Methodology (Loss Estimate)

The loss estimate for flood is based on the total of improved and contents value. Only improved parcels and the value of their structure improvements were included in the flood loss analysis. The value of land is not included in the loss estimates as generally the land is not at loss to floods, just the value of

improvements and structure contents. The land value is represented in the detailed flood tables but is primarily present to show the value of the land associated with parcels and leach flood zone.

Once the potential value of affected parcels was calculated, a damage factor was applied to obtain loss estimates by flood zone. When a flood occurs, seldom does the event cause total loss of an area or building. Potential losses from flooding are related to a variety of factors including flood depth, flood velocity, building type, and construction. The percentage of damage is primarily related to the flood depth. FEMA’s flood benefit/cost module uses a simplified approach to model flood damage based on building type and flood depth. The values at risk in the flood analysis tables were refined by applying an average damage estimation of 20% of the total building value. The 20% damage estimate utilized FEMA’s Flood Building Loss Table based on an assumed average flood depth of 2 feet. The end result of this more refined flood hazard loss estimate analysis is an inventory of the numbers, types, and values of parcels subject to the flood hazard.

People and Populations

All people and populations located in the 1% and 0.2% annual chance floodplains are at some risk to flooding. Certain vulnerable populations located within areas prone to flooding may be at increased risk to this hazard, especially during a large event with minimal advance notice. These vulnerable populations include: the unhoused, those with limited mobility, and those that lack the resources to leave the area.

Plumas County Planning Area residents that live in the 1% and 0.2% annual chance floodplains are often the most vulnerable. Not only are the residents at risk, but their homes and contents are all at risk, compounding the impacts associated with significant hazard events. To further evaluate the impact to the Planning Area’s residential population residing within these hazard areas, the DFIRM flood zones were overlayed on the parcel layer and linked to the Assessor Data. Those residential parcel polygons that intersect the flood zones were counted and multiplied by the 2023 Census Bureau American Community Survey average household factors for each jurisdiction. This is shown in Table 4-85.

Table 4-85 Plumas County Planning Area – Improved Residential Parcels and Populations in FEMA DFIRM Flood Zones by Jurisdiction

| Jurisdiction | 1% Annual Chance | | 0.2% Annual Chance | |
|-----------------------|------------------------------|--------------------|------------------------------|--------------------|
| | Improved Residential Parcels | Population at Risk | Improved Residential Parcels | Population at Risk |
| City of Portola | 36 | 82 | 0 | 0 |
| Unincorporated County | 1,497 | 3,578 | 680 | 1,625 |

Source: FEMA DFIRM 03/02/05, Plumas County 2024 Parcel/Assessor’s Data, 2023 US Census American Community Survey Average Household Size – City of Portola (2.29); Unincorporated Plumas County (2.39).

Structures

Results are presented here first for the Plumas County Planning Area and secondly for unincorporated County.

Plumas County Planning Area

Certain structures in the Plumas County Planning Area are at risk of DFIRM flooding and primarily include those structures located within the 1% and 0.2% annual chance floodplains. GIS was used to determine the possible impacts of flooding on parcels and structures within the Planning Area. Table 4-86 shows parcel counts, land and improved values (i.e., those with a structure improvement on the parcel), personal property values, content replacement values, and total values in the Planning Area. This is shown for the 1% and 0.2% annual chance flood zones, as well as for those properties that fall outside of the mapped FEMA DFIRM flood zones.

Table 4-86 Plumas County Planning Area – Count and Value of Parcels and Structures in FEMA DFIRM 1% and 0.2% Annual Chance Flood Zones by Jurisdiction

| Jurisdiction / Flood Zone | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|---|--------------------|-----------------------|------------------------|--------------------------|-------------------------|--------------------------|------------------------|
| City of Portola | | | | | | | |
| 1% Annual Chance Flood Hazard | 136 | 50 | \$5,846,857 | \$23,227,628 | \$1,322,526 | \$20,717,340 | \$51,114,351 |
| 0.2% Annual Chance Flood Hazard | 2 | 1 | \$137,332 | \$374,544 | \$0 | \$374,544 | \$886,420 |
| Other Areas | 1,505 | 970 | \$31,966,182 | \$127,648,862 | \$592,546 | \$73,550,325 | \$233,757,915 |
| City of Portola Total | 1,643 | 1,021 | \$37,950,371 | \$151,251,034 | \$1,915,072 | \$94,642,209 | \$285,758,686 |
| Unincorporated Plumas County | | | | | | | |
| 1% Annual Chance Flood Hazard | 3,035 | 1,714 | \$436,754,330 | \$533,266,332 | \$68,252,298 | \$300,503,098 | \$1,338,776,058 |
| 0.2% Annual Chance Flood Hazard | 943 | 787 | \$42,128,297 | \$144,725,179 | \$34,596,689 | \$91,002,831 | \$312,452,996 |
| Other Areas | 20,256 | 10,926 | \$1,186,112,101 | \$2,524,953,767 | \$38,678,576 | \$1,342,652,693 | \$5,092,397,137 |
| Unincorporated Plumas County Total | 24,234 | 13,427 | \$1,664,994,728 | \$3,202,945,278 | \$141,527,563 | \$1,734,158,622 | \$6,743,626,191 |
| | | | | | | | |
| Grand Total | 25,877 | 14,448 | \$1,702,945,099 | \$3,354,196,312 | \$143,442,635 | \$1,828,800,830 | \$7,029,384,876 |

Source: FEMA 03/02/2005 DFIRM, Plumas County 2024 Parcel/Assessor Data

*With respect to improve parcels within the floodplain, the actual structures on the parcels may not be located within the actual floodplain, may be elevated and or otherwise outside of the identified flood zone

**This parcel count only includes those parcels in the 0.2% annual chance flood zone, exclusive of the 1% annual chance flood zone. The 0.2% annual chance flood, in actuality, also includes all parcels in the 1% annual chance flood zone.

Table 4-87 shows Planning Area loss estimates and improved values at risk by FEMA 1% and 0.2% annual chance flood zones. More detailed tables and discussions can be found in each jurisdiction’s respective annex to this Base Plan.

Table 4-87 Plumas County Planning Area – FEMA DFIRM Flood Loss Estimates

| Flood Zone | Total Parcel Count | Imp. Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value | Loss Estimate | Loss Ratio |
|---------------------------------|--------------------|-------------------|----------------------|--------------------------|-------------------------|--------------------------|------------------------|----------------------|--------------|
| 1% Annual Chance Flood Hazard | 3,171 | 1,764 | \$442,601,187 | \$556,493,960 | 69,574,824 | \$321,220,438 | \$947,289,222 | \$189,457,845 | 3.75% |
| 0.2% Annual Chance Flood Hazard | 945 | 788 | \$42,265,629 | \$145,099,723 | \$34,596,689 | \$91,377,375 | \$271,073,787 | \$54,214,758 | 1.07% |
| Grand Total | 4,116 | 2,552 | \$484,866,816 | \$701,593,683 | \$104,171,513 | \$412,597,813 | \$1,218,363,009 | \$243,672,603 | 4.82% |

Source: FEMA 03/02/2005 DFIRM, Plumas County 2024 Parcel/Assessor Data

*With respect to improved parcels within the floodplain, the actual structures on the parcels may not be located within the actual floodplain, may be elevated and or otherwise outside of the identified flood zone

**This parcel count only includes those parcels in the 0.2% annual chance flood zone, exclusive of the 1% annual chance flood zone. The 0.2% annual chance flood, in actuality, also includes all parcels in the 1% annual chance flood zone.

According to the information in Table 4-86 and Table 4-87, the Plumas County Planning Area has 1,764 improved parcels and roughly \$947.3 million of structure and contents value in the 1% annual chance floodplain. There are an additional 788 improved parcels and roughly \$271.1 million of structure and contents value in the 0.2% annual chance flood event. A loss ratio of 3.75% and 1.07% indicates that while the Plumas County Planning Area does have structural assets at risk to flood, the County should be able to effectively recover from a major flood event.

Unincorporated Plumas County

Numerous structures in unincorporated Plumas County are at risk of DFIRM flooding and primarily include those structures located within the 1% and 0.2% annual chance floodplains. GIS was used to determine the possible impacts of flooding on parcels and structures within the unincorporated County. Table 4-88 shows parcel counts, land and improved values (i.e., those with a structure improvement on the parcel), personal property values, estimated content replacement values, and total values in the unincorporated County. This is shown for the detailed flood zones by 1% and 0.2% annual chance flood zones by property use, as well as for those properties that fall outside of the mapped FEMA DFIRM flood zones.

Table 4-88 Unincorporated Plumas County – Count and Value of Parcels and Structures in Detailed FEMA DFIRM 1% and 0.2% Annual Chance Flood Zones by Property Use

| Flood Zone / Property Use | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|--------------------------------------|--------------------|-----------------------|----------------------|--------------------------|-------------------------|--------------------------|------------------------|
| 1% Annual Chance Flood Hazard | | | | | | | |
| Zone A | | | | | | | |
| Agricultural | 297 | 79 | \$38,287,431 | \$14,953,243 | \$1,997,675 | \$14,953,243 | \$70,191,592 |
| Commercial | 66 | 35 | \$9,813,026 | \$14,638,475 | \$1,748,420 | \$14,638,475 | \$40,838,396 |
| Federal Lands | 42 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 79 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 27 | 14 | \$2,357,231 | \$2,918,804 | \$0 | \$4,378,206 | \$9,654,241 |
| Institutional | 6 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Miscellaneous | 2 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 39 | 28 | \$7,020,109 | \$9,854,924 | \$699,406 | \$9,854,924 | \$27,429,363 |
| Residential | 1,772 | 1,279 | \$346,035,966 | \$413,794,910 | \$5,541,684 | \$206,897,455 | \$972,270,015 |
| ROW/Utilities | 168 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Zone A Total | 2,498 | 1,435 | \$403,513,763 | \$456,160,356 | \$9,987,185 | \$250,722,303 | \$1,120,383,607 |
| Zone AE | | | | | | | |
| Agricultural | 16 | 4 | \$1,449,736 | \$601,029 | \$50,970 | \$601,029 | \$2,702,764 |
| Commercial | 38 | 28 | \$5,744,975 | \$13,653,796 | \$241,593 | \$13,653,796 | \$33,294,160 |
| Government | 14 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 12 | 9 | \$1,017,704 | \$2,587,779 | \$0 | \$3,881,669 | \$7,487,152 |
| Residential | 212 | 170 | \$14,823,192 | \$46,546,047 | \$57,234,227 | \$23,273,024 | \$141,876,490 |
| ROW/Utilities | 35 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Zone AE Total | 327 | 211 | \$23,035,607 | \$63,388,651 | \$57,526,790 | \$41,409,517 | \$185,360,565 |
| Zone AE: Regulatory Floodway | | | | | | | |
| Agricultural | 16 | 6 | \$1,308,547 | \$988,581 | \$74,000 | \$988,581 | \$3,359,709 |
| Commercial | 14 | 4 | \$1,403,253 | \$1,913,256 | \$658,482 | \$1,913,256 | \$5,888,247 |
| Federal Lands | 3 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 3 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 4 | 2 | \$406,737 | \$61,697 | \$0 | \$92,546 | \$560,980 |
| Institutional | 1 | 0 | \$27,886 | \$0 | \$0 | \$0 | \$27,886 |
| Miscellaneous | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Residential | 133 | 48 | \$6,412,558 | \$8,964,199 | \$5,841 | \$4,482,100 | \$19,864,698 |
| ROW/Utilities | 21 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |

| Flood Zone / Property Use | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|--|--------------------|-----------------------|----------------------|--------------------------|-------------------------|--------------------------|------------------------|
| Zone AE: Regulatory Floodway Total | 196 | 60 | \$9,558,981 | \$11,927,733 | \$738,323 | \$7,476,482 | \$29,701,519 |
| Zone AH | | | | | | | |
| Government | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Residential | 11 | 8 | \$645,979 | \$1,789,592 | \$0 | \$894,796 | \$3,330,367 |
| ROW/Utilities | 2 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Zone AH Total | 14 | 8 | \$645,979 | \$1,789,592 | \$0 | \$894,796 | \$3,330,367 |
| 1% Annual Chance Flood Hazard Total | 3,035 | 1,714 | \$436,754,330 | \$533,266,332 | \$68,252,298 | \$300,503,098 | \$1,338,776,058 |
| 0.2% Annual Chance Flood Hazard | | | | | | | |
| Zone X (shaded) | | | | | | | |
| Agricultural | 2 | 1 | \$25,857 | \$574,148 | \$0 | \$574,148 | \$1,174,153 |
| Commercial | 103 | 90 | \$11,112,003 | \$27,549,347 | \$603,156 | \$27,549,347 | \$66,813,853 |
| Government | 9 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 21 | 12 | \$1,796,224 | \$2,900,367 | \$33,531,160 | \$4,350,551 | \$42,578,302 |
| Institutional | 9 | 4 | \$272,853 | \$3,356,253 | \$3,050 | \$3,356,253 | \$6,988,409 |
| Residential | 758 | 680 | \$28,921,360 | \$110,345,064 | \$459,323 | \$55,172,532 | \$194,898,279 |
| ROW/Utilities | 41 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Zone X (shaded) Total | 943 | 787 | \$42,128,297 | \$144,725,179 | \$34,596,689 | \$91,002,831 | \$312,452,996 |
| 0.2% Annual Chance Flood Hazard Total | 943 | 787 | \$42,128,297 | \$144,725,179 | \$34,596,689 | \$91,002,831 | \$312,452,996 |
| Other Areas | | | | | | | |
| Zone X (unshaded) | | | | | | | |
| Agricultural | 570 | 21 | \$16,443,313 | \$6,917,572 | \$643,882 | \$6,917,572 | \$30,922,339 |
| Commercial | 585 | 371 | \$47,503,071 | \$101,167,535 | \$28,731,777 | \$101,167,535 | \$278,569,918 |
| Federal Lands | 85 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 299 | 0 | \$95,301 | \$0 | \$0 | \$0 | \$95,301 |
| Industrial | 74 | 47 | \$5,101,553 | \$9,957,202 | \$19,048 | \$14,935,803 | \$30,013,606 |
| Institutional | 64 | 35 | \$1,844,377 | \$10,579,916 | \$193,330 | \$10,579,916 | \$23,197,539 |
| Miscellaneous | 10 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 172 | 54 | \$9,503,364 | \$10,937,803 | \$1,114,080 | \$10,937,803 | \$32,493,050 |
| Residential | 13,414 | 8,787 | \$939,342,063 | \$2,161,874,103 | \$6,744,374 | \$1,080,937,052 | \$4,188,897,592 |
| ROW/Utilities | 660 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |

| Flood Zone / Property Use | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|---|--------------------|-----------------------|------------------------|--------------------------|-------------------------|--------------------------|------------------------|
| Zone X (unshaded) Total | 15,933 | 9,315 | \$1,019,833,042 | \$2,301,434,131 | \$37,446,491 | \$1,225,475,681 | \$4,584,189,345 |
| Zone D (unmapped) | | | | | | | |
| Agricultural | 409 | 7 | \$12,767,933 | \$945,072 | \$0 | \$945,072 | \$14,658,077 |
| Commercial | 47 | 28 | \$3,023,552 | \$5,422,003 | \$292,457 | \$5,422,003 | \$14,160,015 |
| Federal Lands | 87 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 194 | 0 | \$29,655 | \$0 | \$0 | \$0 | \$29,655 |
| Industrial | 2 | 1 | \$54,172 | \$23,684 | \$0 | \$35,526 | \$113,382 |
| Miscellaneous | 13 | 0 | \$9,591 | \$0 | \$0 | \$0 | \$9,591 |
| Recreational | 308 | 9 | \$1,666,675 | \$4,419,946 | \$638 | \$4,419,946 | \$10,507,205 |
| Residential | 3,124 | 1,566 | \$148,727,481 | \$212,708,931 | \$938,990 | \$106,354,466 | \$468,729,868 |
| ROW/Utilities | 139 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Zone D (unmapped) Total | 4,323 | 1,611 | \$166,279,059 | \$223,519,636 | \$1,232,085 | \$117,177,013 | \$508,207,793 |
| Other Areas Total | 20,256 | 10,926 | \$1,186,112,101 | \$2,524,953,767 | \$38,678,576 | \$1,342,652,693 | \$5,092,397,137 |
| | | | | | | | |
| Unincorporated Plumas County Total | 24,234 | 13,427 | \$1,664,994,728 | \$3,202,945,278 | \$141,527,563 | \$1,734,158,622 | \$6,743,626,191 |

Source: FEMA 03/02/2005 DFIRM, Plumas County 2024 Parcel/Assessor Data

*With respect to improve parcels within the floodplain, the actual structures on the parcels may not be located within the actual floodplain, may be elevated and or otherwise outside of the identified flood zone

**This parcel count only includes those parcels in the 0.2% annual chance flood zone, exclusive of the 1% annual chance flood zone. The 0.2% annual chance flood, in actuality, also includes all parcels in the 1% annual chance flood zone.

Table 4-89 shows unincorporated Plumas County loss estimates and improved values at risk by FEMA 1% and 0.2% annual chance flood zones.

Table 4-89 Unincorporated Plumas County – FEMA DFIRM Flood Loss Estimates

| Flood Zone | Total Parcel Count | Imp. Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value | Loss Estimate | Loss Ratio |
|-------------------------------|--------------------|-------------------|------------------|--------------------------|-------------------------|--------------------------|---------------|---------------|------------|
| 1% Annual Chance Flood Hazard | 3,035 | 1,714 | \$436,754,330 | \$533,266,332 | \$68,252,298 | \$300,503,098 | \$902,021,728 | \$180,404,346 | 3.6% |
| 0.2% Annual Chance | 943 | 787 | \$42,128,297 | \$144,725,179 | \$34,596,689 | \$91,002,831 | \$270,324,699 | \$54,064,940 | 1.1% |

| Flood Zone | Total Parcel Count | Imp. Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value | Loss Estimate | Loss Ratio |
|--------------|--------------------|-------------------|----------------------|--------------------------|-------------------------|--------------------------|------------------------|----------------------|-------------|
| Flood Hazard | | | | | | | | | |
| Total | 3,978 | 2,501 | \$478,882,627 | \$677,991,511 | \$102,848,987 | \$391,505,929 | \$1,172,346,427 | \$234,469,286 | 4.7% |

Source: FEMA 03/02/2005 DFIRM, Plumas County 2024 Parcel/Assessor Data

*With respect to improve parcels within the floodplain, the actual structures on the parcels may not be located within the actual floodplain, may be elevated and or otherwise outside of the identified flood zone

**This parcel count only includes those parcels in the 0.2% annual chance flood zone, exclusive of the 1% annual chance flood zone. The 0.2% annual chance flood, in actuality, also includes all parcels in the 1% annual chance flood zone.

According to the information in Table 4-88 and Table 4-89, the unincorporated Plumas County has 1,714 improved parcels and roughly \$902.0 million of structure and contents value in the 1% annual chance floodplain. There are an additional 787 improved parcels and roughly \$270.3 million of structure and contents value in the 0.2% annual chance flood event. A loss ratio of 3.6% and 1.1% indicates that while the County does have structural assets at risk to flood, the County should be able to effectively recover from a major flood event.

Insurance Coverage, Claims Paid, and Repetitive Losses

Standard property insurance does not include flood coverage because of the relatively high risk. The National Flood Insurance Program (NFIP) provides flood insurance to residents in those communities that participate in the NFIP. Federal financial assistance requires the purchase of flood for structures located within a 1% annual chance floodplain – a requirement that affects nearly all mortgages financed through commercial lending institutions. Flood insurance is also recommended for all structures protected by levees, even if not mapped within a floodplain. Flood insurance promotion and outreach will be important moving forward to ensure these vulnerable structures are adequately insured and protected.

Unincorporated Plumas County joined the NFIP on September 24, 1984. The County does not participate in the CRS. NFIP insurance data provided by CA DWR indicates that as of December 2, 2024, there were 93 policies in force in the unincorporated County, resulting in \$61,661,100 of insurance in force. There have been 59 closed paid losses totaling \$1,099,373.04. Of these losses, 46 were parcels in A zones and 12 parcels were in B, C, or X zone, with 1 claim unknown. Of the 59 claims, 52 claims were associated with pre-FIRM structures and 6 with post-FIRM structures, with 1 claim unknown. There have been 4 repetitive loss (RL) structures, and 0 severe repetitive loss (SRL) structures in the County. There have been 9 substantial damage claims since 1978. There has been 1 Increased Cost of Compliance (ICC) loss totaling \$0.

Based on this analysis of insurance coverage, unincorporated Plumas County has significant values at risk to the 1% annual chance and greater floods. Of the 1,505 improved parcels within the 1% annual chance flood zone, only 93 (or 6.2 percent) of those parcels maintain flood insurance. This can be seen on Table 4-90, along with insurance information from City of Portola.

Table 4-90 Plumas County Planning Area – Percentage of Policy Holders to Improved Parcels in the 1% Annual Chance Floodplain

| Jurisdiction | Improved Parcels in SFHA (1% Annual Chance) Floodplain* | Insurance Policies in the SFHA (1% Annual Chance) Floodplain | Percentage of 1% Annual Chance Floodplain Parcels Currently Insured |
|------------------------------|---|--|---|
| City of Portola | 36 | 2 | 5.5% |
| Unincorporated Plumas County | 1,505 | 93 | 6.2% |

Source: FEMA 03/02/2005 DFIRM, FEMA CIS 2024, Plumas County 2024 Parcel/Assessor's Data

FEMA also supplied data from their PIVOT database, which provides property use information specific to the RL and SRL properties. However, according to FEMA, there is a discrepancy between CIS and the PIVOT database on numbers of RL and SRL properties based on how information is transferred between systems. According to the PIVOT database, there are 3 RL properties and 1 SRL properties in the unincorporated County. This can be seen for all communities on Table 4-91. FEMA's CIS data does not include searchable information on property use for RL and SRL properties.

Table 4-91 Plumas County Planning Area – RL and SRL Properties and their Status

| Jurisdiction | RL Properties | SRL Properties |
|------------------------------|---------------|----------------|
| City of Portola | 0 | 0 |
| Unincorporated Plumas County | | |
| Single-family dwelling | 3 | 1 |

Source: FEMA, PIVOT, 3/24/2025

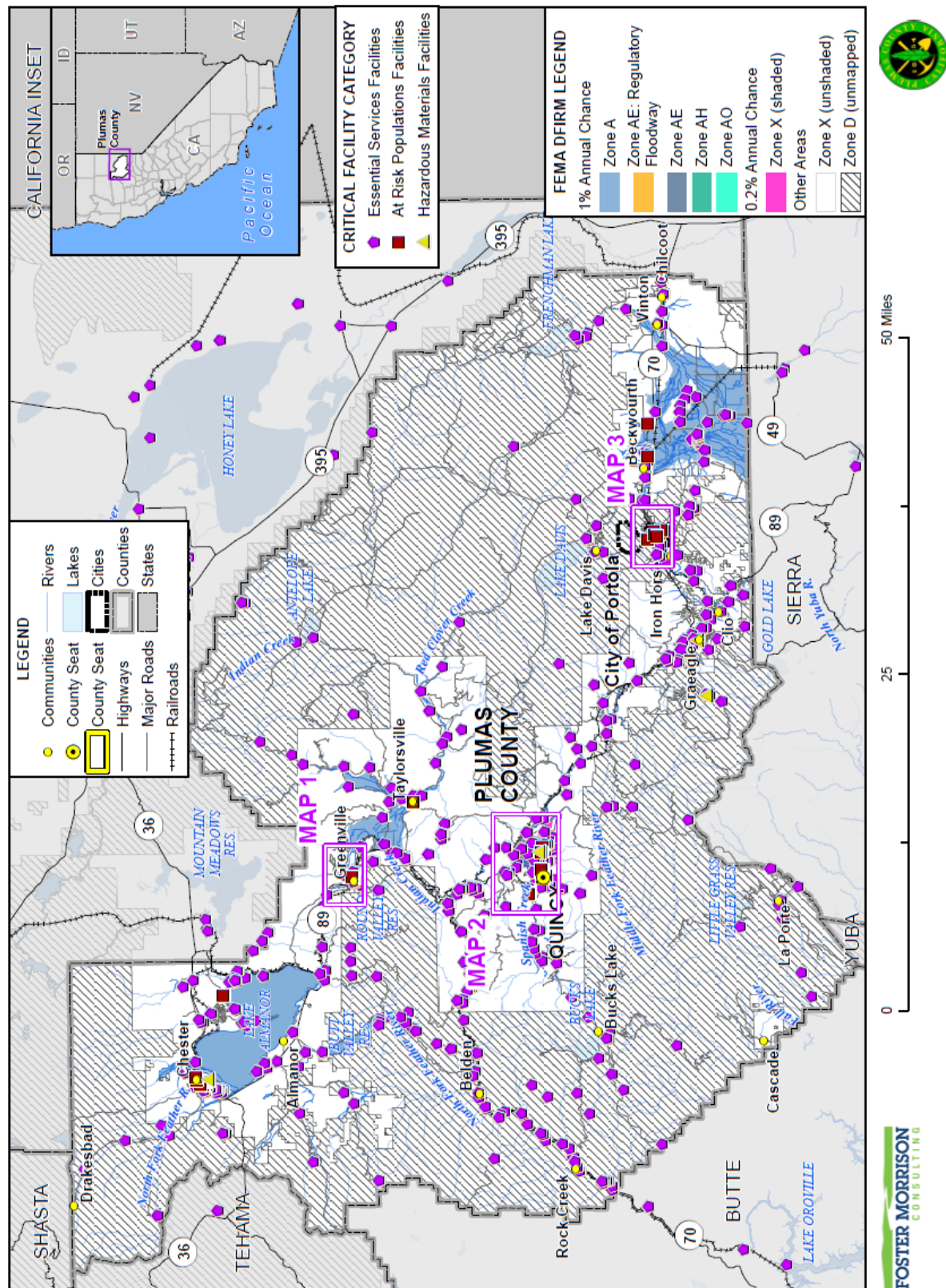
Critical Facilities and Infrastructure

Flooding presents a threat to critical facilities and infrastructure, and community lifelines. Critical facilities and infrastructure play an immensely important role in our communities. As previously noted, communities rely on roads, rail corridors, and related biking and pedestrian routes for transportation, and on critical infrastructure for drinking water, wastewater service, and draining streets of rainwater. Other utilities play an important role in providing critical services to area residents. Fire, police and other emergency response facilities and functions are also critical to the wellbeing of the community and the ability to respond and recover from hazard events, such as floods. Damage to any one of these systems can threaten public safety, wreak havoc on daily life, impact properties far from flood zones, and result in economic impacts that cascade throughout California. The following GIS analysis identifies critical facilities and infrastructure at risk to 1% and 0.2% annual chance flooding.

A separate analysis was performed on the critical facility inventory in the Plumas County Planning Area to determine critical facilities in the 1% and 0.2 annual chance flood zones. Using GIS, the DFIRM flood zones were overlaid on the critical facility GIS layer. Figure 4-142 shows critical facilities and the detailed DFIRM flood zones (with the inset maps shown). These inset maps are shown in Figure 4-143 through Figure 4-145. Table 4-92 details critical facilities in detailed DFIRM flood zones by facility type and count for the Plumas County Planning Area broken out by jurisdiction. Details of critical facilities by type, name, and address by flood zone are listed in Appendix G.

As shown on these tables, 3 critical facilities in the City of Portola fall in the 1% annual chance flood zone; 111 and 27 critical facilities in the unincorporated County fall in the 1% and 0.2% annual chance flood zone, respectively; and 2 and 1 of the critical facilities in the surrounding counties fall in the 1% and 0.2% annual chance flood zone, respectively.

Figure 4-142 Plumas County Planning Area – Critical Facilities in DFIRM Flood Zones (Overview Maps with Insets)



Data Source: FEMA Effective DFIRM 03/02/2005 (NFHL 03/12/2025 database), Plumas County GIS, Cal-Atlas; Map Date: 9/9/2025.

Figure 4-143 Plumas County Planning Area – Critical Facilities in DFIRM Flood Zones (Map Inset 1)

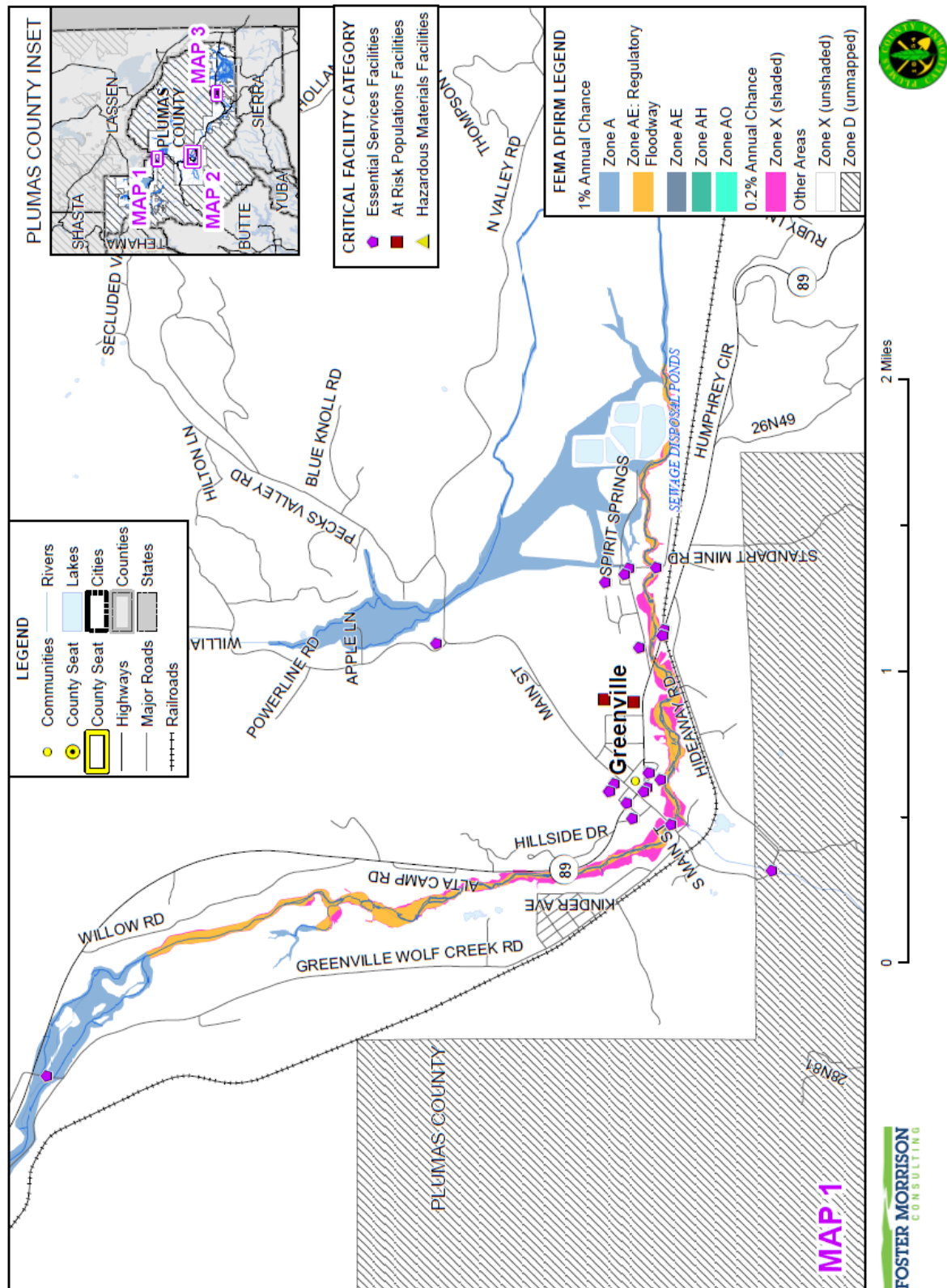


Figure 4-144 Plumas County Planning Area – Critical Facilities in DFIRM Flood Zones (Map Inset 2)

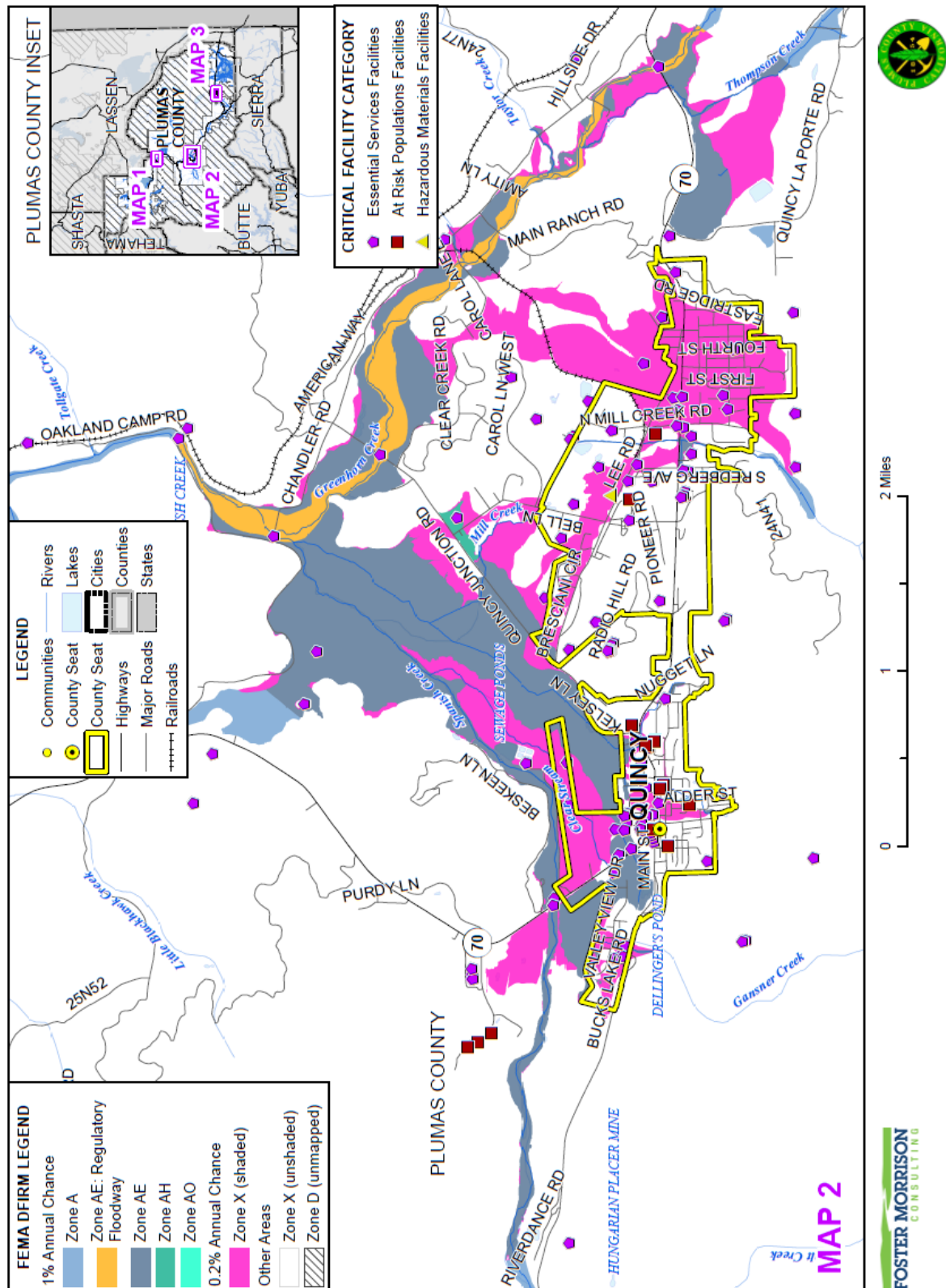


Figure 4-145 Plumas County Planning Area – Critical Facilities in DFIRM Flood Zones (Map Inset 3)

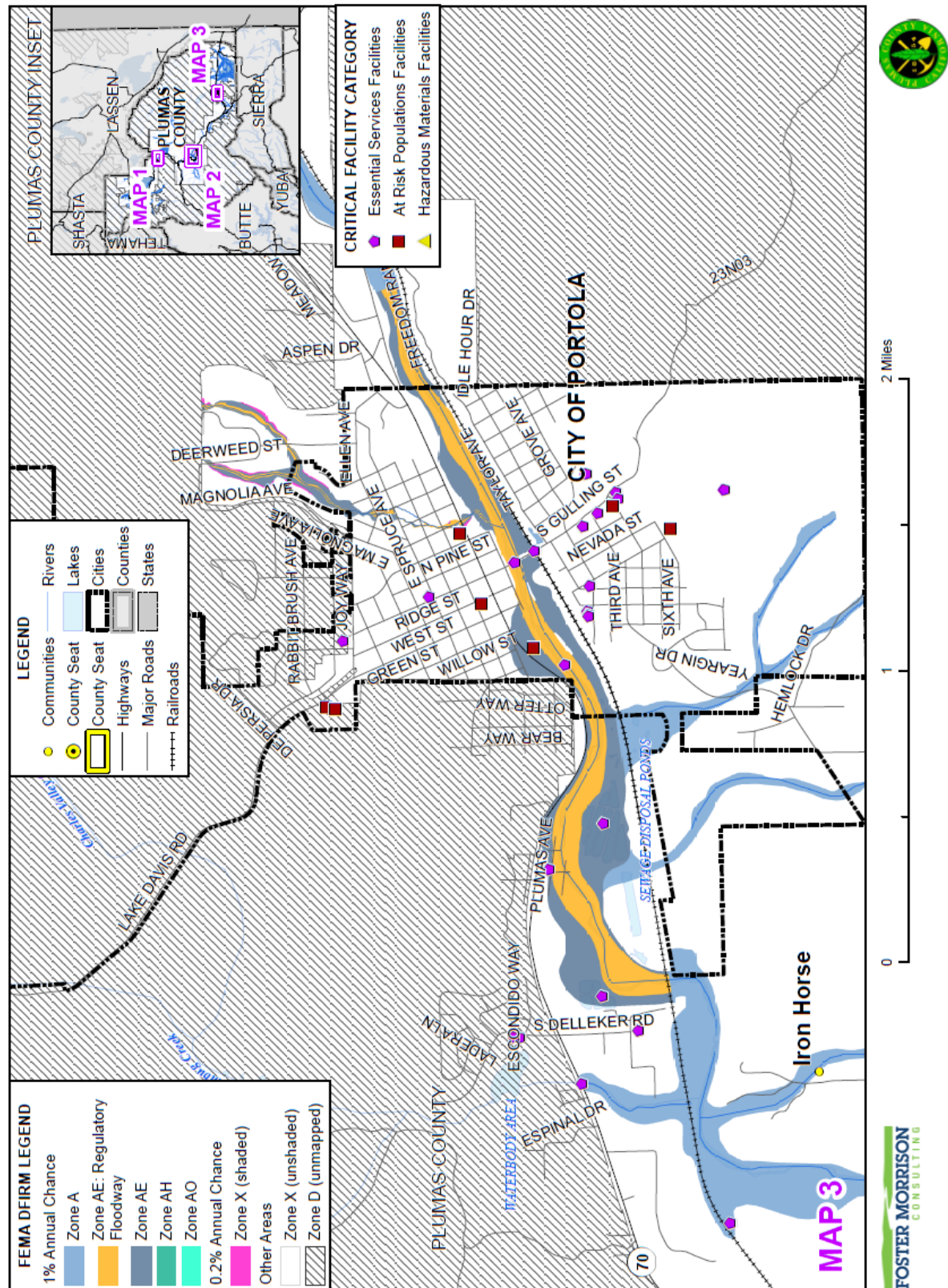


Table 4-92 Plumas County Planning Area – Critical Facilities in Detailed DFIRM Flood Zones by Jurisdiction and Critical Facility Category

| Jurisdiction / Flood Zone | Critical Facility Category | Facility Count |
|---|--|----------------|
| Portola | | |
| 1% Annual Chance Flood Hazard | Essential Services Facilities | 2 |
| | At Risk Populations Facilities | 1 |
| | Hazardous Materials Facilities | 0 |
| | 1% Annual Chance Total | 3 |
| Other Areas | Essential Services Facilities | 14 |
| | At Risk Populations Facilities | 7 |
| | Hazardous Materials Facilities | 0 |
| | Other Areas Total | 21 |
| Portola Total | | 24 |
| Unincorporated Plumas County | | |
| 1% Annual Chance Flood Hazard | Essential Services Facilities | 111 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | 1% Annual Chance Flood Hazard Total | 111 |
| 0.2% Annual Chance Flood Hazard | Essential Services Facilities | 26 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 1 |
| | 0.2% Annual Chance Flood Hazard Total | 27 |
| Other Areas | Essential Services Facilities | 692 |
| | At Risk Populations Facilities | 33 |
| | Hazardous Materials Facilities | 3 |
| | Other Areas Total | 728 |
| Unincorporated Plumas County Total | | 866 |
| Unincorporated Butte County | | |
| Other Areas | Essential Services Facilities | 4 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | Other Areas Total | 4 |
| Unincorporated Butte County Total | | 4 |
| Unincorporated Lassen County | | |
| 1% Annual Chance Flood Hazard | Essential Services Facilities | 2 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | 1% Annual Chance Flood Hazard Total | 2 |

| Jurisdiction / Flood Zone | Critical Facility Category | Facility Count |
|---|--|----------------|
| 0.2% Annual Chance Flood Hazard | Essential Services Facilities | 1 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | 0.2% Annual Chance Flood Hazard Total | 1 |
| Other Areas | Essential Services Facilities | 31 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | Other Areas Total | 31 |
| Unincorporated Lassen County Total | | 34 |
| Unincorporated Sierra County | | |
| Other Areas | Essential Services Facilities | 4 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | Other Areas Total | 4 |
| Unincorporated Sierra County Total | | 4 |
| Unincorporated Tehama County | | |
| Other Areas | Essential Services Facilities | 2 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | Other Areas Total | 2 |
| Unincorporated Tehama County Total | | 2 |
| | | |
| Grand Total | | 934 |

Source: FEMA 3/2/2005 DFIRM, Plumas County GIS

Natural, Historic, and Cultural Resources

Large flood events can affect natural, historic, and cultural resources. There are a number of ways floodwaters can impact natural resources and the environment: Wildlife habitats can be destroyed by floodwaters. Contaminated floodwater can pollute rivers and habitats. Silt and sediment can destroy natural areas. Riverbanks and natural levées can be eliminated as rivers reach bankfull capacity. Rivers can be widened, and deposition can increase downstream. Trees can be uprooted by high-velocity water flow. Plants that survive the initial flood may die due to being inundated with water. Historic and cultural resources may also be affected. Generally, the impacts are associated with damage to structures within the flooded areas, but other cultural resources such as those associated with Native Americans and old tribal areas can also be disturbed, damaged and lost during extreme flood events. Any of these resources that fall in the flood zones would be vulnerable.

FEMA NRI Hazard Vulnerability Assessment

The HMPC looked at the FEMA NRI for additional specific data on Plumas County's vulnerability to Flood: 1%/0.2% annual chance and Flood: Localized Flooding. The NRI contains data and analysis for 18 separate natural hazards. The NRI hazard related to Plumas County's Flood: 1%/0.2% annual chance and Flood: Localized Flooding is riverine flooding. As shown in Table 4-93, riverine flooding could cause a total of \$1,910,839 in expected annual losses, with a historic loss rating of relatively moderate. Riverine flooding has a relatively low rating for social vulnerability and relatively high community resilience, with a risk index score of 85.9 out of 100. According to the NRI, there have been 11 riverine flooding events between the years 1996-2019 with an average of 0.5 events per year.

Table 4-93 Plumas County Planning Area – Riverine Flooding Vulnerability Ratings from FEMA NRI

| NRI Hazard | Hazard Risk Index Rating | Expected Annual Loss Values (total)** | Exposure Value (total)*** | Historic Loss Ratio Rating |
|-------------------|--------------------------|---------------------------------------|---------------------------|----------------------------|
| Riverine Flooding | 85.9 | \$1,910,839 | \$8,960,873,982 | Relatively moderate |

Source: FEMA NRI Report

*Hazard Risk Index is calculated using data for only a single hazard type, and reflects a communities expected annual loss value, community risk factors, and the adjustment factor used to calculate the risk value.

**Expected annual loss represents the average economic loss in dollars resulting from natural hazards each year.

***Exposure is a natural hazard consequence factor that is the representative value of buildings, populations, or agriculture potentially exposed to a natural hazard occurrence.

Additional information on the FEMA NRI can be found in Section 4.2 and Appendix H.

Impacts from Flood: 1% and 0.2% Annual Chance Flood

Floods are among the costliest natural disasters in terms of human hardship and economic loss nationwide. Large flood events, including those associated with 1% and 0.2% annual chance floods, can cause substantial damage to structures, landscapes, and utilities as well as life safety issues. People may be swept away in floodwaters, causing injuries or deaths. Floods can be extremely dangerous, and even six inches of moving water can knock over a person given a strong current. During a flood, people can also suffer heart attacks or electrocution due to electrical equipment short outs. Direct impacts, such as drowning, can be limited with adequate warning and public education about what to do during floods. Floodwaters can transport large objects downstream which can damage or remove stationary structures. Structures can be damaged directly from floodwaters and can also be damaged from trees falling as a result of water-saturated soils. Ground saturation can result in instability, collapse, or other damage. Objects can also be buried or destroyed through sediment deposition. Floodwaters can also break utility lines and interrupt services causing power outages. The interruption of power causes major problems and can result in the closure of governmental offices and community businesses. Public schools may also be required to close or be placed on a delayed start schedule. Roads can be damaged and closed, causing safety and evacuation issues.

Standing water can cause damage to crops, roads, foundations, and electrical circuits. Other problems connected with flooding and stormwater runoff include erosion, sedimentation, degradation of water quality, loss of environmental resources, and economic impacts.

Impacts that are not quantified, but can be anticipated in large future events, include:

- Injury and loss of life;
- Commercial and residential structural and property damage;
- Disruption of and damage to public infrastructure, utilities, and services;
- Damage to roads/bridges resulting in loss of mobility;
- Significant economic impact (jobs, sales, tax revenue) to the community; and
- Negative impact on commercial and residential property values

Health Hazards from Flooding

Certain health hazards are also common to flood events. While such problems are often not reported, three general types of health hazards accompany floods. The first comes from the water itself. Floodwaters carry anything that was on the ground that the upstream runoff picked up, including dirt, oil, animal waste, and lawn, farm and industrial chemicals. Pastures and areas where cattle, hogs, and other livestock are kept or their wastes are stored can contribute polluted waters to the receiving streams.

Floodwaters also saturate the ground, which leads to infiltration into sanitary sewer lines. When wastewater treatment plants are flooded, there is nowhere for the sewage to flow. Infiltration and lack of treatment can lead to overloaded sewer lines that can back up into low-lying areas and homes. Even when it is diluted by flood waters, raw sewage can be a breeding ground for bacteria such as e. coli and other disease-causing agents.

The second type of health problems arise after most of the water has gone. Stagnant pools can become breeding grounds for mosquitoes, and wet areas of a building that have not been properly cleaned breed mold and mildew. A building that is not thoroughly cleaned becomes a health hazard, especially for small children and the elderly.

Another health hazard occurs when heating ducts in a forced air system are not properly cleaned after inundation. When the furnace or air conditioner is turned on, the sediments left in the ducts are circulated throughout the building and breathed in by the occupants. If a city or county water system loses pressure, a boil order may be issued to protect people and animals from contaminated water.

The third problem is the long-term psychological impact of having been through a flood and seeing one's home damaged and irreplaceable keepsakes destroyed. The cost and labor needed to repair a flood-damaged home puts a severe strain on people, especially the unprepared and uninsured. There is also a long-term problem for those who know that their homes can be flooded again. The resulting stress on floodplain residents takes its toll in the form of aggravated physical and mental health problems.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the County may be affected in the future by climate change (which was discussed in the hazard profile section above), changes in

population patterns, and changes in land use and development. The influencing effects of these factors on this hazard are discussed further in the Future Conditions/Future Development discussion below.

Future Conditions/Future Development

This section provides a discussion of how future conditions will influence or affect the hazard over time and also discusses future development relative to each hazard.

Future Conditions

Future conditions may be affected by climate change, changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. Findings on this for Plumas County include the following:

- Climate change is likely to exacerbate future flood conditions and associated impacts and vulnerability of the County to 1% and 0.2% annual chance flooding.
- Population in Plumas County is expected to decrease. Additional growth within the flood-risk areas of the County would place additional populations at risk to flooding. Additional population growth would likely bring continued diversity to the County. Vulnerable population groups could face disproportionate effects from a flood and should be planned for. Changes in population and population patterns may or may not increase the impacts and vulnerability of the County to this hazard depending on the location and nature of growth and continued planning for future hazard conditions.
- Land use planning should be proactive to address future hazard conditions. Locating new development, structures and critical facilities and infrastructure within or near areas of flood risk may put additional development at risk. However, County building codes and the County's floodplain ordinance are in effect to reduce this risk and should be updated as necessary to continue to address future flood conditions. Depending on the location of new development and adherence to protective building codes and the floodplain ordinance, changes in land use and development may or may not increase the impacts and associated vulnerabilities of the County to this hazard.

Future Development

Future development considerations should be ongoing and proactive. Ensuring that comprehensive land use planning is conducted, regulatory requirements, such as building codes, are followed, and varying needs for different demographic groups with intersecting identities that reside within the County are considered can help to make for a more resilient community.

This section discusses considerations in evaluating future flooding conditions and also provides an analysis of the flood hazard and proposed future development within the County based on FEMA floodplains.

Future Development: General Considerations

Communities that participate in the NFIP adopt regulations and codes that govern development in special flood hazard areas (SFHAs) and enforce those requirements through their local floodplain management ordinances through the issuance of permits. Plumas County's floodplain management ordinance provides

standards for development, subdivision of land, construction of buildings, and improvements and repairs to buildings that generally meet the minimum requirements of the NFIP.

The International Residential Code (IRC) and International Building Code (IBC), by reference to ASCE 24, include requirements that govern the design and construction of buildings and structures in flood hazard areas. FEMA has determined that the flood provisions of the I-Codes are consistent with the requirements of the NFIP (the I-Code requirements shown either meet or exceed NFIP requirements). ASCE 24, a design standard developed by the American Society of Civil Engineers, expands on the minimum NFIP requirements with more specificity, additional requirements, and some limitations.

With the adoption of the International Codes, communities will be moving towards a more stringent approach to regulatory floodplain management, beyond the minimum requirements of the NFIP. The adoption and enforcement of disaster-resistant building codes is a core community action to promote effective mitigation. When communities ensure that new buildings and infrastructure are designed and constructed in accordance with national building codes and construction standards, they significantly increase local resilience now and in the future. With continued advancements in building codes, local ordinances should be reviewed and updated to meet and exceed standards as practicable to protect new development from future flood events and to further promote disaster resiliency.

One of the most effective ways to reduce vulnerability to potential flood damage is through careful land use planning that fully considers applicable flood management information and practices. Master planning will also be necessary to assure that open channel flood flow conveyances serving the smaller internal streams and drainage areas are adequately prepared to accommodate the flows. Preservation and maintenance of natural and riparian areas should also be an ongoing priority to realize the flood control benefits of the natural and beneficial functions of these areas.

Future development in the County may be built in the floodplain, in conformance to the standards of the floodplain ordinance. The County enforces the floodplain ordinance on new development in unincorporated Plumas County.

Future development areas and their vulnerability to DFIRM flooding is discussed further in the below GIS analysis.

Future Development: GIS Analysis

Plumas County provided 13 future development areas which were used as the basis for the inventory of future development for the unincorporated County. These were mapped in GIS. Where multiple parcels are listed, the parcels are merged to form one polygon, and the hazards are assigned to the highest annual chance flood zone category. Figure 4-146 shows the locations of the future development areas and FEMA DFIRM flood zones as well as the National Levee Database areas. As shown, some of these areas fall inside of the 1% and 0.2% annual chance flood zones, as shown on Table 4-94.

Figure 4-146 Unincorporated Plumas County – Future Development in FEMA DFIRM Flood Zones

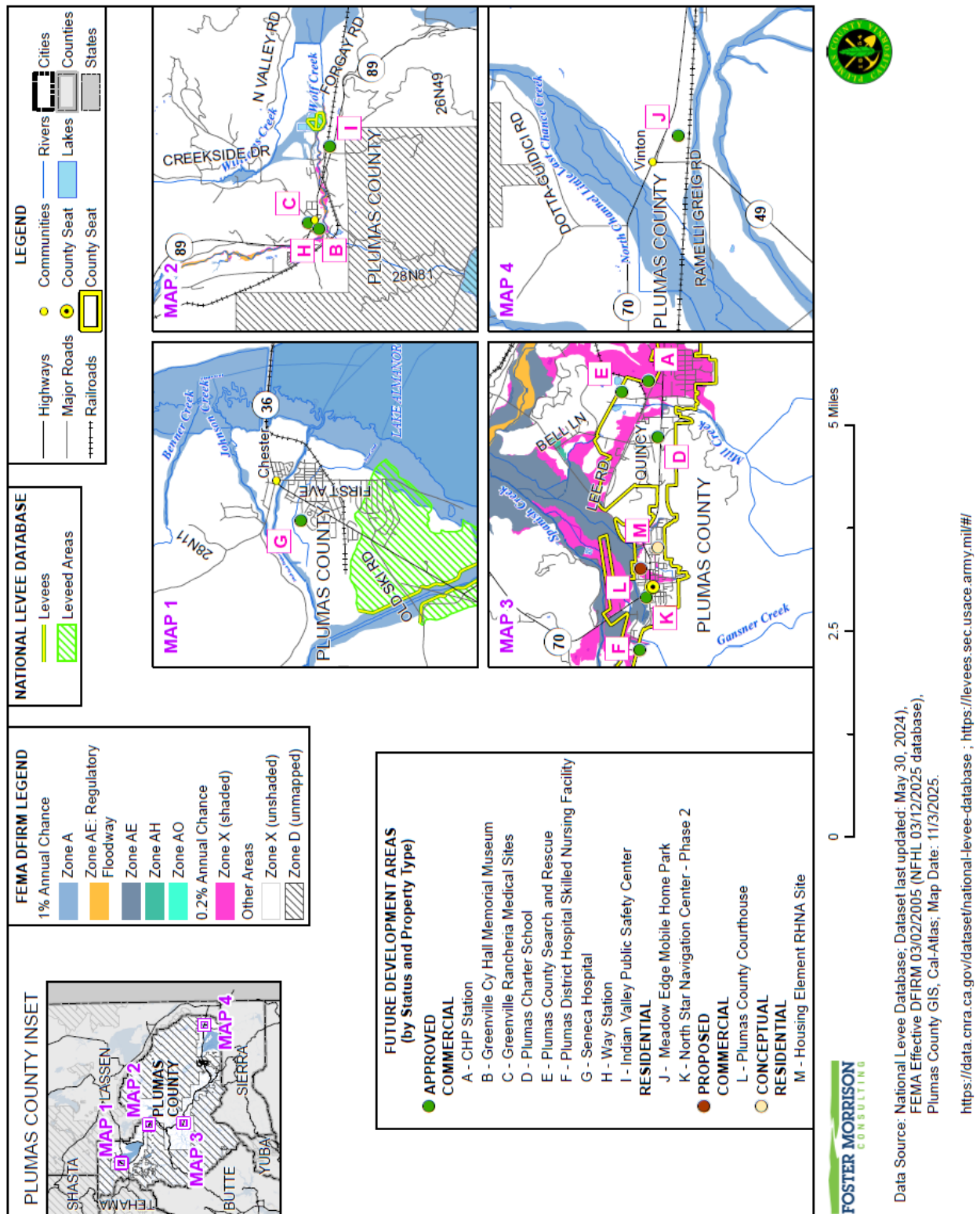


Table 4-94 Unincorporated Plumas County – Future Development in FEMA DFIRM Flood Zones with Parcel Counts and Acreages

| Flood Zones / Site / Map ID and Future Development Name | Total Parcel Count | Improved Parcel Count | Unimproved Parcel Count | Total Acres | Total Improved Acres | Total Unimproved Acres |
|---|--------------------|-----------------------|-------------------------|-------------|----------------------|------------------------|
| 1% Annual Chance Flood Hazard | | | | | | |
| Approved | | | | | | |
| K - North Star Navigation Center - Phase 2 | 1 | 1 | 0 | 1.00 | 1.00 | 0.00 |
| Approved Total | 1 | 1 | 0 | 1.00 | 1.00 | 0.00 |
| Proposed | | | | | | |
| L - Plumas County Courthouse | 1 | 1 | 0 | 2.86 | 2.86 | 0.00 |
| Proposed Total | 1 | 1 | 0 | 2.86 | 2.86 | 0.00 |
| 1% Annual Chance Flood Hazard Total | 2 | 2 | 0 | 3.86 | 3.86 | 0.00 |
| 0.2% Annual Chance Flood Hazard | | | | | | |
| Approved | | | | | | |
| A - CHP Station | 1 | 0 | 1 | 5.00 | 0.00 | 5.00 |
| F - Plumas District Hospital Skilled Nursing Facility | 1 | 0 | 1 | 4.12 | 0.00 | 4.12 |
| Approved Total | 2 | 0 | 2 | 9.12 | 0.00 | 9.12 |
| 0.2% Annual Chance Flood Hazard Total | 2 | 0 | 2 | 9.12 | 0.00 | 9.12 |
| Other Areas | | | | | | |
| Approved | | | | | | |
| B - Greenville Cy Hall Memorial Museum | 1 | 0 | 1 | 0.11 | 0.00 | 0.11 |
| C - Greenville Rancheria Medical, Dental Clinic, and Pharmacy | 1 | 0 | 1 | 1.58 | 0.00 | 1.58 |
| D - Plumas Charter School | 1 | 0 | 1 | 0.89 | 0.00 | 0.89 |

| Flood Zones / Site / Map ID and Future Development Name | Total Parcel Count | Improved Parcel Count | Unimproved Parcel Count | Total Acres | Total Improved Acres | Total Unimproved Acres |
|---|--------------------|-----------------------|-------------------------|--------------|----------------------|------------------------|
| E - Plumas County Search and Rescue | 1 | 1 | 0 | 4.50 | 4.50 | 0.00 |
| G - Seneca Hospital | 1 | 0 | 1 | 11.80 | 0.00 | 11.80 |
| H - Way Station | 1 | 0 | 1 | 0.28 | 0.00 | 0.28 |
| I - Indian Valley Public Safety Center | 1 | 0 | 1 | 5.00 | 0.00 | 5.00 |
| J - Meadow Edge Mobile Home Park | 1 | 1 | 0 | 42.74 | 42.74 | 0.00 |
| Approved Total | 8 | 2 | 6 | 66.90 | 47.24 | 19.66 |
| Conceptual | | | | | | |
| M - Housing Element RHNA Site | 1 | 1 | 0 | 3.64 | 3.64 | 0.00 |
| Conceptual Total | 1 | 1 | 0 | 3.64 | 3.64 | 0.00 |
| Other Areas Total | 9 | 3 | 6 | 70.54 | 50.88 | 19.66 |
| | | | | | | |
| Grand Total | 13 | 5 | 8 | 83.52 | 54.74 | 28.78 |

Source: FEMA 03/02/2005 DFIRM, Plumas County GIS

4.3.12. Flood: Localized Flooding

Hazard Profile

This hazard profile contains multiple sections that detail how this hazard can affect the Plumas County Planning Area. These sections include a hazard/problem description; description of location and extent; past occurrences of this hazard; likelihood of future occurrence; and how climate change can affect or influence this hazard.

Hazard/Problem Description

Flooding occurs in areas other than the FEMA mapped floodplains. Flooding may be from drainages not studied by FEMA, lack of or inadequate drainage infrastructure, or inadequate maintenance. Localized, stormwater flooding occurs throughout the Plumas County Planning Area during the rainy season from November through April. Prolonged heavy rainfall contributes to a large volume of runoff resulting in high peak flows of moderate duration. Flooding is more severe when previous rainfall has created saturated

ground conditions. Urban storm drainpipes and pump stations have a finite capacity. When rainfall exceeds this capacity, or the system is clogged, water accumulates in the street until it reaches a level of overland release. This type of flooding may occur when intense storms occur over areas of development.

Location and Extent

There is no established scientific scale or measurement system for localized flooding. Localized flooding is generally measured by depth of flooding and the area affected. Localized flooding often happens quickly and has a short speed of onset. In the County this happens more often during the winter months, as was shown on Figure 4-50 above. Localized flooding often has a short duration. Specific locations in the County can be seen in the Local Concerns section below.

Past Occurrences

Disaster Declarations

There are no identified state or federal disaster declarations for localized flooding, as shown in Table 4-4. However, localized flooding was likely an issue during previous declarations for severe storms, heavy rains and floods.

NCDC Events

The past occurrences of localized flooding are included in the 1% and 0.2% annual chance flood hazard profile in Section 4.3.11.

Hazard Mitigation Planning Committee Events

These sections separate events since the 2019/2020 LHMPs and those before 2019.

Events since 2019/2020 LHMP

The HMPC noted the following events:

- **2023** – Spring flooding caused localized flooding to occur in many areas of the County. Roads and culverts were damaged. Juniper Lake Road saw roadway impacted by excessive storm surge and debris dislodging/plugging two culverts and subsequently washing out the roadway. Warner Valley Road saw excessive storm surge resulted in a landslide uphill from the roadway which plugged and/or buried three culvert sites servicing Warner Valley Road. The landslide also diverted streams uphill from the roadway resulting in branches of the stream no longer leading towards the current culvert locations and presently flowing over the roadway. Three culverts along Butterfly Valley Road and Twain Road were plugged and/or washed out by storm debris as well as a section of roadway underneath the railroad washed out by excessive storm surge.

Events before 2019

The HMPC noted the following events:

- Each year there are flood issues throughout the County due to stormwater. There is significant stormwater runoff that occurs throughout the County, and the County has very little stormwater infrastructure
- During large storms, such as those in **1986 and 1997**, the entire Sierra Valley will fill with several feet of water.
- In **February of 2017**, heavy rains combined with previous heavy snow to cause localized flooding issues throughout the County. The heavy snow blocked the rain from getting into drainage ditches. Creeks also rose above their banks (discussed in Section 4.3.11). The Greenhorn Creek Community was particularly hard hit. Greenhorn Ranch Road Greenhorn Creek CSD well-house #1 sustained water damage from Estray Creek rising above its banks and flooding the well-house. Greenhorn Ranch Rd. was closed until waters receded and the road could be repaired. Approximately 1 day. Flood damage to Greenhorn Creek CSD properties/buildings was covered by insurance. More information on some of the damages from this flood can be found in the Past Occurrences in Section 4.3.11.

Figure 4-147 2017 Localized Flooding at High Street in Quincy



Source: Plumas County Ag Commissioner

- The HMPC noted that there are yearly bottlenecks in Spanish Creek, for example at Oakland Camp, that create backups into American Valley to varying degrees.

Likelihood of Future Occurrence

Highly Likely—Natural drainage systems located throughout the Plumas County Planning Area have a finite capacity to convey water. Likewise, storm drainage systems have a finite capacity generally based on the design criteria. When rainfall exceeds the capacity of natural and storm drainage systems or systems clog, water accumulates until it reaches a level of overland release. Due to aging and often undersized infrastructure, this type of flooding will continue to occur annually during heavy rains.

It is likely that climate change will increase the chance of future occurrence as well as future impacts. More information on climate change and localized flood can be found in the next section. More information on future impacts can be found in the Future Conditions/Future Development section of the Vulnerability Assessment below.

Climate Change and Localized Flood

Even if average annual rainfall may decrease slightly, the intensity of individual rainfall events is likely to increase during the 21st century, increasing the likelihood of overwhelming stormwater systems built to historical rainfall averages. This makes localized flooding more likely.

Vulnerability Assessment

Vulnerability—Medium

Flood vulnerability and their impacts vary by location and severity of any given flood event and will likely only affect certain areas of the Plumas County Planning Area during specific times. Based on the risk assessment, it is evident that floods will continue to have potentially significant economic impacts to certain areas of the Plumas County Planning Area. However, while flooding can cause significant impacts depending on the duration and volume of precipitation and the drainage in any given area, many of the floods in the Planning Area are minor, localized flood events that are more of a nuisance than a disaster.

Many areas of the Planning Area are at some measure of vulnerability to localized flooding. An assessment of a community's vulnerability to this hazard begins with an understanding of local exposure to unincorporated Plumas County. This is included in the Local Concerns section below. After that, vulnerability is discussed in multiple sections that detail how this hazard can affect both the entire Plumas County Planning Area as well as the unincorporated portions of Plumas County. How the hazard affects the other participating jurisdictions can be found in their respective annexes to this LHMP Update. These sections below include assets at risk, impacts, and how future development can be affected by this hazard.

Local Concerns (unincorporated Plumas County)

The unincorporated County has specific concerns regarding this hazard. These concerns form a portion of the basis for the mitigation strategy and mitigation actions that seek to reduce vulnerabilities to this hazard.

According to Plumas County, numerous parcels and roads throughout the County not included in the FEMA 1% and 0.2% annual chance floodplains are subject to flooding in heavy rains. In addition to flooding, damage to these areas during heavy storms includes pavement deterioration, washouts, mudslides, debris

areas, and downed trees. The frequency and type of damage or flooding that occurs varies from year to year, depending on the quantity of runoff.

It was noted that the County has 6 maintenance yards with backhoes to assist with managing areas of localized flooding. In Quincy, the County has all the supplies to be dispatched to areas as needed.

Localized flood areas within Plumas County can be organized by elevation within the Upper Feather River watershed, thus examining the impact of water as it travels downhill on its journey to the Central Valley. The primary areas at risk of loss from flooding are: Sierra Valley, Chester, Indian Valley, American Valley, and the North Fork Feather River Canyon.

Sierra Valley

The Sierra Valley is a large intermountain valley on the eastern edge of Plumas County. It has an area of 120,000 acres and is primarily located in Plumas County but also extends southward into Sierra County. The valley has an average elevation of 4,850 feet and serves as the headwaters for the Middle Fork Feather River. The Sierra Valley has minimal topographic relief, and flooding is generally shallow and low velocity. Table 4-95 provides a summary of the primary localized flooding problems in the Sierra Valley. See Figure 4-148 through Figure 4-151 for photos of localized flooding in the Sierra Valley.

Table 4-95 Sierra Valley Localized Flooding Issues

| Sierra Valley Areas | Issues | Road Impacts | Home and Business Impacts | Evacuation Route |
|-----------------------------------|--|--------------|---------------------------|------------------|
| Marble Hot Springs Road | Annual flooding in various locations from rain and irrigation 0.7 mile stretch east of the historic bridge experiences repeated flooding Closed in winter due to snow Primary evacuation route | X | | X |
| Rocky Point Road (Old Highway 70) | Experiences shoulder and bank erosion and repeated flooding Will flood nearly up to road centerline during major events One or two homes have been damaged | X | X | |
| Harriet Lane | Experiences sheet flow across road Often inundates nearby agricultural/ranch facilities, specifically around Island Ranch Road has sub-layer integrity issues and contains clay road base requiring constant repair Major corridor for Hay transportation | X | | |
| Dyson Lane | Experiences sheet flow and shallow flooding Flooded with entire valley in 1992 0.1 mile low spot across the valley drainage area Serves local population and as a bypass | X | | X |
| Sloat Road | Flooding in Sloat is limited to little Long Valley Creek flooding SR70 during high flow events and high flows in the Middle Fork Feather River, which has flooded houses near Sloat Bridge crossing. | X | X | |

Source: Plumas County 2014 LHMP, HMPC

Figure 4-148 High Water Mark from 1992 Flood Event on Rocky Point Road



Source: Plumas County 2014 LHMP

Figure 4-149 Sierra Valley Marble Hot Springs Road – Localized Flood Area



Source: Plumas County 2014 LHMP

Figure 4-150 Rocky Point Road – Shoulder Erosion from Localized Flooding



Source: Plumas County 2014 LHMP

Figure 4-151 Harriet Lane – Pavement Deterioration from Localized Flooding



Source: Plumas County 2014 LHMP

Chester/Lake Almanor

Lake Almanor is a higher elevation alpine reservoir located in the northwestern portion of Plumas County. Chester is the largest community of several that surround the lake and is located at the inlet of the North Fork Feather River. The outflow of the North Fork Feather River is controlled by Canyon Dam at the southern edge of the lake. The dam and outflow rates are managed and maintained by PG&E. The Canyon dam spillway elevation is 4,505 FT and PG&E property ownership around the lake resides at 4,500 FT. Currently, PG&E's FERC license allows lake levels to be operated at 4,494 FT. Flooding issues in this region are minimal due to the construction of the Chester Flood Control Channel, or ACE bypass, a large diversion channel from the North Fork Feather River upstream of Chester/Lake Almanor. The diversion channel allows river water to enter once it reaches a certain height and directs it around Chester into Lake Almanor. The bypass also has a secondary set-back levee system outside of the channel for extreme flooding events. The hydrography in the Lake Almanor area is important to understand as all water that flows through this region travels down into the Feather River Canyon that contains major road and rail transportation routes and a number of communities.

Indian Valley

Indian Valley is located in the north-central portion of Plumas County at an average elevation of 3,500 feet. It contains several developed communities and is also utilized for farming. Indian Valley is the meeting place of four creeks: Wolf Creek, Cooks Creek, Lights Creek, and Indian Creek. Indian Creek is the dominant stream reach as the other three creeks confluence with it and then exits the valley past Arlington Bridge.

Indian Valley exhibits a number of flooding issues due to its flat topography and hydrography. Much of the water that flows through the Upper Feather River watershed makes its way through Indian Valley on its journey into the Feather River Canyon. Table 4-96 provides a summary of the primary localized flooding issues in Indian Valley: Figure 4-152 through Figure 4-156 provide photos and descriptions of localized Indian Valley flooding issues.

Table 4-96 Summary of Indian Valley Localized Flooding Issues

| Indian Valley Areas | Issues | Road Impacts | Home and Business Impacts | Evacuation Route |
|------------------------------------|--|--------------|---------------------------|------------------|
| Williams Creek @ North Valley Road | Road over culverts that drain water from upstream private land into the valley Road has been overtopped resulting from debris blockage in culverts Road Department uses logging equipment/poles to remove debris during high flows preventing flooding, which is a dangerous activity Major flooding in 1986 and 1997 Roadway serves large populations in Taylorsville and Diamond Valley and is heavily trafficked during winter due to its tendency to receive less snow and ice than alternative routes | X | | X |
| Cassidy's Turn | Shows high water mark from 1997 flood | | | |

| Indian Valley Areas | Issues | Road Impacts | Home and Business Impacts | Evacuation Route |
|-------------------------------------|---|--------------|---------------------------|------------------|
| Stampfli Lane | Cross-valley road traveling E-W sits at low point in drainage area Annual flooding of 0.5-1.0 feet of water on roadway often renders road impassible Repeated flooding of residential structures Poor drainage and flooding are caused by saturation of adjacent agricultural fields | X | X | X |
| Mt. Hough Estates | Low-lying subdivision, portion of which has repeated flooding Houses appear to be slab-on-grade Typically, during valley-flooding events Residents aware of impending flooding by the presence of water in neighboring fields | | X | |
| Old Wagon Road, Crescent Mills | Residential structure flooded repeatedly (5-6 times) High water mark 6 feet high in some locations House built at drain point for basin | | X | |
| Arlington Bridge (State# 09C-007) | Bridge overtopped by 3 feet during 1997 flood Flows often approach height of bridge deck Major drainage point for entire valley Sedimentation issues on downstream side Adding culverts may improve drainage | X | | X |
| Genesee Road @ Little Grizzly Creek | Flooding can close road cutting off access for 15-20 homes | X | | X |

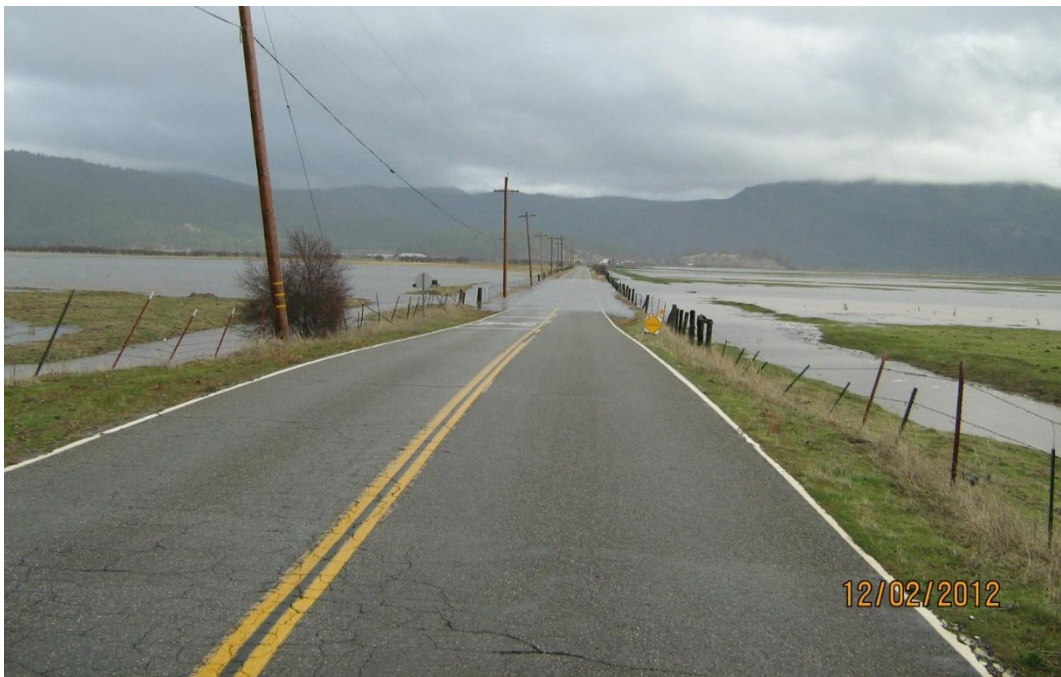
Source: Plumas County 2014 LHMP

Figure 4-152 Indian Valley Localized Flooding – North Valley Road crossing Williams Creek where Culverts often Clog with Debris



Source: Plumas County 2014 LHMP

Figure 4-153 Indian Valley Localized Flooding – Ponding area of Stampfli Lane has Poor Drainage and Floods Annually



Source: Plumas County 2014 LHMP

Figure 4-154 Indian Valley Localized Flooding – Low-lying area of Mt. Hough Estates Subdivision Subject to Flooding from Indian Valley Creeks.



Source: Plumas County 2014 LHMP

Figure 4-155 Indian Valley Localized Flooding – Residential Structure in Crescent Mills built at Drain Point of Basin Experiences Repeated Flooding



Source: Plumas County 2014 LHMP

Figure 4-156 Indian Valley Localized Flooding – Location along Genesee Road Where Flood Waters Can Cover Road and Cut Off Access



Source: Plumas County 2014 LHMP

American Valley

American Valley is located in the geographic center of Plumas County and sits at an average elevation of 3,500 feet. In American Valley, Greenhorn Creek confluent with Spanish Creek upstream near the Town of Quincy. A majority of the flooding issues are caused by localized drainage as opposed to valley-flooding events. The water in Spanish Creek that passes through American Valley confluent with Indian Creek flowing out of Indian Valley into the Feather River Canyon. Table 4-97 provides a summary of the primary localized flooding issues in American Valley. Figure 4-157 through Figure 4-166 provides photos and descriptions of American Valley localized flooding issues.

Table 4-97 American Valley Localized Flooding Issue Summary

| American Valley Areas | Issues | Road Impacts | Home and Business Impacts | Evacuation Route |
|-----------------------|--|--------------|---------------------------|------------------|
| Les Schwab | Storm grate behind facility becomes clogged with debris causing water to overtop and flow into building Typically, only floods with major events, not large storms; recalled events were in 1986, 1993, and 1997 Overtopping waters also flow into a nearby home and businesses further downhill | | X | |

| American Valley Areas | Issues | Road Impacts | Home and Business Impacts | Evacuation Route |
|--------------------------------|---|--------------|---------------------------|------------------|
| Lindan Avenue | The drainage ditch that runs behind the Lindan Avenue properties (west side of street) provides drainage for a large area of Quincy including the shopping center and housing developments to the south. The ditch doesn't have enough capacity to contain larger flood events, since it pre-dates all the construction of the shopping center and housing on the southeast side of Quincy. Potential build of 30 units south Lindan. | | X | |
| Paradise Grill | Water can overtop edges of earthen ditch Water flooding from behind Les Schwab will flow down street and into businesses in strip mall Historic flooding up to 2 feet of water in strip mall businesses | X | X | |
| Hentschel | Storm drain on small creek gets clogged with debris and backs up, causing water to flow onto roadway and into the school and neighboring building across the street Grate is not easily accessible | X | X | |
| Old Sewer Plant (at bike path) | Drainage path takes 90-degree turn into culverts underneath bike path Water drains poorly and overtops path | X | | |
| West's Ranch Road (at CA-70) | Road needs to be elevated and larger pipes installed | X | | |
| East Quincy Drains | Drainage problems at high water Pipes/drainage too small and becomes clogged with debris | | | |
| Vieira's Field | Better/safer access and larger pipe. Runs behind and alongside private property Small drain on private property can clog with debris During heavy rains and large-scale events water will bypass drain and flow down gravel road toward CA-70 | X | | |
| Chandler Road (West) | Beddell Ranch and Green Bridge areas often flood Easy fix is to elevate road and install culverts where needed | X | | |
| Oakland Camp Road | Floods from intersection with Chandler Road to Oakland Camp gate Easy fix is to elevate road and install culverts where needed | X | | |
| Gansner Creek | Storm grate on south side of West Main Street becomes clogged with debris causing water to overtop and flow across road Flood water flows down into hospital flooding the ambulance entrance, ER entrance, and X-ray doors Hospital flooded in 1986, 1993, and 1997 | X | X | X |
| Mill Creek | Runs behind and alongside private property Small drain on private property can clog with debris During heavy rains and large-scale events water will bypass drain and flow down gravel road toward CA-70 | X | X | |

| American Valley Areas | Issues | Road Impacts | Home and Business Impacts | Evacuation Route |
|-------------------------------|--|--------------|---------------------------|------------------|
| Clear Creek | Located in Meadow Valley outside of American Valley Grate clogs with debris causing water to back up Water can back up high enough to swirl around the base of Meadow Valley Road potentially causing erosion and damage to roadway System is stressed several times annually | X | | |
| Oakland Camp at Spanish Creek | Oakland Camp Road floods regularly during high flow events when Spanish Creek flows over the low water crossing adjacent to the Oakland Camp Bridge. The concrete low water crossing is designed for high water to flow over | X | | |

Source: Plumas County 2014 LHMP

Figure 4-157 American Valley Localized Flooding – Storm Grate behind Les Schwab Becomes Clogged with Debris Causing Flooding



Source: Plumas County 2014 LHMP

Figure 4-158 American Valley Localized Flooding – Strip Mall Containing Paradise Grill and other Businesses. Water can Overtop Earthen Ditch on Right, or Flow Down Street on Left when Storm Drain Floods behind Les Schwab



Source: Plumas County 2014 LHMP

Figure 4-159 American River Localized Flooding – Lindan Avenue in 2012



Source: Member of HMPC (Marty Walters)

Figure 4-160 American Valley Localized Flooding – Hentschel’s Storm Grate, Small Grate for Localized Drainage Clogs with Debris and Causing Flooding over Roadway.



Source: Plumas County 2014 LHMP

Figure 4-161 American Valley Localized Flooding – Flood Water from Hentschel’s Flows Across Street and into School.



Source: Plumas County 2014 LHMP

Figure 4-162 American Valley Localized Flooding – Water Overtops Drainage at Culverts Where Forced to take 90-degree Right Turn.



Source: Plumas County 2014 LHMP

Figure 4-163 American Valley Localized Flooding – View of Plumas District Hospital from Storm Grate along Gansner Creek. Apparent that Hospital is Down Slope from Culvert and Subject to Flooding from Overtopping Water.



Source: Plumas County 2014 LHMP

Figure 4-164 American Valley Localized Flooding – Plumas District Hospital downhill from West Main Street, Susceptible to Flooding from Waters Overtopping Storm Grate on Gansner Creek



Source: Plumas County 2014 LHMP

Figure 4-165 American Valley Localized Flooding – Small drain for Mill Creek can be Bypassed During Larger Storms Causing Water to Flow Down Adjacent Gravel Road.



Source: Plumas County 2014 LHMP

Figure 4-166 American Valley Localized Flooding – Culvert on Clear Creek in Meadow Valley Becomes Clogged with Debris. Rising and Swirling Water poses Erosion Issue that Could Jeopardize Roadway.



Source: Plumas County 2014 LHMP

Feather River Canyon

The Feather River Canyon is a narrow river valley occupied by the North Fork Feather River and East Branch North Fork Feather River. At its upstream end is the confluence of Indian Creek, flowing from Indian Valley, and Spanish Creek, flowing from American Valley; here is the beginning of the East Branch North Fork Feather River. The East Branch meets the North Fork Feather River, flowing from Lake Almanor, about two miles upstream from Belden.

The Feather River Canyon is occupied by CA-70 and the Union Pacific Railroad, which comprise the two major E-W transportation routes through Plumas County. The canyon is home to a number of small towns adjacent to the riverbanks, highway, and train tracks.

Flooding issues in the Canyon are primarily related to larger events involving the North Fork Feather River, such as the 1986 and 1997 floods. Typical damage is washouts to roadways or train tracks. Much of the precipitation that falls in Plumas County flows through the Canyon.

Local concerns for Portola and the Special Districts can be found under the Local Concerns heading in each respective jurisdictional annex to this LHMP Update.

Assets at Risk

Assets at risk from localized flood include people and populations; structures; critical facilities and infrastructure; and natural, historic, and cultural resources. These are discussed in the following sections for the Plumas County Planning Area and unincorporated Plumas County.

Additionally, for each hazard in the FEMA National Risk Index in Plumas County, the relevant portions of the hazard analysis done by FEMA is presented below. This includes the Hazard Risk Index Rating, Expected Annual Loss Values, Exposure Values, and the Historic Loss Ratio Rating. These are presented for the Plumas County Planning Area as a whole.

People and Populations

People and populations are traditionally not highly vulnerable to localized flooding, but their structures and contents can be at risk. Localized flooding may also cause transportation issues as roads and lanes are impacted or closed and affect the ability for people to travel throughout the Planning Area.

Structures

Structures in areas with localized flooding can be affected if floodwaters intrude into the structure. Structures in low lying areas, or those with basements can be at greater risk. Buildings with older foundations that are prone to water intrusion are also at greater risk. Once water finds its way into a structure, it tends to continue to do so until the path that brings water into a structure is mitigated. Ground saturation can result in instability, collapse, or other damage to structures. Trees can also be compromised and uprooted falling on structures causing damage.

Critical Facilities and Infrastructure

Localized flooding, while often more of a nuisance, can cause damage to critical facilities and infrastructure during a heavy rain and storm event. Any facility that experiences localized flooding can be impacted. Utilities and other critical infrastructure can all be affected, causing interruptions in service until repairs can be made. For example, water and wastewater systems can be vulnerable to heavy rains and flood events. Rainfall creates a high-water table, surging streams and creeks, and saturates soil. Infiltration of stormwater into water and wastewater systems may occur and presents a threat to public health and safety, when the infrastructure is no longer able to meet operational needs and local demands.

Natural, Historic, and Cultural Resources

Natural resource assets may have some vulnerabilities to localized flood during major storm events, but can benefit from floodwaters, often by design. Many parks and green spaces are designed to take overflow water and release it into the underlying soils and natural areas. Wetlands areas in the Planning Area actually help reduce the risk of flooding, as they can absorb excess rainfall that would have to be drained away from impervious surfaces. Flooding can provide many benefits to the natural environment, including recharging wetlands and groundwater, increasing fish production, creating wildlife habitat, and rejuvenating soil fertility. These smaller localized flooding events often provide more benefits to the environment in comparison to negative impacts associated with large flood events. Historic and cultural resources may be at some measure of vulnerability if they are located in areas subject to repeated localized flooding.

FEMA NRI Hazard Vulnerability Assessment

Localized flooding is not an NRI hazard; therefore, no data is presented.

Impacts from Localized Flood

Primary concerns associated with stormwater flooding include impacts to infrastructure that provides a means of ingress and egress throughout the community. Ground saturation can result in instability, collapse, or other damage to trees, structures, roadways and other critical infrastructure. Objects can also be buried or destroyed through sediment deposition. Floodwaters can break utility lines and interrupt services. Standing water can cause damage to crops, roads, and foundations. Other problems connected with flooding and stormwater runoff include erosion, sedimentation, degradation of water quality, losses of environmental resources, and certain health hazards.

Life safety issues from localized flooding would be more limited. The amount and type of damage or flooding that occurs varies from year to year and from storm to storm, depending on the quantity of precipitation and runoff.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the County may be affected in the future by climate change (which was discussed in the hazard profile section above), changes in population patterns, and changes in land use and development. The influencing effects of these factors on this hazard are discussed further in the Future Conditions/Future Development discussion below.

Future Conditions/Future Development

This section provides a discussion of how future conditions will influence or affect the hazard over time and also discusses future development relative to each hazard.

Future Conditions

Future conditions may be affected by climate change, changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. Findings on this for Plumas County include the following:

- Climate change is likely to exacerbate future heavy rain conditions and associated impacts and vulnerability of the County to localized flood.
- Future population growth should be considered, as having more or less people in a community affects the overall hazard vulnerability to the County. Population in Plumas County is expected to decrease. Vulnerable population groups such as low-income individuals and households living in floodprone areas could face disproportionate effects from localized flood and should be planned for. Changes in population and population patterns may or may not increase the impacts and vulnerability of the County to this hazard depending on the location and nature of growth and continued planning for future hazard conditions.
- Land use planning should be proactive to address future hazard conditions. Locating new development, structures and critical facilities and infrastructure within or near areas of localized flooding risk may put additional development at risk. County building codes are in effect to reduce this risk and should be updated as necessary to continue to address future localized flood conditions. Depending on the location of new development and adherence to protective building codes, changes in land use and development may or may not increase the impacts and associated vulnerabilities of the County to this hazard.

Future Development

The potential for flooding may increase as stormwater is channeled due to land development. Such changes can create localized flooding problems inside and outside of natural floodplains by altering or confining natural drainage channels. Mitigating the root causes of the localized stormwater flooding or choosing not to develop in areas that often are subject to localized flooding will reduce future risks of losses due to stormwater/localized flooding. Floodplain modeling and master planning should be based on build out property conditions to ensure that all new development remains safe from future flooding.

Future development considerations should be ongoing and proactive. Ensuring that comprehensive land use planning is conducted, regulatory requirements, such as building codes, are followed, and varying needs for different demographic groups with intersecting identities that reside within the County are considered can help to make for a more resilient community.

4.3.13. Hazardous Materials Transportation

Hazard Profile

This hazard profile contains multiple sections that detail how this hazard can affect the Plumas County Planning Area. These sections include a hazard/problem description; description of location and extent; past occurrences of this hazard; likelihood of future occurrence; and how climate change can affect or influence this hazard.

Hazard/Problem Description

According to the Environmental Protection Agency (EPA), a hazardous material is any item or agent (biological, chemical, physical) which has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors. Hazardous materials can be present in any form; gas, solid, or liquid. Environmental or atmospheric conditions can influence hazardous materials if they are uncontained.

The U.S. Occupational Safety and Health Administration's (OSHA) definition of hazardous material includes any substance or chemical which is a "health hazard" or "physical hazard," including: chemicals which are carcinogens, toxic agents, irritants, corrosives, sensitizers; agents which act on the hematopoietic system; agents which damage the lungs, skin, eyes, or mucous membranes; chemicals which are combustible, explosive, flammable, oxidizers, pyrophorics, unstable-reactive or water-reactive; and chemicals which in the course of normal handling, use, or storage may produce or release dusts, gases, fumes, vapors, mists or smoke which may have any of the previously mentioned characteristics.

The EPA incorporates the OSHA definition and adds any item or chemical which can cause harm to people, plants, or animals when released by spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping or disposing into the environment. The EPA maintains a list of 366 chemicals that are considered extremely hazardous substances (EHS). This list was developed under the Superfund Amendments and Reauthorization Act. The presence of EHSs in amounts in excess of a threshold planning quantity requires that certain emergency planning activities be conducted.

A release or spill of bulk hazardous materials could result in fire, explosion, toxic cloud or direct contamination of water, people, and property. The effects may involve a local area or many square miles. Health problems may be immediate, such as corrosive effects on skin and lungs, or be gradual, such as the development of cancer from a carcinogen. Damage to property could range from immediate destruction by explosion to permanent contamination by a persistent hazardous material.

Location and Extent

In Plumas County there are multiple hazardous materials transportation routes. State Roads 36, 49, 70, 89, and 147 are all hazardous materials routes. The Union Pacific (UP), Burlington Northern Santa Fe (BNSF), Quincy Railroad, and Almanor Railroad are railroad hazardous materials routes. Figure 4-167 shows the hazardous materials transportation corridors (for roadways and rail) in the County as well as the one-mile buffer zone (on each side of the corridor for a two-mile total buffer) used for this analysis as detailed further in the methodology below. This map shows three insets for communities within the County. Maps zoomed to these areas are shown in Figure 4-168, Figure 4-169, and Figure 4-170.

Geographic hazardous materials buffer zones for the unincorporated County are detailed by highway in Table 4-98 and by railroad in Table 4-99.

LEGEND

- Communities
- County Seat
- County Seat
- Highways
- Major Roads
- Railroads
- Rivers
- Lakes
- Cities
- Counties
- States

HAZARDOUS MATERIALS TRANSPORTATION ROUTES WITH BUFFER ZONES

Routes

- Highways
- Railroads
- 1-Mile Buffer Zones
- Highways
- Railroads

MAP 1

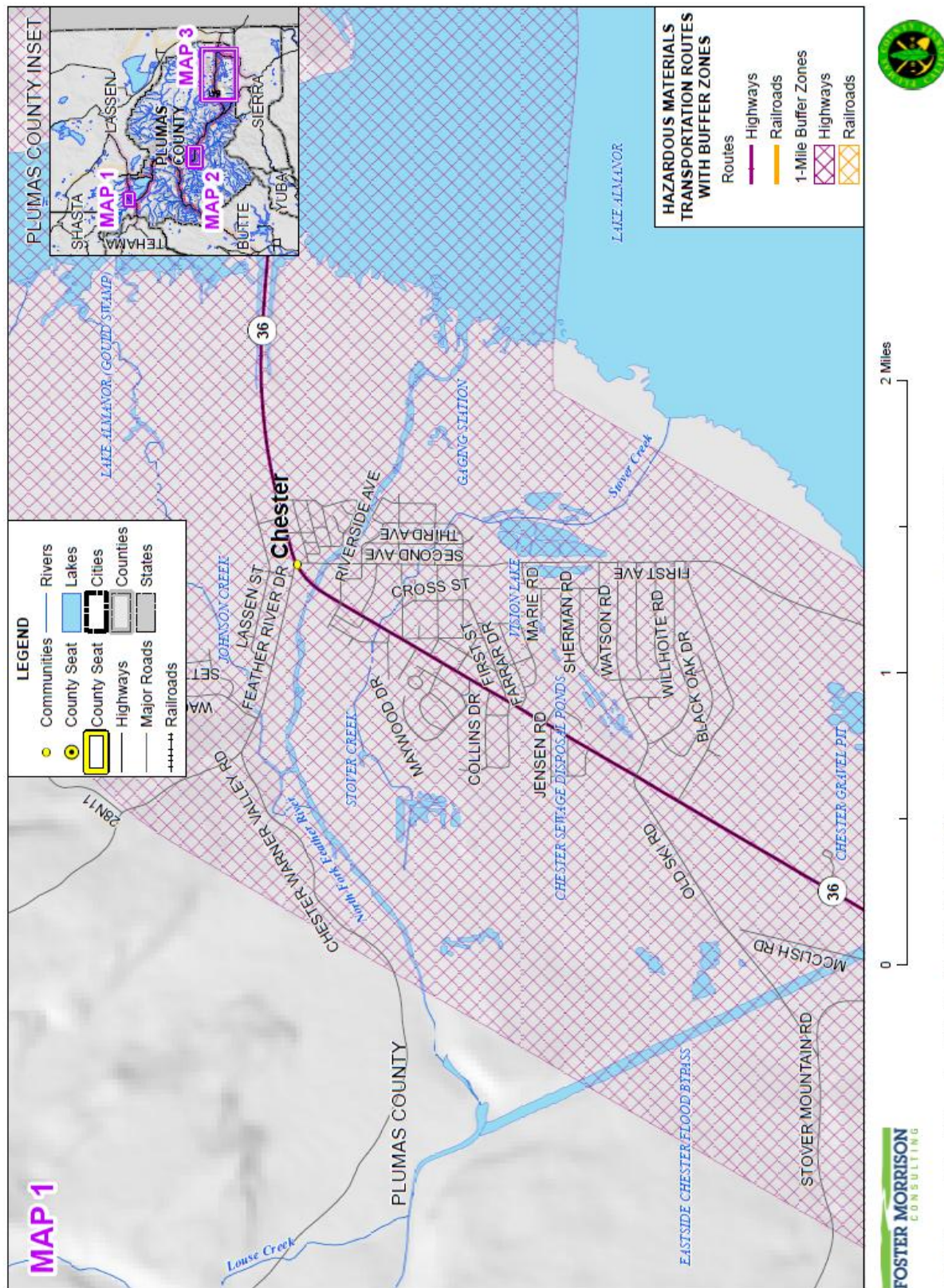
MAP 2

MAP 3

0 25 50 Miles

FOSTER MORRISON CONSULTING

Figure 4-168 Plumas County Planning Area – Hazardous Materials Transportation Routes and Buffer Zones (Inset 1)



Data Source: National Hazardous Materials Route Registry 2025, Plumas County GIS, Cal-Atlas, Map Date: 9/30/2025.

Figure 4-169 Plumas County Planning Area – Hazardous Materials Transportation Routes and Buffer Zones (Inset 2)

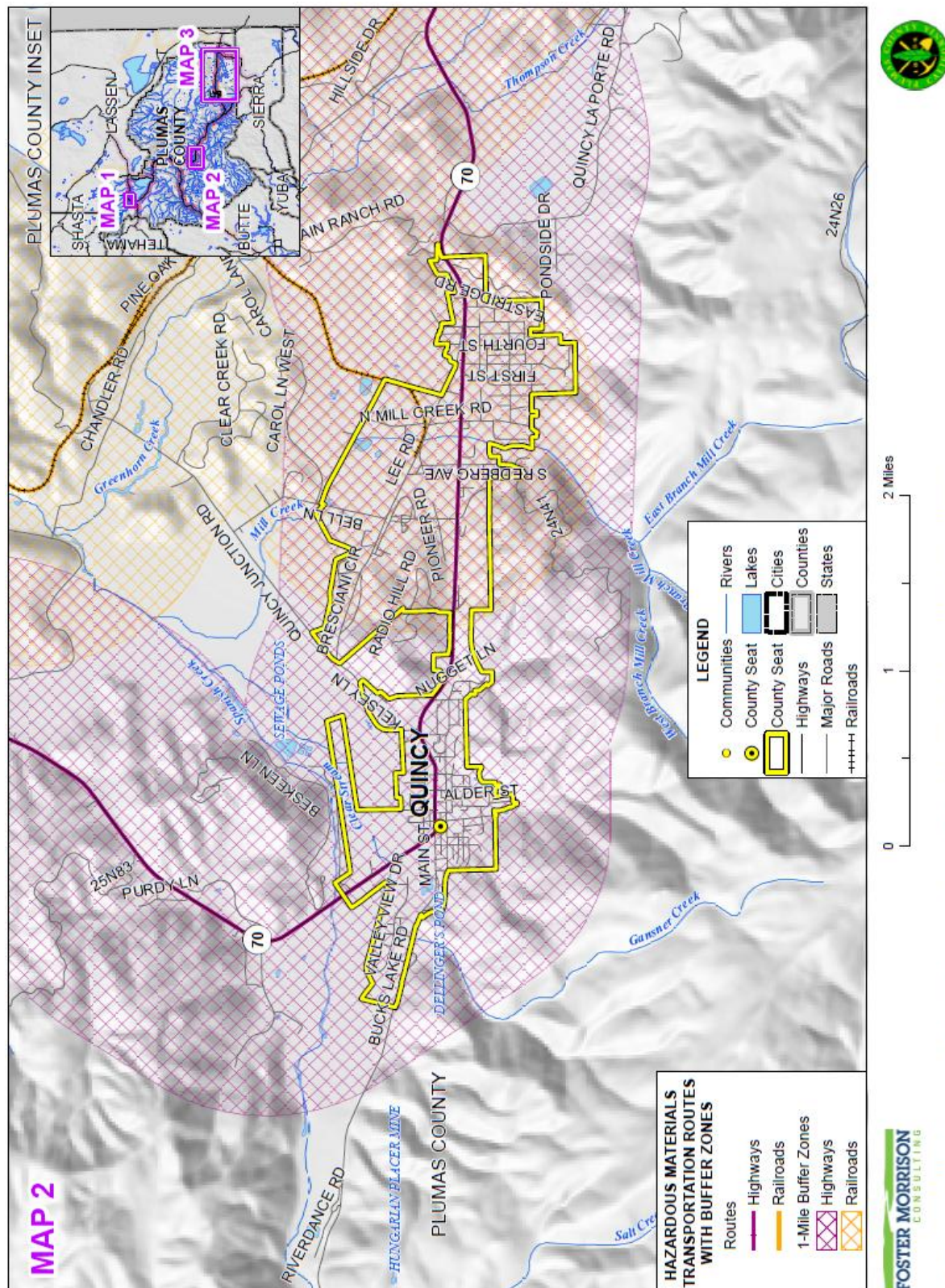
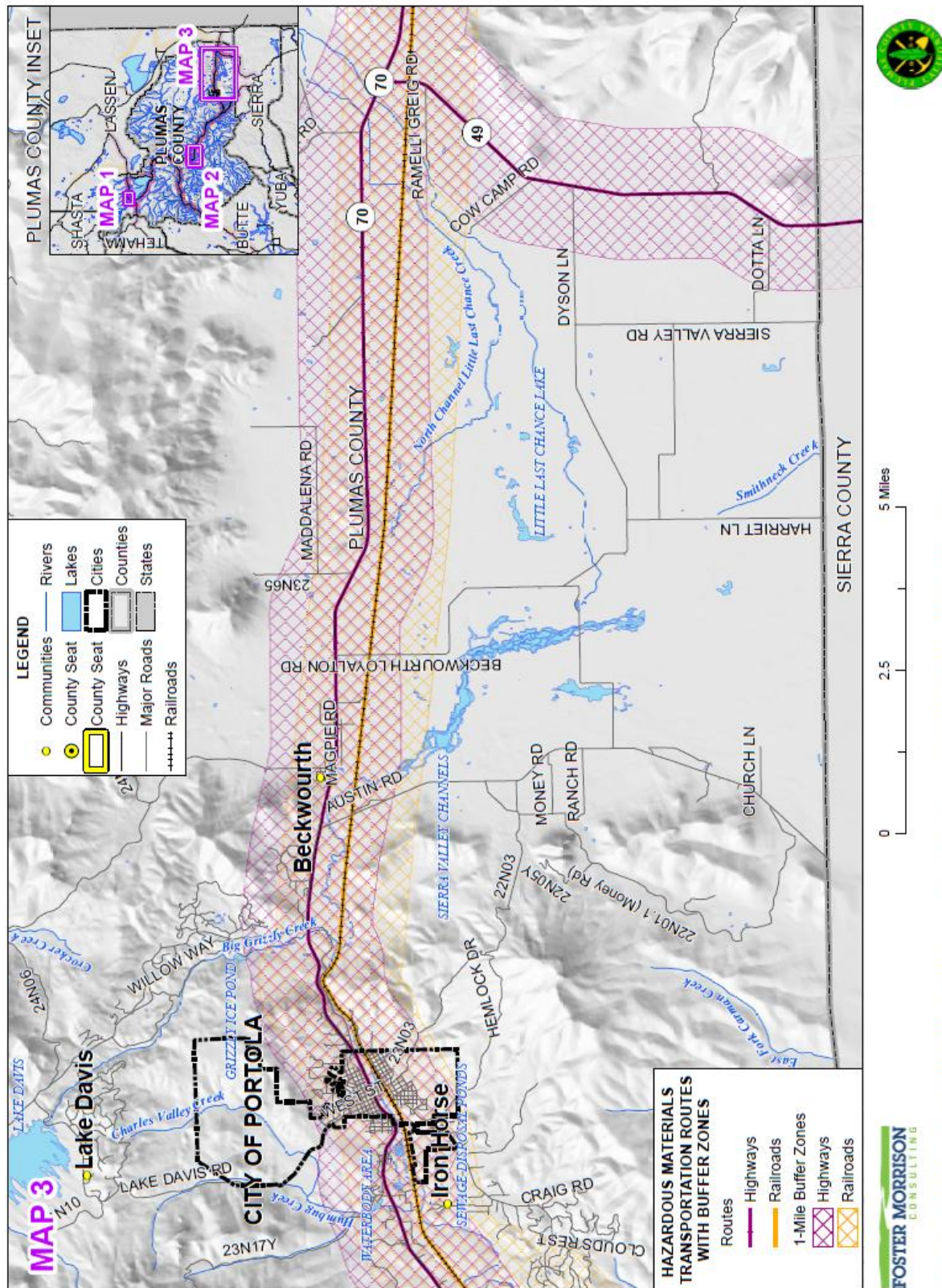


Figure 4-170 Plumas County Planning Area – Hazardous Materials Transportation Routes and Buffer Zones (Inset 3)



Data Source: National Hazardous Materials Route Registry 2025, Plumas County GIS, Cal-Atlas, Map Date: 9/30/2025.

Table 4-98 Plumas County Planning Area – Geographical Extent of Hazardous Materials Transportation Buffer Zones for Highways

| Hazardous Materials Routes | Total Acres | % of Total Acres | Improved Acres | % of Total Improved Acres | Unimproved Acres | % of Total Unimproved Acres |
|-------------------------------------|-------------|------------------|----------------|---------------------------|------------------|-----------------------------|
| City of Portola | | | | | | |
| Highway 70 | 1,357 | 38.9% | 303 | 13.6% | 1,053 | 84.0% |
| Unincorporated Plumas County | | | | | | |
| Highway 147 | 13,535 | 1% | 599 | 1% | 12,936 | 1% |
| Highway 36 | 25,562 | 2% | 1,527 | 2% | 24,035 | 2% |
| Highway 49 | 10,503 | 1% | 6,459 | 7% | 4,044 | 0.3% |
| Highway 70 | 122,574 | 7% | 23,388 | 26% | 99,187 | 6% |
| Highway 89 | 99,818 | 6% | 13,463 | 15% | 86,355 | 5% |

Source: National Hazardous Materials Routes Registry (2025)

Table 4-99 Plumas County Planning Area – Geographical Extent of Hazardous Materials Transportation Buffer Zones for Railroads

| Hazardous Materials Routes | Total Acres | % of Total Acres | Improved Acres | % of Total Improved Acres | Unimproved Acres | % of Total Unimproved Acres |
|-------------------------------------|-------------|------------------|----------------|---------------------------|------------------|-----------------------------|
| City of Portola | | | | | | |
| UP / BNSF | 1,403 | 40% | 279 | 12% | 1,124 | 90% |
| Unincorporated Plumas County | | | | | | |
| BNSF | 45,223 | 2.7% | 3,745 | 4.1% | 41,478 | 2.6% |
| Quincy Railroad | 5,479 | 0.3% | 1,961 | 2.2% | 3,518 | 0.2% |
| UP / BNSF | 130,941 | 7.8% | 20,940 | 23.1% | 110,000 | 7.0% |

Source: National Hazardous Materials Routes Registry (2025)

In addition, while most routes are known, Plumas County has not quantified the amount of hazardous materials that are transported through it en route to local deliveries or to adjoining counties. Accidents involving the transportation of hazardous materials could be just as catastrophic as accidents involving stored chemicals, possibly more so, since the location of a transportation accident is not predictable. The U.S. Department of Transportation (USDOT) divides hazardous materials into nine major hazard classes. A hazard class is a group of materials that share a common major hazardous property, i.e., radioactivity, flammability, etc. These hazard classes include:

- Class 1—Explosives
- Class 2—Compressed Gases
- Class 3—Flammable Liquids
- Class 4—Flammable Solids; Spontaneously Combustible Materials; Dangers When Wet Materials/Water-Reactive Substances
- Class 5—Oxidizing Substances and Organic Peroxides

- Class 6—Toxic Substances and Infectious Substances
- Class 7—Radioactive Materials
- Class 8—Corrosives
- Class 9—Miscellaneous Hazardous Materials/Products, Substances, or Organisms

The speed of onset of a hazardous materials spill is generally short. The duration is typically short as well, though certain chemicals can pollute earth and groundwater for long periods of time. The actual extent of any given incident will depend on the type of release, location, and nature and extent of any release.

Past Occurrences

Disaster Declaration History

There have been no federal or state disaster declarations for hazardous materials in the County, as shown on Table 4-4.

NCDC Events

The NCDC does not track hazardous materials events.

Pipeline and Hazardous Materials Safety Administration Events

The USDOT Pipeline and Hazardous Materials Safety Administration's (PHMSA) Office of Hazardous Materials Safety performs a range of functions to support the safe transport of hazardous materials. One of these functions is the tracking of hazardous materials incidents in the United States. The database was searched for hazardous materials incidents in the County. A summary of rail and highway incidents since 1970 in the Plumas County Planning Area are shown in Table 4-100. 11 separate events were contained in the database.

Table 4-100 Plumas County Planning Area – Hazardous Materials Transportation Incidents Since 1970

| Date of Incident | Incident Route | Mode of Transportation | Commodity Short Name | Quantity Released | Amount of Damages |
|------------------|----------------------------------|------------------------|---|-------------------|-------------------|
| 11/21/1995 | State Route 70 | Highway | Fuel Oil | 2,200 gallons | \$37,000 |
| 7/14/1992 | Highway 70 | Highway | Methanol | 1 gallon | \$1,100 |
| 11/19/2012 | 348 Questa Way | Highway | Liquefied Petroleum Gas | 40 gallons | \$0 |
| 9/14/2018 | Hwy 70 & Spanish Creek | Highway | Gasoline Includes Gasoline Mixed With Ethyl Alcohol, With Not More Than 10% Alcohol | 1,762 gallons | \$377,246 |
| 4/19/2006 | Main Track, Milepost 202.8, BNSF | Railroad | Methanol | 3.5 gallons | \$61,005 |
| 6/30/2007 | Milepost 252.50 | Highway | Alcohols, N.O.S. | 29,357 gallons | \$2,035,200 |

| Date of Incident | Incident Route | Mode of Transportation | Commodity Short Name | Quantity Released | Amount of Damages |
|------------------|--------------------|------------------------|---|-------------------|-------------------|
| 2/5/2004 | State Route 166 | Highway | Petroleum Gases, Liquefied Or Liquefied Petroleum Gas | 0 | \$10,000 |
| 12/20/2007 | Not reported | Highway | Petroleum Distillates, N.O.S. Or Petroleum Products, N.O.S. | 1,641 gallons | \$20,865 |
| 8/31/1999 | 560 Cresnet Street | Highway | Fuel, Aviation, Turbine Engine | 100 gallons | \$0 |
| 12/1/2014 | 1690 E. Main | Highway | Liquefied Petroleum Gas | 6.684 | \$0 |
| 12/30/2002 | State Highway 70 | Highway | Petroleum Gases, Liquefied Or Liquefied Petroleum Gas | 0 | \$75,000 |

Source: PHMSA Database – Search dates 01/01/1970 – 04/01/2025

Hazard Mitigation Planning Committee Events

These sections separate events since the 2019/2020 LHMPs and those before 2019.

Events since 2019/2020 LHMP

In addition to what was reported to the PHMSA, the HMPC reported the following transportation event.

February 11, 2024 – there was a main line derailment in Plumas County near Blairsden, CA. UPRR mainline structure was eroded due to heavy rain elements and rock/mudslide event. 15 Bituminous Coal hopper cars derailed and released. Out of the 15 cars, 3 had entered the Middle Fork River and resulted in a mass recovery operation in the Feather River. The HMPC were of the opinion that there is a moderate to high future event probability to occur again as topography and terrain continuously migrate during inclement weather.

Summer 2025 – The HMPC recalled a hazardous materials spill from a truck release. 1,200 gallons of fuel spilled at Highway 89 near Arlington. Clean up occurred but the load was lost.

Events before 2019

The HMPC noted that events occurred but could recall no events with specific dates or damages.

Likelihood of Future Occurrence

Occasional – Given that 11 minor hazardous materials incidents have happened in transport through the County in the past 53 years, a hazardous materials incident will occur in the County occasionally. It should be noted, however, that small hazardous materials spills happen often and are cleaned up locally and go unreported to national databases. According to Caltrans, most incidences are related to releases during loading and unloading of cargo, and the release of fluids/materials from the transporting vehicles themselves and not the cargo.

Climate Change and Hazardous Materials

Climate change is unlikely to affect hazardous materials transportation incidents.

Vulnerability Assessment

Vulnerability—Medium

It is often quite difficult to quantify the potential losses from human-caused hazards. While the facilities themselves have a tangible dollar value, loss from a human-caused hazard often inflicts an even greater toll on a community, both economically and emotionally. The impact to identified values will vary from event to event and depend on the type, location, and nature of a specific hazardous material incident. The most significant impact from hazardous materials transport is life safety and public health. Given the difficulty in quantifying the losses associated with technological hazards, this section focuses on analyzing key Planning Area values relative to the hazardous materials transportation corridors identified above.

An assessment of a community's vulnerability to this hazard begins with an understanding of local exposure to unincorporated Plumas County. This is included in the Local Concerns section below. After that, vulnerability is discussed in multiple sections that detail how this hazard can affect both the entire Plumas County Planning Area as well as the unincorporated portions of Plumas County. How the hazard affects the other participating jurisdictions can be found in their respective annexes to this LHMP Update. These sections below include assets at risk, impacts, and how future development can be affected by this hazard.

Local Concerns (unincorporated Plumas County)

The unincorporated County has specific concerns regarding this hazard. These concerns form a portion of the basis for the mitigation strategy and mitigation actions that seek to reduce vulnerabilities to this hazard.

The 2023 Plumas County HazMat Response Plan noted that the highest potential for a highway transportation incident exists along the County's main east-west thoroughfare, State Highway 70. This route follows the Feather River in a steep, rocky canyon and has long been recognized for its history and potential for a significant hazardous materials incident. An additional potential exists on the other State Highways which traverse the county, namely State Highways 36 and 89. The materials transported on these highways are typically destined for a facility within the county. However, when the major trans-Sierra route (Interstate 80) is closed during inclement weather, local highways and especially Highway 70 may see an increase in both the volume and variety of hazardous materials shipments.

As identified during the 2009 commodity flow study, ninety percent of the hazardous materials identified on state highways were bulk petroleum products, which included heating fuels, gasoline, diesel, and propane. Other hazardous materials identified included industrial/medical cylinders and general industrial products. Approximately 10 (ten) percent of all truck traffic on Plumas County roadways were found to be transporting a hazardous commodity.

Rail transport through the county also poses a significant hazmat release potential. This is confirmed by both historical releases and the 2009 commodity flow study. Both UP and Burlington Northern Santa Fe BNSF currently maintain track in Plumas County, and, through the commodity flow study, BNSF was found to be the primary rail shipper of hazardous materials through the county.

BNSF's primary rail line, known as the High Line route, runs north and south starting near the Feather River Canyon town of Keddie and passing through the northern section of Plumas County east of Lake

Almanor. BNSF also has an agreement with UP to lease track time for all UP rail lines in Plumas County. Their highest traffic section of leased line that they use is the Feather River Canyon Route, allowing them to ship between the Bay Area and the Pacific Northwest.

Union Pacific's rail line passes east-west through Plumas County, connecting the Sacramento Valley to Northern Nevada and includes the Portola rail yard. The majority of UP's traffic through Plumas County consists of mixed cargo containers, single and doubled stacked. While UP never reported shipping unit trains of light crude on this route, they did report shipping smaller quantities as part of mixed load trains. Again, while most rail transport includes mixed loads of hazardous materials, the potential for encountering light crude rail shipments in significant volumes in Plumas County should not be overlooked.

The geography of the County can influence the development of incidents and the way in which they are handled. A steep river canyon can restrict or even prevent access to an incident. The Middle Fork of the Feather River below the LaPorte Road Bridge, for example, is not accessible by vehicle. If a spill is not contained by this point, it may not be possible to reach it again until the spill reaches Lake Oroville. As another example, in the Feather River canyon the highway is often on one side of the river and the rail line is on the other. Consequently, a rail incident may not be directly accessible from the highway. Depending on river flows, one of various bridge crossings may be needed, and personnel and equipment may need to be taken to the scene by railroad personnel via a high rail. Another consideration in the Feather River Canyon is that a highway incident may block the highway. With local first responders coming primarily from the Quincy or the Indian Valley/Lake Almanor basin areas, local responders may not be able to access the westerly downriver side of an incident. In such cases early calls for mutual aid from Butte County resources would be important.

Local concerns for Portola and the Special Districts can be found under the Local Concerns heading in each respective jurisdictional annex to this LHMP Update.

Assets at Risk from Hazardous Materials Transportation

Assets at risk from hazardous materials transportation release include: people and populations; structures; critical facilities; and natural, historic, and cultural resources. These are discussed in the following sections. The methodology used to analyze hazardous materials transportation for the population, structures, and critical facilities is discussed in the section below.

Additionally, for each hazard in the FEMA National Risk Index in Plumas County, the relevant portions of the hazard analysis done by FEMA is presented below. This includes the Hazard Risk Index Rating, Expected Annual Loss Values, Exposure Values, and the Historic Loss Ratio Rating. These are presented for the Plumas County Planning Area as a whole.

Methodology: Transportation Release and Buffer Zone

An analysis of the potential vulnerability of the Planning Area to a transportation-related hazardous materials release was conducted using GIS within identified transportation corridors. To evaluate the areas most vulnerable, a one-mile buffer was applied to both sides of Highways 36, 49, 70, 89, and 147, as well as the Union Pacific, BNSF, Quincy Railroad, and Almanor Railroad lines. The result is a two-mile buffer zone around each transportation corridor that is included in this analysis. The buffer distance was based on

guidelines in the USDOT’s Emergency Response Guidebook that suggest distances useful to protect people from vapors resulting from spills involving dangerous goods considered toxic if inhaled. The recommended buffer distance referred to in the guide as the “protective action distance” is the area surrounding the incident in which people are at risk of harmful exposure. Actual buffer distances will vary depending on the nature and quantity of the release, whether the release occurred during the night or daytime, and prevailing weather conditions.

This hazardous materials buffer zone analysis can be misleading since there are many large polygons throughout the County.

People and Populations

All populations are at some vulnerability to a hazardous materials transportation release. Certain vulnerable populations are at the greatest risk to the effects of hazardous materials. Vulnerable populations include:

- The unsheltered
- Those with breathing difficulties or other underlying health conditions
- Infants and children under age five and their caregivers
- Elderly (65 and older)
- Individuals with disabilities
- Individuals dependent on medical equipment
- Individuals who work, exercise, or physically train outdoors
- Individuals with impaired mobility

To determine the overall populations at risk from a transportation-related hazardous materials release within identified transportation corridors, an analysis was performed using GIS to determine the residential population that resides within the two-mile buffer zone of the highway and railroad corridors. Using GIS, the buffered corridor was overlaid on the improved residential parcel and structure data and results tabulated for the Planning Area, as found in Table 4-101. Those residential parcel polygons that intersect the buffered corridor were counted and multiplied by the 2023 Census Bureau average household factors for Portola and the unincorporated County. According to the analysis, there are 2,075 residents in the City and 19,674 residents in the overall County in the hazardous materials buffer zones associated with the hazardous materials transportation routes and potentially at risk.

Table 4-101 Plumas County Planning Area–Improved Residential Parcels and Populations at Risk in Hazardous Materials Buffer Zones

| Jurisdiction | Improved Residential Parcels | Population at Risk |
|------------------------|---------------------------------|--------------------|
| City of Portola | | |
| Highways | | |
| Highway 70 | 906 | 2,075 |
| Railroads | | |
| UP/BNSF | 899 | 2,059 |

| Jurisdiction | Improved Residential Parcels | Population at Risk |
|-------------------------------|---------------------------------|--------------------|
| Unincorporated Plumas County | | |
| Highways | | |
| Highway 147 | 618 | 1,479 |
| Highway 36 | 1,110 | 2,653 |
| Highway 36 and 147 | 0 | 0 |
| Highway 36 and Highway 89 | 0 | 0 |
| Highway 49 | 1 | 3 |
| Highway 49 and Highway 70 | 19 | 45 |
| Highway 70 | 1,126 | 2,692 |
| Highway 70 and Highway 89 | 2,817 | 6,733 |
| Highway 89 | 2,015 | 4,816 |
| Highway 89 and Highway 147 | 4 | 13 |
| Railroads | | |
| BNSF | 1,010 | 2,414 |
| BNSF and UP / BNSF | 30 | 72 |
| Quincy Railroad | 822 | 1,965 |
| Quincy Railroad and UP / BNSF | 223 | 533 |
| UP / BNSF | 2,819 | 6,737 |

Source: National Hazardous Materials Routes Registry (2025), Plumas County 2024 Parcel/Assessor's Data, 2023 US Census American Community Survey Average Household Size – City of Portola (2.29); Unincorporated Plumas County (2.39).

Structures

Structures in the County have some measure of risk to hazardous materials which can affect the built environment of the County. During a hazardous materials transportation spill, it is generally the people that are at risk to the effects of the spill. During a spill, buildings, property, and their values are at a lessor risk; however, given the location and breadth of hazardous materials routes in the County, an analysis is performed here. This analysis is shown in Table 4-102 for highways and in Table 4-103 for railroads. These tables summarize by total parcel counts, improved parcel (structure) counts, and their improved and land values, personal property values, and the estimated contents replacement values based on the CRV factors detailed in Table 4-9.

Table 4-102 Plumas County Planning Area – Count and Value of Parcels and Structures in Highway Hazardous Materials Transportation Buffer Zone by Jurisdiction and Route

| Jurisdiction/ Hazardous Materials Routes | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|--|--------------------------|-----------------------------|---------------------|--------------------------------|-------------------------------|--------------------------------|---------------|
| City of Portola | | | | | | | |
| Highway 70 | 1,389 | 906 | \$29,280,690 | \$113,448,396 | \$283,632 | \$56,724,198 | \$199,736,916 |

| Jurisdiction/ Hazardous Materials Routes | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|--|--------------------------|-----------------------------|---------------------|--------------------------------|-------------------------------|--------------------------------|-----------------|
| Unincorporated Plumas County | | | | | | | |
| Highway 147 | 804 | 618 | \$100,061,736 | \$159,628,234 | \$380,288 | \$79,814,117 | \$339,884,375 |
| Highway 36 | 1,437 | 1,110 | \$67,198,419 | \$199,727,901 | \$792,726 | \$99,863,951 | \$367,582,997 |
| Highway 36 and Highway 89 | 1 | 1 | \$36,214 | \$18,106 | \$0 | \$9,053 | \$63,373 |
| Highway 49 | 3 | 1 | \$496,763 | \$7,374 | \$0 | \$3,687 | \$507,824 |
| Highway 49 and Highway 70 | 26 | 19 | \$974,931 | \$1,534,625 | \$54,018 | \$767,313 | \$3,330,887 |
| Highway 70 | 1,840 | 1,126 | \$83,808,531 | \$180,178,813 | \$1,500,463 | \$90,089,407 | \$355,577,214 |
| Highway 70 and Highway 89 | 3,424 | 2,817 | \$203,563,790 | \$571,022,756 | \$58,484,315 | \$285,511,378 | \$1,118,582,239 |
| Highway 89 | 3,358 | 2,015 | \$320,453,952 | \$600,807,297 | \$622,601 | \$300,403,649 | \$1,222,287,499 |
| Highway 89 and Highway 147 | 18 | 4 | \$951,740 | \$167,078 | \$1,221 | \$83,539 | \$1,203,578 |

Source: National Hazardous Materials Routes Registry (2025), Plumas County 2024 Parcel/Assessor's Data

To avoid duplication of parcel count, the parcels located in areas where multiple haz-mat route buffers overlap were assigned the route grouping listed above.

Table 4-103 Plumas County Planning Area – Count and Value of Parcels and Structures in Railroad Hazardous Materials Transportation Buffer Zone by Jurisdiction and Railway

| Jurisdiction/ Hazardous Materials Routes | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|---|--------------------------|-----------------------------|---------------------|--------------------------------|-------------------------------|--------------------------------|-----------------|
| City of Portola | | | | | | | |
| UP / BNSF | 1,379 | 899 | \$28,873,512 | \$112,305,977 | \$283,632 | \$56,152,989 | \$197,616,110 |
| Unincorporated Plumas County | | | | | | | |
| BNSF | 1,849 | 1,010 | \$134,325,701 | \$195,217,680 | \$523,760 | \$97,608,840 | \$427,675,981 |
| BNSF and UP / BNSF | 64 | 30 | \$3,768,034 | \$4,392,811 | \$0 | \$2,196,406 | \$10,357,251 |
| Quincy Railroad | 926 | 822 | \$39,751,756 | \$142,273,400 | \$57,695,029 | \$71,136,700 | \$310,856,885 |
| Quincy Railroad and UP / BNSF | 272 | 223 | \$18,882,230 | \$56,093,035 | \$0 | \$28,046,518 | \$103,021,783 |
| UP / BNSF | 4,250 | 2,819 | \$259,724,454 | \$605,239,651 | \$3,508,993 | \$302,619,826 | \$1,171,092,924 |

Source: National Hazardous Materials Routes Registry (2025), Plumas County 2024 Parcel/Assessor's Data

To avoid duplication of parcel count, the parcels located in areas where multiple haz-mat route buffers overlap were assigned the route grouping listed above.

Table 4-104 and Table 4-110 show additional analysis for the unincorporated County. Table 4-104 shows the specific hazardous materials routes for highways and then separates by property use the total parcel counts, improved parcel and structure counts, improved and land values, personal property values, and the

estimated contents replacement values. Table 4-110 shows the specific hazardous materials routes for railways and then separates by property use the total parcel counts, improved parcel and structure counts, improved and land values, personal property values, and the estimated contents replacement values.

Table 4-104 Unincorporated Plumas County – Count and Value of Parcels and Structures in Highway Hazardous Materials Transportation Buffer Zone by Route and Property Use

| Hazardous Materials Routes/ Property Use | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|---|--------------------|-----------------------|----------------------|--------------------------|-------------------------|--------------------------|----------------------|
| Highway 147 | | | | | | | |
| Agricultural | 17 | 0 | \$872,664 | \$0 | \$0 | \$0 | \$872,664 |
| Commercial | 27 | 17 | \$2,784,129 | \$3,026,622 | \$16,313 | \$3,026,622 | \$8,853,686 |
| Federal Lands | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 4 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Institutional | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Miscellaneous | 3 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 10 | 9 | \$2,687,977 | \$384,191 | \$2,024 | \$384,191 | \$3,458,383 |
| Residential | 804 | 618 | \$100,061,736 | \$159,628,234 | \$380,288 | \$79,814,117 | \$339,884,375 |
| ROW/Utilities | 68 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Highway 147 Total | 934 | 644 | \$106,406,506 | \$163,039,047 | \$398,625 | \$83,224,930 | \$353,069,108 |
| Highway 36 | | | | | | | |
| Agricultural | 81 | 0 | \$1,581,818 | \$0 | \$0 | \$0 | \$1,581,818 |
| Commercial | 164 | 120 | \$15,241,185 | \$35,154,836 | \$24,613,536 | \$35,154,836 | \$110,164,393 |
| Federal Lands | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 25 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 19 | 13 | \$1,454,167 | \$2,954,682 | \$671 | \$4,432,023 | \$8,841,543 |
| Institutional | 16 | 9 | \$307,206 | \$1,412,790 | \$11,680 | \$1,412,790 | \$3,144,466 |
| Miscellaneous | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 8 | 7 | \$674,402 | \$1,155,503 | \$0 | \$1,155,503 | \$2,985,408 |
| Residential | 1,437 | 1,110 | \$67,198,419 | \$199,727,901 | \$792,726 | \$99,863,951 | \$367,582,997 |
| ROW/Utilities | 74 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Highway 36 Total | 1,826 | 1,259 | \$86,457,197 | \$240,405,712 | \$25,418,613 | \$142,019,103 | \$494,300,625 |
| Highway 36 and Highway 147 | | | | | | | |
| Agricultural | 4 | 1 | \$221,688 | \$45,572 | \$0 | \$45,572 | \$312,832 |
| Commercial | 1 | 0 | \$139,896 | \$0 | \$0 | \$0 | \$139,896 |

| Hazardous Materials Routes/Property Use | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|---|--------------------|-----------------------|--------------------|--------------------------|-------------------------|--------------------------|--------------------|
| Federal Lands | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Institutional | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Miscellaneous | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Residential | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| ROW/Utilities | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Highway 36 and Highway 147 Total | 5 | 1 | \$361,584 | \$45,572 | \$0 | \$45,572 | \$452,728 |
| Highway 36 and Highway 89 | | | | | | | |
| Agricultural | 21 | 0 | \$576,678 | \$0 | \$0 | \$0 | \$576,678 |
| Commercial | 10 | 2 | \$4,038,947 | \$256,995 | \$10,220 | \$256,995 | \$4,563,157 |
| Federal Lands | 2 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 20 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 1 | 0 | \$114,530 | \$0 | \$0 | \$0 | \$114,530 |
| Institutional | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Miscellaneous | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Residential | 1 | 1 | \$36,214 | \$18,106 | \$0 | \$9,053 | \$63,373 |
| ROW/Utilities | 12 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Highway 36 and Highway 89 Total | 67 | 3 | \$4,766,369 | \$275,101 | \$10,220 | \$266,048 | \$5,317,738 |
| Highway 49 | | | | | | | |
| Agricultural | 15 | 5 | \$2,406,411 | \$1,261,116 | \$103,680 | \$1,261,116 | \$5,032,323 |
| Commercial | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Federal Lands | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 3 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Institutional | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Miscellaneous | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Residential | 3 | 1 | \$496,763 | \$7,374 | \$0 | \$3,687 | \$507,824 |
| ROW/Utilities | 2 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |

| Hazardous Materials Routes/Property Use | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|---|--------------------|-----------------------|----------------------|--------------------------|-------------------------|--------------------------|----------------------|
| Highway 49 Total | 24 | 6 | \$2,903,174 | \$1,268,490 | \$103,680 | \$1,264,803 | \$5,540,147 |
| Highway 49 and Highway 70 | | | | | | | |
| Agricultural | 15 | 9 | \$6,887,098 | \$1,519,906 | \$260,631 | \$1,519,906 | \$10,187,541 |
| Commercial | 5 | 5 | \$210,304 | \$623,600 | \$550 | \$623,600 | \$1,458,054 |
| Federal Lands | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 2 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 2 | 1 | \$191,990 | \$258,916 | \$0 | \$388,374 | \$839,280 |
| Institutional | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Miscellaneous | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Residential | 26 | 19 | \$974,931 | \$1,534,625 | \$54,018 | \$767,313 | \$3,330,887 |
| ROW/Utilities | 8 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Highway 49 and Highway 70 Total | 59 | 34 | \$8,264,323 | \$3,937,047 | \$315,199 | \$3,299,193 | \$15,815,762 |
| Highway 70 | | | | | | | |
| Agricultural | 66 | 14 | \$5,732,257 | \$3,487,673 | \$1,555,244 | \$3,487,673 | \$14,262,847 |
| Commercial | 95 | 76 | \$8,176,275 | \$22,612,548 | \$2,566,331 | \$22,612,548 | \$55,967,702 |
| Federal Lands | 13 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 62 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 38 | 23 | \$3,163,313 | \$5,871,624 | \$190 | \$8,807,436 | \$17,842,563 |
| Institutional | 8 | 3 | \$179,834 | \$1,706,933 | \$6,650 | \$1,706,933 | \$3,600,350 |
| Miscellaneous | 2 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 4 | 4 | \$573,844 | \$4,183,042 | \$638 | \$4,183,042 | \$8,940,566 |
| Residential | 1,840 | 1,126 | \$83,808,531 | \$180,178,813 | \$1,500,463 | \$90,089,407 | \$355,577,214 |
| ROW/Utilities | 93 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Highway 70 Total | 2,221 | 1,246 | \$101,634,054 | \$218,040,633 | \$5,629,516 | \$130,887,039 | \$456,191,242 |
| Highway 70 and Highway 89 | | | | | | | |
| Agricultural | 90 | 8 | \$3,469,408 | \$2,848,019 | \$108,566 | \$2,848,019 | \$9,274,012 |
| Commercial | 281 | 220 | \$27,539,816 | \$66,969,308 | \$3,020,467 | \$66,969,308 | \$164,498,899 |
| Federal Lands | 29 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 80 | 0 | \$70,569 | \$0 | \$0 | \$0 | \$70,569 |
| Industrial | 57 | 40 | \$4,542,641 | \$8,414,087 | \$33,549,347 | \$12,621,131 | \$59,127,206 |
| Institutional | 26 | 15 | \$627,402 | \$5,094,875 | \$171,670 | \$5,094,875 | \$10,988,822 |

| Hazardous Materials Routes/Property Use | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|---|--------------------|-----------------------|----------------------|--------------------------|-------------------------|--------------------------|------------------------|
| Miscellaneous | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 70 | 43 | \$5,187,298 | \$9,442,318 | \$36,430 | \$9,442,318 | \$24,108,364 |
| Residential | 3,424 | 2,817 | \$203,563,790 | \$571,022,756 | \$58,484,315 | \$285,511,378 | \$1,118,582,239 |
| ROW/Utilities | 218 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Highway 70 and Highway 89 Total | 4,275 | 3,143 | \$245,000,924 | \$663,791,363 | \$95,370,795 | \$382,487,029 | \$1,386,650,111 |
| Highway 89 | | | | | | | |
| Agricultural | 93 | 5 | \$4,719,327 | \$776,986 | \$12,150 | \$776,986 | \$6,285,449 |
| Commercial | 99 | 31 | \$6,123,411 | \$9,834,193 | \$755,529 | \$9,834,193 | \$26,547,326 |
| Federal Lands | 12 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 75 | 0 | \$18,612 | \$0 | \$0 | \$0 | \$18,612 |
| Industrial | 19 | 6 | \$1,064,529 | \$847,891 | \$0 | \$1,271,837 | \$3,184,257 |
| Institutional | 16 | 8 | \$366,013 | \$1,533,086 | \$0 | \$1,533,086 | \$3,432,185 |
| Miscellaneous | 4 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 95 | 5 | \$2,031,858 | \$1,142,034 | \$1,132,489 | \$1,142,034 | \$5,448,415 |
| Residential | 3,358 | 2,015 | \$320,453,952 | \$600,807,297 | \$622,601 | \$300,403,649 | \$1,222,287,499 |
| ROW/Utilities | 205 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Highway 89 Total | 3,976 | 2,070 | \$334,777,702 | \$614,941,487 | \$2,522,769 | \$314,961,784 | \$1,267,203,742 |
| Highway 89 and Highway 147 | | | | | | | |
| Agricultural | 7 | 0 | \$74,224 | \$0 | \$0 | \$0 | \$74,224 |
| Commercial | 8 | 2 | \$404,047 | \$12,100 | \$5,500 | \$12,100 | \$433,747 |
| Federal Lands | 2 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 1 | 0 | \$79,590 | \$0 | \$0 | \$0 | \$79,590 |
| Institutional | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Miscellaneous | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Residential | 18 | 4 | \$951,740 | \$167,078 | \$1,221 | \$83,539 | \$1,203,578 |
| ROW/Utilities | 5 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Highway 89 and Highway 147 Total | 41 | 6 | \$1,509,601 | \$179,178 | \$6,721 | \$95,639 | \$1,791,139 |

| Hazardous Materials Routes/ Property Use | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|---|--------------------|-----------------------|----------------------|--------------------------|-------------------------|--------------------------|------------------------|
| | | | | | | | |
| Unincorporated Plumas County Total | 13,428 | 8,412 | \$892,081,434 | \$1,905,923,630 | \$129,776,138 | \$1,058,551,138 | \$3,986,332,340 |

Source: National Hazardous Materials Routes Registry (2025), Plumas County 2024 Parcel/ Assessor's Data

Table 4-105 Unincorporated Plumas County – Count and Value of Parcels and Structures in Railroad and Highway Hazardous Materials Transportation Buffer Zone by Property Use

| Hazardous Materials Routes/ Property Use | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|---|--------------------|-----------------------|----------------------|--------------------------|-------------------------|--------------------------|----------------------|
| BNSF | | | | | | | |
| Agricultural | 98 | 5 | \$6,570,808 | \$881,719 | \$20,260 | \$881,719 | \$8,354,506 |
| Commercial | 122 | 44 | \$7,367,205 | \$10,387,360 | \$777,342 | \$10,387,360 | \$28,919,267 |
| Federal Lands | 10 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 48 | 0 | \$16,728 | \$0 | \$0 | \$0 | \$16,728 |
| Industrial | 19 | 6 | \$1,144,119 | \$847,891 | \$0 | \$1,271,837 | \$3,263,847 |
| Institutional | 17 | 9 | \$379,500 | \$1,587,499 | \$0 | \$1,587,499 | \$3,554,498 |
| Miscellaneous | 7 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 16 | 11 | \$2,873,781 | \$661,752 | \$42,163 | \$661,752 | \$4,239,448 |
| Residential | 1,849 | 1,010 | \$134,325,701 | \$195,217,680 | \$523,760 | \$97,608,840 | \$427,675,981 |
| ROW/Utilities | 162 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| BNSF Total | 2,348 | 1,085 | \$152,677,842 | \$209,583,901 | \$1,363,525 | \$112,399,007 | \$476,024,275 |
| BNSF and UP / BNSF | | | | | | | |
| Agricultural | 5 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Commercial | 2 | 0 | \$130,254 | \$0 | \$0 | \$0 | \$130,254 |
| Federal Lands | 5 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Institutional | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Miscellaneous | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 1 | 1 | \$272,070 | \$297,381 | \$0 | \$297,381 | \$866,832 |
| Residential | 64 | 30 | \$3,768,034 | \$4,392,811 | \$0 | \$2,196,406 | \$10,357,251 |
| ROW/Utilities | 12 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |

| Hazardous Materials Routes/ Property Use | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|--|--------------------|-----------------------|---------------------|--------------------------|-------------------------|--------------------------|----------------------|
| BNSF and UP / BNSF Total | 90 | 31 | \$4,170,358 | \$4,690,192 | \$0 | \$2,493,787 | \$11,354,337 |
| Quincy Railroad | | | | | | | |
| Agricultural | 8 | 2 | \$350,868 | \$450,809 | \$1,420 | \$450,809 | \$1,253,906 |
| Commercial | 94 | 76 | \$9,875,331 | \$25,223,745 | \$437,135 | \$25,223,745 | \$60,759,956 |
| Federal Lands | 2 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 10 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 39 | 23 | \$3,301,515 | \$5,283,807 | \$33,549,347 | \$7,925,711 | \$50,060,380 |
| Institutional | 13 | 7 | \$426,060 | \$2,515,174 | \$13,960 | \$2,515,174 | \$5,470,368 |
| Miscellaneous | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Residential | 926 | 822 | \$39,751,756 | \$142,273,400 | \$57,695,029 | \$71,136,700 | \$310,856,885 |
| ROW/Utilities | 56 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Quincy Railroad Total | 1,148 | 930 | \$53,705,530 | \$175,746,935 | \$91,696,891 | \$107,252,139 | \$428,401,495 |
| Quincy Railroad and UP / BNSF | | | | | | | |
| Agricultural | 21 | 8 | \$2,050,131 | \$1,582,542 | \$74,000 | \$1,582,542 | \$5,289,215 |
| Commercial | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Federal Lands | 3 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Institutional | 2 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Miscellaneous | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Residential | 272 | 223 | \$18,882,230 | \$56,093,035 | \$0 | \$28,046,518 | \$103,021,783 |
| ROW/Utilities | 24 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Quincy Railroad and UP / BNSF Total | 322 | 231 | \$20,932,361 | \$57,675,577 | \$74,000 | \$29,629,060 | \$108,310,998 |
| UP / BNSF | | | | | | | |
| Agricultural | 138 | 20 | \$13,590,936 | \$4,507,019 | \$1,244,367 | \$4,507,019 | \$23,849,341 |
| Commercial | 182 | 120 | \$13,329,365 | \$44,648,465 | \$3,991,541 | \$44,648,465 | \$106,617,836 |
| Federal Lands | 38 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 106 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 47 | 31 | \$3,750,554 | \$6,461,503 | \$190 | \$9,692,255 | \$19,904,502 |

| Hazardous Materials Routes/ Property Use | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|---|--------------------|-----------------------|----------------------|--------------------------|-------------------------|--------------------------|------------------------|
| Institutional | 12 | 3 | \$184,744 | \$1,706,933 | \$6,650 | \$1,706,933 | \$3,605,260 |
| Miscellaneous | 2 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 75 | 47 | \$5,535,663 | \$15,377,033 | \$497,081 | \$15,377,033 | \$36,786,810 |
| Residential | 4,250 | 2,819 | \$259,724,454 | \$605,239,651 | \$3,508,993 | \$302,619,826 | \$1,171,092,924 |
| ROW/Utilities | 237 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| UP / BNSF Total | 5,087 | 3,040 | \$296,115,716 | \$677,940,604 | \$9,248,822 | \$378,551,530 | \$1,361,856,672 |
| | | | | | | | |
| Unincorporated Plumas County Total | 8,995 | 5,317 | \$527,601,807 | \$1,125,637,209 | \$102,383,238 | \$630,325,521 | \$2,385,947,775 |

Source: National Hazardous Materials Routes Registry (2025), Plumas County 2024 Parcel/Assessor's Data

Critical Facilities and Infrastructure

A separate analysis was performed on the critical facility inventory in the Plumas County Planning Area to determine critical facilities in the hazardous materials buffer zones. Using GIS, the hazardous material buffer zones were overlayed on the critical facility GIS layer. Figure 4-171 shows critical facilities and the highway and railroad hazardous material buffer zones (with the inset maps shown). These inset maps are shown in Figure 4-172 through Figure 4-174. Table 4-106 and Table 4-107 detail critical facilities in highway and railroad (respectively) hazardous material buffer zone zones by facility type and count for the Plumas County Planning Area broken out by jurisdiction. Details of critical facilities by type, name, and address by flood zone are listed in Appendix G.

As shown on these tables, 24 critical facilities in the City of Portola fall in both the highway and railroad hazardous material buffer zone. In Plumas County, 464 critical facilities fall in the highway hazardous materials buffer zone, while 286 fall in the railroad hazardous materials buffer zone. Additionally, 8 of the critical facilities in the surrounding counties fall in the highway hazardous materials buffer zone, while 9 fall in the railroad hazardous materials buffer zone.

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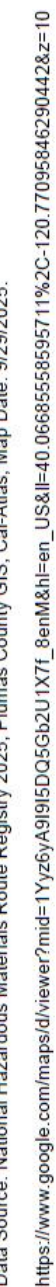
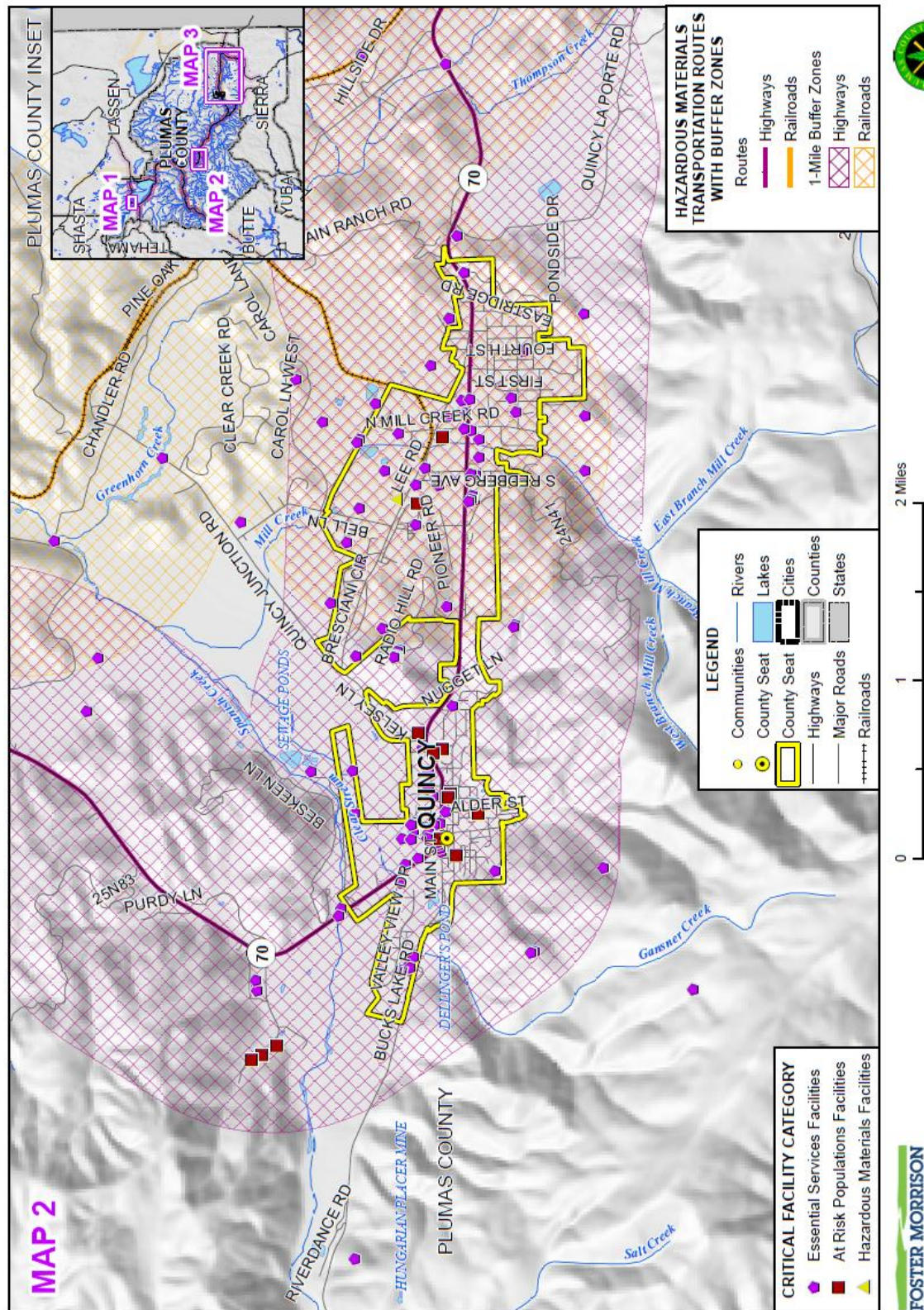
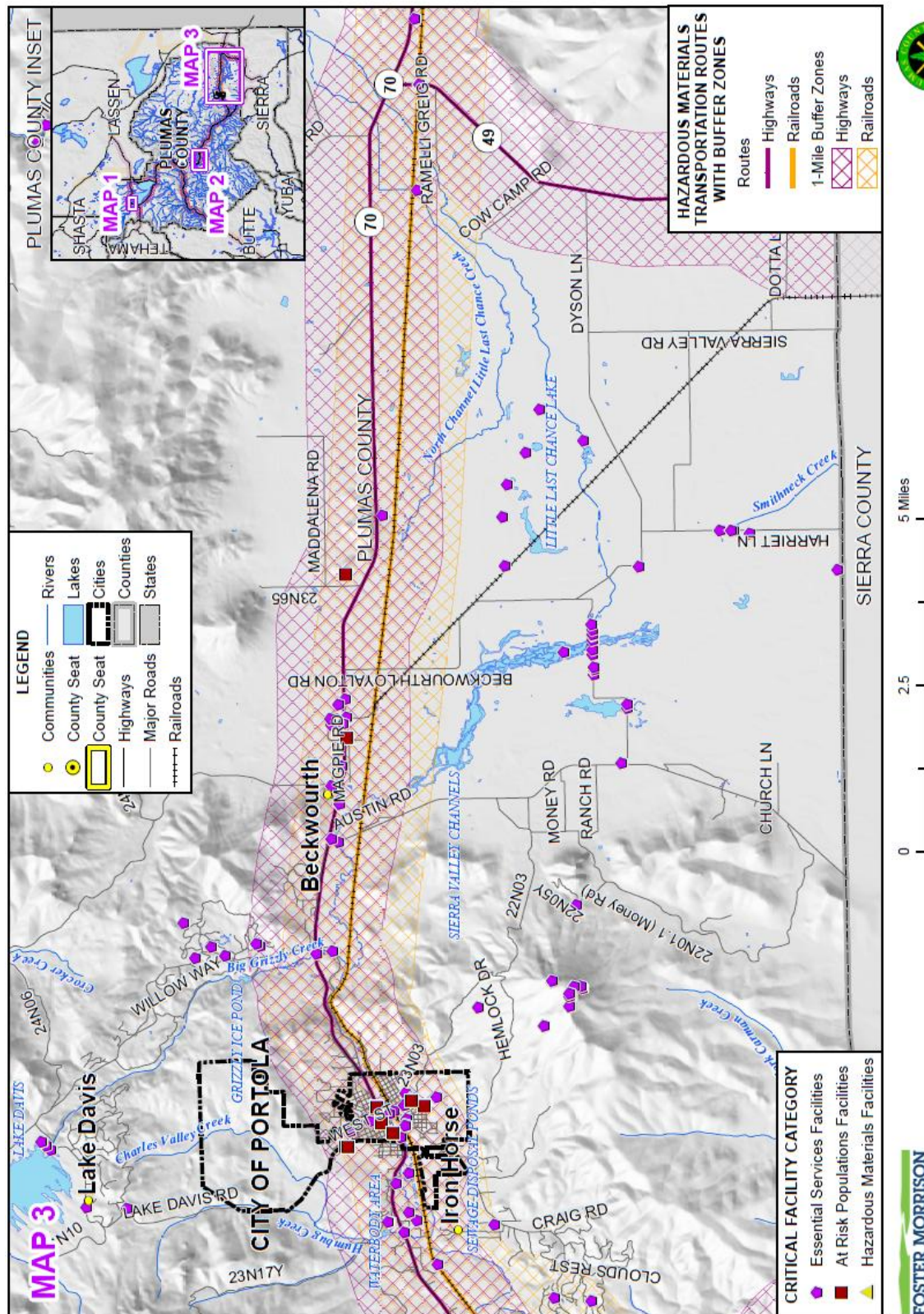


Figure 4-173 Plumas County Planning Area – Critical Facilities in Highway and Railroad Hazardous Materials Buffer Zones (Map Inset 2)



Data Source: National Hazardous Materials Route Registry 2025, Plumas County GIS, Cal-Atlas. Map Date: 9/29/2025.
https://www.google.com/maps/d/viewer?mid=1Yyz6yA9l9l5DO5Gb2U1X7f_8enM&hl=en_US&ll=40.06685558595711%2C-120.77095846290442&z=10

Figure 4-174 Plumas County Planning Area – Critical Facilities in Highway and Railroad Hazardous Materials Buffer Zones (Map Inset 3)



Data Source: National Hazardous Materials Route Registry 2025, Plumas County GIS, CalAtlas; Map Date: 9/29/2025.

https://www.google.com/maps/d/viewer?mid=1Yyz6yA9l9l5DQ5G62U1X7f_8enM&hl=en_US&ll=40.06685558595711%2C-120.77095846290442&z=10

Table 4-106 Plumas County Planning Area – Critical Facilities in Critical Facilities in Highway Hazardous Materials Buffer Zones by Jurisdiction and Critical Facility Category

| Jurisdiction / Hazardous Materials Routes | Critical Facility Category | Facility Count |
|---|--------------------------------|----------------|
| Portola | | |
| Highway 70 | Essential Services Facilities | 16 |
| | At Risk Populations Facilities | 8 |
| | Total | 24 |
| Portola Total | | 24 |
| Unincorporated Plumas County | | |
| Highway 147 | Essential Services Facilities | 13 |
| | Total | 13 |
| Highway 147 and Highway 89 | Essential Services Facilities | 8 |
| | Total | 8 |
| Highway 36 | Essential Services Facilities | 45 |
| | At Risk Populations Facilities | 10 |
| | Hazardous Materials Facilities | 1 |
| | Total | 56 |
| Highway 36 and Highway 89 | Essential Services Facilities | 8 |
| | Total | 8 |
| Highway 49 and Highway 70 | Essential Services Facilities | 3 |
| | Total | 3 |
| Highway 70 | Essential Services Facilities | 98 |
| | At Risk Populations Facilities | 2 |
| | Total | 100 |
| Highway 70 and Highway 89 | Essential Services Facilities | 202 |
| | At Risk Populations Facilities | 14 |
| | Hazardous Materials Facilities | 2 |
| | Total | 218 |
| Highway 89 | Essential Services Facilities | 55 |
| | At Risk Populations Facilities | 3 |
| | Total | 58 |
| Unincorporated Plumas County Total | | 464 |
| Unincorporated Butte County | | |
| Highway 70 | Essential Services Facilities | 1 |
| | Total | 1 |
| Unincorporated Butte County Total | | 1 |

| Jurisdiction / Hazardous Materials Routes | Critical Facility Category | Facility Count |
|---|-------------------------------|----------------|
| Unincorporated Lassen County | | |
| Highway 36 | Essential Services Facilities | 4 |
| | Total | 4 |
| Unincorporated Lassen County Total | | 4 |
| Unincorporated Sierra County | | |
| Highway 49 | Essential Services Facilities | 2 |
| | Total | 2 |
| Unincorporated Sierra County Total | | 2 |
| Unincorporated Tehama County | | |
| Highway 36 | Essential Services Facilities | 1 |
| | Total | 1 |
| Unincorporated Tehama County Total | | 1 |
| | | |
| Grand Total | | 496 |

Source: National Hazardous Route Registry, Plumas County GIS

Table 4-107 Plumas County Planning Area – Critical Facilities in Critical Facilities in Railroad Hazardous Materials Buffer Zones by Jurisdiction and Critical Facility Category

| Jurisdiction / Hazardous Materials Routes | Critical Facility Category | Facility Count |
|---|--------------------------------|----------------|
| Portola | | |
| UP / BNSF | Essential Services Facilities | 16 |
| | At Risk Populations Facilities | 8 |
| | Total | 24 |
| Portola Total | | 24 |
| Unincorporated Plumas County | | |
| BNSF | Essential Services Facilities | 55 |
| | At Risk Populations Facilities | 3 |
| | Total | 58 |
| BNSF and UP / BNSF | Essential Services Facilities | 15 |
| | Total | 15 |
| Quincy Railroad | Essential Services Facilities | 44 |
| | At Risk Populations Facilities | 2 |
| | Hazardous Materials Facilities | 1 |
| | Total | 47 |
| Quincy Railroad and UP / BNSF | Essential Services Facilities | 5 |

| Jurisdiction / Hazardous Materials Routes | Critical Facility Category | Facility Count |
|---|--------------------------------|----------------|
| | Total | 5 |
| UP / BNSF | Essential Services Facilities | 158 |
| | At Risk Populations Facilities | 2 |
| | Hazardous Materials Facilities | 1 |
| | Total | 161 |
| Unincorporated Plumas County Total | | 286 |
| Unincorporated Butte County | | |
| UP / BNSF | Essential Services Facilities | 3 |
| | Total | 3 |
| Unincorporated Butte County Total | | 3 |
| Unincorporated Lassen County | | |
| BNSF | Essential Services Facilities | 3 |
| | Total | 3 |
| UP / BNSF | Essential Services Facilities | 3 |
| | Total | 3 |
| Unincorporated Lassen County Total | | 6 |
| | | |
| Grand Total | | 319 |

Source: National Hazardous Route Registry, Plumas County GIS

Natural, Historic, and Cultural Resources

Any natural, historic, or cultural resource that falls in the buffer zone shown on Figure 4-167 has some measure of vulnerability. If a release caused a fire, it could affect historic and cultural resources in the County. Natural resources can be more greatly affected by a hazardous materials spill. Clean up of a spill into a natural resource (such as a creek, stream, or river) may be difficult to complete. Hazardous releases can significantly harm wildlife and habitat areas. The contamination also can make its way up the food chain, affecting the food supply. Open water and wetland environments experience significant exposure to hazardous materials events, which may result in further loss of ecosystem functions.

FEMA NRI Hazard Vulnerability Assessment

Hazardous material transport is not an NRI hazard; therefore, no data is presented.

Impacts from Hazardous Materials Transportation

Impacts from hazardous materials transportation incidents vary by location and severity of any given event and will likely only affect certain areas of the County during specific times. Based on the risk assessment, it a hazardous materials transportation release could have potential adverse impacts to affected areas of the County as described below. However, the majority of releases in the County are minor, localized events

that are more of a nuisance than a disaster. Impacts that are not quantified, but can be anticipated in large future events, include:

- Injury and loss of life;
- Contaminated water supplies
- Contaminated buildings
- Soil contamination that results in mass die-off of vegetation
- Fire and explosions
- Public health impacts
- Commercial and residential structural and property damage;
- Disruption of and damage to public infrastructure and services;
- Damage to roads/bridges resulting in loss of mobility;
- Business closures and significant economic impact (jobs, sales, tax revenue) to the community;
- Negative impact on commercial and residential property values; and
- Impact on the overall mental health of the community.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the County may be affected in the future by climate change (which was discussed in the hazard profile section above), changes in population patterns, and changes in land use and development. The influencing effects of these factors on this hazard are discussed further in the Future Conditions/Future Development discussion below.

Future Conditions/Future Development

Future conditions may be affected by climate change, changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. Findings on this for Plumas County include the following:

- Climate change is unlikely to exacerbate future hazardous material transportation events and associated impacts and vulnerability of the County.
- Population in Plumas County is expected to decrease. Vulnerable population groups could face disproportionate effects from a hazardous materials release and should be planned for. Changes in population and population patterns may or may not increase the impacts and vulnerability of the County to this hazard depending on the location and nature of growth and continued planning for future hazard conditions.
- Land use planning should be proactive to address future hazard conditions. However, it is difficult to locate development outside of the hazardous materials buffer zones, due to the location of rail lines and highways in the County. Building codes do not account for hazardous materials spills or incidents. More development within the hazardous materials buffer zones is likely to increase the vulnerability of the County to this hazard.

Development will continue to happen within hazardous materials transportation corridors due to the large area within the County located within these corridors. Those who choose to develop in these areas should be made aware of the risks associated with living within close proximity to a hazardous materials transportation route. Future development areas and their vulnerability to hazardous materials transport are discussed further in the below GIS analysis.

GIS Analysis

Plumas County provided 13 future development areas which were used as the basis for the inventory of future development for the unincorporated County. These were mapped in GIS. Many facilities fall in either the highway or railroad hazardous materials buffer zone. Figure 4-179 show the locations of the future development areas and both the highway and railroad hazardous materials buffer zone. Table 4-108 shows the details of the future development areas that are located in the highway hazardous materials buffer zone. Table 4-109 shows the details of the future development areas that are located in the railroad hazardous materials buffer zone.

Figure 4-175 Unincorporated Plumas County – Future Development in Highway and Railroad Hazardous Materials Buffer Zones

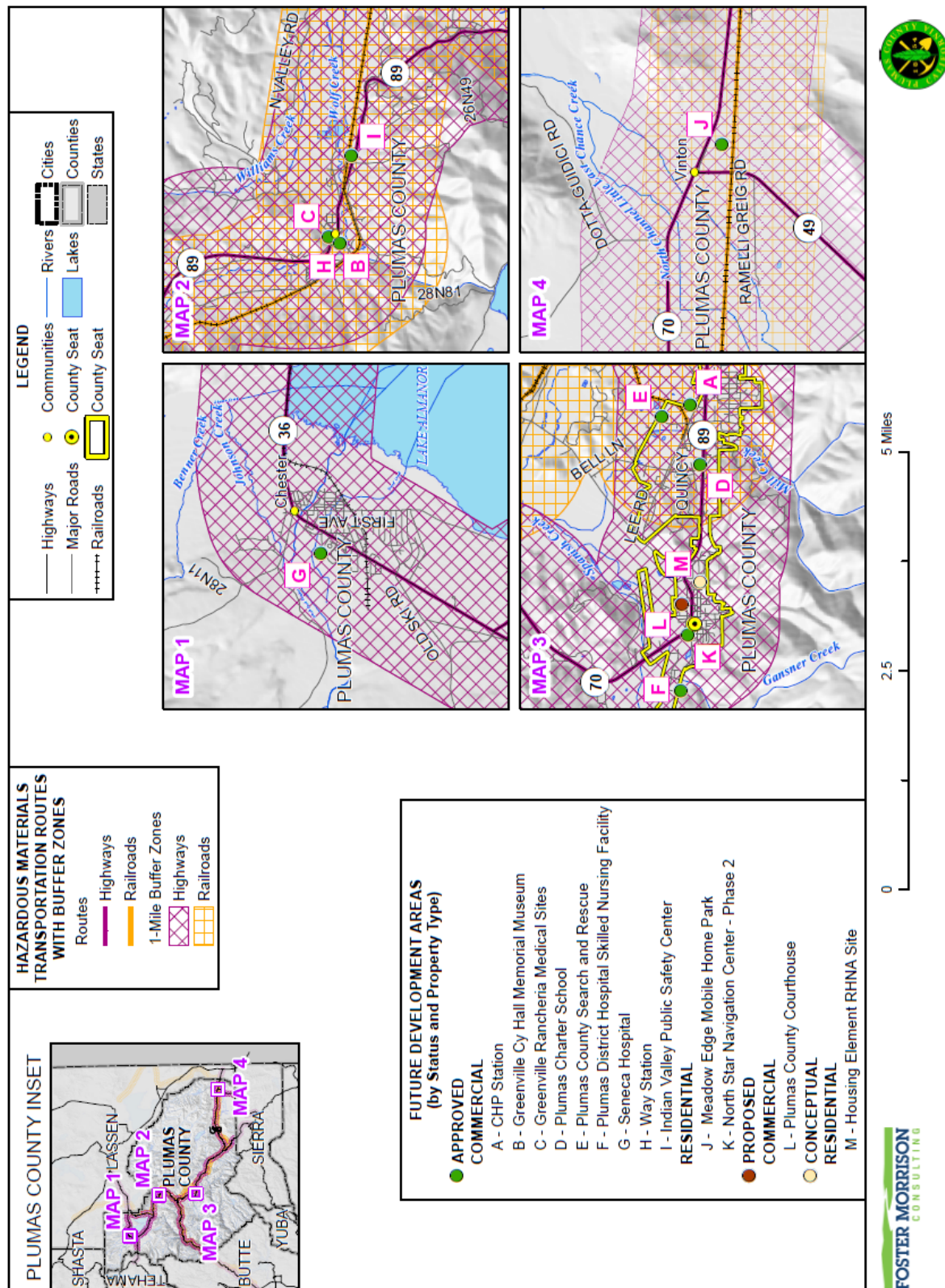


Table 4-108 Unincorporated Plumas County – Future Development in Highway Hazardous Materials Buffer Zones with Parcel Counts and Acreages

| Hazardous Materials Routes /Site / Map ID and Future Development Name | Total Parcel Count | Improved Parcel Count | Unimproved Parcel Count | Total Acres | Total Improved Acres | Total Unimproved Acres |
|---|--------------------|-----------------------|-------------------------|--------------|----------------------|------------------------|
| Highway 36 | | | | | | |
| Approved | | | | | | |
| G - Seneca Hospital | 1 | 0 | 1 | 11.80 | 0.00 | 11.80 |
| Approved Total | 1 | 0 | 1 | 11.80 | 0.00 | 11.80 |
| Highway 49 and Highway 70 | | | | | | |
| Approved | | | | | | |
| J - Meadow Edge Mobile Home Park | 1 | 1 | 0 | 42.74 | 42.74 | 0.00 |
| Approved Total | 1 | 1 | 0 | 42.74 | 42.74 | 0.00 |
| Highway 70 and Highway 89 | | | | | | |
| Approved | | | | | | |
| A - CHP Station | 1 | 0 | 1 | 5.00 | 0.00 | 5.00 |
| D - Plumas Charter School | 1 | 0 | 1 | 0.89 | 0.00 | 0.89 |
| E - Plumas County Search and Rescue | 1 | 1 | 0 | 4.50 | 4.50 | 0.00 |
| F - Plumas District Hospital Skilled Nursing Facility | 1 | 0 | 1 | 4.12 | 0.00 | 4.12 |
| K - North Star Navigation Center - Phase 2 | 1 | 1 | 0 | 1.00 | 1.00 | 0.00 |
| Approved Total | 5 | 2 | 3 | 15.51 | 5.50 | 10.01 |
| Proposed | | | | | | |
| L - Plumas County Courthouse | 1 | 1 | 0 | 2.86 | 2.86 | 0.00 |
| Proposed Total | 1 | 1 | 0 | 2.86 | 2.86 | 0.00 |
| Conceptual | | | | | | |
| M - Housing Element RHNA Site | 1 | 1 | 0 | 3.64 | 3.64 | 0.00 |

| Hazardous Materials Routes /Site / Map ID and Future Development Name | Total Parcel Count | Improved Parcel Count | Unimproved Parcel Count | Total Acres | Total Improved Acres | Total Unimproved Acres |
|---|--------------------|-----------------------|-------------------------|-------------|----------------------|------------------------|
| Conceptual Total | 1 | 1 | 0 | 3.64 | 3.64 | 0.00 |
| Highway 89 | | | | | | |
| Approved | | | | | | |
| B - Greenville Cy Hall Memorial Museum | 1 | 0 | 1 | 0.11 | 0.00 | 0.11 |
| C - Greenville Rancheria Medical, Dental Clinic, and Pharmacy | 1 | 0 | 1 | 1.58 | 0.00 | 1.58 |
| H - Way Station | 1 | 0 | 1 | 0.28 | 0.00 | 0.28 |
| I - Indian Valley Public Safety Center | 1 | 0 | 1 | 5.00 | 0.00 | 5.00 |
| Approved Total | 4 | 0 | 4 | 6.97 | 0.00 | 6.97 |

Source: National Hazardous Materials Route Registry, Plumas County GIS

Table 4-109 Unincorporated Plumas County – Future Development in Railroad Hazardous Materials Buffer Zones with Parcel Counts and Acreages

| Hazardous Materials Routes /Site / Map ID and Future Development Name | Total Parcel Count | Improved Parcel Count | Unimproved Parcel Count | Total Acres | Total Improved Acres | Total Unimproved Acres |
|---|--------------------|-----------------------|-------------------------|-------------|----------------------|------------------------|
| BNSF | | | | | | |
| Approved | | | | | | |
| B - Greenville Cy Hall Memorial Museum | 1 | 0 | 1 | 0.11 | 0.00 | 0.11 |
| C - Greenville Rancheria Medical, Dental Clinic, and Pharmacy | 1 | 0 | 1 | 1.58 | 0.00 | 1.58 |
| H - Way Station | 1 | 0 | 1 | 0.28 | 0.00 | 0.28 |

| Hazardous Materials Routes /Site / Map ID and Future Development Name | Total Parcel Count | Improved Parcel Count | Unimproved Parcel Count | Total Acres | Total Improved Acres | Total Unimproved Acres |
|---|--------------------|-----------------------|-------------------------|--------------|----------------------|------------------------|
| I - Indian Valley Public Safety Center | 1 | 0 | 1 | 5.00 | 0.00 | 5.00 |
| Approved Total | 4 | 0 | 4 | 6.97 | 0.00 | 6.97 |
| Quincy Railroad | | | | | | |
| Approved | | | | | | |
| A - CHP Station | 1 | 0 | 1 | 5.00 | 0.00 | 5.00 |
| D - Plumas Charter School | 1 | 0 | 1 | 0.89 | 0.00 | 0.89 |
| E - Plumas County Search and Rescue | 1 | 1 | 0 | 4.50 | 4.50 | 0.00 |
| Approved Total | 3 | 1 | 2 | 10.39 | 4.50 | 5.89 |
| UP / BNSF | | | | | | |
| Approved | | | | | | |
| J - Meadow Edge Mobile Home Park | 1 | 1 | 0 | 42.74 | 42.74 | 0.00 |
| Approved Total | 1 | 1 | 0 | 42.74 | 42.74 | 0.00 |

Source: National Hazardous Materials Route Registry, Plumas County GIS

4.3.14. Landslides, Mudslides, and Debris Flows

Hazard Profile

This hazard profile contains multiple sections that detail how this hazard can affect the Plumas County Planning Area. These sections include a hazard/problem description; description of location and extent; past occurrences of this hazard; likelihood of future occurrence; and how climate change can affect or influence this hazard.

Hazard/Problem Description

Like its earthquake-generating faults, California's mountainous terrain is a consequence of dynamic geologic processes in operation as the North American Plate grinds past the Pacific Plate. According to the CGS, a landslide is a general term for a variety of mass-movement processes that generate a down-slope movement of mud, soil, rock, and/or vegetation. Landslides are classified into many different types based on form and type of movement. They range from slow-moving rotational slumps and earth flows, which can slowly distress structures but are less threatening to personal safety, to fast-moving rock avalanches and debris flows that are a serious threat to structures and have been responsible for most fatalities during

landslide events. For the purposes of this LHMP Update, the term landslide includes mudslides, debris flows, and rockfalls that tend to occur suddenly; as well as hillside erosion, which is a similar process that tends to occur on smaller scales and more gradually but can exacerbate landslide events.

Landslides, debris flows and mudslides are closely related to flooding, as both processes are related to precipitation, runoff, and the saturation of ground by water. In addition, landslides, mud flows, and debris flows can occur on small, steep stream channels and are often mistaken for floods. However, landslide events may be much more destructive than floods because of their higher densities, high debris loads, and high velocities.

Soil erosion is another common form of soil instability. Erosion is a function of soil type, slope, rainfall intensity, and groundcover. It accounts for a loss in many dollars of valuable soil, is aesthetically displeasing, and often induces even greater rates of erosion and sedimentation. Sedimentation is simply the accumulation of soil as a result of erosion. Construction activities often contribute greatly to erosion and sedimentation. Besides being a pollutant in its own right, sediment acts as a transport medium for other pollutants, especially nutrients, pesticides, and heavy metals, which adhere to the eroded soil particles. As the sediment drains into watercourses, the combination of these pollutants adversely affects water quality and can eventually impact stream flows and contribute to flooding potential. Conditions that contribute to landslide, mudslides, debris flows, hillside and streambank erosion, include the following:

- Degree of slope
- Water (heavy rain, river flows, or wave action)
- Unconsolidated soil or soft rock and sediments
- Lack of vegetation (no stabilizing root structure)
- Previous wildfires and other forest disturbances (discussed in Section 4.3.15)
- Road building, excavation, and grading
- Earthquake

The 2023 State of California Hazard Mitigation Plan noted that more than one third of California is mountainous terrain that generally trends parallel to the coast, forming a barrier that captures moisture from offshore storms originating in the Gulf of Alaska and Mexico. Steep topography, weak rocks, heavy winter rains, and occasional earthquakes all lead to slope failures more frequently than would otherwise occur under gravity alone. This is true in the mountainous, sloped areas within the Planning Area where the topography is characterized by more substantial elevation changes.

Location and Extent

Landslides can be expected in areas with steep slopes and weak soils. It can also occur in areas where erosion has previously occurred. Both winter storms (precipitation-induced) and earthquake triggered landslides tend to occur in or near places that have experienced previous landslides. However, landslides may also occur in other locations over time.

Figure 4-176 shows the CGS areas susceptible to deep seated landslides. The legend on Figure 4-176 shows the susceptibility scale (from 0-X with 0 being the least and X being the most susceptible) that the CGS uses to show the susceptibility of landslides. It is a primarily a combination of slope class and rock strength.

Geographic extents of these classes for the unincorporated Plumas County are shown on Table 4-110. Details on each participating jurisdiction's CGS deep-seated landslide extents can be found in their respective annexes to this LHMP Update. According to the 2023 State Hazard Mitigation Plan, the susceptibility classes were further categorized into Very High (susceptibility class X) and High (susceptibility classes VII, VIII, & IX) for exposure analysis. The rest of the classes were not categorized. CGS mapping indicates that much of the County and surrounding area have areas at high to very high susceptibility areas for landslides. This can be seen in the darker orange and red colors.

The speed of onset of landslide is often short, especially in post-wildfire burn scar areas, but it can also take years for a slope to fail. Landslide duration is usually short, though digging out and repairing landslide areas can take some time. In Plumas County, landslides generally occur where there is very little population or infrastructure.

Figure 4-176 Plumas County Planning Area – Susceptibility to Deep Seated Landslides

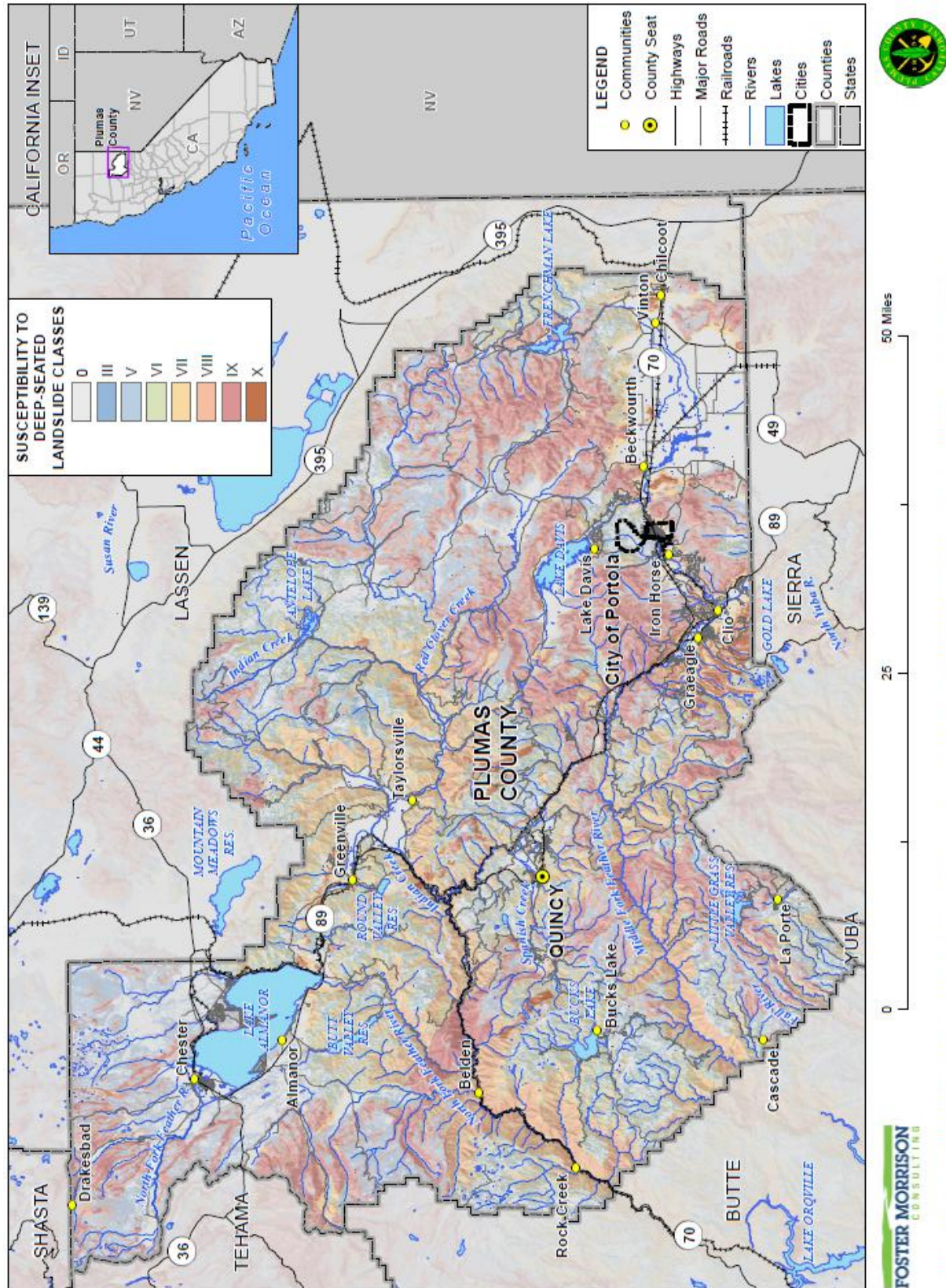


Table 4-110 Plumas County Planning Area – Geographical Extent of Deep-Seated Landslide Classes

| Deep Seated Landslide Class | Total Acres | % of Total Acres | Improved Acres | % of Total Improved Acres | Unimproved Acres | % of Total Unimproved Acres |
|-------------------------------------|------------------|------------------|----------------|---------------------------|------------------|-----------------------------|
| City of Portola | | | | | | |
| 0 | 2,001 | 57% | 1,372 | 61% | 629 | 50% |
| III | 402 | 12% | 402 | 18% | 0.5 | 0.04% |
| V | 116 | 3% | 5 | 0.2% | 111 | 9% |
| VI | 248 | 7% | 248 | 11% | - | |
| VII | 598 | 17% | 204 | 9% | 394 | 31% |
| VIII | 60 | 2% | 1 | 0.03% | 59 | 5% |
| IX | 59 | 2% | 4 | 0.2% | 55 | 4% |
| X | 6 | 0.2% | 1 | 0.1% | 5 | 0.4% |
| Grand Total | 3,491 | 100% | 2,237 | 100% | 1,254 | 100% |
| Unincorporated Plumas County | | | | | | |
| 0 | 269,918 | 21% | 17,483 | 36% | 252,435 | 20% |
| III | 111,182 | 8% | 2,240 | 5% | 108,941 | 9% |
| V | 171,220 | 13% | 5,456 | 11% | 165,764 | 13% |
| VI | 110,673 | 8% | 1,821 | 4% | 108,851 | 9% |
| VII | 224,116 | 17% | 12,774 | 26% | 211,342 | 17% |
| VIII | 223,848 | 17% | 2,774 | 6% | 221,074 | 17% |
| IX | 180,031 | 14% | 4,154 | 9% | 175,876 | 14% |
| X | 21,713 | 2% | 1,782 | 4% | 19,931 | 2% |
| Grand Total | 1,312,701 | 100% | 48,485 | 100% | 1,264,216 | 100% |

Source: Susceptibility to Deep-Seated Landslides map – CSG Map Sheet 58 (05/2011)

Past Occurrences

Disaster Declaration History

There have been no disaster declarations associated solely with landslides in Plumas County; however, as shown in Table 4-111, there have been 7 state and 5 federal disaster declarations for flood which included landslides as a component.

Table 4-111 Plumas County – Federal and State Disaster Declarations Summary 1950-2025

| Disaster Type | State Declarations | | Federal Declarations | |
|--|--------------------|--|----------------------|-------------------------------------|
| | Count | Years | Count | Years |
| Flood (those events that included landslide) | 7 | 1992*, 1995 (twice*), 2017 (twice*), 2023 (twice*) | 5 | 2006*, 2017 (twice*), 2023 (twice*) |

Source: Cal OES, FEMA. Retrieved March 2025.

NCDC Events

The NCDC contains 21 records for landslides or debris flows in Plumas County since 1993, which can be seen in Table 4-111.

*Table 4-112 NCDC Landslide and Debris Flow Events for Plumas County 1993-7/31/2024**

| Event Type | Number of Events | Deaths | Deaths (indirect) | Injuries | Injuries (indirect) | Property Damage | Crop Damage |
|--------------|------------------|--------|-------------------|----------|---------------------|-----------------|-------------|
| Debris Flows | 21 | 0 | 0 | 0 | 0 | \$2,000 | \$0 |

Source: NCDC

*Note: Losses reflect totals for all impacted areas, some of which fell outside of Plumas County

Hazard Mitigation Planning Committee Events

There are certain areas within the County that are susceptible to slope failure resulting in localized landslides, mudslides, and debris flows. These areas are detailed in the Local Concern section below.

These sections separate events since the 2019/2020 LHMPs and those before 2019.

Events since 2019/2020 LHMP

EVENTS SINCE 2020? DATES? DAMAGES?

Events before 2019

The HMPC reported the following events of landslide in the County:

- **2006** – A rockslide occurred on State Route 70 1.5 miles west of Pulga. No injuries or deaths occurred. Damages were unknown from this event.
- **2009** – A rockslide occurred on State Route 70 near Rich bar. Some injuries were reported, but details could not be recalled. Damages were unknown from this event.
- **2010** – A landslide occurred on the USFS Road (Scales Road). No injuries or deaths occurred. Damages were unknown from this event.
- **2010** – A rockslide occurred on State Route 70 between Greenville Way and Elephant Butte Tunnel. No injuries or deaths occurred. Damages were unknown from this event.
- **2013** – A rockslide occurred. There was damage to County Road 411 5 miles west of State Route 70 at Quincy in the Bucks Lake area. No injuries or deaths occurred. Damages were unknown from this event.
- **2013** – Major slope failure has occurred on Johnsville Road / County Highway A14 approximately 4.6 miles west of the intersection of the intersection of SR89 at Blairsdale / Graeagle. The slope failure condition has been prevalent for more than 5 years, and is a result of weak soils, slop and water related erosion. This particular roadway is the only paved road that connects Graeagle to Johnsville. The only other transportation route connecting Johnsville is a dirt road which is essentially impassable in the winter. As a safety precaution, the roadway shoulder has been narrowed several times in order to avoid the on-site erosion issues. Slope saturation by water is a primary cause of landslide issue at this location.

Figure 4-177 Slope Failure near Johnsonville on County Highway A14



Source: Plumas County

- **2017** – A flood occurred in a canyon above Greenville in February. This caused multiple mudslides that blocked Highway 89. This road is an ingress and egress route for Indian Valley.

Likelihood of Future Occurrence

Likely—Based on data provided by the HMPC, landslides are naturally occurring events that will inevitably happen as long as gravity itself is a controlling factor upon the landscape. Since Plumas County’s mountainous terrain in much of the County challenges gravity as it rapidly rises to upper elevations, much of the high-relief topography in the County can be identified as land with the potential for landslides. Much of that land though is in remote and undeveloped locales, which reduces the risk and vulnerability of this natural hazard. Given the nature of localized problems identified within the County, landslides will likely continue to impact the area when heavy precipitation occurs, as they have in the past.

It is likely that climate change will increase the chance of future occurrence as well as future impacts. More information on climate change and landslide and debris flow can be found in the next section. More information on future impacts can be found in the Future Conditions/Future Development section of the Vulnerability Assessment below.

Climate Change and Landslide and Debris Flows

According to the 2021 CAS (as well as the 2024 Draft CAS), climate change may result in precipitation extremes (i.e., wetter wet periods and drier dry periods). More information on precipitation increases can be found in Section 4.3.3. While total average annual rainfall may decrease only slightly, rainfall is

predicted to occur in fewer, more intense precipitation events. The combination of a generally drier climate in the future, which will increase the chance of drought and wildfires, and the occasional extreme downpour is likely to cause more mudslides, landslides, and debris flows.

Vulnerability Assessment

Vulnerability—Medium

According to historical hazard data and landslide hazard mapping, landslides can occur in the Plumas County Planning Area. An assessment of a community's vulnerability to this hazard begins with an understanding of local exposure to unincorporated Plumas County. This is included in the Local Concerns section below. After that, vulnerability is discussed in multiple sections that detail how this hazard can affect both the entire Plumas County Planning Area as well as the unincorporated portions of Plumas County. How the hazard affects the other participating jurisdictions can be found in their respective annexes to this LHMP Update. These sections below include assets at risk, impacts, and how future development can be affected by this hazard.

Local Concerns (unincorporated Plumas County)

The unincorporated County has specific concerns regarding this hazard. These concerns form a portion of the basis for the mitigation strategy and mitigation actions that seek to reduce vulnerabilities to this hazard.

The 2035 Plumas County General Plan Public Health & Safety Element noted that areas with steep slopes in the County could be prone to landslides, mud slides and avalanches. Landslides, or ground failure, are dependent on slope, geology, rainfall, excavation or seismic activity. Mud slides are often caused by heavy rainfall. Areas that have recently been subject to wildfire are susceptible to mud slides. In Plumas County, landslides generally occur where there is very little population or infrastructure. However, there are certain areas throughout the Plumas County Planning Area prone to landslides and where damages have occurred. Though not shown on the USGS map, the 2035 General Plan Public Health and Safety Element noted that the volcanic soils in the eastern portion of the Plumas National Forest are prone to landslides. It was also noted that areas concentrated along the North and Middle Forks of the Feather River are also susceptible to landslides, as well as post-wildfire fire areas.

Plumas County Public Works also noted areas of reoccurring slope failure on County Roads:

- Hwy 89 on the way to Greenville
- Hwy 70 continuous
- Chester/Warner Valley drainage has changed
- Butterfly/Twain Road
- Beckwourth/Genesse Road
- Arlington Road
- Gold Lake Forest Highway
- Quincy-LaPorte Road
- Bucks Lake Road
- Big Creek Road
- North Valley Road

➤ Mill Creek at SR70

AREAS TO ADD? SPECIFIC VULNERABILITY CONCERNS? WHICH AREAS WILL MITIGATION EFFORTS FOCUS ON?

Local concerns for Portola and the special Districts can be found under the Local Concerns heading in each respective jurisdictional annex to this LHMP Update.

Assets at Risk

Assets at risk from landslide include people and populations; structures; critical facilities and infrastructure; and natural, historic, and cultural resources. These are discussed in the following sections for the Plumas County Planning Area and unincorporated Plumas County.

Additionally, for each hazard in the FEMA National Risk Index in Plumas County, the relevant portions of the hazard analysis done by FEMA is presented below. This includes the Hazard Risk Index Rating, Expected Annual Loss Values, Exposure Values, and the Historic Loss Ratio Rating. These are presented for the Plumas County Planning Area as a whole.

Methodology (Parcels and Structures)

The 2011 California Geologic Survey Deep Seated Landslide Susceptibility data was obtained for the Plumas County Planning Area. The 2024 Plumas County Parcel/Assessor Data was used as the basis for the inventory of all parcels within the Plumas County Planning Area. GIS was used to overlay the landslide hazard layer onto the parcel layer. Since it is possible for any given parcel to intersect with multiple categories for purposes of this analysis, the most conservative (or highest risk) deep-seated landslide class that intersected each parcel was used to determine which class to assign to each parcel. Once completed, the deep-seated landslide class parcel layer was joined to the assessor data to determine the number of parcels and values falling within each class. Based on this approach, the deep-seated landslide classes for the Planning Area and unincorporated Plumas County were determined and further broken out by property use and included information on both land and improved values and estimated contents values.

Note: similar to other hazard analyses, all analyses were performed on the parcel polygon. For the landslide (and other) hazard, the highest hazard category applied to the parcel polygon. This landslide analysis can be misleading since multiple classes may fall within one polygon, and there are many large polygons throughout the County.

People and Populations

All populations located within areas of landslide susceptibility, especially in the High to Very High hazard areas (i.e., Classes VII to X) are at some vulnerability to landslide. This includes those people residing in these landslide potential areas as well as those that might reside or work within the landslide run out areas. People residing in these areas may also be cut off from transportation routes if roads and streets providing a means of ingress and egress are impacted. Certain vulnerable populations may be at greater risk due to the often sudden onset of a landslide event and include: the unsheltered, those with limited mobility, and those that lack the resources to leave the area.

Plumas County Planning Area residents that live in the High and Very High landslide susceptibility areas are often the most vulnerable, but those who live in the landslide run out areas (which are not mapped) are also vulnerable. Not only are the residents at risk, but their homes and contents are all at risk, compounding the impacts associated with significant hazard events. To further evaluate the impact to Planning Area's residential population residing within these hazard areas, an analysis was conducted of those who physically reside in the mapped landslide susceptibility areas. The CGS Susceptibility to Deep Seated Landslide maps were overlaid on the parcel layer and linked to the assessor data. Those residential parcel polygons that intersect the High or Very High risk areas (Class VII or higher) were counted and multiplied by the 2023 Census Bureau American Community Survey average household factors each jurisdiction in the Planning Area. Analysis results are shown in Table 4-113.

Table 4-113 Plumas County Planning Area – Residential Populations in High or Very High Deep Seated Landslide Classes

| Deep Seated Landslide Class/Jurisdiction | Improved Residential Parcels | Population at Risk |
|--|------------------------------|--------------------|
| Class VII | | |
| City of Portola | 513 | 1,175 |
| Unincorporated County | 2,710 | 6,477 |
| Class VIII | | |
| City of Portola | 0 | 0 |
| Unincorporated County | 933 | 2,230 |
| Class IX | | |
| City of Portola | 44 | 101 |
| Unincorporated County | 1,444 | 3,451 |
| Class X | | |
| City of Portola | 9 | 21 |
| Unincorporated County | 830 | 1,984 |

Source: CGS, Plumas County 2024 Parcel/Assessor's Data, 2023 US Census American Community Survey Average Household Size – City of Portola (2.29); Unincorporated Plumas County (2.39).

Structures

Landslides can affect the built environment of the Plumas County Planning Area and those structures located within the high to very high hazard areas (i.e., Classes VII to X) are especially vulnerable, as are the structures located within the landslide run out areas. The CGS Deep Seated Landslide Susceptibility layer was overlaid with the County parcel (structure) layer in GIS and linked to the assessor data. The mapped landslide areas are shown on Figure 4-176. Table 4-114 summarizes parcel counts, land and improved values (i.e., those with a structure improvement on the parcel), personal property values, estimated content replacement values, and total values in the Planning Area for deep seated landslide classes. Table 4-115 summarizes parcel counts, land and improved values (i.e., those with a structure improvement on the parcel), personal property values, estimated content replacement values, and total

values by property use for the unincorporated County for deep seated landslide classes. As shown, many improved parcels fall in Classes VII to X in the Portola as well as in the unincorporated County.

Table 4-114 Plumas County Planning Area – Count and Value of Parcels and Structures in Deep Seated Landslide Class by Jurisdiction

| Jurisdiction / Susceptibility to Deep-Seated Landslide Class | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|--|--------------------|-----------------------|------------------------|--------------------------|-------------------------|--------------------------|------------------------|
| City of Portola | | | | | | | |
| 0 | 540 | 395 | \$12,942,889 | \$49,148,720 | \$53,696 | \$29,001,715 | \$91,147,020 |
| III | 2 | 0 | \$56,463 | \$0 | \$0 | \$0 | \$56,463 |
| V | 22 | 10 | \$560,793 | \$2,627,044 | \$0 | \$2,241,074 | \$5,428,911 |
| VI | 1 | 1 | \$21,106 | \$2,429 | \$0 | \$1,215 | \$24,750 |
| VII | 940 | 557 | \$19,519,134 | \$86,443,389 | \$1,678,026 | \$55,910,625 | \$163,551,174 |
| VIII | 2 | 1 | \$529,643 | \$1,400,712 | \$0 | \$1,400,712 | \$3,331,067 |
| IX | 105 | 48 | \$2,773,597 | \$6,470,686 | \$35,120 | \$3,507,842 | \$12,787,245 |
| X | 31 | 9 | \$1,546,746 | \$5,158,054 | \$148,230 | \$2,579,027 | \$9,432,057 |
| Not in a Landslide Class | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| City of Portola Total | 1,643 | 1,021 | \$37,950,371 | \$151,251,034 | \$1,915,072 | \$94,642,209 | \$285,758,686 |
| Unincorporated Plumas County | | | | | | | |
| 0 | 7,133 | 4,848 | \$377,748,466 | \$941,215,911 | \$98,515,649 | \$546,539,951 | \$1,964,019,977 |
| III | 426 | 188 | \$18,511,321 | \$33,844,115 | \$203,800 | \$17,392,879 | \$69,952,115 |
| V | 3,478 | 1,991 | \$313,658,890 | \$620,338,134 | \$1,853,913 | \$316,361,786 | \$1,252,212,723 |
| VI | 447 | 184 | \$18,609,277 | \$30,571,867 | \$183,993 | \$15,715,842 | \$65,080,979 |
| VII | 4,899 | 2,847 | \$282,021,385 | \$605,509,339 | \$6,302,556 | \$319,914,993 | \$1,213,748,273 |
| VIII | 2,196 | 970 | \$191,923,312 | \$284,500,071 | \$1,141,051 | \$150,585,108 | \$628,149,542 |
| IX | 3,466 | 1,486 | \$293,745,442 | \$446,129,929 | \$2,611,482 | \$230,868,937 | \$973,355,790 |
| X | 2,188 | 912 | \$167,960,204 | \$239,869,245 | \$30,715,119 | \$136,295,794 | \$574,840,362 |
| Not in a Landslide Class | 1 | 1 | \$816,431 | \$966,667 | \$0 | \$483,334 | \$2,266,432 |
| Unincorporated Plumas County Total | 24,234 | 13,427 | \$1,664,994,728 | \$3,202,945,278 | \$141,527,563 | \$1,734,158,622 | \$6,743,626,191 |
| | | | | | | | |
| Grand Total | 25,877 | 14,448 | \$1,702,945,099 | \$3,354,196,312 | \$143,442,635 | \$1,828,800,830 | \$7,029,384,876 |

Source: Susceptibility to Deep-Seated Landslides map – CSG Map Sheet 58 (05/2011), Plumas County 2024 Parcel/Assessor Data

Table 4-115 Unincorporated Plumas County – Count and Value of Parcels and Structures in Deep Seated Landslide Class by Property Use

| Susceptibility to Deep-Seated Landslide Class / Property Use | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|--|--------------------|-----------------------|----------------------|--------------------------|-------------------------|--------------------------|------------------------|
| 0 | | | | | | | |
| Agricultural | 117 | 25 | \$10,455,490 | \$3,300,763 | \$95,569 | \$3,300,763 | \$17,152,585 |
| Commercial | 544 | 375 | \$48,461,504 | \$105,470,321 | \$4,369,631 | \$105,470,321 | \$263,771,777 |
| Federal Lands | 3 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 128 | 0 | \$46,383 | \$0 | \$0 | \$0 | \$46,383 |
| Industrial | 112 | 73 | \$8,641,335 | \$16,776,154 | \$33,550,208 | \$25,164,231 | \$84,131,928 |
| Institutional | 52 | 25 | \$1,072,469 | \$6,582,289 | \$183,350 | \$6,582,289 | \$14,420,397 |
| Miscellaneous | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 100 | 43 | \$2,932,129 | \$2,958,310 | \$42,163 | \$2,958,310 | \$8,890,912 |
| Residential | 5,859 | 4,307 | \$306,139,156 | \$806,128,074 | \$60,274,728 | \$403,064,037 | \$1,575,605,995 |
| ROW/Utilities | 217 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| 0 Total | 7,133 | 4,848 | \$377,748,466 | \$941,215,911 | \$98,515,649 | \$546,539,951 | \$1,964,019,977 |
| III | | | | | | | |
| Agricultural | 4 | 0 | \$59,483 | \$0 | \$0 | \$0 | \$59,483 |
| Commercial | 3 | 2 | \$159,876 | \$938,111 | \$69,620 | \$938,111 | \$2,105,718 |
| Federal Lands | 4 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Miscellaneous | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 45 | 1 | \$318,263 | \$3,531 | \$0 | \$3,531 | \$325,325 |
| Residential | 341 | 185 | \$17,973,699 | \$32,902,473 | \$134,180 | \$16,451,237 | \$67,461,589 |
| ROW/Utilities | 27 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| III Total | 426 | 188 | \$18,511,321 | \$33,844,115 | \$203,800 | \$17,392,879 | \$69,952,115 |
| V | | | | | | | |
| Agricultural | 25 | 0 | \$185,335 | \$0 | \$0 | \$0 | \$185,335 |
| Commercial | 48 | 24 | \$3,923,156 | \$6,030,434 | \$603,043 | \$6,030,434 | \$16,587,067 |
| Federal Lands | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 25 | 0 | \$1,884 | \$0 | \$0 | \$0 | \$1,884 |
| Industrial | 3 | 2 | \$410,326 | \$283,628 | \$0 | \$425,442 | \$1,119,396 |
| Institutional | 3 | 2 | \$644,990 | \$4,127,648 | \$6,380 | \$4,127,648 | \$8,906,666 |
| Miscellaneous | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 143 | 14 | \$1,058,206 | \$1,660,099 | \$4,080 | \$1,660,099 | \$4,382,484 |
| Residential | 3,099 | 1,949 | \$307,434,993 | \$608,236,325 | \$1,240,410 | \$304,118,163 | \$1,221,029,891 |
| ROW/Utilities | 130 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |

| Susceptibility to Deep-Seated Landslide Class / Property Use | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|--|--------------------|-----------------------|----------------------|--------------------------|-------------------------|--------------------------|------------------------|
| V Total | 3,478 | 1,991 | \$313,658,890 | \$620,338,134 | \$1,853,913 | \$316,361,786 | \$1,252,212,723 |
| VI | | | | | | | |
| Agricultural | 9 | 0 | \$65,468 | \$0 | \$0 | \$0 | \$65,468 |
| Commercial | 7 | 4 | \$317,418 | \$619,186 | \$2,140 | \$619,186 | \$1,557,930 |
| Federal Lands | 2 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 12 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Institutional | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 48 | 1 | \$889,560 | \$240,630 | \$0 | \$240,630 | \$1,370,820 |
| Residential | 340 | 179 | \$17,336,831 | \$29,712,051 | \$181,853 | \$14,856,026 | \$62,086,761 |
| ROW/Utilities | 28 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| VI Total | 447 | 184 | \$18,609,277 | \$30,571,867 | \$183,993 | \$15,715,842 | \$65,080,979 |
| VII | | | | | | | |
| Agricultural | 145 | 31 | \$11,886,009 | \$6,169,855 | \$1,744,048 | \$6,169,855 | \$25,969,767 |
| Commercial | 123 | 84 | \$10,104,580 | \$23,790,387 | \$2,577,642 | \$23,790,387 | \$60,262,996 |
| Federal Lands | 8 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 87 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 17 | 7 | \$1,369,781 | \$1,121,799 | \$0 | \$1,682,699 | \$4,174,279 |
| Institutional | 14 | 9 | \$230,101 | \$1,448,564 | \$0 | \$1,448,564 | \$3,127,229 |
| Miscellaneous | 4 | 0 | \$718 | \$0 | \$0 | \$0 | \$718 |
| Recreational | 102 | 6 | \$1,712,467 | \$668,243 | \$638 | \$668,243 | \$3,049,591 |
| Residential | 4,124 | 2,710 | \$256,717,729 | \$572,310,491 | \$1,980,228 | \$286,155,246 | \$1,117,163,694 |
| ROW/Utilities | 275 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| VII Total | 4,899 | 2,847 | \$282,021,385 | \$605,509,339 | \$6,302,556 | \$319,914,993 | \$1,213,748,273 |
| VIII | | | | | | | |
| Agricultural | 293 | 4 | \$6,834,080 | \$3,147,203 | \$14,808 | \$3,147,203 | \$13,143,294 |
| Commercial | 44 | 26 | \$7,903,254 | \$8,373,995 | \$455,031 | \$8,373,995 | \$25,106,275 |
| Federal Lands | 43 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 77 | 0 | \$70,569 | \$0 | \$0 | \$0 | \$70,569 |
| Industrial | 1 | 1 | \$29,916 | \$239,168 | \$0 | \$358,752 | \$627,836 |
| Institutional | 2 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Miscellaneous | 9 | 0 | \$4,158 | \$0 | \$0 | \$0 | \$4,158 |
| Recreational | 35 | 6 | \$5,098,413 | \$4,670,611 | \$643,730 | \$4,670,611 | \$15,083,365 |
| Residential | 1,586 | 933 | \$171,982,922 | \$268,069,094 | \$27,482 | \$134,034,547 | \$574,114,045 |
| ROW/Utilities | 106 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| VIII Total | 2,196 | 970 | \$191,923,312 | \$284,500,071 | \$1,141,051 | \$150,585,108 | \$628,149,542 |

| Susceptibility to Deep-Seated Landslide Class / Property Use | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|--|--------------------|-----------------------|------------------------|--------------------------|-------------------------|--------------------------|------------------------|
| IX | | | | | | | |
| Agricultural | 470 | 14 | \$23,445,085 | \$3,827,148 | \$50,490 | \$3,827,148 | \$31,149,871 |
| Commercial | 49 | 20 | \$3,040,750 | \$7,712,649 | \$190,618 | \$7,712,649 | \$18,656,666 |
| Federal Lands | 61 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 133 | 0 | \$6,120 | \$0 | \$0 | \$0 | \$6,120 |
| Industrial | 6 | 2 | \$191,926 | \$28,784 | \$0 | \$43,176 | \$263,886 |
| Institutional | 4 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Miscellaneous | 6 | 0 | \$4,715 | \$0 | \$0 | \$0 | \$4,715 |
| Recreational | 24 | 6 | \$1,833,144 | \$4,010,580 | \$627,070 | \$4,010,580 | \$10,481,374 |
| Residential | 2,547 | 1,444 | \$265,223,702 | \$430,550,768 | \$1,743,304 | \$215,275,384 | \$912,793,158 |
| ROW/Utilities | 166 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| IX Total | 3,466 | 1,486 | \$293,745,442 | \$446,129,929 | \$2,611,482 | \$230,868,937 | \$973,355,790 |
| X | | | | | | | |
| Agricultural | 247 | 44 | \$17,351,867 | \$8,534,676 | \$861,612 | \$8,534,676 | \$35,282,831 |
| Commercial | 35 | 21 | \$4,689,342 | \$11,409,329 | \$24,008,160 | \$11,409,329 | \$51,516,160 |
| Federal Lands | 95 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 136 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 1 | 0 | \$90,337 | \$0 | \$0 | \$0 | \$90,337 |
| Institutional | 4 | 3 | \$197,556 | \$1,777,668 | \$6,650 | \$1,777,668 | \$3,759,542 |
| Miscellaneous | 4 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Recreational | 22 | 14 | \$4,347,966 | \$11,000,669 | \$496,443 | \$11,000,669 | \$26,845,747 |
| Residential | 1,527 | 830 | \$141,283,136 | \$207,146,903 | \$5,342,254 | \$103,573,452 | \$457,345,745 |
| ROW/Utilities | 117 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| X Total | 2,188 | 912 | \$167,960,204 | \$239,869,245 | \$30,715,119 | \$136,295,794 | \$574,840,362 |
| Not in a Landslide Class | | | | | | | |
| Residential | 1 | 1 | \$816,431 | \$966,667 | \$0 | \$483,334 | \$2,266,432 |
| Not in a Landslide Class Total | 1 | 1 | \$816,431 | \$966,667 | \$0 | \$483,334 | \$2,266,432 |
| | | | | | | | |
| Unincorporated Plumas County Total | 24,234 | 13,427 | \$1,664,994,728 | \$3,202,945,278 | \$141,527,563 | \$1,734,158,622 | \$6,743,626,191 |

Source: Susceptibility to Deep-Seated Landslides map – CSG Map Sheet 58 (05/2011), Plumas County 2024 Parcel/Assessor Data

Critical Facilities and Infrastructure

Landslides present a threat to critical facilities and infrastructure. The following analysis discusses critical facilities and infrastructure. A separate analysis was performed on the critical facility inventory in the Plumas County Planning Area to determine critical facilities by deep-seated landslide class. Using GIS, the landslide classes were overlaid on the critical facility GIS layer. Figure 4-178 shows critical facilities, as well as the deep-seated landslide classes. Table 4-116 details critical facilities by deep seated landslide class by facility category and count for the Planning Area. Details of critical facility category, type, name and address by deep-seated landslide classes are listed in Appendix G. As shown, 276 critical facilities fall in classes VII to X, 5 of which are in Portola, 265 in the unincorporated County, and the 6 in the surrounding counties.

Figure 4-178 Plumas County Planning Area – Critical Facilities in Deep-Seated Landslide Class

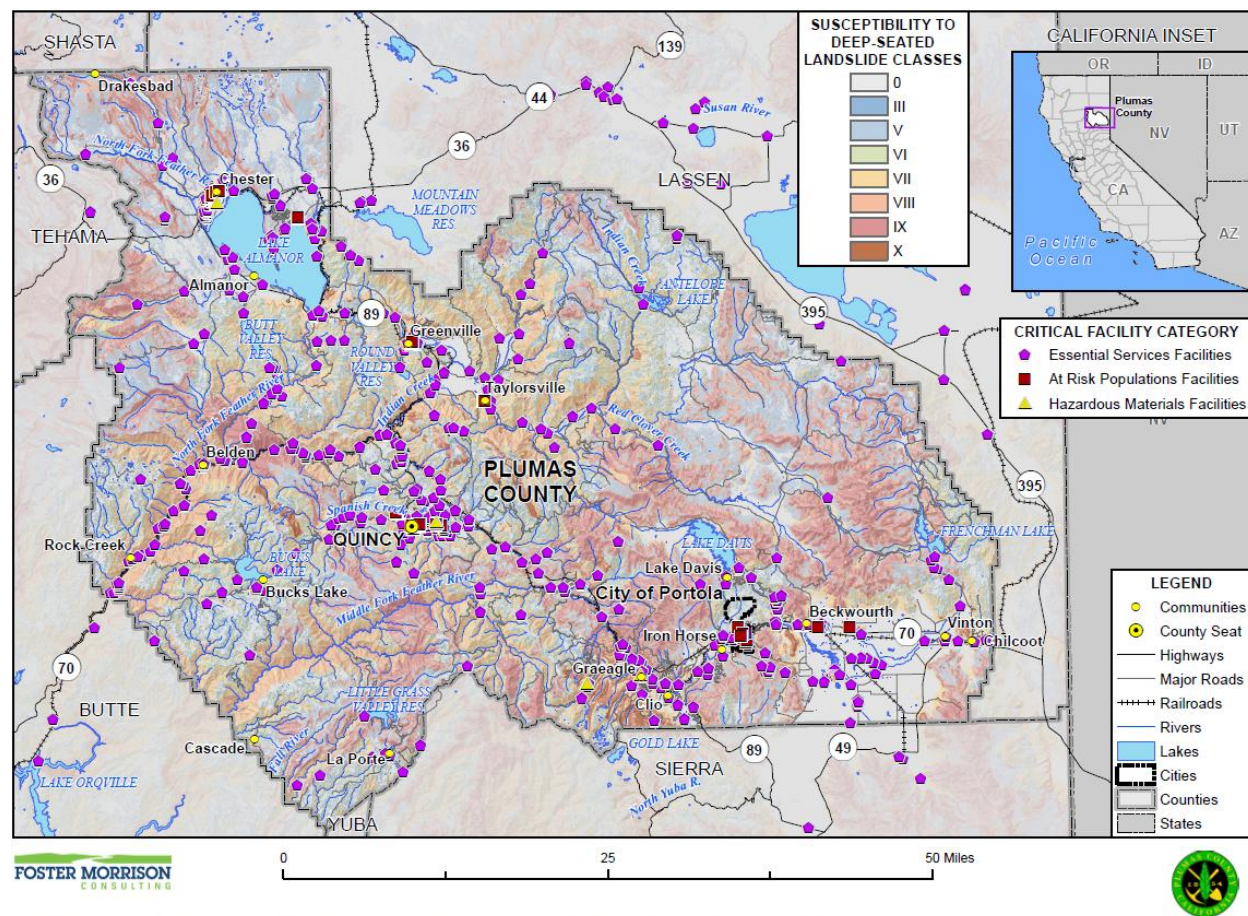


Table 4-116 Plumas County Planning Area – Critical Facilities in Deep-Seated Landslide Class by Jurisdiction and Critical Facility Category

| Jurisdiction / Susceptibility to Deep-Seated Landslide Class | Critical Facility Category | Facility Count |
|--|--------------------------------|----------------|
| Portola | | |
| 0 | Essential Services Facilities | 14 |
| | At Risk Populations Facilities | 5 |
| | Hazardous Materials Facilities | 0 |
| | 0 Total | 19 |
| VII | Essential Services Facilities | 1 |
| | At Risk Populations Facilities | 3 |
| | Hazardous Materials Facilities | 0 |
| | VII Total | 4 |
| IX | Essential Services Facilities | 1 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | IX Total | 1 |
| Portola Total | | 24 |
| Unincorporated Plumas County | | |
| 0 | Essential Services Facilities | 407 |
| | At Risk Populations Facilities | 25 |
| | Hazardous Materials Facilities | 3 |
| | 0 Total | 435 |
| III | Essential Services Facilities | 52 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | III Total | 52 |
| V | Essential Services Facilities | 70 |
| | At Risk Populations Facilities | 2 |
| | Hazardous Materials Facilities | |
| | V Total | 72 |
| VI | Essential Services Facilities | 41 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | VI Total | 41 |
| VII | Essential Services Facilities | 154 |
| | At Risk Populations Facilities | 6 |
| | Hazardous Materials Facilities | 0 |

| Jurisdiction / Susceptibility to Deep-Seated Landslide Class | Critical Facility Category | Facility Count |
|--|--------------------------------|----------------|
| | VII Total | 160 |
| IX | Essential Services Facilities | 94 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | IX Total | 94 |
| X | Essential Services Facilities | 11 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 1 |
| | X Total | 12 |
| Unincorporated Plumas County Total | | 866 |
| Unincorporated Butte County | | |
| 0 | Essential Services Facilities | 3 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | 0 Total | 3 |
| VII | Essential Services Facilities | 1 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | VII Total | 1 |
| Unincorporated Butte County Total | | 4 |
| Unincorporated Lassen County | | |
| 0 | Essential Services Facilities | 27 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | 0 Total | 27 |
| V | Essential Services Facilities | 4 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | V Total | 4 |
| VII | Essential Services Facilities | 2 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | VII Total | 2 |
| IX | Essential Services Facilities | 1 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |

| Jurisdiction / Susceptibility to Deep-Seated Landslide Class | Critical Facility Category | Facility Count |
|--|--------------------------------|----------------|
| | IX Total | 1 |
| Unincorporated Lassen County Total | | 34 |
| Unincorporated Sierra County | | |
| 0 | Essential Services Facilities | 4 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | 0 Total | 4 |
| Unincorporated Sierra County Total | | 4 |
| Unincorporated Tehama County | | |
| V | Essential Services Facilities | 1 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | V Total | 1 |
| VIII | Essential Services Facilities | 1 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | VIII Total | 1 |
| Unincorporated Tehama County Total | | 2 |
| | | |
| Grand Total | | 934 |

Source: Susceptibility to Deep-Seated Landslides map – CSG Map Sheet 58 (05/2011), Plumas County GIS

Natural, Historic, and Cultural Resources

Landslides can affect natural, historic, and cultural resources that lie in the landslide area, or the landslide run out area. Landslides can destroy large tracts of forest and open space areas, destroy wildlife habitat, and remove productive soils and vegetation from slopes. It can also fill in waterways, impact water quality, and potentially affect flooding potential. Natural resources that fall in the High or Very High susceptibility classes shown on Figure 4-176 would be most vulnerable, as well as those in the run out areas. As shown on the map, this would include a relatively small area of the developed area, since most of the higher risk areas occur in the undeveloped areas of the Planning Area.

FEMA NRI Hazard Vulnerability Assessment

The HMPC looked at the FEMA NRI for additional specific data on Plumas County's vulnerability to Landslides, Mudslides, and Debris Flow. The NRI contains data and analysis for 18 separate natural hazards. The NRI hazard related to Plumas County's Landslides, Mudslides, and Debris Flow is only landslide. As shown in Table 4-117, landslides could cause a total of \$233,919 in expected annual losses, with a historic loss rating of very low. Landslide has a relatively low rating for social vulnerability and a

relatively high community resilience, with a risk index score of 94.9 out of 100. According to the NRI, there have been 6 landslide events between the years 2010-2021 with an average of 0.1 events per year.

Table 4-117 Plumas County Planning Area – Landslide Vulnerability Ratings from FEMA NRI

| NRI Hazard | Hazard Risk Index Rating | Expected Annual Loss Values (total)** | Exposure Value (total)*** | Historic Loss Ratio Rating |
|------------|--------------------------|---------------------------------------|---------------------------|----------------------------|
| Landslide | 94.9 | \$233,919 | \$132,005,510,075 | Very low |

Source: FEMA NRI Report

*Hazard Risk Index is calculated using data for only a single hazard type, and reflects a communities expected annual loss value, community risk factors, and the adjustment factor used to calculate the risk value.

**Expected annual loss represents the average economic loss in dollars resulting from natural hazards each year.

***Exposure is a natural hazard consequence factor that is the representative value of buildings, populations, or agriculture potentially exposed to a natural hazard occurrence.

Additional information on the FEMA NRI can be found in Section 4.2 and Appendix H.

Impacts from Landslide

Any type of landslide may result in damages or complete destruction of buildings in their path, as well as deaths and injuries. Landslides can cause road blockages by depositing debris on road surfaces or road damage if the road surface itself slides downhill. Utility lines and pipes are also prone to breakage in slide areas.

Landslides can collapse into water bodies, causing tsunamis or seiches. In 1958, a magnitude 8 earthquake collapsed a hillside into Lituya Bay, Alaska, causing a water splash wave that reached 1,720 feet up a mountain slope, stripping all vegetation. A massive landslide into the Vaoint Reservoir in Italy in 1963 caused a water splash wave that swept 800 feet over the top of a dam, causing a major flood that killed an estimated 2,600 people below. Landslides can relocate river channels, as occurred during the Oso mudslide in Washington State in March 2014. This occurred in an area not considered landslide prone on local maps. Landslides and debris flows can impact water quality and the storage capacity of surface water reservoirs used to store potable water.

Landslides, debris flows, and mud flows impacts vary by location and severity of any given event and will likely only affect certain areas of the Planning Area susceptible to landslide. Based on the risk assessment, there is a potential for significant landslides to occur in the Planning Area. However, most, but not all, of the historic landslides in the Plumas County Planning Area have been minor, localized events that are more of a nuisance than a disaster. Impacts that are not quantified, but can be anticipated in large future events, include:

- Injury and loss of life;
- Commercial and residential structural and property damage;
- Disruption of and damage to public infrastructure, utilities, and services;
- Damage to roads/bridges resulting in loss of mobility;
- Significant economic impact (jobs, sales, tax revenue) to the community; and

- Negative impact on commercial and residential property values

Impacts to identified assets at risk to this hazard and the overall vulnerability of the County may be affected in the future by climate change (which was discussed in the hazard profile section above), changes in population patterns, and changes in land use and development. The influencing effects of these factors on this hazard are discussed further in the Future Conditions/Future Development discussion below.

Future Conditions/Future Development

This section provides a discussion of how future conditions will influence or affect the hazard over time and also discusses future development relative to each hazard.

Future Conditions

Future conditions may be affected by climate change, changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. Findings on this for Plumas County include the following:

- Climate change is likely to exacerbate future landslide conditions and associated impacts and vulnerability of the County to landslides. This is especially true in burn scar areas that are at greater risk to landslides.
- Future population growth should be considered, as having more or less people in a community affects the overall hazard vulnerability to the County. Population is expected to decrease in Plumas County. Changes in population and population patterns may or may not increase the impacts and vulnerability of the County to this hazard depending on the location and nature of growth and continued planning for future hazard conditions.
- Land use planning should be proactive to address future hazard conditions. Locating new development, structures and critical facilities and infrastructure within or near areas of landslide risk may put additional development at risk. However, County building codes are in effect to reduce this risk and should be updated as necessary to continue to address future landslide conditions. It should be noted that most of the growth in the County is occurring in areas outside the landslide risk areas. Thus, depending on the location of new development and adherence to protective building codes, changes in land use and development may or may not increase the impacts and associated vulnerabilities of the County to this hazard.

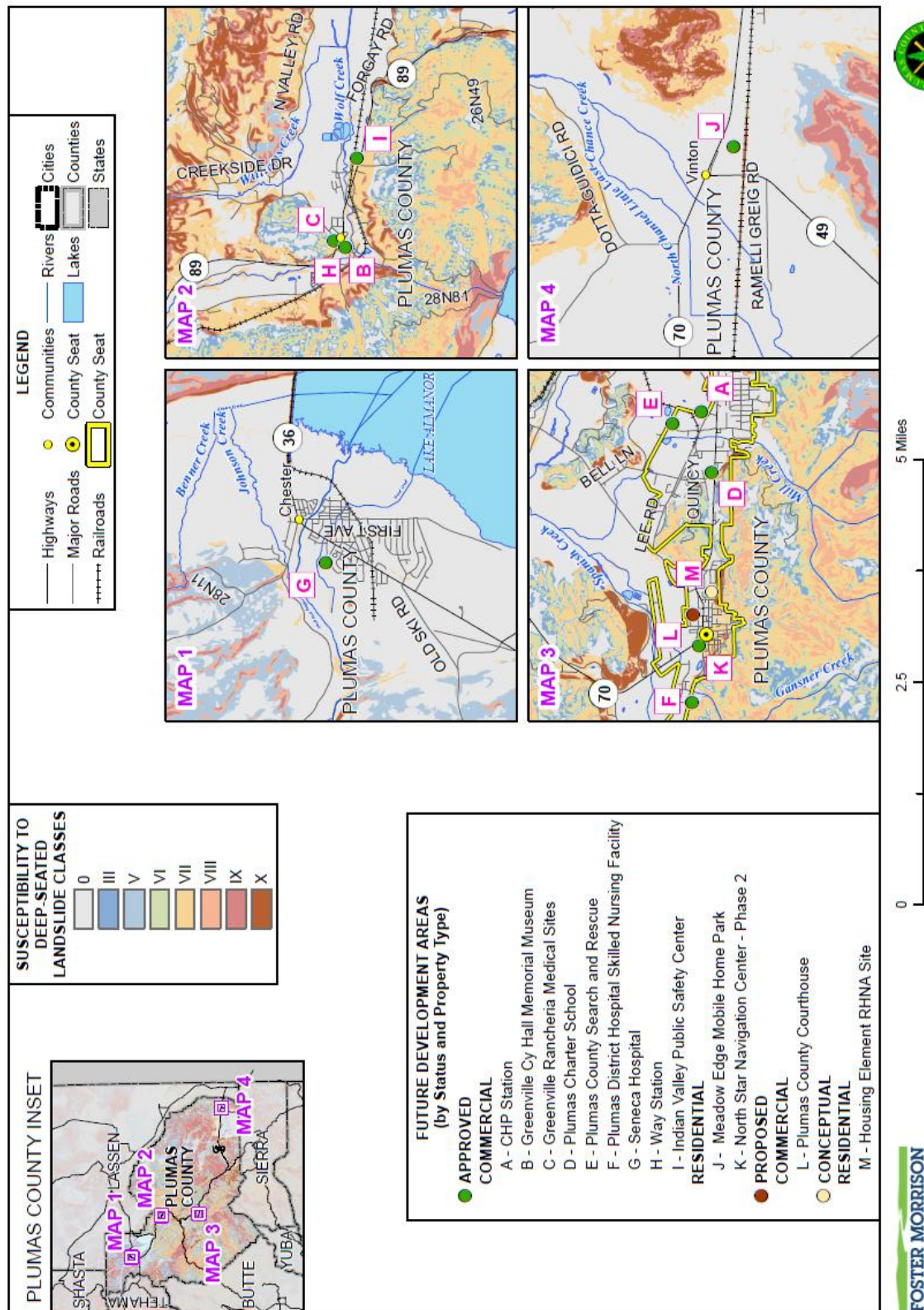
Future Development

Future development considerations should be ongoing and proactive. Ensuring that comprehensive land use planning is conducted, regulatory requirements are followed, and varying needs for different demographic groups with intersecting identities that reside within the County are considered can help to make for a more resilient community. Although new growth and development corridors would fall in the area affected by moderate risk of landslide, given the small chance of a major landslide and the building codes and erosion ordinance in effect, development in the landslide areas will continue to occur.

GIS Analysis

Plumas County provided 13 future development areas which were used as the basis for the inventory of future development for the unincorporated County. These were mapped in GIS. Figure 4-179 show the locations of the future development areas and deep-seated landslide classes. Table 4-118 shows the details of the future development areas that are located in each deep-seated landslide class.

Figure 4-179 Unincorporated Plumas County – Future Development in Deep-Seated Landslide Classes



Data Source: Susceptibility to Deep-Seated Landslides map - CGS Map Sheet 58 (May 2011), Plumas County GIS, Cal-Atlas; Map Date: 11/3/2025.

Table 4-118 Unincorporated Plumas County – Future Development in Deep-Seated Landslide Classes with Parcel Counts and Acreages

| Susceptibility to Deep-Seated Landslide Class / Future Development Status and Type | Site / Map ID and Future Development Name | Total Parcel Count | Improved Parcel Count | Unimproved Parcel Count | Total Acres | Total Improved Acres | Total Unimproved Acres |
|--|---|--------------------|-----------------------|-------------------------|--------------|----------------------|------------------------|
| 0 | | | | | | | |
| Approved | | | | | | | |
| Commercial | A - CHP Station | 1 | 0 | 1 | 5.00 | 0.00 | 5.00 |
| | B - Greenville Cy Hall Memorial Museum | 1 | 0 | 1 | 0.11 | 0.00 | 0.11 |
| | C - Greenville Rancheria Medical, Dental Clinic, and Pharmacy | 1 | 0 | 1 | 1.58 | 0.00 | 1.58 |
| | D - Plumas Charter School | 1 | 0 | 1 | 0.89 | 0.00 | 0.89 |
| | E - Plumas County Search and Rescue | 1 | 1 | 0 | 4.50 | 4.50 | 0.00 |
| | G - Seneca Hospital | 1 | 0 | 1 | 11.80 | 0.00 | 11.80 |
| | H - Way Station | 1 | 0 | 1 | 0.28 | 0.00 | 0.28 |
| | I - Indian Valley Public Safety Center | 1 | 0 | 1 | 5.00 | 0.00 | 5.00 |
| | Commercial Total | 8 | 1 | 7 | 29.16 | 4.50 | 24.66 |
| Residential | K - North Star Navigation Center - Phase 2 | 1 | 1 | 0 | 1.00 | 1.00 | 0.00 |
| | Residential Total | 1 | 1 | 0 | 1.00 | 1.00 | 0.00 |
| Approved Total | | 9 | 2 | 7 | 30.16 | 5.50 | 24.66 |
| Proposed | | | | | | | |
| Commercial | L - Plumas County Courthouse | 1 | 1 | 0 | 2.86 | 2.86 | 0.00 |

| Susceptibility to Deep-Seated Landslide Class / Future Development Status and Type | Site / Map ID and Future Development Name | Total Parcel Count | Improved Parcel Count | Unimproved Parcel Count | Total Acres | Total Improved Acres | Total Unimproved Acres |
|--|---|--------------------|-----------------------|-------------------------|--------------|----------------------|------------------------|
| | Commercial Total | 1 | 1 | 0 | 2.86 | 2.86 | 0.00 |
| Proposed Total | | 1 | 1 | 0 | 2.86 | 2.86 | 0.00 |
| 0 Total | | 10 | 3 | 7 | 33.02 | 8.36 | 24.66 |
| VI | | | | | | | |
| Approved | | | | | | | |
| Commercial | F - Plumas District Hospital Skilled Nursing Facility | 1 | 0 | 1 | 4.12 | 0.00 | 4.12 |
| | Commercial Total | 1 | 0 | 1 | 4.12 | 0.00 | 4.12 |
| | Approved Total | 1 | 0 | 1 | 4.12 | 0.00 | 4.12 |
| VI Total | | 1 | 0 | 1 | 4.12 | 0.00 | 4.12 |
| X | | | | | | | |
| Approved | | | | | | | |
| Residential | J - Meadow Edge Mobile Home Park | 1 | 1 | 0 | 42.74 | 42.74 | 0.00 |
| | Residential Total | 1 | 1 | 0 | 42.74 | 42.74 | 0.00 |
| Approved Total | | 1 | 1 | 0 | 42.74 | 42.74 | 0.00 |
| Conceptual | | | | | | | |
| Residential | M - Housing Element RHNA Site | 1 | 1 | 0 | 3.64 | 3.64 | 0.00 |
| | Residential Total | 1 | 1 | 0 | 3.64 | 3.64 | 0.00 |
| Conceptual Total | | 1 | 1 | 0 | 3.64 | 3.64 | 0.00 |
| X Total | | 2 | 2 | 0 | 46.38 | 46.38 | 0.00 |
| | | | | | | | |
| Grand Total | | 13 | 5 | 8 | 83.52 | 54.74 | 28.78 |

Source: CGS, Plumas County GIS

4.3.15. Volcano

Hazard Profile

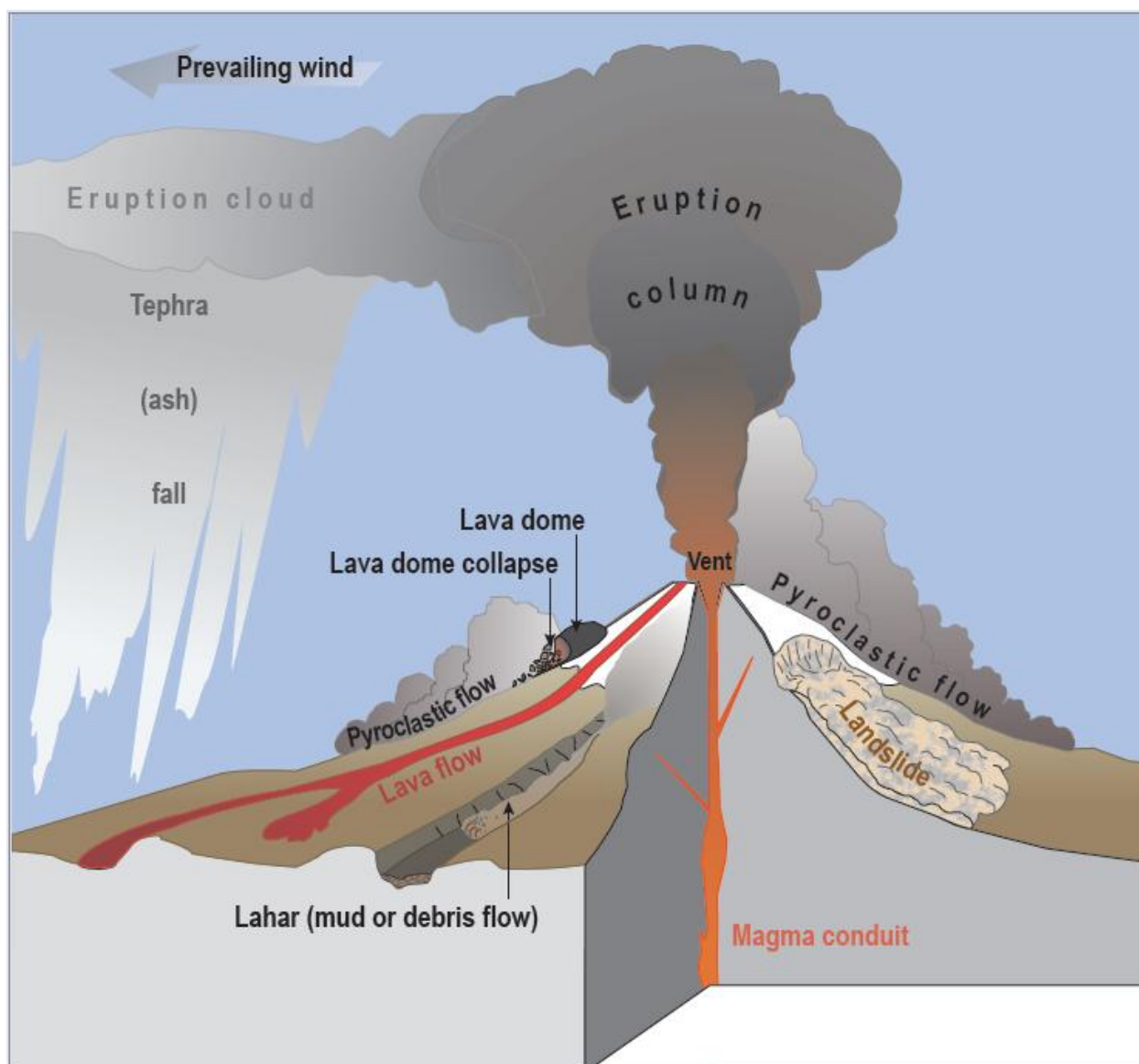
This hazard profile contains multiple sections that detail how this hazard can affect the Plumas County Planning Area. These sections include a hazard/problem description; description of location and extent; past occurrences of this hazard; likelihood of future occurrence; and how climate change can affect or influence this hazard.

Hazard/Problem Description

The 2023 California State Hazard Mitigation Plan identifies volcanoes as one of the hazards that can adversely impact the State. However, there have been few losses in California from volcanic eruptions. Along with this, the State Plan does not list volcano as one of Plumas County's high impact hazards.

As shown in Figure 4-180, active volcanoes pose a variety of natural hazards. Explosive eruptions blast lava fragments and gas into the air with tremendous force. The finest particles (ash) billow upward, forming an eruption column that can attain stratospheric heights in minutes. Simultaneously, searing volcanic gas laden with ash and coarse chunks of lava may sweep down the flanks of the volcano as a pyroclastic flow. Ash in the eruption cloud, carried by the prevailing winds, is an aviation hazard and may remain suspended for hundreds of miles before settling to the ground as ash fall. During less energetic effusive eruptions, hot, fluid lava may issue from the volcano as lava flows that can cover many miles in a single day. Alternatively, a sluggish plug of cooler, partially solidified lava may push up at the vent during an effusive eruption, creating a lava dome. A growing lava dome may become so steep that it collapses, violently releasing pyroclastic flows potentially as hazardous as those produced during explosive eruptions.

Figure 4-180 Volcanoes and Associated Hazards

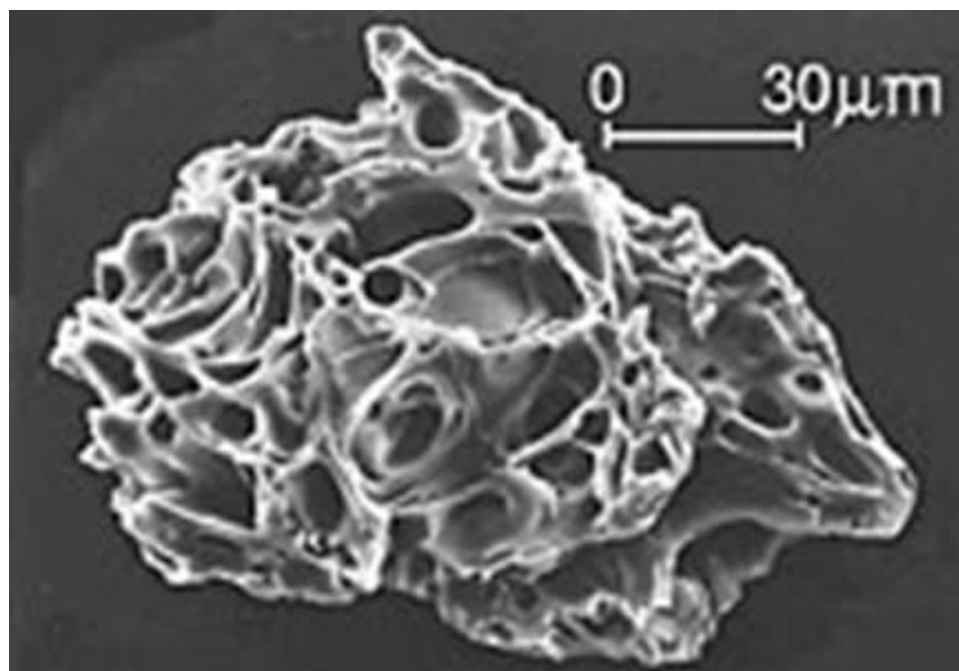


Source: USGS Publication 2014-3120

During and after an explosive or effusive eruption, loose volcanic debris on the flanks of the volcano can be mobilized by heavy rainfall or melting snow and ice, forming powerful floods of mud and rock (lahars) resembling rivers of wet concrete. These can rush down valleys and stream channels as one of the most destructive types of volcano hazards.

The USGS notes specific characteristics of volcanic ash. Volcanic ash is composed of small jagged pieces of rocks, minerals, and volcanic glass the size of sand and silt, as shown in Figure 4-181. Very small ash particles can be less than 0.001 millimeters across. Volcanic ash is not the product of combustion, like the soft fluffy material created by burning wood, leaves, or paper. Volcanic ash is hard, does not dissolve in water, is extremely abrasive and mildly corrosive, and conducts electricity when wet.

Figure 4-181 Ash Particle from 1980 Mt. St Helens Eruption Magnified 200 Times



Source: US Geological Survey: Volcanic Ash: Effect & Mitigation Strategies.

Volcanic ash is formed during explosive volcanic eruptions. Explosive eruptions occur when gases dissolved in molten rock (magma) expand and escape violently into the air, and also when water is heated by magma and abruptly flashes into steam. The force of the escaping gas violently shatters solid rocks. Expanding gas also shreds magma and blasts it into the air, where it solidifies into fragments of volcanic rock and glass. Once in the air, wind can blow the tiny ash particles tens to thousands of miles away from the volcano.

The average grain-size of rock fragments and volcanic ash erupted from an exploding volcanic vent varies greatly among different eruptions and during a single explosive eruption that lasts hours to days. Heavier, large-sized rock fragments typically fall back to the ground on or close to the volcano and progressively smaller and lighter fragments are blown farther from the volcano by wind. Volcanic ash, the smallest particles (2 mm in diameter or smaller), can travel hundreds to thousands of kilometers downwind from a volcano depending on wind speed, volume of ash erupted, and height of the eruption column.

The size of ash particles that fall to the ground generally decreases exponentially with increasing distance from a volcano. Also, the range in grain size of volcanic ash typically diminishes downwind from a volcano (becoming progressively smaller). At specific locations, however, the distribution of ash particle sizes can vary widely.

The USGS has ranked the volcanic threat at all U.S. volcanoes using volcano age, types of potential hazards, and estimates of the societal exposure to those hazards. Sixteen volcanoes are on California's watch list to monitor. Research suggests that partially molten rock (magma) lies beneath seven of these volcanoes—Medicine Lake Volcano, Mount Shasta, Lassen Volcanic Center, Clear Lake Volcanic Field, the Long Valley Volcanic Region, Coso Volcanic Field, and Salton Buttes. At these volcanoes, earthquakes

(seismicity), hot springs, volcanic gas emissions, and (or) ground movement (deformation) attest to their restless nature. Information on the Lassen Volcanic Center threat, the volcano with the greatest potential to affect Plumas County, is shown in Table 4-119.

Table 4-119 Volcano Threat near Plumas County

| | |
|--------------------|---|
| Volcano | Lassen Volcanic Center |
| Threat | Very High Threat |
| Information | Lassen Volcanic National Park, located about 50 miles east of Redding, showcases the dynamic history of this area and draws more than 350,000 visitors each year. Lassen Peak erupted violently in the early twentieth century. |

Source: USGS Fact Sheet 2014-3120

Though the table above shows the threat as very high, given the likelihood of future occurrences, the HMPC still ranks the risk to this hazard as low for this LHMP.

Location and Extent

Of the approximately 20 volcanoes in the State, only a few are active and pose a threat. Of these, Lassen Peak is the closet potential threat to Plumas County. Figure 4-182 shows volcanoes in or near California and their location relative to the Plumas County.

Figure 4-182 Active Volcanoes in California and in the Plumas County Area



Source: 2018 State of California Hazard Mitigation Plan

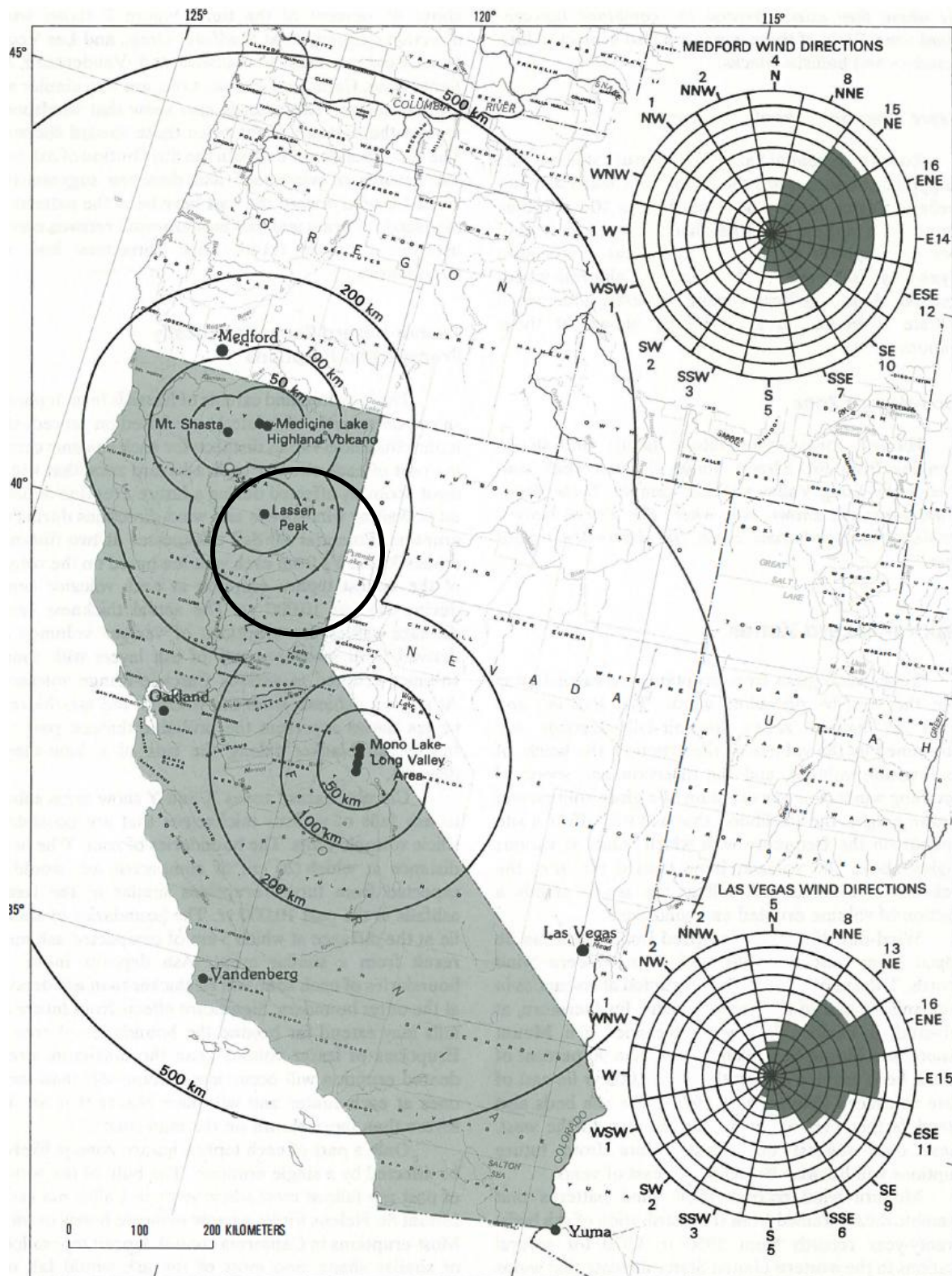
According to the USGS, Lassen Volcanic Center lies in Lassen Volcanic National Park 55 mi east of Redding. The park draws over 350,000 visitors each year with its spectacular volcanic landscapes. Lassen Volcanic Center is located at the southern edge of the Cascade Range, which is bounded on the west by the Sacramento Valley and the Klamath Mountains, on the south by the Sierra Nevada, and on the east by the

Basin and Range geologic provinces. Volcanism in the Lassen segment is a result of subduction of the Juan de Fuca oceanic plate eastward beneath the North American continental plate.

Volcano extent is traditionally measured in magma production and ashfall. Maps showing ashfall or magma affected areas have been created for the Lassen Volcanics Area:

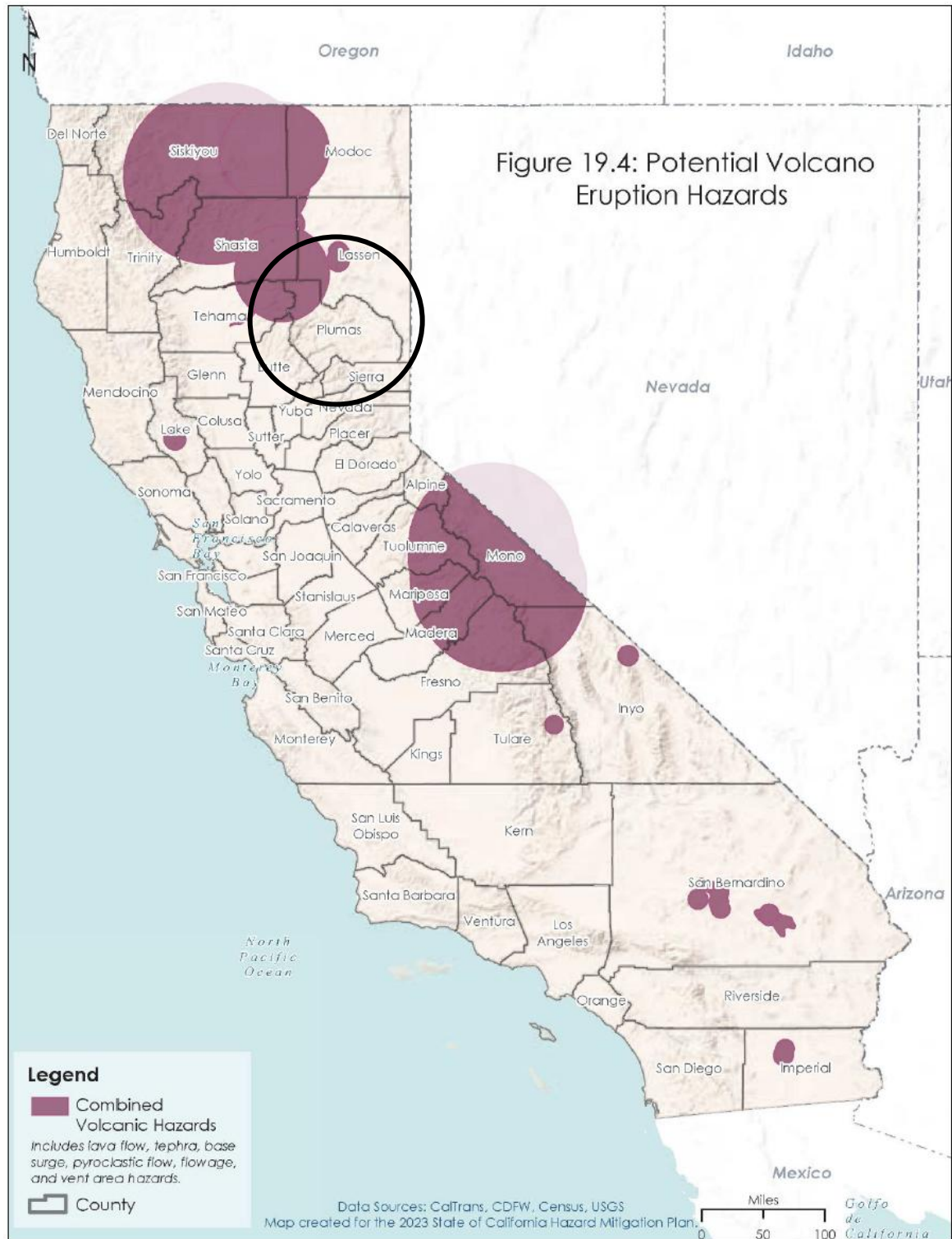
- These potential ashfall zones can be seen in Figure 4-183. The USGS noted that basaltic eruptions may build cinder cones as high as a few hundred meters (around 1,000 ft) and blanket many square kilometers with ash a few centimeters to meters thick. However, these eruptions would not typically impact human life if they occurred at Lassen volcanic center, because they are relatively nonviolent. More devastating ash eruptions occur when dacite magma charged with volcanic gases reaches the surface. In this case, an explosive vertical column of gas and ash may rise several kilometers into the atmosphere. Fallout from the eruption column can blanket areas within a few kilometers of the vent with a thick layer of tephra and high-altitude winds may carry finer ash tens to hundreds of kilometers from the volcano and pose a hazard to aircraft.
- Potential lava flow (among other volcanic issues) were mapped in the 2023 State of California Hazard Mitigation Plan. These areas touch the northeast portion of the County, as shown on Figure 4-184.

Figure 4-183 Potential Ashfall Areas for California Volcanoes



Source: USGS Bulletin 1847

Figure 4-184 Potential Volcano Eruption Hazards



Source: 2023 California State Hazard Mitigation Plan

Past Occurrences

Disaster Declaration History

There have been no FEMA or Cal OES disasters related to volcano, as shown in Table 4-4. There have been no USDA disaster declarations for volcano.

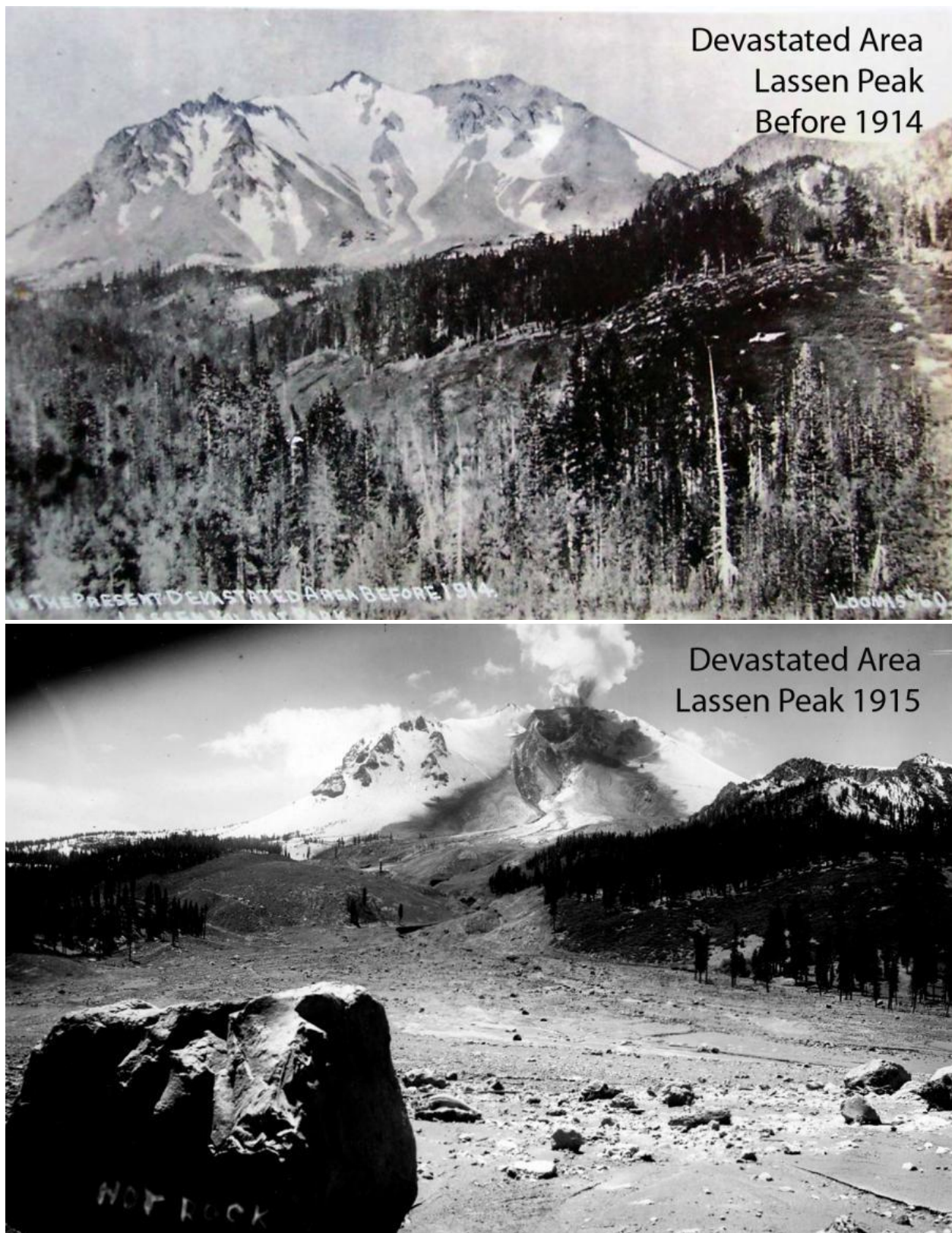
NCDC Events

The NCDC does not track volcanic activity.

USGS Events

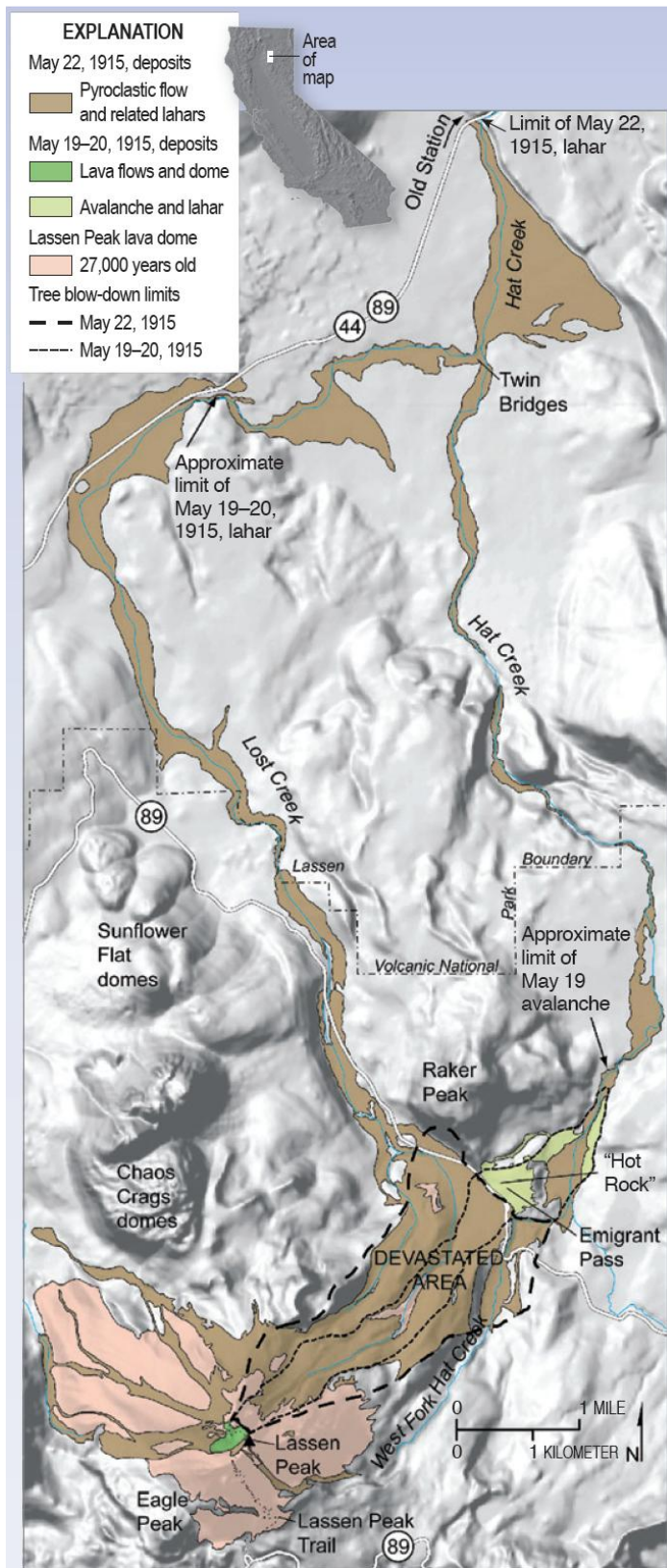
Within the last 825,000 years, hundreds of explosive eruptions came from vents scattered over approximately 200 mi². Surrounding Lassen Volcanic Center, over fifty effusive (non-explosive) eruptions have occurred in the last 100,000 years. The area has been relatively quiet for the last 25,000 years with three notable exceptions—the Chaos Crags eruption (1,100 years ago), the eruption of Cinder Cone (1666 A.D.), and the Lassen Peak eruption (A.D. 1914 to 1917). The Lassen Peak eruption consisted mostly of sporadic steam blasts. In May of 1915, however, partially molten rock oozing from the vent began building a precarious lava dome. The dome collapsed on May 19, sending an avalanche of hot rock down the north flank of the volcano. Three days later, a vertical column of ash exploded from the vent reaching altitudes of 30,000 feet. The ash column spawned a high-speed ground flow of hot gas and fragmented lava. Ash from the top of the column drifted downwind 200 miles to the east, as far as Winnemucca, NV. On both days, melting snow fueled mudflows, flooding drainages 20-30 miles away. Before and after pictures are shown on Figure 4-185, while Figure 4-186 shows the extent of damages due to the eruption.

Figure 4-185 1915 Lassen Volcano Eruption



Source: USGS

Figure 4-186 Deposits from Lassen Peak May 1915 Eruptions



Source: USGS – A Sight “Fearfully Grans” – Eruptions of Lassen Peak California, 1914 to 1917

The older Chaos Crags eruption was similar in style, but considerably larger in magnitude. Lassen Volcanic Center hosts a vigorous geothermal system, numerous hot springs, steam vents, and boiling mud pots. Volcanic earthquakes are common, although most are too small to be felt. Non-volcanic earthquakes along regional faults also occur—earthquake swarms in 1936, 1945-1947, and 1950 included several events above magnitude 4.0, with the two largest registering 5.0 and 5.5. Ground surveys show localized subsidence of the volcano, probably due to motion on regional faults.

Hazard Mitigation Planning Committee Events

The HMPC noted no volcanic events.

Likelihood of Future Occurrence

Unlikely—According to the USGS, volcanoes in the Lassen area tend to erupt infrequently, and may be inactive for periods lasting centuries or even millennia. The most recent eruptions in the Lassen area were the relatively small events that occurred at Lassen Peak between 1914 and 1917. The most recent large eruption produced Chaos Crags about 1,100 years ago. Such large eruptions in the Lassen area have an average recurrence interval of about 10,000 years. However, the geological history of the Lassen area indicates that volcanism there is episodic, having periods of relatively frequent eruptions separated by long quiet intervals. For example, the last large event before Chaos Crags eruption was the one that built Lassen Peak 27,000 years.

Climate Change and Volcano

Climate change is unlikely to influence volcanic eruptions.

Vulnerability Assessment

Vulnerability—Low

The population of Plumas County, California, faces low vulnerability to volcanic impacts due to the absence of active or high-threat volcanoes within or near the County. Lassen, located in Shasta County, last erupted in 1914-1917, and while it poses risks such as pyroclastic flows, ashfall, and lahars, these hazards diminish with distance. While lava flow wouldn't be a concern to the County, volcanic ash and gases could pose respiratory risks, particularly for vulnerable populations (e.g., the elderly, who make up a significant portion of Plumas County's residents).

An assessment of a community's vulnerability to this hazard begins with an understanding of local exposure to unincorporated Plumas County. This is included in the Local Concerns section below. After that, vulnerability is discussed in multiple sections that detail how this hazard can affect both the entire Plumas County Planning Area as well as the unincorporated portions of Plumas County. How the hazard affects the other participating jurisdictions can be found in their respective annexes to this LHMP Update. These sections below include assets at risk, impacts, and how future development can be affected by this hazard.

Local Concerns (unincorporated Plumas County)

The unincorporated County has specific concerns regarding this hazard. These concerns form a portion of the basis for the mitigation strategy and mitigation actions that seek to reduce vulnerabilities to this hazard.

Low-level volcanic unrest can persist for decades or even hundreds of years without an eruption. Although steady, low-level unrest is normal for many young volcanoes, rapidly accelerating unrest is cause for concern. At California's most threatening volcanoes, monitoring sensors are in place to continuously track levels of unrest. Such monitoring is necessary to determine the baseline, or background level, of activity at a volcano to help volcanologists know what is normal. An uptick in unrest may be a sign of increased volcanic threat.

Local concerns for each of the jurisdictions can be found under the Local Concerns heading in each respective jurisdictional annex to this LHMP Update.

Assets at Risk

Assets at risk from volcano include people and populations; structures; critical facilities and infrastructure; and natural, historic, and cultural resources. These are discussed in the following sections for both the Plumas County Planning Area and unincorporated Plumas County.

Additionally, for each hazard in the FEMA National Risk Index in Plumas County, the relevant portions of the hazard analysis done by FEMA is presented below. This includes the Hazard Risk Index Rating, Expected Annual Loss Values, Exposure Values, and the Historic Loss Ratio Rating. These are presented for the Plumas County Planning Area as a whole.

People and Populations

Populations living near volcanoes are most vulnerable to volcanic eruptions and lava flows, although volcanic ash can travel and affect populations many miles away and cause problems for aviation. Vulnerable populations with respiratory issues would be at greatest vulnerability to the volcano hazard. The USGS, in Bulletin 1847, described the nature and probable distribution of potentially hazardous volcanic phenomena and their threat to people and property. It included hazard zonation maps that depicted areas relatively likely to be affected by future eruptions in California. Affected areas fall in Plumas County. This is shown on Figure 4-183.

Structures

Volcanic magma is expected to see limited impact to structures in Plumas County. Structures may be damaged by accumulation of falling lava fragments or burnt by their high heat. Ashfall can affect solar panels and other appurtenances. Ash may affect air conditioning and other HVAC systems. There is a risk of wildfires that may be ignited due to coarse ash that could impact structures within the County depending on where the wind would be blowing.

Critical Facilities and Infrastructure

Depending on their type and function, critical facilities and infrastructure can also be affected by a volcanic eruption. Ash can cause ventilation issues and large deposits can even clog pipes. Schools may have to close or operate on a reduced schedule due to health concerns of breathing in the ash. Hospitals may be temporarily overrun with patients with breathing issues.

Natural, Historic, and Cultural Resources

Park areas and natural resource assets in the Plumas County Planning Area may be vulnerable to a volcano. These include turfed areas; landscapes, trees, wildlife and habitat areas, and wetlands and marsh lands. Environmentally, ash contains toxic elements that can contaminate water, degrade soils, and disrupt local ecosystems. Historic and cultural resources that are protected by structures are not expected to be affected by this hazard.

FEMA NRI Hazard Vulnerability Assessment

Volcano is not an NRI hazard; therefore, no data is presented.

Impacts from Volcano

With respect to Plumas County, it is unlikely that lava flows would impact the Planning Area given the distance from Mt. Lassen; it is the potential for ash and gases associated with an eruption that could extend into the County causing issues. The impact of coarse ash fall is limited to the immediate area of the volcanic vent. Structures may be damaged by accumulation of falling lava fragments or burnt by their high heat. Wildfires may be ignited by coarse ash. Although generally non-lethal, fine ash fall is the most widespread and disruptive volcanic hazard. People exposed to fine ash commonly experience various eye, nose, and throat symptoms. Short-term exposures are not known to pose a significant health hazard. Long-term health effects have not been demonstrated conclusively. Ash deposited downwind of the volcano covers everything like a snowfall, but also infiltrates cracks and openings in machinery, buildings, and electronics. Falling ash can obscure sunlight, reducing visibility to zero. When wet, it can make paved surfaces slippery and impassable. Fine ash is abrasive, damaging surfaces and moving parts of machinery, vehicles, and aircraft. Life-threatening and costly damage can occur to aircraft that fly through fine ash clouds. Newly fallen volcanic ash may result in short-term physical and chemical changes in water quality. Close to the volcano, heavy ash fall may cause roofs to collapse, wastewater systems to clog, and power systems to shut down. In agricultural areas, fine ash can damage crops, and sicken livestock. Resuspension of ash by human activity and wind cause continuing disruption to daily life.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the County may be affected in the future by climate change (which was discussed in the hazard profile section above), changes in population patterns, and changes in land use and development. The influencing effects of these factors on this hazard are discussed further in the Future Conditions/Future Development discussion below.

Future Conditions/Future Development

Future conditions may be affected by climate change, changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. Findings on this for Plumas County include the following:

- Climate change is unlikely to affect volcanic eruptions and associated impacts and vulnerability of the County.
- Future population growth should be considered, as having more or less people in a community affects the overall hazard vulnerability to the County. Population is expected to decrease for Plumas County and, as such, the vulnerability to this hazard may decrease. Changes in population and population patterns may or may not increase the impacts and vulnerability of the County to this hazard.
- Land use planning will have limited to no effects on volcanic eruption. There are no building codes in effect that take volcano into account. Additionally, there are no land use restrictions in volcano prone areas. Changes in land use are unlikely to increase or decrease the vulnerability of the County to a volcanic eruption.

Future development in the County may be at risk to volcanic activity; however, future development is at no greater risk to volcanic activity than current development. Further, given the uncertainties with regard to volcanic activity, it is unlikely that future development activities would be constrained in any manner.

4.3.16. Wildfire

Hazard Profile

This hazard profile contains multiple sections that detail how this hazard can affect the Plumas County Planning Area. These sections include a hazard/problem description; description of location and extent; past occurrences of this hazard; likelihood of future occurrence; and how climate change can affect or influence this hazard.

Hazard/Problem Description

California is recognized as one of the most fire-prone and consequently fire-adapted landscapes in the world. The combination of complex terrain, Mediterranean climate, and productive natural plant communities, along with ample natural and aboriginal ignition sources, has created conditions for extensive wildfires. Wildland fire is an ongoing concern for the Plumas County Planning Area. Historically, the fire season extends from early spring through late fall of each year during the hotter, dryer months. However, in recent years, wildfire season is more of a year around event. Fire conditions arise from a combination of high temperatures, low moisture content in the air and fuel, an accumulation of vegetation, and high winds.

Potential losses from wildfire include human life, structures and other improvements, natural and cultural resources, quality and quantity of water supplies, cropland, timber, and recreational opportunities. Economic losses could also result. Smoke and air pollution from wildfires can be a severe health hazard. In addition, catastrophic wildfire can create favorable conditions for other hazards such as flooding, landslides and mudflows, and erosion during the rainy season. Additional losses could occur if PG&E or

PSREC initiates a power shutdown during extreme fire weather conditions. This is discussed in greater detail at the beginning of Section 4.3.

Wildfire Smoke and Air Quality

Smoke from wildfires is made up of gas and particulate matter, which can be easily observed in the air. Air quality standards have been established to protect human health with the pollutant referred to as PM2.5 which consists of particles 2.5 microns or less in diameter. These smaller sizes of particles are responsible for adverse health effects because of their ability to reach the lower regions of the respiratory tract.

Wildfire smoke can have negative effects to those who live in or near a fire burn area. Smoke and air pollution from wildfires can be a severe health hazard. Significant wildfires occurring in nearby northern California communities since the 2019/2020 LHMPs have created significant air pollution affecting area residents. County residents have been affected by wildfire smoke and poor air quality, from fires both within the Planning Area and from those much further away. The County has seen air quality impacts from smoke from wildfires since the 2019/2020 LHMPs. During these times, air sensors in the County showed periods of very poor air quality in Plumas County. This was especially a concern during Covid. A document titled Smoke Impacts CA: 2020 Lessons – 2021 Actions that was published by the US Forest Service noted that wildfire smoke exposure could result in greater susceptibility to COVID-19 and other viruses/bacteria (decrease in local and systemic immune function).

According to FirstStreet.org, a climate risk data organization, elderly individuals are at an adversely high risk of experiencing negative health impacts from poor air quality, like worsening of heart disease and the potential for stroke, reduced lung capacity, and increase in lung disease.

The paper “Wildland fire management and air quality in the southern Sierra Nevada: Using the Lion Fire as a case study with a multi-year perspective on PM2.5 impacts and fire policy” by D. Schweizer and R. Cisneros explores the impacts of smoke from high-intensity, stand replacing fires versus lower intensity fires in the Sierra Nevada and explains that while smoke and fire mitigation is important with any fire, we the extreme effects of smoke from large wildfires can be prevented by managing forests and allowing low intensity fires to burn.

Location and Extent

Fires can have a quick speed of onset, especially during periods of drought. Fires can burn for a short period of time or may have durations lasting for a week or more. Wildfire can affect any area of the Planning Area; however, CAL FIRE has mapped areas in California that are at risk to wildfire. Maps showing the various Fire Hazard Severity Zones, which range from Non-Wildland/Non-Urban to Very High, can be found below. CAL FIRE Fire Hazard Severity Zones have been developed specific to Fire Responsibility Areas located in the County which details the responsible fire agency for each area of the County; specifically, federal, state, and local areas also shown in the below maps.

This section is broken down into three parts: a discussion on the wildland urban interface in Plumas, the Plumas County wildfire setting, and the (CAL FIRE) Fire Responsibility Area and Fire Hazard Severity Zone Mapping.

Wildland Urban Interface

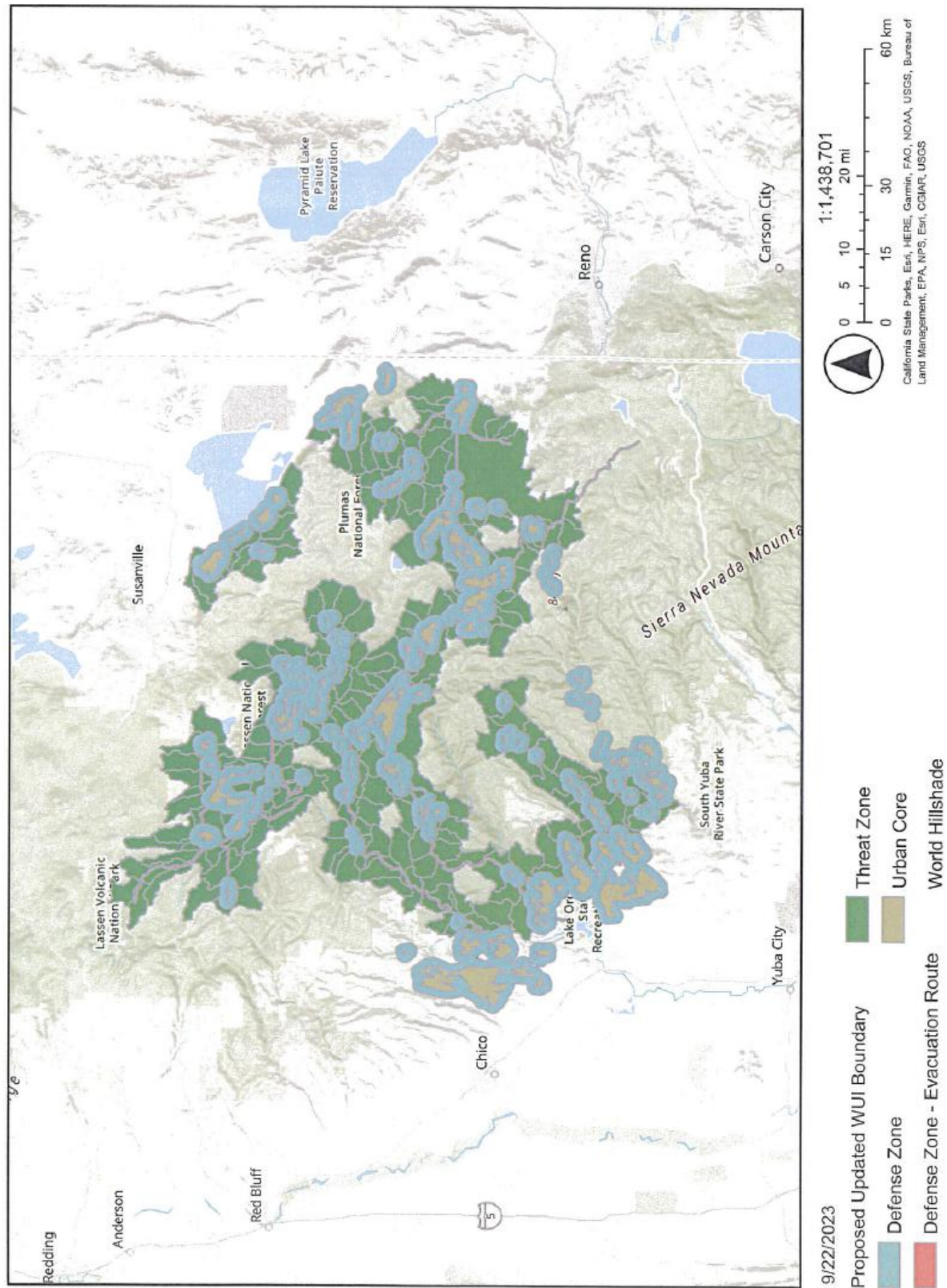
Throughout California, communities are increasingly concerned about wildfire safety as increased development in the foothills and mountain areas and subsequent fire control practices have affected the natural cycle of the ecosystem. While wildfire risk is predominantly associated with wildland urban interface (WUI) areas, significant wildfires can also occur in heavily populated areas. The wildland urban interface is a general term that applies to development adjacent to landscapes that support wildland fire. The WUI defines the community development into the foothills and mountainous areas of California. The WUI describes those communities that are mixed in with grass, brush and timbered covered lands (wildland). These are areas where wildland fire once burned only vegetation but now burns homes as well. The WUI for Plumas County consists of communities at risk (shown in Section 4.3.15) as well as the area around the communities that pose a fire threat.

There are two types of WUI environments. The first is the true urban interface where development abruptly meets wildland. The second WUI environment is referred to as the wildland urban intermix. Wildland urban intermix communities are rural, low-density communities where homes are intermixed in wildland areas. Wildland urban intermix communities are difficult to defend because they are sprawling communities over a large geographical area with wild fuels throughout. This profile makes access, structure protection, and fire control difficult as fire can freely run through the community.

WUI fires are often the most damaging. WUI fires occur where the natural forested landscape and urban built environment meet or intersect. Even relatively small acreage fires may result in disastrous damages. The damages are primarily reported as damage to infrastructure, built environment, loss of socio-economic values and injuries to people.

The WUI for Plumas County adopted by the County is shown on Figure 4-187.

Figure 4-187 WUI Boundaries in Plumas County



The HMPC did note that there is no standard definition of how to delineate the boundaries of any particular WUI area. The Fire Safe Council map that is embedded in the document was approved by the Plumas County Board of Supervisors. From the CWPP regarding Plumas County's WUI:

In 2004-2005 when the first Plumas County WUI map was developed the concept was to have two WUI boundaries, an "Adjacent WUI" and an Extended WUI", (0-.75 and .75 to 1.5 mile respectively). Consequently, the GIS program generated WUI's with circles around the CAR's, using the above criteria.

In 2010, the WUI boundaries were expanded to better link communities and the WUI. While implementing the CWPP since 2005, it became apparent to PC FSC during collaborative project outreach & development that the earlier computer generated WUI boundaries should be more contiguous with respect to connecting communities and logical in terms of watersheds, ridges, valleys or roads. Earlier WUI circle maps weren't well suited to watershed scale and larger community project planning. On November 2, 2010, the Plumas County Board of Supervisors approved the updated "Wildland Urban Interface" Map.

Plumas County Wildfire Setting

As previously stated, there are areas in the County that are prone to wildfire. Wildland fires affect grass, forest, and brushlands, as well as any structures located within them. Where there is human access to wildland areas, the risk of fire increases due to a greater chance for human carelessness and historical fire management practices. Generally, there are four major factors that contribute to and sustain wildfires and allow for predictions of a given area's potential for ignitions and to burn. These factors include fuel, topography, weather, and human actions.

- **Fuel** – Fuel is the material that feeds a fire and is a key factor in wildfire behavior. Fuel is generally classified by type and by volume. Fuel sources are diverse and include everything from dead tree needles and leaves, twigs, and branches to dead standing trees, live trees, brush, and cured grasses. Also to be considered as a fuel source, are man-made structures and other associated combustibles. The type of prevalent fuel directly influences the behavior of wildfire. Light fuels such as grasses burn quickly and serve as a catalyst for fire spread. The volume of available fuel is described in terms of Fuel Loading. Certain areas in and surrounding Plumas County are extremely vulnerable to fires as a result of overgrown fuels combined with a growing number of structures being built near and within rural lands. Fuel is the only factor that is under human control.
- **Topography** – An area's terrain and land slopes affect its susceptibility to wildfire spread. Fire intensities and rates of spread increase as slope increases due to the tendency of heat from a fire to rise via convection. The natural arrangement of vegetation throughout a hillside can also contribute to increased fire activity on slopes. According to the Plumas County 2019 CWPP, Plumas County sits mostly in the Sierra Nevada Range and lies between the Central Valley and Great Basin. There are about 30 mountain peaks over 7,000 feet in elevation. Most of the population centers are over 3,400 feet. Wide ranges of elevation (1,600- 8,000+ feet) are responsible in part for the variety of climates and vegetation found in the County. Another significant factor is the continuous interaction of maritime

air masses with those of continental origin. The combination of these influences results in pronounced climatic changes within short distances.

- **Weather** – Weather components such as temperature, relative humidity, wind, and lightning also affect the potential for wildfire. High temperatures and low relative humidity dry out the fuels that feed wildfire creating a situation where fuel will more readily ignite and burn more intensely. Wind is the most treacherous weather factor. The greater the wind, the faster a fire will spread, and the more intense it will be. Winds can be significant at times in Plumas County. Wind from the Central Valley is especially conducive to hot, dry conditions, in the Sierra Foothills, which can lead to extreme fire danger. Wind shifts, in addition to wind speed, can occur suddenly due to temperature changes or the interaction of wind with topographical features such as slopes or steep hillsides. Most wind shifts in Plumas County occur in the Feather River Canyon. According to the 2019 CWPP, since 1970, most of the acres burned have been under southwest and north wind conditions. Critical fire weather patterns vary within the County, but mostly a southwest flow, which occurs across Plumas County due to the general wind flow associated with air moving from sea to land and California lying in the “Belt of the Westerlies” global circulation pattern. In addition to the general southwesterly flow, topography and local up canyon flow from diurnal heating of the Sacramento Valley complement this air movement, usually increasing speeds. The strongest southwest winds are associated with frontal system or low-pressure trough. These winds tend to cause most of the large fires in the county to burn from the southwest to the northeast. On the western slopes of the County, before the crest of the Sierras, most large fires are driven from east to west by north and east winds, when a high-pressure form over the Great Basin and reversing normal air flows from land to sea. These conditions are magnified at night and in the early morning hours when down canyon winds are accelerated by the local diurnal process, the general flow and channeled topographically. These north and east wind events usually occur in the spring and fall and have the largest impacts in the Feather River Canyons. In these events, relative humidity is also lower as the air mass originates on land versus sea, and as the air moves downslope it compresses, creating additional lowering. This is similar to what occurs in Southern California during Santa Ana conditions. Meteorologists with the US Forest Service conducted a study of these wind events. They found that while these patterns only occurred about 25% of the time in fire season, that 90% of large fires, on the western slopes, burned during those events. As part of a weather system, lightning also ignites wildfires, often in difficult to reach terrain for firefighters. Related to weather is the issue of recent drought conditions contributing to concerns about wildfire vulnerability. During periods of drought, the threat of wildfire increases.
- **Human Actions** – Most wildfires are ignited by human action, the result of direct acts of arson, carelessness, or accidents. Many fires originate in populated areas along roads and around homes and are often the result of arson or careless acts such as the disposal of cigarettes, use of equipment or debris burning. Recreation areas that are located in high fire hazard areas also result in increased human activity that can increase the potential for wildfires to occur.

California Department of Forestry and Fire Protection (CAL FIRE) Fire Responsibility Area and Fire Hazard Severity Zone Mapping

CAL FIRE mapping of Fire Responsibility Areas and Fire Hazard Severity Zone Mapping is shown below for the Plumas County Planning Area.

CAL FIRE Fire Responsibility Areas

There are various wildland fire protection agencies that have responsibility within the California communities. There are also numerous fire departments and fire protection districts that serve local areas, many of whom have mutual aid agreements with each other as well as federal and state agencies for fire suppression and protection. Fire Responsibility areas are generally categorized by FRA, SRA and LRA.

The CAL FIRE data, detailing Fire Responsibility Areas within the City Planning Area, was utilized to determine the locations of the County falling within each Fire Responsibility Area. CAL FIRE has a legal responsibility to provide fire protection on all SRA lands, which are defined based on land ownership, population density and land use. CAL FIRE's LRA lands show where the local jurisdictions have primary responsibility for fire protection. CAL FIRE's FRA areas detail where the federal government has responsibility. Using the 2023 FRA mapping layer, Fire Responsibility Areas are shown below.

Plumas County
Local Hazard Mitigation Plan Update
November 2025



CAL FIRE Fire Hazard Severity Zone Mapping

As part of the Fire and Resource Assessment Program (FRAP), the State Fire Marshall was mandated to map areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors, including areas where winds have been identified as a major cause of wildfire spread. These zones, referred to as Fire Hazard Severity Zones (FHSZs), include non-wildland/non-urban, moderate, high, and very high FHSZs. The FHSZ map evaluates hazard, not risk. Hazard is based on the physical conditions that create a likelihood and expected fire behavior over a 30-50 year period without considering mitigation measures such as home hardening, recent wildfire, or fuel reduction efforts. Risk is the potential damage a fire can do to an area under existing conditions, accounting for any modification such as fuel reduction projects, defensible space, and ignition resistant building construction.

CAL FIRE's FHSZ mapping for California, including Plumas County, has recently been updated as detailed below. The new FHSZ mapping will create more accurate zone designations that can direct the implementation of mitigation strategies in areas where hazards warrant these investments.

Effective April 1, 2024, CAL FIRE updated its Fire Hazard Severity Zone (FHSZ) maps for the State Responsibility Area (SRA) to provide updated map zones based on new science in local climate data and improved fire assessment modeling. The FHSZ model for wildland fire has two key elements: probability of an area burning and expected fire behavior under extreme fuel and weather conditions. The factors considered in determining fire hazard within wildland areas are fire history, flame length, terrain, local weather, and the potential fuel over a 50-year period. Outside of wildlands, the model considers factors that might lead to buildings being threatened, including terrain, weather, urban vegetation cover, blowing embers, proximity to wildland, fire history and fire hazard in nearby wildlands. FHSZs are not a structure loss model, as key information regarding structure ignition (such as roof type, etc.) is not included.

The FHSZ data for the Federal Responsibility Area has not been updated since 2007.

Effective February 10, 2025, CAL FIRE also updated its Fire Hazard Severity Zone (FHSZ) maps for the Local Responsibility Areas (LRA) to provide updated map zones based on new science in local climate data and improved fire assessment modeling.

New FHSZ mapping for Plumas County is utilized for this LHMP using two separate analyses: The SRA/FRA FHSZ mapping has been combined into one map and analysis and the LRA FHSZ mapping is included in a separate analysis and described below:

- Figure 4-189 shows the FHSZ map for the SRA/FRA in the Plumas County Planning Area. Geographic extents of wildfire FHSZs in the FRA and SRA for the Plumas County Planning Area is detailed in Table 4-120.
- Figure 4-190 shows the FHSZ map for the LRA in the Plumas County Planning Area. This map has three inset areas. These inset maps are shown on Figure 4-191, Figure 4-192, and Figure 4-193. Geographic extents of wildfire FHSZs in the LRA for the Plumas County Planning Area is detailed in Table 4-121.

Details on each jurisdiction's Fire Hazard Severity Zone extents (for both SRA/FRA and LRA) can be found in their respective annexes to this LHMP Update.

Figure 4-189 Plumas County Planning Area – CAL FIRE SRA/FRA Fire Hazard Severity Zones

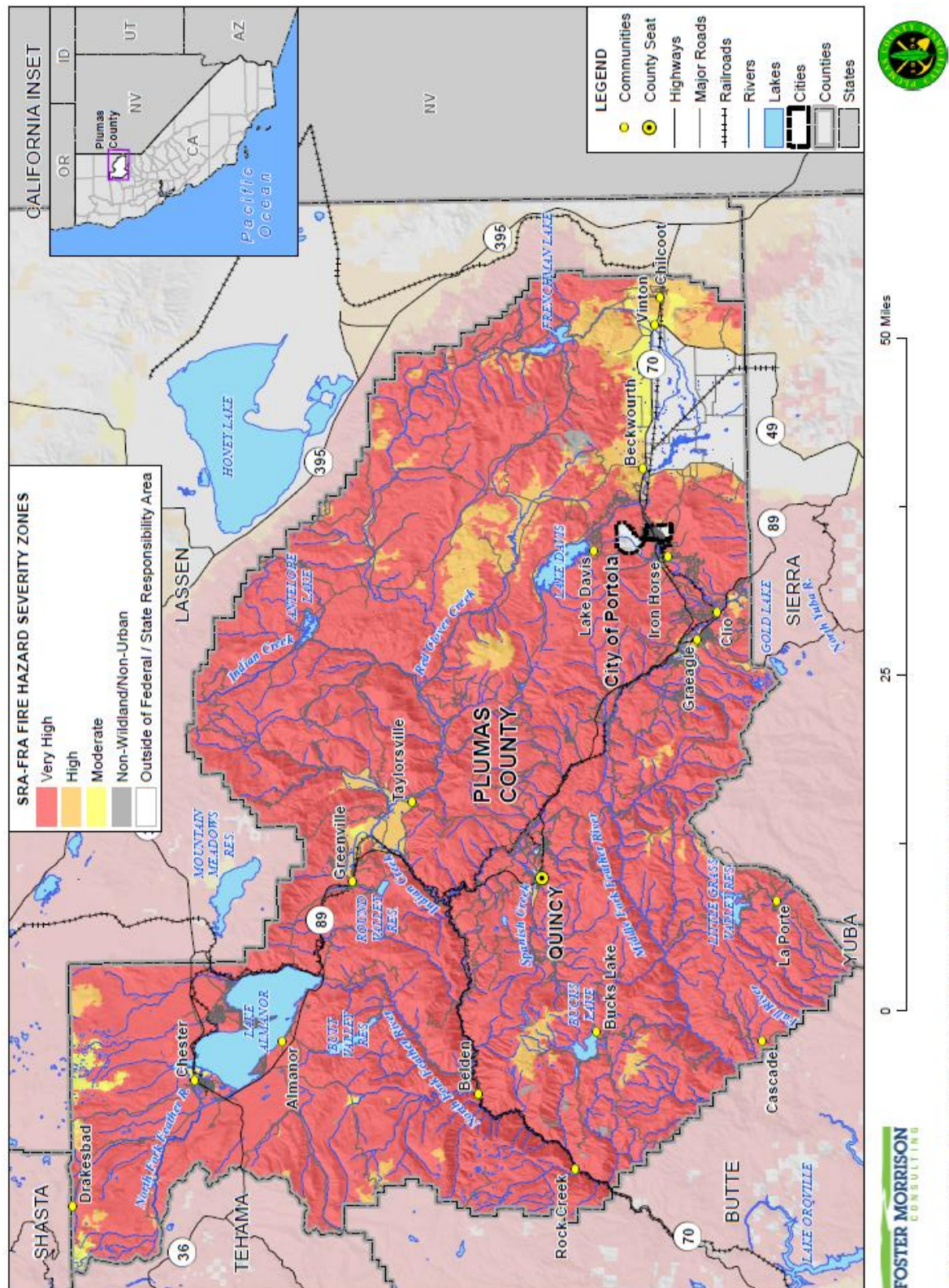


Table 4-120 Plumas County Planning Area – Geographical Extent of CAL FIRE SRA/FRA Fire Hazard Severity Zones

| SRA/FRA Fire Hazard Severity Zone | Total Acres | % of Total Acres | Improved Acres | % of Total Improved Acres | Unimproved Acres | % of Total Unimproved Acres |
|--|------------------|------------------|----------------|---------------------------|------------------|-----------------------------|
| City of Portola | | | | | | |
| Very High | 5 | 0.2% | 3 | 0.1% | 2 | 0.2% |
| High | 5 | 0.1% | 0.0001 | 0.000004% | 5 | 0.4% |
| Moderate | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% |
| Non-Wildland/Non-Urban | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% |
| Outside of Federal / State Responsibility Area | 3,481 | 99.7% | 2,234 | 99.9% | 1,246 | 99.4% |
| Grand Total | 3,491 | 100.0% | 2,237 | 100.0% | 1,254 | 100.0% |
| Unincorporated Plumas County | | | | | | |
| Very High | 1,454,532 | 87.2% | 40,739 | 44.9% | 1,413,793 | 89.6% |
| High | 116,705 | 7.0% | 19,400 | 21.4% | 97,305 | 6.2% |
| Moderate | 39,004 | 2.3% | 6,405 | 7.1% | 32,599 | 2.1% |
| Non-Wildland/Non-Urban | 13,602 | 0.8% | 0.01 | 0.00001% | 13,602 | 0.9% |
| Outside of Federal / State Responsibility Area | 44,775 | 2.7% | 24,214 | 26.7% | 20,560 | 1.3% |
| Grand Total | 1,668,618 | 100.0% | 90,759 | 100.0% | 1,577,859 | 100.0% |

Source: CAL FIRE (FHSZ SRA 2024, FHSZ FRA 2007)

[illegible]

Figure 4-191 Plumas County Planning Area –CAL FIRE LRA Fire Hazard Severity Zones (Map Inset 1)

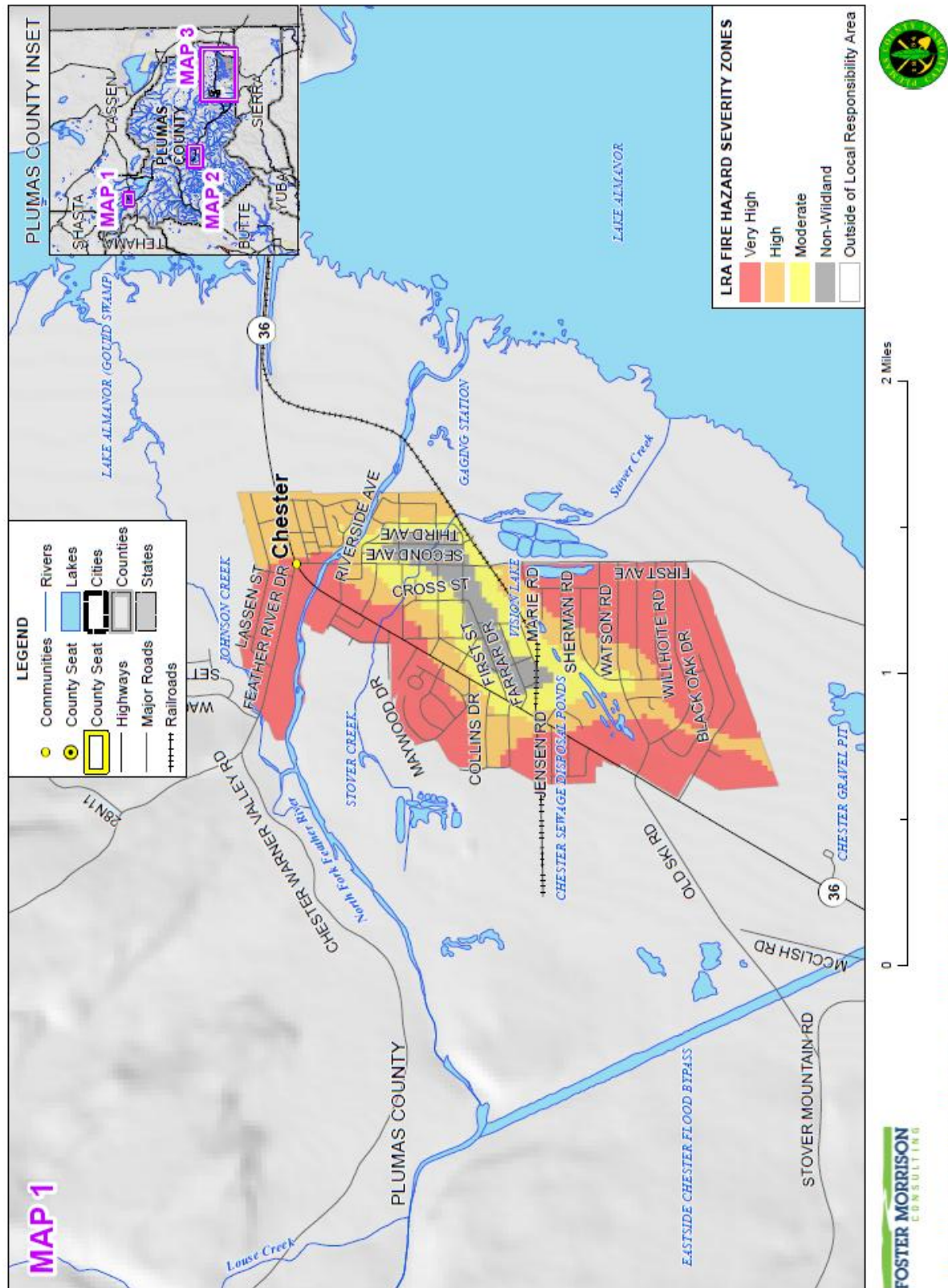
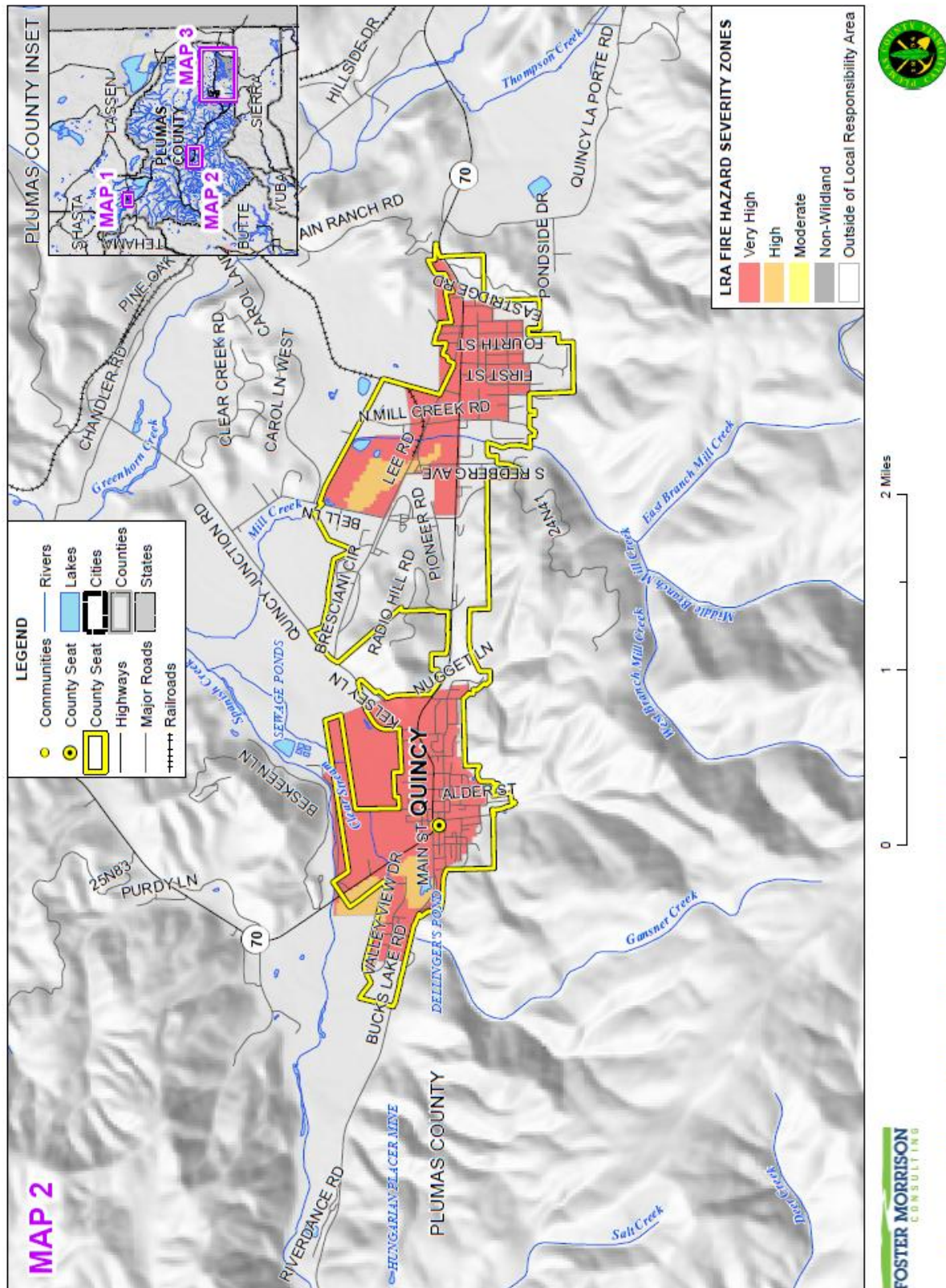


Figure 4-192 Plumas County Planning Area –CAL FIRE LRA Fire Hazard Severity Zones
(Map Inset 2)



Data Source: CAL FIRE (Local Responsibility Area FHSZ 2/2025 FHSZLRA25_Phase1_v1),
Plumas County GIS, Cal-Atlas; Map Date: 4/18/2025.

Figure 4-193 Plumas County Planning Area –CAL FIRE LRA Fire Hazard Severity Zones
(Map Inset 3)

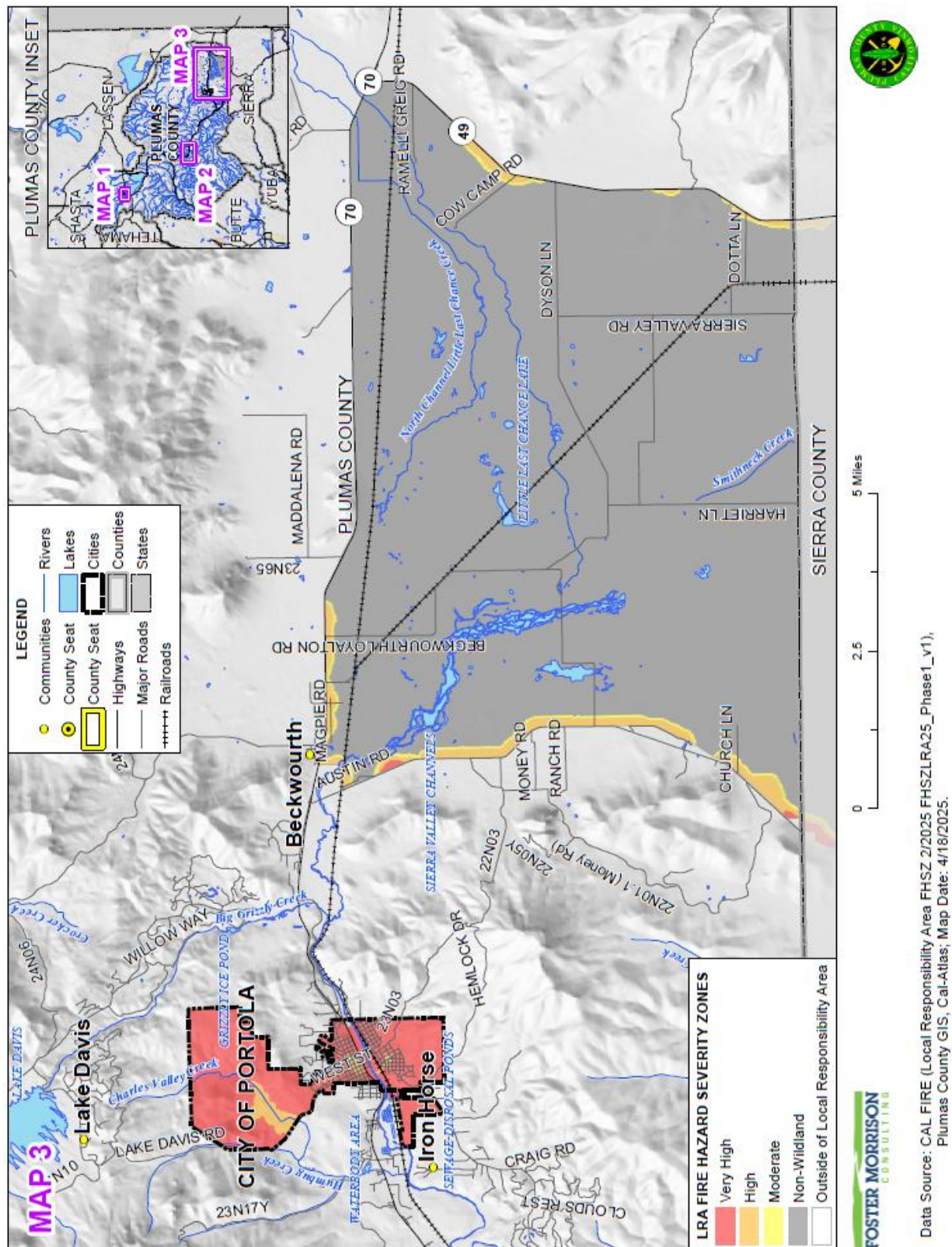


Table 4-121 Plumas County Planning Area – Geographical Extent of CAL FIRE LRA Fire Hazard Severity Zones

| LRA Fire Hazard Severity Zone | Total Acres | % of Total Acres | Improved Acres | % of Total Improved Acres | Unimproved Acres | % of Total Unimproved Acres |
|--------------------------------------|------------------|------------------|----------------|---------------------------|------------------|-----------------------------|
| City of Portola | | | | | | |
| Very High | 3,235 | 92.7% | 2,016 | 90.1% | 1,219 | 97.2% |
| High | 250 | 7.2% | 221 | 9.9% | 28 | 2.26% |
| Moderate | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% |
| Non-Wildland | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% |
| Outside of Local Responsibility Area | 6 | 0.2% | 0 | 0.0% | 6 | 0.5% |
| Grand Total | 3,491 | 100.0% | 2,237 | 100.0% | 1,254 | 100.0% |
| Unincorporated Plumas County | | | | | | |
| Very High | 1,400 | 0.1% | 742 | 0.8% | 658 | 0.04% |
| High | 1,279 | 0.1% | 588 | 0.6% | 690 | 0.04% |
| Moderate | 488 | 0.03% | 258 | 0.3% | 230 | 0.01% |
| Non-Wildland | 41,625 | 2.5% | 22,641 | 24.9% | 18,984 | 1.2% |
| Outside of Local Responsibility Area | 1,623,211 | 97.3% | 66,542 | 73.3% | 1,556,670 | 98.7% |
| Grand Total | 1,668,003 | 100.0% | 90,771 | 100.0% | 1,577,231 | 100.0% |

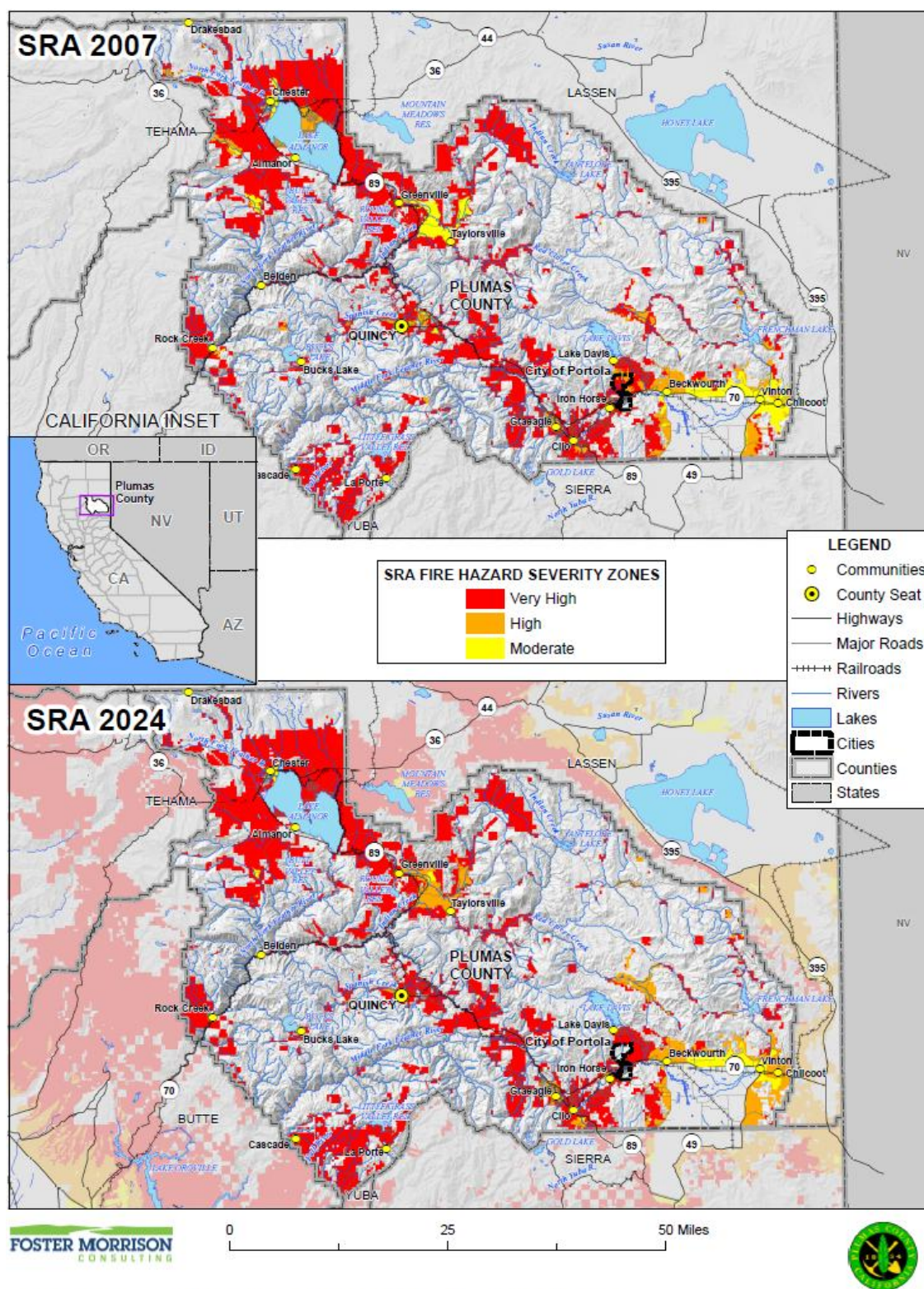
Source: CAL FIRE (LRA 2025)

CAL FIRE Fire Hazard Severity Zone Comparison

Given the new CAL FIRE Fire Hazard Severity Zone mapping for the SRA (2024) and the LRA (2025), a comparison of the previous CAL FIRE FHSZ mapping from 2007 was conducted. Figure 4-194 and Table 4-122 shows the 2007 FHSZ data compared to the 2024 FHSZ data for the SRA within the Plumas County Planning Area and Figure 4-195 and Table 4-123 shows the FHSZ data comparison for the LRA datasets.

Based on this comparative analysis, while many of the FHSZs have changed within the two (SRA and LRA) analyses, much of the change can be contributed to mapped areas being reallocated to new State and Local Fire Responsibility Areas. As such, the risk and vulnerability of the County Planning Area to wildfire remains significant. Further given the topography and fuels located throughout the Planning Areas, and the history of devastating wildfires in and around Plumas County, wildfire continues to be one of the County's most significant hazard of concern.

Figure 4-194 Plumas County Planning Area – SRA FHSZ Comparison



2007 Data Source: CAL FIRE (State Responsibility Area: fhszs06_3_32) November 2007, Plumas County GIS, Cal-Atlas; Map Date: 03/01/2020.

2024 Data Source: CAL FIRE (State Responsibility Area: FHSZSRA_23_3) April 2024, Plumas County GIS, Cal-Atlas; Map Date: 9/30/2025.

Table 4-122 Plumas County Planning Area – SRA/FRA FHSZ Comparisons by Jurisdiction

| Jurisdictions / Fire Hazard Severity Zones | Overall Acre Change | | | % Acre Change | | |
|---|----------------------------|----------------------------|-------------------------------------|------------------------------------|------------------------------------|---------------------------------------|
| | Total Acres Plumas 2007 | Total Acres Plumas 2024 | Overall Change in Total Acres | % of Total Acres Plumas 2007 | % of Total Acres Plumas 2024 | Overall Change in % Total Acres |
| City of Portola | | | | | | |
| Very High | 1,265 | 0.02 | -1,265 | 0.3% | 0.000004% | -0.3% |
| High | 777 | 0.0001 | -777 | 0.2% | 0.00000002% | -0.2% |
| Moderate | 0.001 | 0 | -0.001 | 0.0000002% | 0% | -0.0000002% |
| City of Portola Total | 2,043 | 0.0201 | -2,043 | 0.5% | 0.000004% | -0.5% |
| Unincorporated Plumas County | | | | | | |
| Very High | 342,434 | 354,154 | 11,720 | 77% | 81% | 3.5% |
| High | 35,436 | 52,768 | 17,332 | 8% | 12% | 4.1% |
| Moderate | 62,329 | 30,500 | -31,829 | 14% | 7% | -7.1% |
| Unincorporated Plumas County Total | 440,199 | 437,422 | -2,778 | 99.5% | 100.0% | 0.5% |

Source: CAL FIRE

Figure 4-195 Plumas County Planning Area – LRA FHSZ Comparison

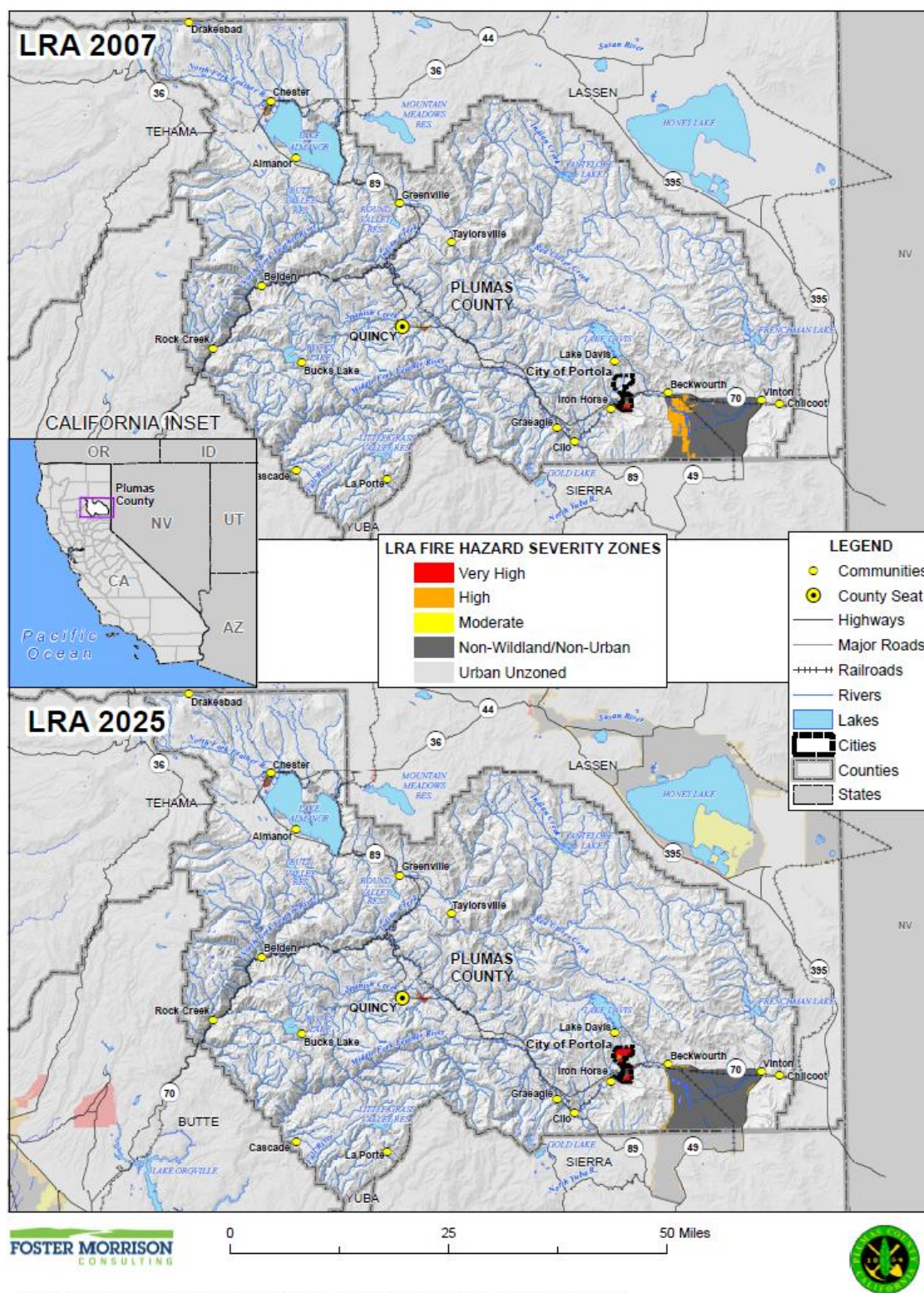


Table 4-123 Plumas County Planning Area – LRA FHSZ Comparisons by Jurisdiction

| Jurisdictions / Fire Hazard Severity Zones | Overall Acre Change | | | % Acre Change | | |
|---|----------------------------|----------------------------|-------------------------------------|------------------------------------|------------------------------------|---------------------------------------|
| | Total Acres Plumas 2007 | Total Acres Plumas 2025 | Overall Change in Total Acres | % of Total Acres Plumas 2007 | % of Total Acres Plumas 2025 | Overall Change in % Total Acres |
| City of Portola | | | | | | |
| Very High | 812 | 3,235 | 2,423 | 2% | 6.7% | 5.0% |
| High | 468 | 250 | -218 | 1% | 0.5% | -0.5% |
| Moderate | 205 | 0 | -205 | 0.4% | 0% | -0.4% |
| Non- Wildland/Non- Urban | 0 | 0 | 0 | 0% | 0% | 0% |
| Urban Unzoned | 0 | 0 | 0 | 0% | 0% | 0% |
| City of Portola Total | 1,485 | 3,485 | 2,000 | 3% | 7% | 4% |
| Unincorporated Plumas County | | | | | | |
| Very High | 772 | 1,400 | 628 | 2% | 3% | 1% |
| High | 8,098 | 1,279 | -6,819 | 17% | 3% | -15% |
| Moderate | 361 | 488 | 127 | 1% | 1% | 0.2% |
| Non- Wildland/Non- Urban | 35,815 | 41,625 | 5,810 | 77% | 86% | 9% |
| Urban Unzoned | 106 | 0 | -106 | 0.2% | 0% | -0.2% |
| Unincorporated Plumas County Total | 45,152 | 44,792 | -360 | 97% | 93% | -4% |

Source: CAL FIRE

Post-Wildfire Landslides and Debris Flows

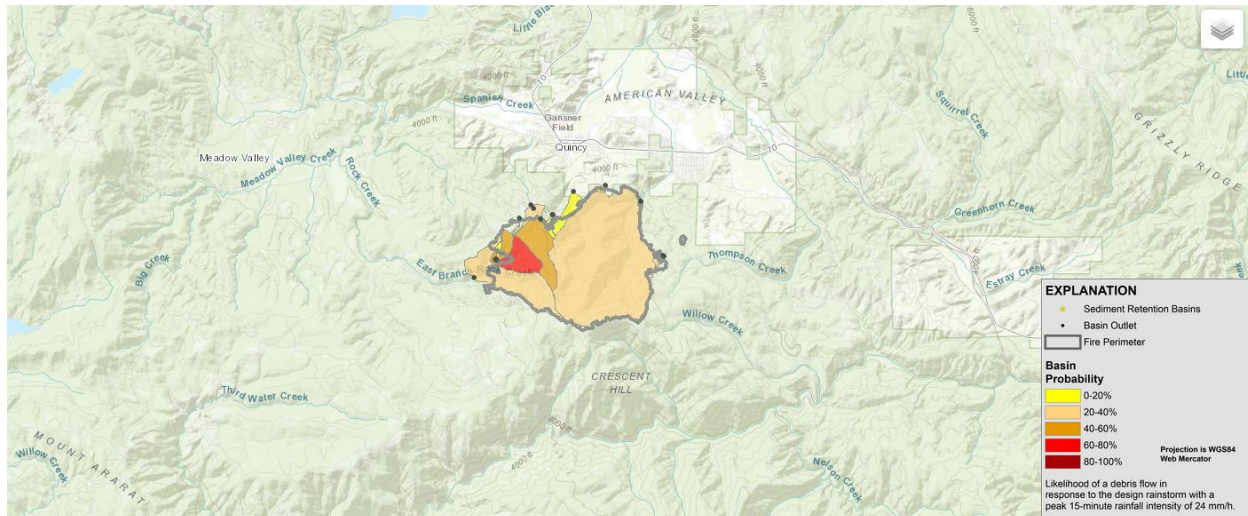
Post-wildfire landslides and debris flows are a concern in Plumas County. Fires that burn in sloped areas remove vegetation that holds hillsides together during rainstorms. Once that vegetation is removed, the hillside may be compromised, resulting in landslides and debris flows. USGS has been developing maps of these areas post fire.

Post-fire debris flow hazard assessments for each fire below were performed by the USGS. These assessments are prepared at the request of land and emergency management agencies responsible for managing wildfires impacts. The assessments are presented as a series of maps and geospatial data showing the probability of debris flows and their expected volume for burned drainage basins. Other landslide hazard assessments produced by the USGS are performed at the request of government agencies or sometimes as demonstration products from research to improve methods of hazard and risk assessment.

2017 Minerva 5 Wildfire

Figure 4-196 estimates of the likelihood of debris flow (in %), potential volume of debris flow (in m³), and combined relative debris flow hazard from the Minerva 5 Fire. These predictions are made at the scale of the drainage basin, and at the scale of the individual stream segment. Estimates of probability, volume, and combined hazard are based upon a design storm with a peak 15-minute rainfall intensity of 24 millimeters per hour (mm/h).

Figure 4-196 Minerva 5 Fire Landslide and Debris Flow Probabilities

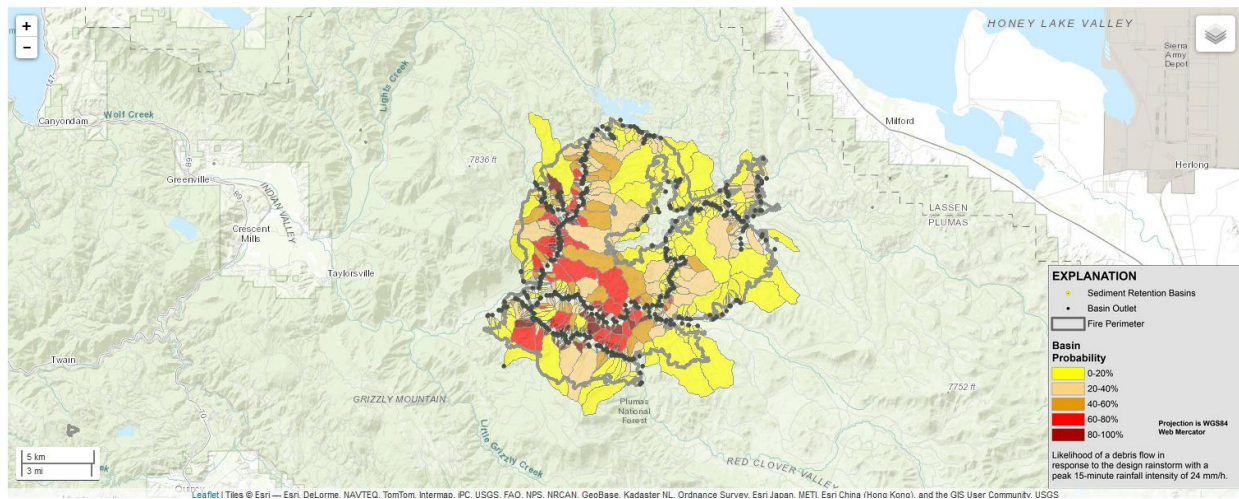


Source: USGS (https://landslides.usgs.gov/hazards/postfire_debrisflow/detail.php?objectid=105). Retrieved 5/5/2025.

2019 Walker Fire Landslide and Debris Flow Mapping

Figure 4-197 estimates of the likelihood of debris flow (in %), potential volume of debris flow (in m³), and combined relative debris flow hazard from the Walker Fire. These predictions are made at the scale of the drainage basin, and at the scale of the individual stream segment. Estimates of probability, volume, and combined hazard are based upon a design storm with a peak 15-minute rainfall intensity of 24 millimeters per hour (mm/h).

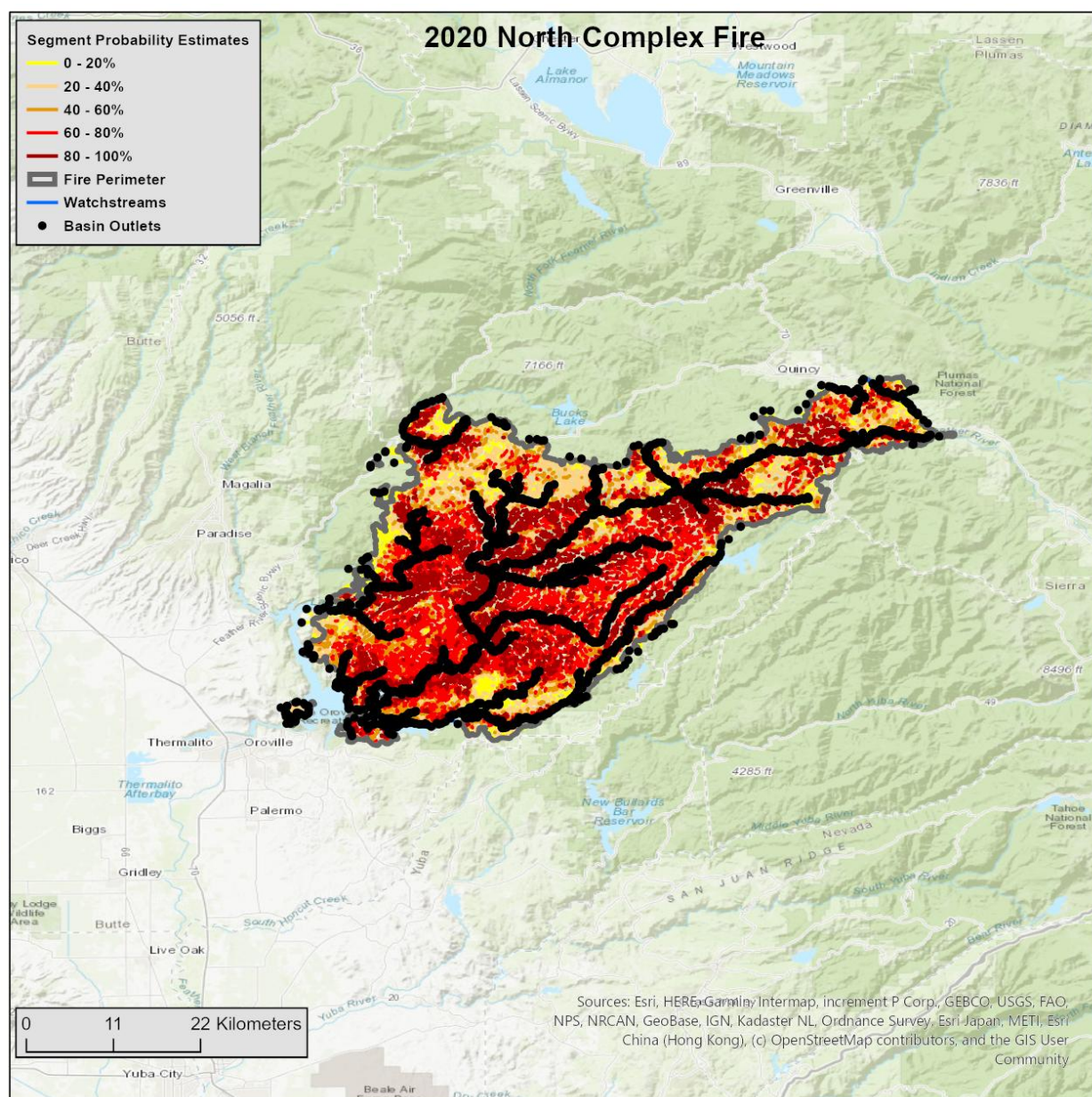
Figure 4-197 Walker Fire Landslide and Debris Flow Probabilities



2020 North Complex Fire

Figure 4-198 estimates of the likelihood of debris flow (in %), potential volume of debris flow (in m³), and combined relative debris flow hazard from the Walker Fire. These predictions are made at the scale of the drainage basin, and at the scale of the individual stream segment. Estimates of probability, volume, and combined hazard are based upon a design storm with a peak 15-minute rainfall intensity of 24 millimeters per hour (mm/h).

Figure 4-198 North Complex Fire Landslide and Debris Flow Probabilities

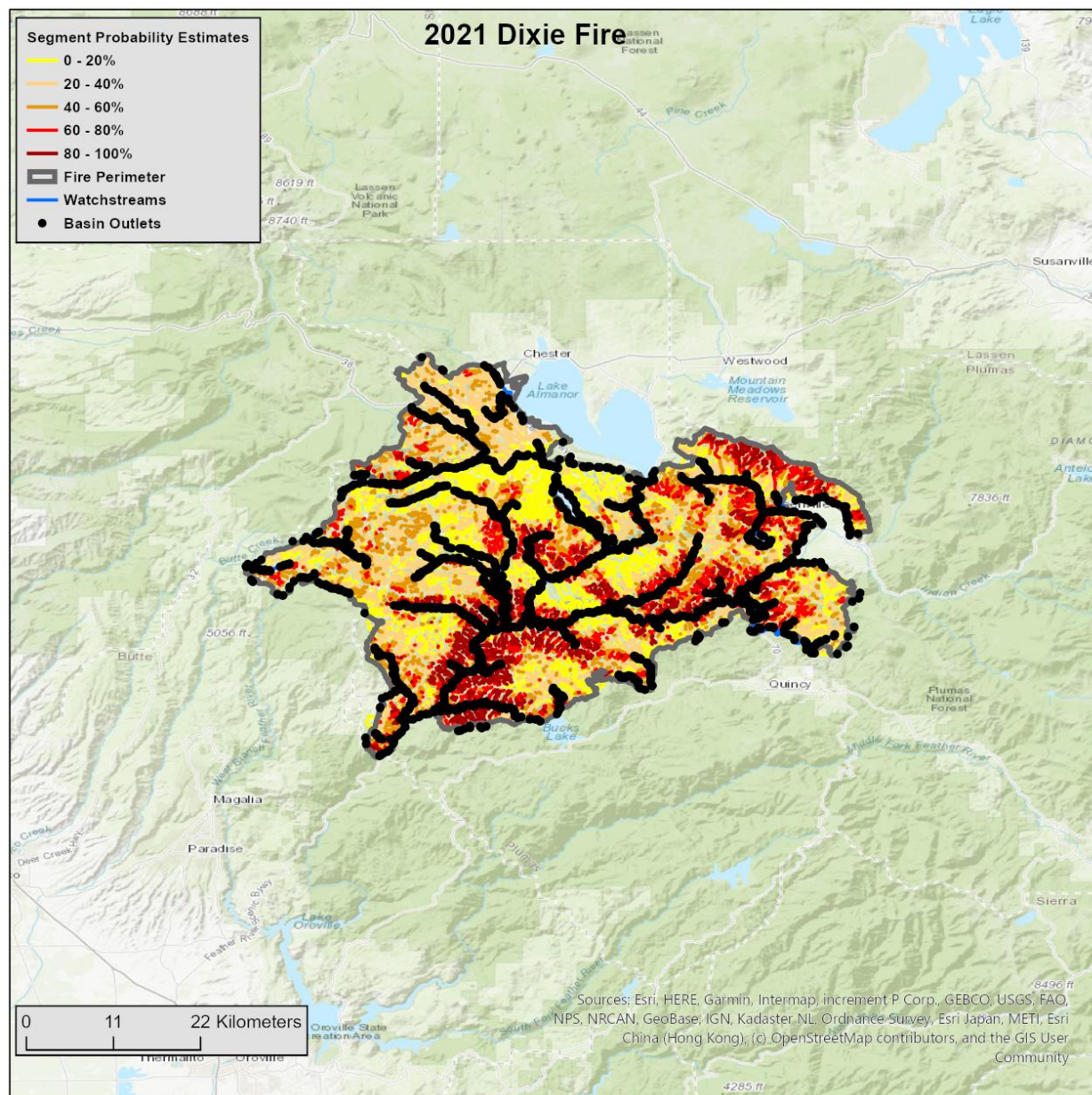


Source: USGS (https://usgs.maps.arcgis.com/apps/dashboards/c09fa874362e48a9afe79432f2cfe6fe#fire_id=nrt2020). Retrieved 5/5/2025.

2021 Dixie Fire Landslide and Debris Flow Mapping

Figure 4-199 estimates of the likelihood of debris flow (in %), potential volume of debris flow (in m³), and combined relative debris flow hazard from the Walker Fire. These predictions are made at the scale of the drainage basin, and at the scale of the individual stream segment. Estimates of probability, volume, and combined hazard are based upon a design storm with a peak 15-minute rainfall intensity of 24 millimeters per hour (mm/h).

Figure 4-199 Dixie Fire Landslide and Debris Flow Probabilities



Source: USGS (https://usgs.maps.arcgis.com/apps/dashboards/c09fa874362e48a9afe79432f2efe6fe#fire_id=dix2021). Retrieved 5/5/2025.

Past Occurrences

Disaster Declaration History

A search of FEMA and Cal OES disaster declarations shows eight state and six federal disaster declarations. These are shown in Table 4-124.

Table 4-124 Plumas County – Federal and State Disaster Declaration from Wildfire 1950-2025

| Disaster Type | State Declarations | | Federal Declarations | |
|---------------|--------------------|---|----------------------|--|
| | Count | Years | Count | Years |
| Fire | 8 | 1960 (unnamed), 1987 (Clarks Fire), 1999 (Bucks Fire), 2020 (twice – Bear Fire, North Complex Fire), 2021 (three – Dixie Fire, Monument Fire, Lava Fire/Beckwourth Complex) | 6 | 1999 (Bucks Fire), 2008 (BTU Lightning Complex), 2020 (twice – Bear Fire, North Complex Fire), 2021 (twice – Dixie Fire, Lava Fire/Beckwourth Complex) |

Source: Cal OES, FEMA

NCDC Events

The NCDC has tracked wildfire events in the County dating back to 1993. The 15 events in Plumas County in the database are shown in Table 4-125. Many more fires have occurred but were not reported to the NCDC database.

Table 4-125 NCDC Wildfire Events in Plumas County 1993 to 7/31/2024*

| Event Type | Number of Events | Deaths | Deaths (indirect) | Injuries | Injuries (indirect) | Property Damage | Crop Damage |
|--------------|------------------|----------|-------------------|----------|---------------------|---------------------|-------------|
| Dense Smoke | 1 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| Wildfire | 14 | 1 | 0 | 3 | 0 | \$22,775,000 | \$0 |
| Total | 15 | 1 | 0 | 3 | 0 | \$22,775,000 | \$ 0 |

Source: NCDC

*Deaths, injuries, and damages are for the entire event, and may not be exclusive to the County.

CAL FIRE Events

CAL FIRE, USDA Forest Service Region 5, Bureau of Land Management (BLM), the National Park Service (NPS), Contract Counties and other agencies jointly maintain a comprehensive fire perimeter GIS layer for public and private lands throughout the state. The data covers fires back to 1878 (though the first recorded incident for the County was in 1917). For the National Park Service, Bureau of Land Management, and US Forest Service, fires of 10 acres and greater are reported. For CAL FIRE, timber fires greater than 10 acres, brush fires greater than 50 acres, grass fires greater than 300 acres, and fires that destroy three or more residential dwellings or commercial structures are reported. CAL FIRE recognizes the various federal, state, and local agencies that have contributed to this dataset, including USDA Forest Service Region 5, BLM, National Park Service, and numerous local agencies.

Fires may be missing altogether or have missing or incorrect attribute data. Some fires may be missing because historical records were lost or damaged, fires were too small for the minimum cutoffs, documentation was inadequate, or fire perimeters have not yet been incorporated into the database. Also, agencies are at different stages of participation. For these reasons, the data should not be used for statistical or analytical purposes.

The data provides a reasonable view of the spatial distribution of past large fires in California. Using GIS, fire perimeters that intersect Plumas County were extracted and are listed in Table 4-126, sorted by the highest wildfire acres affecting each jurisdiction to the lowest acreage. There are 276 total fires recorded in this database for Plumas County. Of these, 186 burn areas in each jurisdiction exceeded 50 acres in size which are included in both the map and table below. Many more small fires likely have occurred but were not included in the CAL FIRE dataset.

Figure 4-200 shows fire history for the Plumas County Planning Area, colored by the size of the acreage burned and includes those fires exceeding 50 acres. This map contains fires from 1950 to 2024, while the detailed tables of wildfire shown in Table 4-126 contain fires from 1910 to 2024 and also includes those fires exceeding 50 acres.

Plumas County
Local Hazard Mitigation Plan Update
November 2025



Table 4-126 Plumas County – CAL FIRE Wildfire History Summary 1910-2024s by Jurisdiction

| Jurisdiction / Wildfire Name | Year | Date | Cause Description | Total Wildfire Acres | Wildfire Acres Within Jurisdiction |
|-------------------------------------|------|-----------|------------------------|----------------------|------------------------------------|
| City of Portola | | | | | |
| (Unnamed) | 1988 | 8/29/1988 | Lightning | 528 | 224 |
| (Unnamed) | 1949 | (blank) | Unknown / Unidentified | 312 | 77 |
| Unincorporated Plumas County | | | | | |
| Dixie | 2021 | 7/14/2021 | Powerline | 963,405 | 699,689 |
| North Complex | 2020 | 8/17/2020 | Lightning | 318,797 | 166,617 |
| Chips | 2012 | 7/28/2012 | Campfire | 76,350 | 76,346 |
| Beckwourth Complex (Sugar) | 2021 | 7/2/2021 | Unknown / Unidentified | 105,004 | 67,828 |
| Moonlight | 2007 | 9/3/2007 | Equipment Use | 64,960 | 64,512 |
| Storrie | 2000 | 8/17/2000 | Railroad | 56,076 | 55,729 |
| Walker | 2019 | 9/4/2019 | Miscellaneous | 54,615 | 54,613 |
| Bucks | 1999 | 8/23/1999 | Lightning | 34,236 | 27,888 |
| (Unnamed) | 1931 | (blank) | Unknown / Unidentified | 32,336 | 27,215 |
| (Unnamed) | 1936 | (blank) | Unknown / Unidentified | 34,113 | 23,573 |
| Wheeler | 2007 | 7/5/2007 | Lightning | 22,332 | 22,330 |
| Plumas NF #531 (Clark) | 1987 | 8/30/1987 | Miscellaneous | 39,921 | 19,391 |
| (Unnamed) | | | Unknown / Unidentified | 17,156 | 17,127 |
| (Unnamed) | 1929 | (blank) | Unknown / Unidentified | 13,346 | 16,980 |
| BTU Lightning Complex | 2008 | 7/2/2008 | Lightning | 53,699 | 16,476 |
| Milk Ranch | 1951 | 9/11/1951 | Miscellaneous | 21,979 | 14,505 |
| (Unnamed) | 1927 | (blank) | Unknown / Unidentified | 36,663 | 12,250 |
| (Unnamed) | 1934 | (blank) | Unknown / Unidentified | 12,180 | 12,181 |
| (Unnamed) | | | Unknown / Unidentified | 12,385 | 10,810 |
| (Unnamed) | 1959 | (blank) | Miscellaneous | 10,362 | 10,362 |
| Scotch | 2008 | 6/21/2008 | Lightning | 13,008 | 9,799 |
| (Unnamed) | 1926 | (blank) | Unknown / Unidentified | 9,476 | 9,476 |
| Sheep | 2020 | 8/17/2020 | Lightning | 29,541 | 7,700 |

| Jurisdiction / Wildfire Name | Year | Date | Cause Description | Total Wildfire Acres | Wildfire Acres Within Jurisdiction |
|-------------------------------|------|------------|------------------------|----------------------|------------------------------------|
| (Unnamed) | | | Unknown / Unidentified | 7,593 | 7,593 |
| Elephant | 1981 | 9/17/1981 | Lightning | 6,852 | 6,852 |
| Ingalls (Assist #12) | 1981 | 9/17/1981 | Unknown / Unidentified | 6,697 | 6,697 |
| Beckwourth Complex (Loyalton) | 2020 | 8/14/2020 | Lightning | 46,721 | 6,415 |
| Rich | 2008 | 7/29/2008 | Railroad | 6,111 | 6,111 |
| Cold | 2008 | 6/21/2008 | Lightning | 5,599 | 5,600 |
| (Unnamed) | 1960 | (blank) | Lightning | 5,064 | 5,064 |
| Babcock | 1977 | 8/2/1977 | Lightning | 5,057 | 5,056 |
| Horton 2 | 1999 | 8/24/1999 | Equipment Use | 4,941 | 4,942 |
| (Unnamed) | | | Miscellaneous | 7,949 | 4,889 |
| Pidgeon | 1999 | 8/23/1999 | Lightning | 4,713 | 4,714 |
| Layman | 1989 | 9/6/1989 | Miscellaneous | 4,449 | 4,450 |
| Minerva 5 | 2017 | 7/29/2017 | Arson | 4,339 | 4,340 |
| Maddalena | 1996 | 7/25/1996 | Equipment Use | 3,975 | 3,976 |
| (Unnamed) | | | Miscellaneous | 3,918 | 3,918 |
| (Unnamed) | | | Unknown / Unidentified | 3,745 | 3,745 |
| Stream | 2001 | 7/25/2001 | Lightning | 3,526 | 3,526 |
| (Unnamed) | 1921 | (blank) | Unknown / Unidentified | 3,355 | 3,355 |
| Ferris | 1974 | 6/25/1974 | Miscellaneous | 3,289 | 3,289 |
| Boulder | 2006 | 6/25/2006 | Lightning | 2,919 | 2,919 |
| (Unnamed) | | | Unknown / Unidentified | 2,697 | 2,697 |
| (Unnamed) | 1966 | (blank) | Lightning | 2,681 | 2,681 |
| Lookout | 1999 | 8/23/1999 | Lightning | 2,615 | 2,615 |
| (Unnamed) | 1978 | 10/30/1978 | Railroad | 2,596 | 2,596 |
| (Unnamed) | 1945 | (blank) | Miscellaneous | 6,358 | 2,527 |
| (Unnamed) | 1946 | (blank) | Lightning | 2,448 | 2,448 |
| (Unnamed) | | | Miscellaneous | 73 | 2,416 |
| Will | 1979 | 9/18/1979 | Miscellaneous | 3,128 | 2,396 |
| (Unnamed) | 1937 | (blank) | Unknown / Unidentified | 2,361 | 2,361 |
| (Unnamed) | | | Miscellaneous | 2,844 | 2,213 |

| Jurisdiction / Wildfire Name | Year | Date | Cause Description | Total Wildfire Acres | Wildfire Acres Within Jurisdiction |
|------------------------------|------|-----------|------------------------|----------------------|------------------------------------|
| Ramelli | 1950 | 8/31/1950 | Unknown / Unidentified | 2,178 | 2,178 |
| (Unnamed) | 1942 | (blank) | Unknown / Unidentified | 7,916 | 2,162 |
| (Unnamed) | 1947 | (blank) | Miscellaneous | 2,036 | 2,036 |
| (Unnamed) | | | Miscellaneous | 3,864 | 1,837 |
| Carman #2 | 1972 | 8/9/1972 | Lightning | 1,790 | 1,790 |
| Chilcoot | 2003 | 7/20/2003 | Lightning | 5,642 | 1,770 |
| (Unnamed) | | | Unknown / Unidentified | 1,737 | 1,737 |
| (Unnamed) | | | Miscellaneous | 2,692 | 1,693 |
| (Unnamed) | | 7/5/1972 | Miscellaneous | 1,676 | 1,676 |
| (Unnamed) | 1930 | (blank) | Unknown / Unidentified | 1,828 | 1,658 |
| Cashman | 1977 | 7/30/1977 | Smoking | 1,556 | 1,556 |
| Walker | 1990 | 8/6/1990 | Lightning | 1,496 | 1,496 |
| Devils Gap | 1999 | 8/22/1999 | Lightning | 1,480 | 1,480 |
| (Unnamed) | 1943 | (blank) | Unknown / Unidentified | 1,425 | 1,425 |
| Plumas N.F. #2 | 1959 | 8/4/1959 | Miscellaneous | 1,409 | 1,409 |
| Rack | 1989 | 7/8/1989 | Miscellaneous | 1,399 | 1,399 |
| Little | 2008 | 6/22/2008 | Lightning | 1,399 | 1,291 |
| (Unnamed) | 1928 | (blank) | Miscellaneous | 1,242 | 1,242 |
| (Unnamed) | | | Miscellaneous | 1,198 | 1,198 |
| COOKS | 1996 | 8/9/1996 | Equipment Use | 1,138 | 1,138 |
| (Unnamed) | 1951 | (blank) | Miscellaneous | 1,106 | 1,106 |
| BELL | 1970 | 8/25/1970 | Miscellaneous | 1,082 | 1,082 |
| (Unnamed) | | | Miscellaneous | 2,035 | 1,063 |
| Assist P.N.F. | 1987 | 8/31/1987 | Unknown / Unidentified | 1,047 | 1,047 |
| Bar | 2010 | 7/31/2010 | Arson | 1,039 | 1,039 |
| Chilcoot | 2017 | 8/6/2017 | Lightning | 1,020 | 1,020 |
| Garnier | 1950 | 8/8/1950 | Miscellaneous | 4,097 | 1,009 |
| Sloat | 1981 | 7/21/1981 | Miscellaneous | 907 | 907 |
| (Unnamed) | 1922 | (blank) | Miscellaneous | 865 | 865 |
| (Unnamed) | 1933 | (blank) | Unknown / Unidentified | 914 | 857 |

| Jurisdiction / Wildfire Name | Year | Date | Cause Description | Total Wildfire Acres | Wildfire Acres Within Jurisdiction |
|------------------------------|------|-----------|------------------------|----------------------|------------------------------------|
| (Unnamed) | | | Unknown / Unidentified | 619 | 855 |
| Hot Springs | 1980 | 8/14/1980 | Arson | 838 | 838 |
| (Unnamed) | | 8/2/1973 | Equipment Use | 775 | 775 |
| (Unnamed) | 1938 | (blank) | Unknown / Unidentified | 721 | 721 |
| Peak | 2012 | 7/28/2012 | Debris | 712 | 712 |
| Junction | 1974 | 9/26/1974 | Miscellaneous | 1,136 | 678 |
| (Unnamed) | 1939 | (blank) | Lightning | 668 | 668 |
| (Unnamed) | 1917 | (blank) | Lightning | 614 | 614 |
| Reno | 1969 | 9/1/1969 | Unknown / Unidentified | 641 | 610 |
| (Unnamed) | 1924 | (blank) | Unknown / Unidentified | 596 | 596 |
| Cottonwood | 2004 | 5/4/2004 | Debris | 567 | 567 |
| (Unnamed) | 1941 | (blank) | Unknown / Unidentified | 564 | 564 |
| Dotta | 2021 | 6/30/2021 | Unknown / Unidentified | 532 | 532 |
| (Unnamed) | 1918 | (blank) | Lightning | 531 | 530 |
| Hungry | 2006 | 6/25/2006 | Lightning | 512 | 512 |
| Cooks | 1964 | 7/24/1964 | Miscellaneous | 501 | 501 |
| Greenhorn | 1990 | 6/29/1990 | Playing With Fire | 497 | 497 |
| Ross | 1977 | 8/8/1977 | Arson | 475 | 475 |
| (Unnamed) | | | Unknown / Unidentified | 1,386 | 475 |
| (Unnamed) | 1999 | (blank) | Unknown / Unidentified | 3,625 | 469 |
| Stag | 1999 | 8/23/1999 | Lightning | 467 | 467 |
| Cabin W.P.R.R. #2 | 1976 | 6/28/1976 | Unknown / Unidentified | 632 | 452 |
| Eureka | 2017 | 9/5/2017 | Lightning | 446 | 446 |
| Chambers Creek | 1957 | 9/6/1957 | Miscellaneous | 432 | 432 |
| (Unnamed) | 1900 | (blank) | Unknown / Unidentified | 419 | 419 |
| (Unnamed) | | 8/18/1987 | Equipment Use | 409 | 409 |
| (Unnamed) | 1955 | (blank) | Miscellaneous | 408 | 408 |
| Babcock Peak | 2007 | 7/5/2007 | Lightning | 407 | 407 |
| Hay | 1952 | 9/3/1952 | Miscellaneous | 401 | 401 |

| Jurisdiction / Wildfire Name | Year | Date | Cause Description | Total Wildfire Acres | Wildfire Acres Within Jurisdiction |
|------------------------------|------|------------|------------------------|----------------------|------------------------------------|
| (Unnamed) | 1932 | (blank) | Miscellaneous | 395 | 395 |
| (Unnamed) | | | Unknown / Unidentified | 387 | 387 |
| GREASE | 2006 | 7/16/2006 | Arson | 366 | 366 |
| (Unnamed) | | | Unknown / Unidentified | 348 | 348 |
| Beckwith (Tahoe NF) | 1984 | 7/30/1984 | Unknown / Unidentified | 344 | 344 |
| (Unnamed) | | 10/24/1972 | Miscellaneous | 344 | 344 |
| (Unnamed) | 1935 | (blank) | Unknown / Unidentified | 340 | 340 |
| Ridge/Heights | 2013 | 8/18/2013 | Lightning | 336 | 336 |
| Hartman | 2008 | 6/21/2008 | Lightning | 331 | 331 |
| Martineck | 1996 | 8/12/1996 | Lightning | 661 | 331 |
| (Unnamed) | 1923 | (blank) | Unknown / Unidentified | 323 | 323 |
| Coyote | 1973 | 9/9/1973 | Miscellaneous | 319 | 319 |
| Silver | 2009 | 9/19/2009 | Miscellaneous | 311 | 311 |
| Camp | 2018 | 11/8/2018 | Powerline | 153,336 | 306 |
| (Unnamed) | | 8/29/1988 | Lightning | - | 304 |
| Millford | 1950 | 9/2/1950 | Miscellaneous | 9,185 | 301 |
| (Unnamed) | | 6/13/1979 | Miscellaneous | 297 | 297 |
| Lone Rock Valley | 1950 | 8/7/1950 | Lightning | 293 | 293 |
| Milford Grade | 2009 | 4/22/2009 | Lightning | 284 | 284 |
| Point | 1980 | 8/14/1980 | Unknown / Unidentified | 284 | 284 |
| Elephant | 2009 | 8/16/2009 | Miscellaneous | 274 | 270 |
| Tobin | 2016 | 9/26/2016 | Miscellaneous | 248 | 248 |
| (Unnamed) | 1919 | (blank) | Lightning | 247 | 247 |
| (Unnamed) | 1920 | (blank) | Lightning | 219 | 219 |
| (Unnamed) | | | Miscellaneous | 217 | 217 |
| (Unnamed) | 1911 | (blank) | Unknown / Unidentified | 201 | 201 |
| Cub | 2008 | 6/21/2008 | Lightning | 14,729 | 190 |
| Wilson | 2018 | 9/28/2018 | Miscellaneous | 261 | 187 |
| (Unnamed) | 1949 | (blank) | Lightning | 185 | 185 |
| Eagle | 1989 | 7/7/1989 | Lightning | 4,665 | 179 |
| Claremont | 1999 | 8/23/1999 | Lightning | 178 | 178 |

| Jurisdiction / Wildfire Name | Year | Date | Cause Description | Total Wildfire Acres | Wildfire Acres Within Jurisdiction |
|------------------------------|------|------------|------------------------|----------------------|------------------------------------|
| South-Frey | 2008 | 6/21/2008 | Lightning | 12,402 | 171 |
| (Unnamed) | 1964 | (blank) | Lightning | 170 | 170 |
| Carman #1 | 1972 | 8/8/1972 | Lightning | 158 | 158 |
| (Unnamed) | 1971 | 11/6/1971 | Debris | 140 | 140 |
| Chrome | 1999 | 8/23/1999 | Miscellaneous | 135 | 135 |
| Martin | 2004 | 11/2/2004 | Debris | 131 | 131 |
| (Unnamed) | 1984 | 5/29/1984 | Arson | 130 | 130 |
| Ward | 2015 | 6/2/2015 | Unknown / Unidentified | 129 | 129 |
| (Unnamed) | 1916 | (blank) | Lightning | 127 | 127 |
| 5-6 Cascade Creek | 2020 | 8/17/2020 | Lightning | 260 | 119 |
| (Unnamed) | 1983 | 7/5/1983 | Arson | 119 | 119 |
| (Unnamed) | 1986 | 8/14/1986 | Smoking | 118 | 118 |
| Murphy | 2018 | 8/7/2018 | Miscellaneous | 117 | 117 |
| Squirrel | 2017 | 9/27/2017 | Arson | 113 | 113 |
| Gulch | 2010 | 7/25/2010 | Lightning | 103 | 103 |
| (Unnamed) | 1972 | 8/11/1972 | Miscellaneous | 102 | 102 |
| Cateyes | 1996 | 5/2/1996 | Debris | 96 | 96 |
| Johnson | 2013 | 8/18/2013 | Lightning | 91 | 91 |
| Stony | 2004 | 4/27/2004 | Debris | 91 | 91 |
| Crocker | 2018 | 7/24/2018 | Lightning | 87 | 87 |
| Ranch | 2017 | 9/6/2017 | Lightning | 84 | 84 |
| West | 2019 | 9/17/2019 | Lightning | 89 | 84 |
| (Unnamed) | 1981 | 9/17/1981 | Lightning | 79 | 79 |
| Keddie | 2008 | 6/21/2008 | Illegal Alien Campfire | 78 | 78 |
| Lone Rock | 2021 | 8/6/2021 | Unknown / Unidentified | 78 | 78 |
| Clifton | 2007 | 5/10/2007 | Debris | 77 | 77 |
| Mills | 2017 | 9/3/2017 | Miscellaneous | 75 | 75 |
| Big | 2008 | 6/21/2008 | Lightning | 74 | 74 |
| Creek | 2019 | 11/21/2019 | Lightning | 74 | 74 |
| (Unnamed) | 1987 | 8/30/1987 | Lightning | 73 | 73 |
| (Unnamed) | | 5/6/1974 | Railroad | 72 | 72 |
| (Unnamed) | | 8/26/1984 | Lightning | 71 | 71 |
| (Unnamed) | | 8/19/1984 | Miscellaneous | 68 | 68 |
| (Unnamed) | | 8/9/1988 | Lightning | 63 | 63 |

| Jurisdiction / Wildfire Name | Year | Date | Cause Description | Total Wildfire Acres | Wildfire Acres Within Jurisdiction |
|------------------------------|------|-----------|------------------------|----------------------|------------------------------------|
| Rock | 2010 | 8/13/2010 | Arson | 62 | 62 |
| (Unnamed) | | 9/1/1981 | Equipment Use | 62 | 62 |
| Toll | 2017 | 8/20/2017 | Arson | 58 | 58 |
| Copper | 2020 | 8/18/2020 | Lightning | 55 | 55 |
| Hartman | 2021 | 6/29/2021 | Unknown / Unidentified | 54 | 54 |
| Crescent | 2017 | 6/30/2017 | Arson | 53 | 53 |
| Correco | 2003 | 7/27/2003 | Lightning | 52 | 52 |

Source: CAL FIRE (May 2024)

Hazard Mitigation Planning Committee Events

These sections separate events since the 2019/2020 LHMPs and those before 2019.

Events since 2019/2020 LHMP

The HMPC noted the following fires to affect the County:

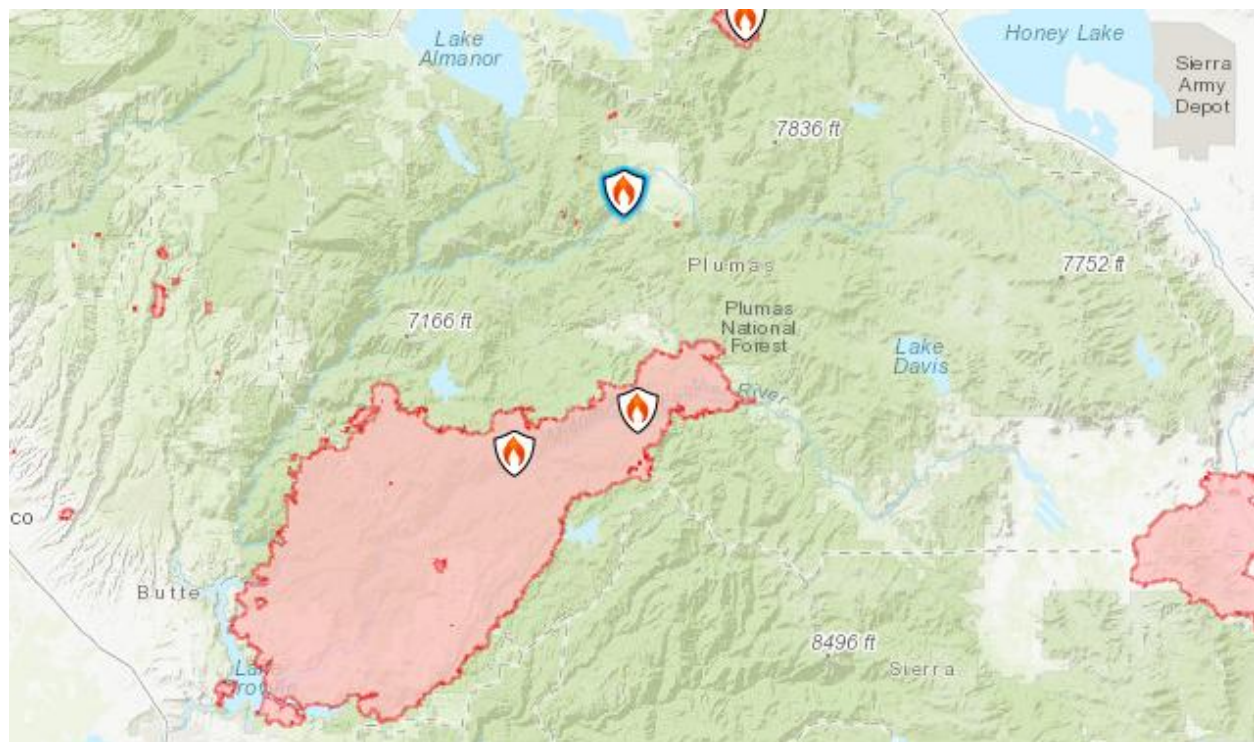
2019 Walker Fire – The Walker Fire was a wildfire that was burning in Genesee Valley in the Plumas National Forest approximately 11 miles east of the community of Taylorsville in Plumas County, California. The blaze was reported on Wednesday, September 4, 2019, and immediately expanded in size over its several days of burning. The fire actively threatened homes from Genesee Valley to Antelope Road. Communities along Highway 395 from Thunder Mountain Road (Wales Canyon) to the Laufman Grade (Old Highway 59), including the communities of Murdock Crossing, Stoney, Milford and Brockman Canyon, were under mandatory evacuation. On September 10, the Walker Fire had grown to 47,340 acres and was 12 percent contained. The Lassen County Fairground evacuation center was closed that morning. The majority of residential evacuation orders were lifted, except the Murdock Crossing and Stoney areas. The next evening, the fire continued to grow, but was 28 percent contained. Crews extended dozer lines and handlines to expand the containment. Structural defense was put in place for buildings at Murdock Crossing and mop up continued at Antelope Lake, Round Mountain and the eastern side of the fire. However, by the morning of September 14, the fire had expanded to 54,612 acres and was 97 percent contained. By the time the fire was extinguished, 9 structures had been destroyed. 55,000 acres of grazing land were burned, with livestock water troughs and fencing burned. Damages to livestock grazing were in excess of \$1.2 million. The Agriculture Commissioner noted that the loss of grazing lands affected both current year and potential future loss for up to 3 years based on government regulations and weather.

It is important to note that in addition to the Plumas County fire history detailed above, there are numerous smaller fires that occur in the area year after year. These smaller fires have the ability to quickly get out of hand and become significant fires. Also, depending on the area, small fires in acreage can result in large losses. The HMPC provided the following details on fire history in Plumas County.

July 2020 Hog Fire – The 2020 Hog Fire affected nearby Lassen County. Though it did not burn areas in Plumas County, there were impacts to Plumas County. The Hog Fire, in Lassen County near Susanville, destroyed the one cable bringing Internet into the Lake Almanor Basin, Greenville and beyond. Sheriff Todd Johns said that Frontier Communications replaced the damaged lines, only to have them destroyed again. Officials say an essential fiber optic cable was damaged by the fire on the morning of the 21st and impacted communications and connectivity for Susanville and neighboring Plumas County.

August and September 2020 North Complex Fire – The North Complex Fire was a massive wildfire currently burning in Northern California in the counties of Plumas and Butte. The fires were started by lightning on August 17, 2020; by September 5, all the individual fires had been put out with the exception of the Claremont and Bear Fires, which merged on that date. Starting on September 8, strong winds caused the Bear Fire to explode in size to the southwest. Frequent ashfall occurred in Quincy through 9/17. The North Complex fire had burned an estimated 291,200 acres. Smoke from the fire has created extremely unhealthy air conditions in Quincy and nearby communities for several weeks. Major destruction was reported in the Greenville, Canyon Dam, and surrounding area. There is a worry that the post-wildfire burn scar will pose landslide, debris flow, and flooding issues.

Figure 4-201 North Complex Fire Burn Area



Source: Cal Fire Inciweb. Retrieved 9/28/2020

2021 Beckwourth Complex Fire - Beckwourth Fire Comprised of two separate fires. Dotta Fire started on 03/30/2021 and Sugar Fire started on 07/02/2021. They combined on 07/03/2021 Cause was dry lightning combined with red flag warnings. Total acres burned were 105,670. 106 residences and 42 outbuildings were destroyed in Plumas County. The fire was on USFS property and burned through 4 campgrounds owned by the federal government. All 4 campgrounds had to be evacuated as well as all the homes in the

Frenchman Lake Area. All USFS roads and two highways were closed and all USFS trails were closed (see detailed list). There are approximately 250 homes within the Beckwourth Fire footprint, but because most of the homes in the footprint of the were second homes or recreation, no sheltering of people was needed. The full-time homes below the fire in Chilcoot, CA were also under mandatory and warning status evacuations, but still, no one needed sheltering.

2021 Dixie Fire – The Dixie Fire began Tuesday, July 13, 2021, and burned nearly 1 million acres of land across five counties: Plumas, Butte, Lassen, Shasta, and Tehama, before it was considered contained October 25, 2021, 103 days later. It is the second largest wildfire in California history after the August Complex Fire. In total there were 95 structures damaged, and 1,329 structures destroyed by the fire and one fatality. During the Dixie Fire, the Seneca Health staff at the Chester facility were evacuated and the facility was temporarily shuttered. The facility was shuttered from August 4th to the 21st.

Evacuation centers for livestock opened on the 18th of July. In October, the evacuation center for livestock closed on the 2nd and the fire was 100% contained on the 24th. In addition, the fire tore through the town of Greenville and decimated most of what was in its path. The Greenville Rancheria lost their medical and dental facilities, the tribal office, the environmental office, as well as two fire trucks and other vehicles in the fire. The Dixie Fire impacted every person in Plumas County – whether directly or indirectly, including the social safety net providers. While the lack of housing was a strong concern pre-fire, the Dixie Fire significantly worsened an already tight housing market in Plumas County. Air quality in the County suffered from wildfire smoke during this event.

Figure 4-202 Dixie Fire billowing smoke as seen from nearby Deer Creek



Source: Plumas County

The magnitude of the Dixie Fire would have overburdened any region's social safety net and has been especially detrimental to the less vibrant system of care in rural Plumas County.

July 24, 2024, Wildfire Smoke – Seneca Healthcare noted that the Park Fire in nearby Butte County caused air quality issues in the County. Seneca prepares Skilled Nursing Unit for Evacuation due to possible Air Quality and/or Wildfire Threat. Highway 32 and 36 impacted making transfer difficult. This continued until August 12, 2024.

2024 Gold Complex Fire – On July 22, 2024, a thunderstorm in eastern Plumas County resulted in four dry lightning strikes that became wildfires on the Plumas National Forest Beckwourth Ranger District. The first fire was reported around 2:45 p.m. The Mill, Mill 2 and Mill 3 fires burned near the community of Clio and Whitehawk Ranch. The Smith Fire burned north of California State Highway 70 between Smith Peak and Maybe, California. All four fires grew rapidly due to winds, slope, and dry fuels. Structures were threatened by all four fires, including the communities of Whitehawk Ranch, Clio, Gold Mountain, Delleker, Maybe, Lake Davis Area, and the south and west sides of Portola. These four fires were combined into the Gold Complex.

Events before 2019

The HMPC noted the following fires to affect the County:

An unnamed fire occurred in **1960** which caused a state declaration (along with other California wildfires that summer).

1979 – A member of the HMPC from Viera Ranch noted there was a forest fire in Indian Valley.

1984 - A member of the HMPC from Viera Ranch noted there were multiple fires caused by dry lightning in the area. These wildfires caused air quality issues in Quincy.

1987 – The Plumas National Forest Fire #531 (known as the Clarks Fire) cause a state declaration in 1987 (along with other California wildfires that summer).

1999 – The Bucks Fire caused a federal and state disaster declaration in 1999. Dry lightning caused 25 fires in the forest in the County. The Quincy area was very smokey, with ash falling like now. Winds increased and Meadow Valley was placed on standby for evacuation. Tobin was surrounded by fire.

2000 Storrie Fire – The Forest Service had about 2,600 federal, state and local firefighters, air tankers and helicopter crews to battle the fire that burned 52,000 acres over three weeks. The federal government estimates the cost of the fire at \$22 million. The fire caused extensive damage to trees and destroyed 21,000 acres of wildlife habitat. The remaining \$80 million of the settlement is earmarked for damages to natural resources, with the money used for the remediation of Lassen and Plumas national forests. Union Pacific Railroad Co. has agreed to a \$102 million settlement for damages from the Storrie forest fire in Lassen and Plumas national forests in 2000, the largest-ever federal settlement for a forest fire. Federal authorities allege Union Pacific employees failed to clear the area when they were using grinders and rail saws during repair work, sparking the fire on Aug. 17, 2000.

The **2007 Moonlight Fire** was one of the most destructive fires in Plumas County history with a burn perimeter of 64,997 acres. Seven structures were destroyed, 2 residences and 5 outbuildings, and 1 outbuilding was damaged. An additional 25 residences and 10 outbuildings were threatened due to their

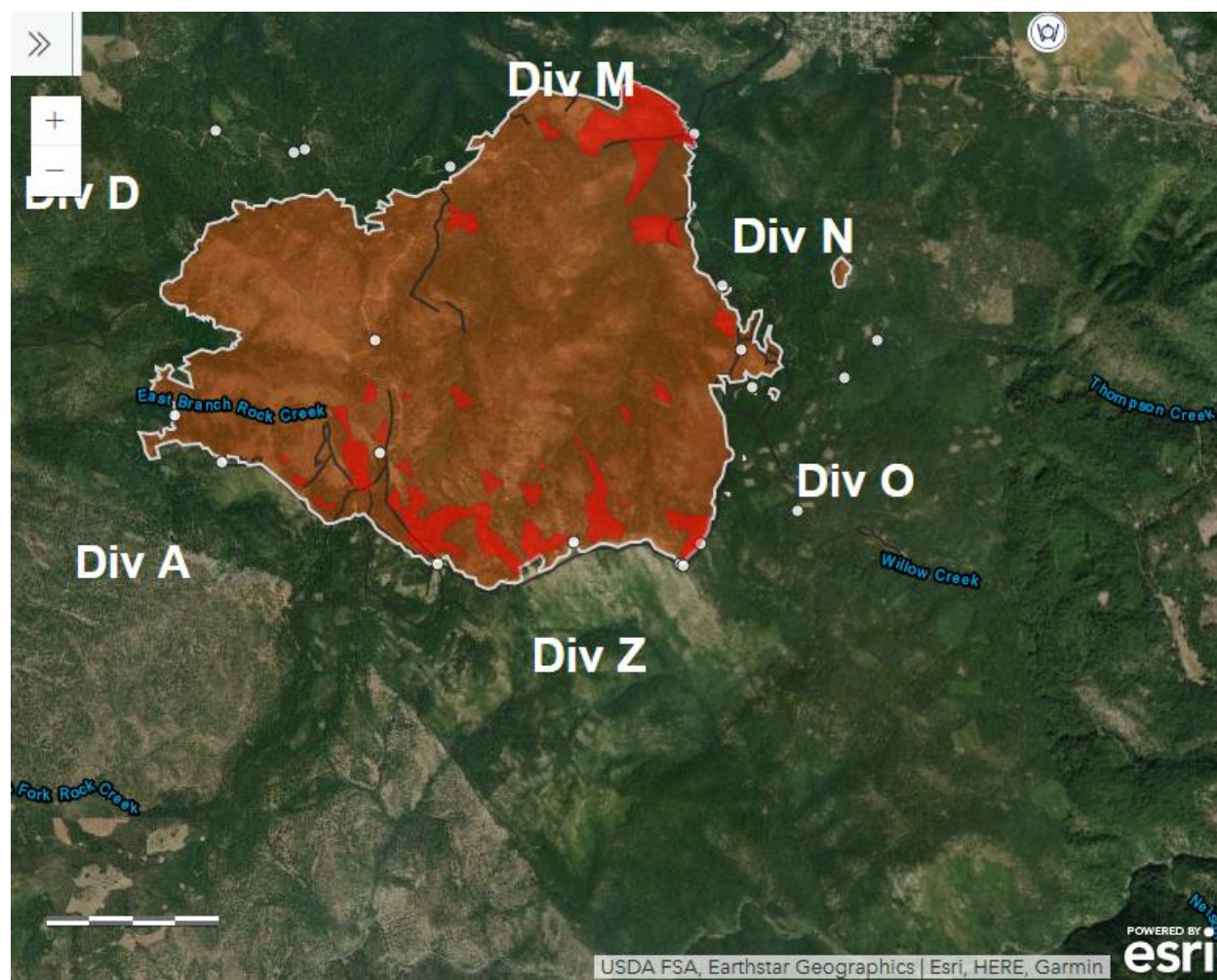
location within the interior of the fire containment lines. 34 injuries and zero deaths were reported. The total cost of fighting the fire was \$31.5 million, utilizing 42 engines, one helicopter, 11 dozers, 34 water tenders, 11 fire crews, and 707 total fire personnel. The blaze was caused by employees of Sierra Pacific Industries and a contractor who struck a rock with a dozer, causing sparks to ignite the dry ground in the area. The federal government was able to successfully sue the logging company for \$122.5 million in damages resulting from the fire that killed 15 million trees.

The **2008 BTU Lightning Complex Fire** caused the federal disaster in 2008 (along with other California wildfires that summer).

2012 Chips Fire – The Chips Fire burned in the Plumas National Forest. The fire started on July 28, causing damage estimated by the US Forest Service of \$53.3 million. The Plumas County Sheriff's Office issued a mandatory evacuation for Butt Reservoir, Ohio Valley, Humbug, Humboldt Area, and Yellow Creek. An evacuation advisory was issued to all Canyon Dam, Big Meadows, Rocky Point Campground, Prattville, Almanor, and West Almanor residents and visitors. The distribution lines powering Quincy and the Eastern Feather River were damaged by fire. PG&E crews were working to restore damaged distribution lines. A mandatory evacuation was ordered for Seneca and Ohio Valley, with voluntary evacuations for Rush Creek, Canyon Dam, Big Meadow, and Rocky Point. A Sheriff's advisory was in effect for West Almanor, Almanor, and Prattville.

2017 Minerva Fire – The Minerva Fire burned in July and August of 2017. The Minerva Fire almost burned into Quincy. On July 29th, the Plumas County Sheriff and OES stated "Residents of Quincy are strongly encouraged to start making emergency plans for the possibility of evacuation. Residents are encouraged to shut all windows, collect all personal documents, photos, avoid use of air conditioning, and locate your pets and keep them nearby." Air quality was poor in the County, especially near Quincy. The Oakland Camp area needed to be evacuated. The HMPC noted that they had school buses pick up evacuees from a fire near Oakland Camp and drop at fairgrounds/Red Cross. More than 1,800 firefighters were brought in to fight the blaze. The fire burned more than 4,300 acres. Authorities in Plumas County arrested a 36-year-old Quincy resident on suspicion of starting several fires in the surrounding forest, including the Minerva Fire. The burn area from the fire is shown on Figure 4-203.

Figure 4-203 Minerva Fire Burn Area



Source: <https://yubanet.com/containedlocal16/minerva/>

2018 Camp Fire – During the 2018 Camp Fire, there was a small area of Plumas County that was burned. High amounts of smoke caused air quality issues throughout the County. The EOC was mobilized for 4 to 5 days. Evacuees from Butte County were housed for a period of approximately 5 days. Mobilization costs were borne by the County and reimbursed by FEMA.

Likelihood of Future Occurrence

Highly Likely—Plumas County faces a serious wildland fire threat every year. While often limited to the sparsely populated, forested areas in the western portion of the County, fires will continue to occur on an annual basis throughout the Plumas County Planning Area. The threat of wildfire and potential losses are constantly increasing as human development and population increase, and the wildland urban interface areas expand. Due to its high fuel load and long, dry summers, portions of Plumas County continue to be at risk from wildfire.

It is likely that climate change will increase the chance of future occurrence as well as future impacts. More information on climate change and wildfire can be found in the next section. More information on future impacts can be found in the Future Conditions/Future Development section of the Vulnerability Assessment below.

Climate Change and Wildfire

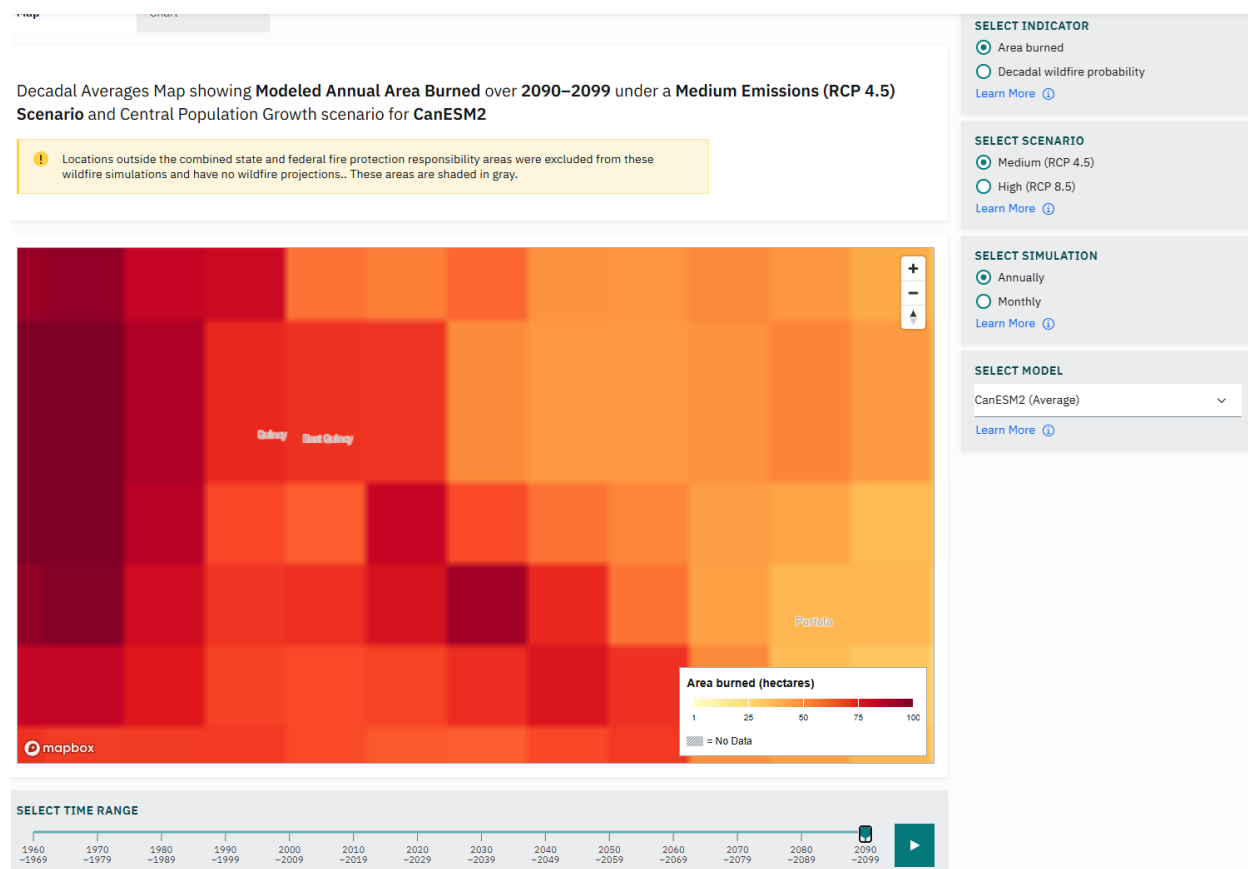
Climate change and its effects on wildfire come from two sources:

- Cal-Adapt
- 2019 Plumas County CWPP

Cal-Adapt

Warmer temperatures can exacerbate drought conditions. Drought often kills plants and trees, which serve as fuel for wildfires. Warmer temperatures could increase the number of wildfires and pest outbreaks, such as the western pine beetle. Cal-Adapt's wildfire tool predicts the potential increase in the amount of burned areas for the year 2090-2099, as compared to recent (2010) conditions. This is shown in Figure 4-204. Based on this model, Cal-Adapt predicts that wildfire risk in Plumas County will increase moderately by the end of the century. However, wildfire models can vary depending on the parameters used. Cal-Adapt does not take landscape and fuel sources into account in their model. In all likelihood, in the Plumas County Planning Area, precipitation patterns, high levels of heat, topography, and fuel load will determine the frequency and intensity of future wildfire.

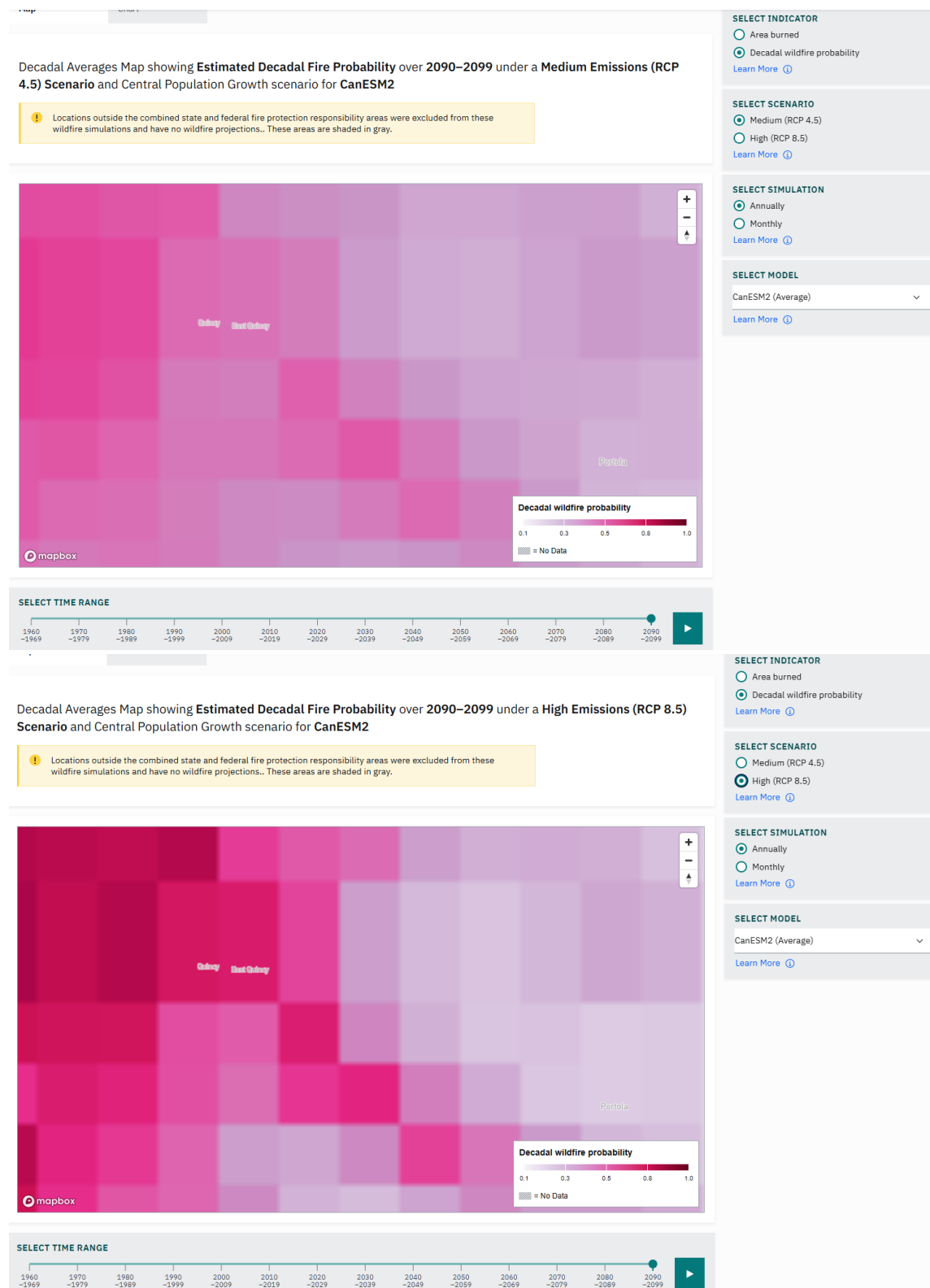
Figure 4-204 Plumas County Planning Area – Projected Increase in Wildfire Burn Areas



Source: Cal-Adapt. Retrieved 2/6/2025.

Wildfire scenario projections were done by Cal-Adapt, based on statistical modeling from historical data of climate, vegetation, population density, and fire history. The fire modeling ran simulations on five variables on a monthly time step - Large fire presence/absence, Number of fires given presence, Area burned in a grid cell given a fire, High severity burned area given a fire and emissions. These are shown on Figure 4-205. The upper chart shows modeled annual averages of area burned for the Planning Area under the RCP 4.5 scenario, while the lower chart shows modeled annual averages of area burned for the Planning Area under the RCP 8.5 scenario.

Figure 4-205 Plumas County Planning area – Future Annual Averages of Acres Burned under RCP 4.5 and 8.5 Scenarios



Source: Cal-Adapt. Retrieved 2/6/2025.

2019 Plumas County CWPP

The 2019 Plumas County CWPP noted that the majority of scientific research concerning climate trends indicates that climate has been changing since the mid-twentieth century. Trends suggest that the northern Sierra Nevada may become generally warmer and wetter, with longer periods of prolonged summer drought. While warmer and wetter weather patterns may increase forest growth and carbon sequestration, warmer temperatures – in combination with longer periods of prolonged summer drought – will likely increase forest insect and disease outbreaks and the occurrence of high severity fire – disturbances which may result in increased carbon losses. Such high severity disturbances could result in type-conversion to shrublands in forested ecosystems that are not adapted to such disturbance patterns – which could drastically alter carbon cycles in the short and long term. High-intensity wildfires, drought, and declining forest health are some effects of climate change that are worsening the threats to forests and reducing forest productivity.

Hotter and drier weather alter forest hydrology and water balance available to forest communities. Increased temperatures alter the timing of snowmelt, affecting the seasonal availability of water with earlier dry conditions which then provides fuel to earlier and hotter fires from stressed trees and shrubs. Drought also reduces trees' ability to produce sap, which protects them from destructive insects and diseases. Research has found that large trees may be most susceptible to climate driven mortality – which the authors suggested can also be compounded by high stand densities of small trees due to fire suppression. Others suggest that “regional warming and consequent increases in water deficits are likely contributors to the increase in mortality rates,” and suggest that exogenous warming trends may be more of a driver of mortality, particularly in large diameter trees, than increasing stand density. Nonetheless, research indicates that warming climate is driving changes in forest structure.

Vulnerability Assessment

Vulnerability—Extremely High

Risk and vulnerability to the County from wildfire is of significant concern. Wildfires that occur in the County occur from a variety of both natural and manmade causes. The County can be affected both by fires that start on or near County lands as well as those that start elsewhere and move into the County. In addition to burning large areas of land, air quality can be affected in the County by fires occurring inside the County as well as those from many miles away. As growth continues and populations increase in the County, the potential for catastrophic wildfires will also increase.

An assessment of a community's vulnerability to this hazard begins with an understanding of local exposure to unincorporated Plumas County. This is included in the Local Concerns section below. After that, vulnerability is discussed in multiple sections that detail how this hazard can affect both the entire Plumas County Planning Area as well as the unincorporated portions of Plumas County. How the hazard affects the other participating jurisdictions can be found in their respective annexes to this LHMP Update. These sections below include assets at risk, impacts, and how future development can be affected by this hazard.

Local Concerns (unincorporated Plumas County)

The unincorporated County has specific concerns regarding this hazard. These concerns form a portion of the basis for the mitigation strategy and mitigation actions that seek to reduce risk and vulnerability to this hazard.

According to the County and HMPC, the areas with the highest risk of wildfire are spread throughout the County and are generally located in areas with greater fuel loads resulting from denser forestation. The area that has seen the highest number of fires is the Feather River Canyon along the CA-70 corridor due to the high volume of auto and rail traffic. The Canyon's accessibility to the population areas, also increases its risk for human-triggered fires. Areas of lower fire hazard, which include the larger valleys such as Indian, American, and Sierra areas of the County, and also the high elevation peaks that receive the most precipitation.

Wildland fires that burn in natural settings with little or no development are part of a natural ecological cycle and may actually be beneficial to the landscape. Century old policies of fire exclusion and aggressive suppression have given way to better understanding of the importance fire plays in the natural cycle of certain forest types.

In Plumas County, past wildfires have caused damages to the County. The County has suffered loss of structures, loss of tax revenue, high costs to battle fires, and loss of lives. The County has noted that both developed and undeveloped areas are at risk. Loss of industrial timberlands, grazing lands, agricultural crops may occur as a result of wildfire. Localized road and school closures have been reported during wildfires. Roads, bridges, utility infrastructure, telecommunications and high voltage transmission lines are also at risk to wildfire. Past wildfires have resulted in loss of timber and recreational lands, which have caused economic issues. This was the case after the Gold Complex Fire.

The County noted that increasingly frequent and severe wildfires throughout California pose a major threat. Limited road networks and dispersed rural communities mean that the vulnerable populations mentioned below may struggle to evacuate quickly and safely.

Additionally, a concern from a fuels mitigation and post fire cleanup perspective, the County is limited with only one mill taking lumber. There is a finite mill capacity. A temporary mill is needed to process waste. The County is looking for more of a biomass project instead of a new mill. However, the County did indicate that there are several constraints to a biomass project; haul routes and distances are two primary issues related to a viable biomass project.

After wildfires, it was noted that there is a sensitive time period to reforest before next fire occurs. There is also a need to help private landowners with reforestation efforts after a fire and before the next fire.

The County and HMPC further noted that in the WUI areas, there has been increased difficulty in obtaining home insurance and the cost of insurance premiums. Some residents have experienced cancellations of their policies due to catastrophic and recent wildfires occurring throughout California which has reduced the risk tolerance of many insurance companies. This increases costs to those who live in the WUI, and in some circumstances limits where people choose to live.

Local concerns for Portola and the Special Districts can be found under the Local Concerns heading in each respective jurisdictional annex to this LHMP Update.

Assets at Risk

Assets at risk from wildfire include people and populations; structures; critical facilities and infrastructure; and natural, historic, and cultural resources. These are discussed in the following sections for the Plumas County Planning Area and unincorporated Plumas County.

Additionally, for each hazard in the FEMA National Risk Index in Plumas County, the relevant portions of the hazard analysis done by FEMA is presented below. This includes the Hazard Risk Index Rating, Expected Annual Loss Values, Exposure Values, and the Historic Loss Ratio Rating. These are presented for the Plumas County Planning Area as a whole.

Methodology (Parcels and Structures)

Utilizing the current FHSZ mapping for the Plumas County Planning Area, two separate analyses were performed: one for the combined SRA/FRA datasets and one for the LRA dataset. Specifically, the following datasets were utilized for the analysis and contained all FHSZ hazard classes from Very High to Non-Wildland: CAL FIRE State Responsibility Area (FHSZSRA_23_3) April 2024 and CAL FIRE Federal Responsibility Area: (Adopted FRA FHSZ 11/2007 - fhszs06_3_6). The following LRA dataset was used for the LRA FHSZ analysis: CAL FIRE Local Responsibility Area (FHSZLRA25_Phase3_v1) released in March 2025. Since it is possible for any given parcel to intersect with multiple categories for purposes of this analysis, the most conservative (or highest risk) FHSZ that intersected each parcel was used to determine which FHSZ to assign to each parcel. Once completed, the FHSZ parcel layer was joined to the assessor data to determine the number of parcels and values falling within each FHSZ. Based on this approach, the FHSZs for the Planning Area and unincorporated Plumas County were determined and further broken out by property use and included information on land and improved values, personal property values and estimated contents values.

This methodology is used below for the FHSZ analysis of people and populations, structures, and critical facilities at risk as well as with respect to future development areas. This FHSZ analysis can be misleading since multiple classes may fall within one polygon, and there are many large polygons throughout the County.

People and Populations

All populations are at some vulnerability to wildfire. Certain vulnerable populations are at greater risk to the effects of wildfire as well as smoke and air quality issues that wildfires bring. Vulnerable populations include:

- Unhoused
- Infants and children under age five and their caregivers
- Elderly (65 and older)
- Individuals with disabilities
- Individuals' dependent on medical equipment

- Individuals who exercise or recreate outdoors
- Individuals who work outdoors
- Individuals with impaired mobility

Plumas County Planning Area residents that live in CAL FIRE FHSZs are often the most vulnerable. Not only are the residents at risk, but their homes and contents are all at risk, compounding the impacts associated with significant hazard events. To further evaluate the impact to the residential population within the Planning Area, CAL FIRE’s wildfire hazard layers were overlaid on the parcel layer and linked to the Assessor data. Those residential parcel polygons that intersect the mapped FRA and SRA layers were counted and multiplied by the 2023 Census Bureau American Community Survey average household factors for each jurisdiction. These are shown by jurisdiction in Table 4-127. Those residential parcel polygons that intersect the mapped LRA layers were counted and multiplied by the 2023 Census Bureau American Community Survey average household factors for each jurisdiction. These are shown by jurisdiction in Table 4-128.

Table 4-127 Plumas County Planning Area – Residential Populations in Moderate or Higher CAL FIRE SRA/FRA Fire Hazard Severity Zones

| SRA/FRA Fire Hazard Severity Zone/Jurisdiction | Improved Residential Parcels | Population at Risk |
|--|------------------------------|--------------------|
| Moderate | | |
| City of Portola | 0 | 0 |
| Unincorporated County | 98 | 234 |
| High | | |
| City of Portola | 0 | 0 |
| Unincorporated County | 1,415 | 3,382 |
| Very High | | |
| City of Portola | 29 | 66 |
| Unincorporated County | 9,275 | 22,167 |

Source: CAL FIRE, Plumas County 2024 Parcel/Assessor’s Data, 2023 US Census American Community Survey Average Household Size – City of Portola (2.29); Unincorporated Plumas County (2.39).

Table 4-128 Plumas County Planning Area – Residential Populations in Moderate or Higher CAL FIRE LRA Fire Hazard Severity Zones

| LRA Fire Hazard Severity Zone/Jurisdiction | Improved Residential Parcels | Population at Risk |
|--|------------------------------|--------------------|
| Moderate | | |
| City of Portola | 0 | 0 |
| Unincorporated County | 184 | 440 |
| High | | |
| City of Portola | 125 | 286 |

| LRA Fire Hazard Severity Zone/Jurisdiction | Improved Residential Parcels | Population at Risk |
|--|------------------------------|--------------------|
| Unincorporated County | 282 | 674 |
| Very High | | |
| City of Portola | 781 | 1,788 |
| Unincorporated County | 1,494 | 3,571 |

Source: CAL FIRE, Plumas County 2024 Parcel/Assessor's Data, 2023 US Census American Community Survey Average Household Size – City of Portola (2.29); Unincorporated Plumas County (2.39).

Structures

This section is presented in two sections: SRA/FRA Fire Hazard Severity Zone Analysis and LRA Fire Hazard Severity Zone Analysis.

For the following analysis, the SRA/FRA and LRA FHSZ layer was overlaid with the parcel data as described above and further broken out by property use and included information on both land and improved values.

It should be noted that fire does not just affect structural values, fire can also affect land values. As such the Assessor's land values and all parcels were accounted for in this analysis to represent total County values at risk. However, it is highly unlikely the whole County will ever be on fire at once.

SRA/FRA Fire Hazard Severity Zone Analysis

All structures in the Plumas County Planning Area have some risk to wildfire. The Plumas County Planning Area parcel inventory and associated values by FRA and SRA are provided in Table 4-129. This is broken down further for the unincorporated County in Table 4-129. Table 4-129 shows FRA and SRA parcel counts, land and improved values (i.e., those with a structure improvement on the parcel), personal property values, estimated content replacement values, and total values in the unincorporated County. Note: while most SRA/FRA mapped areas fall within the unincorporated County areas, due to differing boundaries in mapped datasets, a few SRA/FRA mapped areas are found in the incorporated communities as shown below. Details on each jurisdiction's SRA/FRA Fire Hazard Severity Zones can be found in their respective annexes to this LHMP Update.

Table 4-129 Plumas County Planning Area – Count and Value of Parcels and Structures in CAL FIRE SRA/FRA FHSZ by Jurisdiction

| Jurisdiction / SRA/FRA Fire Hazard Severity Zone | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|--|--------------------|-----------------------|------------------|--------------------------|-------------------------|--------------------------|--------------|
| City of Portola | | | | | | | |
| Very High | 92 | 31 | \$4,749,530 | \$10,547,742 | \$12,605 | \$6,035,035 | \$21,344,912 |
| High | 2 | 0 | \$76,842 | \$0 | \$0 | \$0 | \$76,842 |
| Moderate | 0 | 0 | \$0 | \$0 | \$0 | \$0 | |

| Jurisdiction / SRA/FRA Fire Hazard Severity Zone | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|--|--------------------|-----------------------|------------------------|--------------------------|-------------------------|--------------------------|------------------------|
| Non-Wildland/Non-Urban | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Outside of State/ Federal Responsibility Area | 1,549 | 990 | \$33,123,999 | \$140,703,292 | \$1,902,467 | \$88,607,174 | \$264,336,932 |
| City of Portola Total | 1,643 | 1,021 | \$37,950,371 | \$151,251,034 | \$1,915,072 | \$94,642,209 | \$285,758,686 |
| Unincorporated Plumas County | | | | | | | |
| Very High | 19,315 | 9,693 | \$1,383,692,274 | \$2,467,545,493 | \$41,465,180 | \$1,302,647,402 | \$5,195,350,349 |
| High | 2,252 | 1,542 | \$143,214,394 | \$357,339,463 | \$5,071,453 | \$194,104,091 | \$699,729,401 |
| Moderate | 159 | 108 | \$11,808,219 | \$16,685,606 | \$318,296 | \$9,002,272 | \$37,814,393 |
| Non-Wildland/Non-Urban | 1 | 0 | \$91,800 | \$0 | \$0 | \$0 | \$91,800 |
| Outside of State/ Federal Responsibility Area | 2,507 | 2,084 | \$126,188,041 | \$361,374,716 | \$94,672,634 | \$228,404,857 | \$810,640,248 |
| Unincorporated Plumas County Total | 24,234 | 13,427 | \$1,664,994,728 | \$3,202,945,278 | \$141,527,563 | \$1,734,158,622 | \$6,743,626,191 |
| | | | | | | | |
| Grand Total | 25,877 | 14,448 | \$1,702,945,099 | \$3,354,196,312 | \$143,442,635 | \$1,828,800,830 | \$7,029,384,876 |

Source: CAL FIRE, Plumas County 2024 Parcel/ Assessor's Data

Table 4-130 Unincorporated Plumas County – Count and Value of Parcels and Structures in CAL FIRE SRA/FRA FHSZ by Property Use

| SRA/FRA Fire Hazard Severity Zone / Property Use | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|--|--------------------|-----------------------|------------------|--------------------------|-------------------------|--------------------------|---------------|
| Very High | | | | | | | |
| Agricultural | 1,149 | 65 | \$46,154,317 | \$15,340,446 | \$986,996 | \$15,340,446 | \$77,822,205 |
| Commercial | 458 | 242 | \$42,543,301 | \$75,736,553 | \$26,524,529 | \$75,736,553 | \$220,540,936 |
| Federal Lands | 212 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 509 | 0 | \$124,956 | \$0 | \$0 | \$0 | \$124,956 |
| Industrial | 72 | 40 | \$5,519,454 | \$7,103,600 | \$10,600 | \$10,655,400 | \$23,289,054 |
| Institutional | 43 | 19 | \$1,512,925 | \$10,149,108 | \$26,990 | \$10,149,108 | \$21,838,131 |
| Miscellaneous | 25 | 0 | \$9,591 | \$0 | \$0 | \$0 | \$9,591 |

| SRA/FRA Fire Hazard Severity Zone / Property Use | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|---|--------------------|-----------------------|------------------------|--------------------------|-------------------------|--------------------------|------------------------|
| Recreational | 471 | 52 | \$16,440,859 | \$22,316,004 | \$1,773,985 | \$22,316,004 | \$62,846,852 |
| Residential | 15,474 | 9,275 | \$1,271,386,871 | \$2,336,899,782 | \$12,142,080 | \$1,168,449,891 | \$4,788,878,624 |
| ROW/Utilities | 902 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Very High Total | 19,315 | 9,693 | \$1,383,692,274 | \$2,467,545,493 | \$41,465,180 | \$1,302,647,402 | \$5,195,350,349 |
| High | | | | | | | |
| Agricultural | 79 | 26 | \$10,317,552 | \$5,546,971 | \$225,254 | \$5,546,971 | \$21,636,748 |
| Commercial | 65 | 47 | \$4,611,970 | \$14,771,694 | \$3,919,965 | \$14,771,694 | \$38,075,323 |
| Federal Lands | 5 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 53 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 26 | 15 | \$1,341,184 | \$3,809,343 | \$0 | \$5,714,015 | \$10,864,542 |
| Institutional | 8 | 1 | \$49,910 | \$300,000 | \$0 | \$300,000 | \$649,910 |
| Recreational | 47 | 38 | \$1,696,229 | \$2,631,367 | \$40,139 | \$2,631,367 | \$6,999,102 |
| Residential | 1,875 | 1,415 | \$125,197,549 | \$330,280,088 | \$886,095 | \$165,140,044 | \$621,503,776 |
| ROW/Utilities | 94 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| High Total | 2,252 | 1,542 | \$143,214,394 | \$357,339,463 | \$5,071,453 | \$194,104,091 | \$699,729,401 |
| Moderate | | | | | | | |
| Agricultural | 16 | 5 | \$2,458,399 | \$695,338 | \$131,260 | \$695,338 | \$3,980,335 |
| Commercial | 5 | 5 | \$210,304 | \$623,600 | \$550 | \$623,600 | \$1,458,054 |
| Institutional | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Miscellaneous | 1 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Residential | 131 | 98 | \$9,139,516 | \$15,366,668 | \$186,486 | \$7,683,334 | \$32,376,004 |
| ROW/Utilities | 5 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Moderate Total | 159 | 108 | \$11,808,219 | \$16,685,606 | \$318,296 | \$9,002,272 | \$37,814,393 |
| Non-Wildland/Non-Urban | | | | | | | |
| Residential | 1 | 0 | \$91,800 | \$0 | \$0 | \$0 | \$91,800 |
| Non-Wildland/Non-Urban Total | 1 | 0 | \$91,800 | \$0 | \$0 | \$0 | \$91,800 |
| Outside of State/Federal Responsibility Area | | | | | | | |
| Agricultural | 66 | 22 | \$11,352,549 | \$3,396,890 | \$1,423,017 | \$3,396,890 | \$19,569,346 |
| Commercial | 325 | 262 | \$31,234,305 | \$73,212,565 | \$1,830,841 | \$73,212,565 | \$179,490,276 |
| Government | 37 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 42 | 30 | \$3,872,983 | \$7,536,590 | \$33,539,608 | \$11,304,885 | \$56,254,066 |
| Institutional | 28 | 19 | \$582,281 | \$3,487,061 | \$169,390 | \$3,487,061 | \$7,725,793 |
| Recreational | 1 | 1 | \$53,060 | \$265,302 | \$0 | \$265,302 | \$583,664 |

| SRA/FRA Fire Hazard Severity Zone / Property Use | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|--|--------------------|-----------------------|------------------------|--------------------------|-------------------------|--------------------------|------------------------|
| Residential | 1,943 | 1,750 | \$79,092,863 | \$273,476,308 | \$57,709,778 | \$136,738,154 | \$547,017,103 |
| ROW/Utilities | 65 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Outside of State/ Federal Responsibility Area Total | 2,507 | 2,084 | \$126,188,041 | \$361,374,716 | \$94,672,634 | \$228,404,857 | \$810,640,248 |
| | | | | | | | |
| Unincorporated Plumas County Total | 24,234 | 13,427 | \$1,664,994,728 | \$3,202,945,278 | \$141,527,563 | \$1,734,158,622 | \$6,743,626,191 |

Source: CAL FIRE, Plumas County 2024 Parcel/Assessor's Data

LRA Fire Hazard Severity Zone Analysis

All structures in the Plumas County Planning Area have some risk to wildfire. The Plumas County Planning Area parcel inventory and associated values by LRA are provided in Table 4-131. This is broken down further for the unincorporated County in Table 4-137. Table 4-137 shows LRA parcel counts, land and improved values (i.e., those with a structure improvement on the parcel), personal property values, estimated content replacement values, and total values in the unincorporated County. Details on each jurisdiction's SRA/FRA Fire Hazard Severity Zones and property use types can be found in their respective annexes to this LHMP Update.

Table 4-131 Plumas County Planning Area – Count and Value of Parcels in CAL FIRE LRA FHSZ by Jurisdiction

| Jurisdiction / LRA Fire Hazard Severity Zone | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|--|--------------------|-----------------------|---------------------|--------------------------|-------------------------|--------------------------|----------------------|
| City of Portola | | | | | | | |
| Very High | 1,488 | 891 | \$35,371,649 | \$139,031,606 | \$1,912,223 | \$88,048,386 | \$264,363,864 |
| High | 155 | 130 | \$2,578,722 | \$12,219,428 | \$2,849 | \$6,593,823 | \$21,394,822 |
| Moderate | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Non-Wildland/Non-Urban | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Outside of Local Responsibility Area | 0 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| City of Portola Total | 1,643 | 1,021 | \$37,950,371 | \$151,251,034 | \$1,915,072 | \$94,642,209 | \$285,758,686 |

| Jurisdiction / LRA Fire Hazard Severity Zone | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|--|--------------------|-----------------------|------------------------|--------------------------|-------------------------|--------------------------|------------------------|
| Unincorporated Plumas County | | | | | | | |
| Very High | 2,212 | 1,775 | \$110,540,627 | \$345,315,982 | \$93,775,633 | \$219,780,962 | \$769,413,204 |
| High | 480 | 343 | \$29,466,872 | \$52,827,286 | \$2,723,330 | \$33,896,596 | \$118,914,084 |
| Moderate | 235 | 196 | \$7,886,778 | \$22,845,115 | \$137,783 | \$12,529,989 | \$43,399,665 |
| Non-Wildland/Non-Urban | 188 | 119 | \$15,785,356 | \$13,424,512 | \$1,611,613 | \$9,153,000 | \$39,974,481 |
| Outside of Local Responsibility Area | 21,119 | 10,994 | \$1,501,315,095 | \$2,768,532,383 | \$43,279,204 | \$1,458,798,076 | \$5,771,924,758 |
| Unincorporated Plumas County Total | 24,234 | 13,427 | \$1,664,994,728 | \$3,202,945,278 | \$141,527,563 | \$1,734,158,622 | \$6,743,626,191 |
| | | | | | | | |
| Grand Total | 25,877 | 14,448 | \$1,702,945,099 | \$3,354,196,312 | \$143,442,635 | \$1,828,800,830 | \$7,029,384,876 |

Source: CAL FIRE, Plumas County 2024 Parcel/Assessor's Data

Figure 4-206 Unincorporated Plumas County – Count and Value of Parcels in CAL FIRE LRA FHSZ by Property Use

| LRA Fire Hazard Severity Zone / Property Use | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|--|--------------------|-----------------------|----------------------|--------------------------|-------------------------|--------------------------|----------------------|
| Very High | | | | | | | |
| Agricultural | 13 | 2 | \$1,018,633 | \$759,651 | \$0 | \$759,651 | \$2,537,935 |
| Commercial | 298 | 238 | \$30,845,467 | \$73,154,517 | \$1,765,945 | \$73,154,517 | \$178,920,446 |
| Federal Lands | 3 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 46 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Industrial | 38 | 25 | \$3,326,859 | \$7,767,049 | \$33,540,558 | \$11,650,574 | \$56,285,040 |
| Institutional | 27 | 16 | \$542,169 | \$4,797,675 | \$160,890 | \$4,797,675 | \$10,298,409 |
| Residential | 1,668 | 1,494 | \$74,807,499 | \$258,837,090 | \$58,308,240 | \$129,418,545 | \$521,371,374 |
| ROW/Utilities | 119 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Very High Total | 2,212 | 1,775 | \$110,540,627 | \$345,315,982 | \$93,775,633 | \$219,780,962 | \$769,413,204 |
| High | | | | | | | |
| Agricultural | 18 | 7 | \$6,275,715 | \$1,674,393 | \$103,680 | \$1,674,393 | \$9,728,181 |
| Commercial | 56 | 41 | \$4,555,339 | \$9,216,431 | \$2,565,851 | \$9,216,431 | \$25,554,052 |
| Government | 6 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |

| LRA Fire Hazard Severity Zone / Property Use | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|---|--------------------|-----------------------|------------------------|--------------------------|-------------------------|--------------------------|------------------------|
| Industrial | 8 | 7 | \$920,532 | \$1,414,350 | \$0 | \$2,121,525 | \$4,456,407 |
| Institutional | 8 | 5 | \$249,084 | \$981,080 | \$11,550 | \$981,080 | \$2,222,794 |
| Recreational | 1 | 1 | \$53,060 | \$265,302 | \$0 | \$265,302 | \$583,664 |
| Residential | 362 | 282 | \$17,413,142 | \$39,275,730 | \$42,249 | \$19,637,865 | \$76,368,986 |
| ROW/Utilities | 21 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| High Total | 480 | 343 | \$29,466,872 | \$52,827,286 | \$2,723,330 | \$33,896,596 | \$118,914,084 |
| Moderate | | | | | | | |
| Commercial | 13 | 12 | \$690,326 | \$2,214,862 | \$97,460 | \$2,214,862 | \$5,217,510 |
| Government | 2 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Residential | 214 | 184 | \$7,196,452 | \$20,630,253 | \$40,323 | \$10,315,127 | \$38,182,155 |
| ROW/Utilities | 6 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Moderate Total | 235 | 196 | \$7,886,778 | \$22,845,115 | \$137,783 | \$12,529,989 | \$43,399,665 |
| Non-Wildland | | | | | | | |
| Agricultural | 67 | 24 | \$9,247,840 | \$3,715,159 | \$1,554,277 | \$3,715,159 | \$18,232,435 |
| Commercial | 1 | 1 | \$35,700 | \$117,300 | \$0 | \$117,300 | \$270,300 |
| Industrial | 8 | 4 | \$704,368 | \$524,514 | \$0 | \$786,771 | \$2,015,653 |
| Residential | 105 | 90 | \$5,797,448 | \$9,067,539 | \$57,336 | \$4,533,770 | \$19,456,093 |
| ROW/Utilities | 7 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Non-Wildland Total | 188 | 119 | \$15,785,356 | \$13,424,512 | \$1,611,613 | \$9,153,000 | \$39,974,481 |
| Outside of Local Responsibility Area | | | | | | | |
| Agricultural | 1,212 | 85 | \$53,740,629 | \$18,830,442 | \$1,108,570 | \$18,830,442 | \$92,510,083 |
| Commercial | 485 | 264 | \$42,473,048 | \$79,641,302 | \$27,846,629 | \$79,641,302 | \$229,602,281 |
| Federal Lands | 214 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Government | 545 | 0 | \$124,956 | \$0 | \$0 | \$0 | \$124,956 |
| Industrial | 86 | 49 | \$5,781,862 | \$8,743,620 | \$9,650 | \$13,115,430 | \$27,650,562 |
| Institutional | 45 | 18 | \$1,353,863 | \$8,157,414 | \$23,940 | \$8,157,414 | \$17,692,631 |
| Miscellaneous | 26 | 0 | \$9,591 | \$0 | \$0 | \$0 | \$9,591 |
| Recreational | 518 | 90 | \$18,137,088 | \$24,947,371 | \$1,814,124 | \$24,947,371 | \$69,845,954 |
| Residential | 17,075 | 10,488 | \$1,379,694,058 | \$2,628,212,234 | \$12,476,291 | \$1,314,106,117 | \$5,334,488,700 |
| ROW/Utilities | 913 | 0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Outside of Local Responsibility Area Total | 21,119 | 10,994 | \$1,501,315,095 | \$2,768,532,383 | \$43,279,204 | \$1,458,798,076 | \$5,771,924,758 |

| LRA Fire Hazard Severity Zone / Property Use | Total Parcel Count | Improved Parcel Count | Total Land Value | Improved Structure Value | Personal Property Value | Estimated Contents Value | Total Value |
|--|--------------------|-----------------------|------------------|--------------------------|-------------------------|--------------------------|-----------------|
| | | | | | | | |
| Unincorporated Plumas County Total | 24,234 | 13,427 | \$1,664,994,728 | \$3,202,945,278 | \$141,527,563 | \$1,734,158,622 | \$6,743,626,191 |

Source: CAL FIRE, Plumas County 2024 Parcel/Assessor's Data

Critical Facilities and Infrastructure

Wildfire presents a threat to critical facilities and infrastructure. The following analysis discusses critical facilities and infrastructure. A separate analysis was performed on the critical facility inventory in the Plumas County Planning Area to determine critical facilities in fire hazard severity zones. This was done for both SRA/FRA and LRA fire hazard severity zones.

Using GIS, the SRA/FRA and LRA fire hazard severity zones were overlayed on the critical facility GIS layer. Figure 4-207 shows critical facilities, as well as the SRA/FRA fire hazard severity zones. Table 4-132 details critical facilities by SRA/FRA fire hazard severity zone by facility category and count for the Planning Area.

Figure 4-207 is an overview map (with insets) that shows critical facilities, as well as the LRA fire hazard severity zones. Figure 4-208 through Figure 4-211 show the zoomed inset maps from Figure 4-207. Table 4-133 details critical facilities by LRA fire hazard severity zone by facility category and count for the Planning Area.

Details of critical facility category, type, name and address by SRA/FRA and LRA fire hazard severity zones are listed in Appendix G.

SRA-FRA FIRE HAZARD SEVERITY ZONES

- Very High
- High
- Moderate
- Non-Wildland/Non-Urban
- Outside of Federal / State Responsibility Area

CALIFORNIA INSET

OR ID UT AZ NV CA Pacific Ocean

CRITICAL FACILITY CATEGORY

- Essential Services Facilities
- At Risk Populations Facilities
- Hazardous Materials Facilities

LEGEND

- Communities
- County Seat
- Highways
- Major Roads
- Railroads
- Rivers
- Lakes
- Cities
- Counties
- States

Data Source: CAL FIRE (State Responsibility Area: FHSZSRA_23_3) April 2024,
CAL FIRE (Federal Responsibility Area: Draft c32fhszi06_1) September 2007,
Plumas County GIS, CalAtlas; Map Date: 9/9/2025.

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Table 4-132 Plumas County Planning Area – Critical Facilities in SRA/FRA Fire Hazard Severity Zones by Jurisdiction and Critical Facility Category

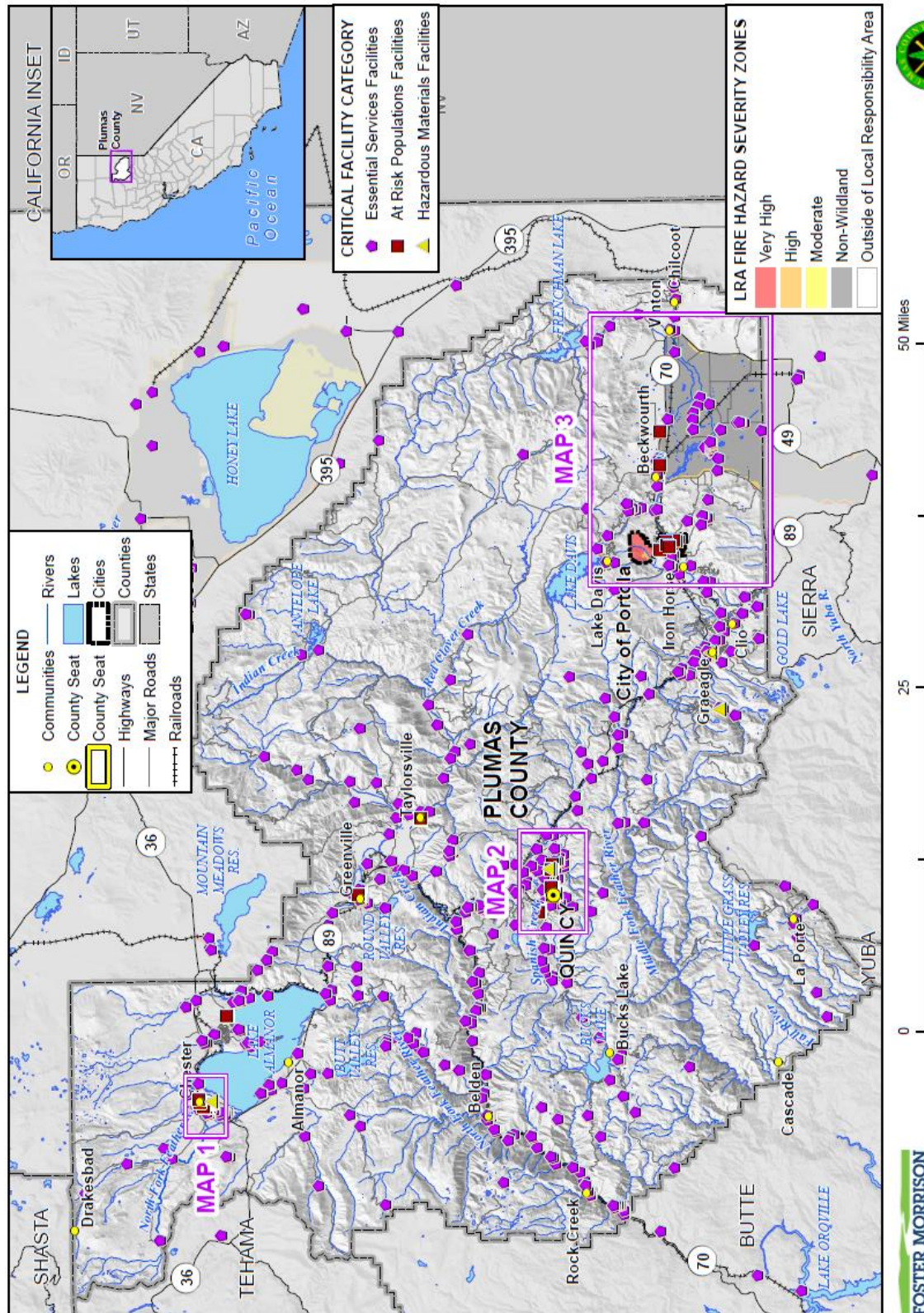
| Jurisdiction / Fire Hazard Severity Zones | Critical Facility Category | Facility Count |
|--|---|----------------|
| Portola | | |
| Outside of Federal / State Responsibility Area | Essential Services Facilities | 16 |
| | At Risk Populations Facilities | 8 |
| | Hazardous Materials Facilities | 0 |
| | Outside of Federal / State Responsibility Area Total | 24 |
| Portola Total | | 24 |
| Unincorporated Plumas County | | |
| Very High | Essential Services Facilities | 619 |
| | At Risk Populations Facilities | 9 |
| | Hazardous Materials Facilities | 2 |
| | Very High Total | 630 |
| High | Essential Services Facilities | 70 |
| | At Risk Populations Facilities | 3 |
| | Hazardous Materials Facilities | 1 |
| | High Total | 74 |
| Moderate | Essential Services Facilities | 4 |
| | At Risk Populations Facilities | 1 |
| | Hazardous Materials Facilities | 0 |
| | Moderate Total | 5 |
| Non-Wildland/Non-Urban | Essential Services Facilities | 6 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | Non-Wildland/Non-Urban Total | 6 |
| Outside of Federal / State Responsibility Area | Essential Services Facilities | 130 |
| | At Risk Populations Facilities | 20 |
| | Hazardous Materials Facilities | 1 |
| | Outside of Federal / State Responsibility Area Total | 151 |
| Unincorporated Plumas County Total | | 866 |
| Unincorporated Butte County | | |
| Very High | Essential Services Facilities | 3 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | Very High Total | 3 |
| No Data Available | Essential Services Facilities | 1 |

| Jurisdiction / Fire Hazard Severity Zones | Critical Facility Category | Facility Count |
|--|---|----------------|
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | No Data Available Total | 1 |
| Unincorporated Butte County Total | | 4 |
| Unincorporated Lassen County | | |
| Very High | Essential Services Facilities | 9 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | Very High Total | 9 |
| High | Essential Services Facilities | 5 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | High Total | 5 |
| Moderate | Essential Services Facilities | 2 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | Moderate Total | 2 |
| Outside of Federal / State Responsibility Area | Essential Services Facilities | 16 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | Outside of Federal / State Responsibility Area Total | 16 |
| No Data Available | Essential Services Facilities | 2 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | No Data Available Total | 2 |
| Unincorporated Lassen County Total | | 34 |
| Unincorporated Sierra County | | |
| High | Essential Services Facilities | 2 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | High Total | 2 |
| Outside of Federal / State Responsibility Area | Essential Services Facilities | 2 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | Outside of Federal / State Responsibility Area Total | 2 |
| Unincorporated Sierra County Total | | 4 |

| Jurisdiction / Fire Hazard Severity Zones | Critical Facility Category | Facility Count |
|---|--------------------------------|----------------|
| Unincorporated Tehama County | | |
| Very High | Essential Services Facilities | 2 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | Very High Total | 2 |
| Unincorporated Tehama County Total | | 2 |
| | | |
| Grand Total | | 934 |

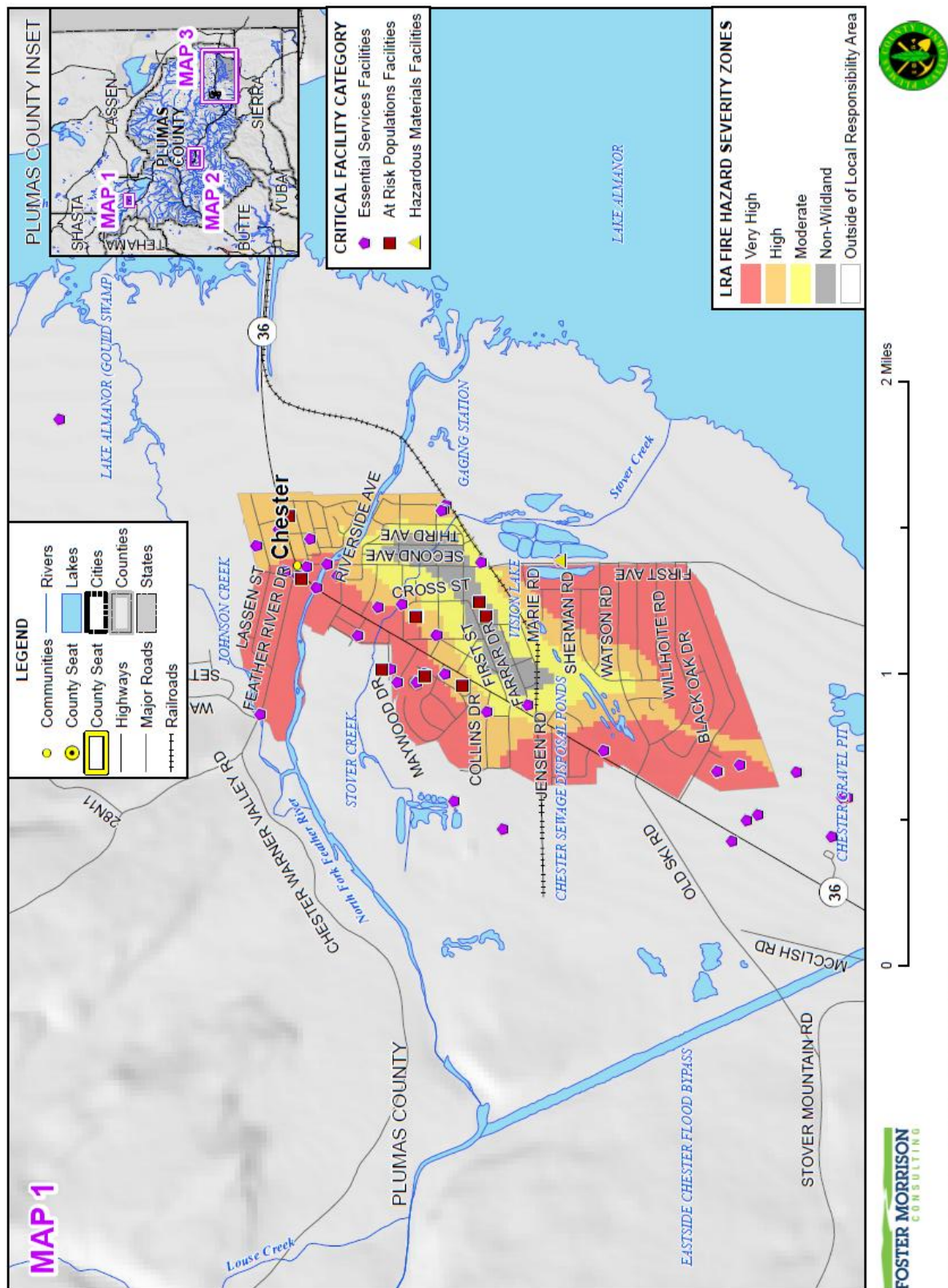
Source: CAL FIRE, Plumas County GIS

Figure 4-208 Plumas County Planning Area – Critical Facilities in LRA Fire Hazard Severity Zones (Overview Map with Insets)



Data Source: CAL FIRE (Local Responsibility Area FHSZ 2/2025 FHSZLRA25_Phase1_v1),
Plumas County GIS, Cal-Atlas; Map Date: 9/9/2025.

Figure 4-209 Plumas County Planning Area – Critical Facilities in LRA Fire Hazard Severity Zones (Map Inset 1)



MAP 2

LEGEND

- Communities
- County Seat
- County Seat
- Highways
- Major Roads
- Railroads
- Rivers
- Lakes
- Cities
- Counties
- States

CRITICAL FACILITY CATEGORY

- Essential Services Facilities
- At Risk Populations Facilities
- Hazardous Materials Facilities

LRA FIRE HAZARD SEVERITY ZONES

- Very High
- High
- Moderate
- Non-Wildland
- Outside of Local Responsibility Area

MAP 1

MAP 2

MAP 3

MAP 4

MAP 5

MAP 6

MAP 7

MAP 8

MAP 9

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MAP 11

MAP 12

MAP 13

MAP 14

MAP 15

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MAP 251

MAP 252

MAP 253

MAP 254

MAP 255

MAP 256

MAP

[illegible]

Table 4-133 Plumas County Planning Area – Critical Facilities in LRA Fire Hazard Severity Zones by Jurisdiction and Critical Facility Category

| Jurisdiction / Fire Hazard Severity Zones | Critical Facility Category | Facility Count |
|---|---|----------------|
| Portola | | |
| Very High | Essential Services Facilities | 11 |
| | At Risk Populations Facilities | 7 |
| | Hazardous Materials Facilities | 0 |
| | Very High Total | 18 |
| High | Essential Services Facilities | 5 |
| | At Risk Populations Facilities | 1 |
| | Hazardous Materials Facilities | 0 |
| | High Total | 6 |
| Portola Total | | 24 |
| Unincorporated Plumas County | | |
| Very High | Essential Services Facilities | 79 |
| | At Risk Populations Facilities | 12 |
| | Hazardous Materials Facilities | 1 |
| | Very High Total | 92 |
| High | Essential Services Facilities | 19 |
| | At Risk Populations Facilities | 6 |
| | Hazardous Materials Facilities | 0 |
| | High Total | 25 |
| Moderate | Essential Services Facilities | 2 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | Moderate Total | 2 |
| Non-Wildland | Essential Services Facilities | 30 |
| | At Risk Populations Facilities | 2 |
| | Hazardous Materials Facilities | |
| | Non-Wildland Total | 32 |
| Outside of Local Responsibility Area | Essential Services Facilities | 699 |
| | At Risk Populations Facilities | 13 |
| | Hazardous Materials Facilities | 3 |
| | Outside of Local Responsibility Area Total | 715 |
| Unincorporated Plumas County Total | | 866 |
| Unincorporated Butte County | | |
| Outside of Local Responsibility Area | Essential Services Facilities | 4 |
| | At Risk Populations Facilities | 0 |

| Jurisdiction / Fire Hazard Severity Zones | Critical Facility Category | Facility Count |
|---|---|----------------|
| | Hazardous Materials Facilities | 0 |
| | Outside of Local Responsibility Area Total | 4 |
| Unincorporated Butte County Total | | 4 |
| Unincorporated Lassen County | | |
| Very High | Essential Services Facilities | 3 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | Very High Total | 3 |
| Moderate | Essential Services Facilities | 1 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | Moderate Total | 1 |
| Non-Wildland | Essential Services Facilities | 12 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | Non-Wildland Total | 12 |
| Outside of Local Responsibility Area | Essential Services Facilities | 18 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | Outside of Local Responsibility Area Total | 18 |
| Unincorporated Lassen County Total | | 34 |
| Unincorporated Sierra County | | |
| High | Essential Services Facilities | 1 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | High Total | 1 |
| Non-Wildland | Essential Services Facilities | 1 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | Non-Wildland Total | 1 |
| Outside of Local Responsibility Area | Essential Services Facilities | 2 |
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | Outside of Local Responsibility Area Total | 2 |
| Unincorporated Sierra County Total | | 4 |
| Unincorporated Tehama County | | |
| Outside of Local Responsibility Area | Essential Services Facilities | 2 |

| Jurisdiction / Fire Hazard Severity Zones | Critical Facility Category | Facility Count |
|---|---|----------------|
| | At Risk Populations Facilities | 0 |
| | Hazardous Materials Facilities | 0 |
| | Outside of Local Responsibility Area Total | 2 |
| Unincorporated Tehama County Total | | 2 |
| | | |
| Grand Total | | 934 |

Source: CAL FIRE, Plumas County GIS

Natural, Historic, and Cultural Resources

Natural, historic, and cultural resources located within areas at risk to wildfire would be vulnerable. Should a wildfire occur in the Planning Area, the impacts to natural, historic, and cultural resources could be extensive and include loss of forested areas, air pollution, contamination from water runoff containing toxic products, and other environmental discharges or releases from burned materials affecting soils, habitat areas, wildlife, and aquatic resources. Historic and cultural resources can be affected and are often more vulnerable due to their older age, construction type, and lack of fire prevention infrastructure such as sprinklers.

FEMA NRI Hazard Vulnerability Assessment

The HMPC looked at the FEMA NRI for additional specific data on Plumas County's vulnerability to Wildfire. The NRI contains data and analysis for 18 separate natural hazards, including wildfire. As shown in Table 4-134, wildfires could cause a total of \$7,840,595 in expected annual losses, with a historic loss rating of relatively high. Wildfire has a relatively low rating for social vulnerability and a relatively high community resilience, with a risk index score of 97.6 out of 100. According to the NRI, there have been 0 wildfire events during the 2021 data set with 0.80% annual chance per year.

Table 4-134 Plumas County Planning Area – Wildfire Vulnerability Ratings from FEMA NRI

| NRI Hazard | Hazard Risk Index Rating | Expected Annual Loss Values (total)** | Exposure Value (total)*** | Historic Loss Ratio Rating |
|------------|--------------------------|---------------------------------------|---------------------------|----------------------------|
| Wildfire | 97.6 | \$7,840,595 | \$67,542,484,158 | Relatively high |

Source: FEMA NRI Report

*Hazard Risk Index is calculated using data for only a single hazard type, and reflects a communities expected annual loss value, community risk factors, and the adjustment factor used to calculate the risk value.

**Expected annual loss represents the average economic loss in dollars resulting from natural hazards each year.

***Exposure is a natural hazard consequence factor that is the representative value of buildings, populations, or agriculture potentially exposed to a natural hazard occurrence.

Additional information on the FEMA NRI can be found in Section 4.2 and Appendix H.

Impacts from Wildfire

Potential impacts from wildfire include loss of life and injuries; damage to structures (commercial, industrial, and residential) and other improvements, natural and cultural resources, croplands, and timber; and loss of recreational opportunities. Wildfires can cause short-term and long-term disruption to the Plumas County Planning Area. Fires can have devastating effects on watersheds through loss of vegetation and soil erosion, which may impact the Planning Area by changing runoff patterns, increasing sedimentation, reducing natural and reservoir water storage capacity, and degrading water quality. Fires can also affect air quality in the Planning Area; smoke and air pollution from wildfires can be a severe health hazard.

Although the physical damages and casualties arising from wildland-urban interface fires may be severe, it is important to recognize that they also cause significant economic impacts by resulting in a loss of function of buildings and infrastructure. Economic impacts of loss of transportation and utility services may include traffic delays/detours from road and bridge closures and loss of electric power, potable water, and wastewater services. Schools and businesses can be forced to close for extended periods of time. Recently, the threat of wildfire, combined with the potential for high winds, heat, and low humidity, has caused PG&E to initiate a PSPS which can also significantly impact a community through loss of services, business closures, and other impacts associated with loss of power for an extended period. In addition, catastrophic wildfire can create favorable conditions for other hazards such as flooding, landslides, and erosion during the rainy season.

The impacts of a fire are felt long after the fire is extinguished. In addition to the loss of property in fires, the loss in vegetation and changes in surface soils alters the environment. When supporting vegetation is burned, hillsides become destabilized and prone to erosion. The burnt surface soils are harder and absorb less water. When winter rains come, this leads to increased runoff, erosion, and landslides in hilly areas.

Impacts that are not quantified, but can be anticipated in large future events, include:

- Injury and loss of life;
- Commercial and residential structural and property damage;
- Disruption of and damage to public infrastructure, utilities, and services;
- Damage to roads/bridges resulting in loss of mobility;
- Significant economic impact (jobs, sales, tax revenue) to the community; and
- Negative impact on commercial and residential property values

Wildfire smoke can also have negative effects to those who live in or near a fire burn area. Smoke and air pollution from wildfires can be a severe health hazard. Significant wildfires occurring in nearby northern California communities since the previous LHMP Update have created significant air pollution affecting area residents. Planning Area residents have been affected by wildfire smoke and poor air quality, from fires both within the County and from those much further away.

The Plumas County Air District noted that wildfire smoke impacts populations for days and weeks at a time. The County has no control on what wildfires burn or for how long. Poor air quality poses a health risk to all individuals. However, children, adolescents, pregnant women, the elderly, the immunocompromised and those with pre-existing chronic diseases and lung conditions are especially

vulnerable to the compounding detrimental health impacts of poor air quality events. Wildfire smoke creates and often exacerbates poor air quality situations. Of the many harmful components that exist in wildfire smoke, one of the most dangerous is particulate matter (PM), specifically fine PM (PM_{2.5}). The microscopic particles of PM_{2.5} are so fine that they are inhaled deep into the lungs and cross the blood-air barrier to enter the bloodstream. Short-term exposure over hours or days can lead to increased asthma attacks, acute bronchitis, increased susceptibility to respiratory infections and can lead to an increased risk of heart attack for individuals with lung disease.

Ground-level ozone is another air pollutant of concern because it is a strong irritant that can cause constriction of the airways, forcing the respiratory system to work harder to provide oxygen. It can also cause other health problems including aggravated respiratory disease such as emphysema, bronchitis and asthma, lung damage, wheezing, chest pain, dry throat, headache, nausea, reduced resistance to infection, increased fatigue and weakened athletic performance. While ozone is typically seen at its highest levels during the summer, wildfire plumes can increase ozone formation. With an increased number of prolonged wildfire smoke events impacting populations near and far from fire epicenters, it has become imperative to understand the health impact from acute and extended exposure to wildfire smoke.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the County may be affected in the future by climate change (which was discussed in the hazard profile section above), changes in population patterns, and changes in land use and development. The influencing effects of these factors on this hazard are discussed further in the Future Conditions/Future Development discussion below.

Future Conditions/Future Development

This section provides a discussion of how future conditions will influence or affect the hazard over time and also discusses future development relative to each hazard.

Future Conditions

Future conditions may be affected by climate change, changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. Findings on this for Plumas County include the following:

- Climate change is likely to exacerbate future wildfire conditions and associated impacts and vulnerability of the County to wildfire.
- Future population growth should be considered, as having more or less people in a community affects the overall hazard vulnerability to the County. Population is expected to decrease in Plumas County. Changes in population and population patterns may or may not increase the impacts and vulnerability of the County to this hazard depending on the location and nature of growth and continued planning for future hazard conditions.
- Land use planning should be proactive to address future hazard conditions. Locating new development, structures and critical facilities and infrastructure within or near areas of wildfire risk may put additional development at risk. However, County building codes are in effect to reduce this risk and should be updated as necessary to continue to address future wildfire conditions. Thus, depending on the location of new development and adherence to protective building codes, changes in land use and development may or may not increase the impacts and associated vulnerabilities of the County to this hazard.

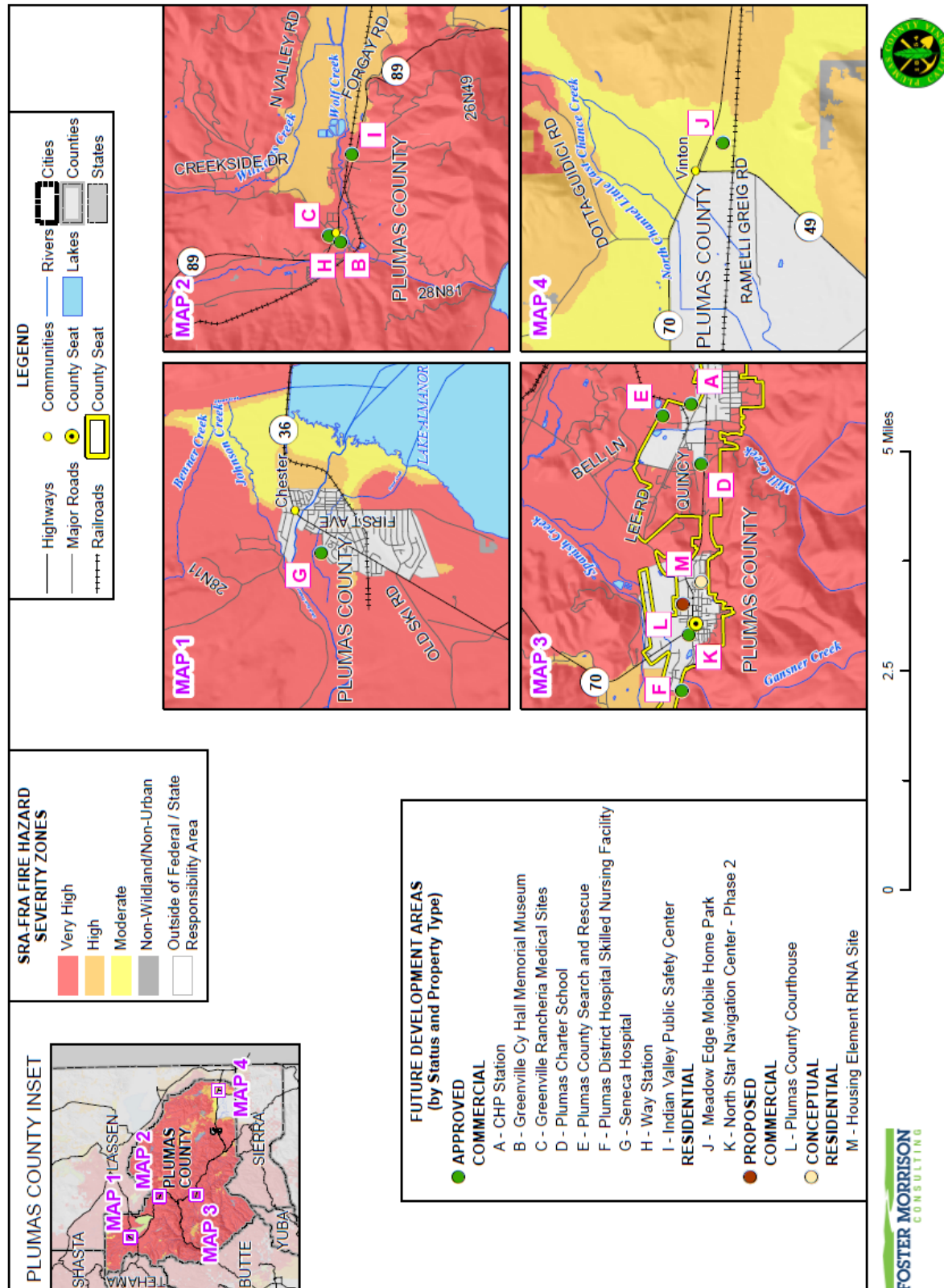
Future Development

Future development considerations should be ongoing and proactive. Ensuring that comprehensive land use planning is conducted, regulatory requirements, such as building codes, are followed, and varying needs for different demographic groups with intersecting identities that reside within the County are considered can help to make for a more resilient community.

GIS Analysis

Plumas County provided 13 future development areas which were used as the basis for the inventory of future development for the unincorporated County. These were mapped in GIS. Figure 4-212 show the locations of the future development areas and SRA/FRA FHSZs. Table 4-135 shows the details of the future development areas that are located in each SRA/FRA FHSZ. Figure 4-213 shows the locations of the future development areas in the LRA FHSZ. Table 4-136 shows the details of the future development areas that are located in the LRA FHSZ. As shown, all future development areas in the County fall in the moderate or higher FHSZ.

Figure 4-212 Unincorporated Plumas County – Future Development in CAL FIRE SRA/FRA Fire Hazard Severity Zones



Data Source: CAL FIRE (State Responsibility Area: FHSZSRA_23_3) April 2024,
 CAL FIRE (Federal Responsibility Area: Draft c32fhszi06_1) September 2007,
 Plumas County GIS, Cal-Atlas; Map Date: 11/3/2025.

Table 4-135 Unincorporated Plumas County – Future Development in SRA/FRA FHSZs with Parcel Counts and Acreages

| Fire Hazard Severity Zone / Future Development Status and Type | Site / Map ID and Future Development Name | Total Parcel Count | Improved Parcel Count | Unimproved Parcel Count | Total Acres | Total Improved Acres | Total Unimproved Acres |
|--|---|--------------------|-----------------------|-------------------------|--------------|----------------------|------------------------|
| Very High | | | | | | | |
| Approved | | | | | | | |
| Commercial | A - CHP Station | 1 | 0 | 1 | 5.00 | 0.00 | 5.00 |
| | B - Greenville Cy Hall Memorial Museum | 1 | 0 | 1 | 0.11 | 0.00 | 0.11 |
| | C - Greenville Rancheria Medical, Dental Clinic, and Pharmacy | 1 | 0 | 1 | 1.58 | 0.00 | 1.58 |
| | E - Plumas County Search and Rescue | 1 | 1 | 0 | 4.50 | 4.50 | 0.00 |
| | F - Plumas District Hospital Skilled Nursing Facility | 1 | 0 | 1 | 4.12 | 0.00 | 4.12 |
| | G - Seneca Hospital | 1 | 0 | 1 | 11.80 | 0.00 | 11.80 |
| | H - Way Station | 1 | 0 | 1 | 0.28 | 0.00 | 0.28 |
| | I - Indian Valley Public Safety Center | 1 | 0 | 1 | 5.00 | 0.00 | 5.00 |
| | Commercial Total | 8 | 1 | 7 | 32.39 | 4.50 | 27.89 |
| Approved Total | | 8 | 1 | 7 | 32.39 | 4.50 | 27.89 |
| Conceptual | | | | | | | |
| Residential | M - Housing Element RHNA Site | 1 | 1 | 0 | 3.64 | 3.64 | 0.00 |
| | Residential Total | 1 | 1 | 0 | 3.64 | 3.64 | 0.00 |

| Fire Hazard Severity Zone / Future Development Status and Type | Site / Map ID and Future Development Name | Total Parcel Count | Improved Parcel Count | Unimproved Parcel Count | Total Acres | Total Improved Acres | Total Unimproved Acres |
|--|---|--------------------|-----------------------|-------------------------|--------------|----------------------|------------------------|
| Conceptual Total | | 1 | 1 | 0 | 3.64 | 3.64 | 0.00 |
| Very High Total | | 9 | 2 | 7 | 36.03 | 8.14 | 27.89 |
| Moderate | | | | | | | |
| Approved | | | | | | | |
| Residential | J - Meadow Edge Mobile Home Park | 1 | 1 | 0 | 42.74 | 42.74 | 0.00 |
| | Residential Total | 1 | 1 | 0 | 42.74 | 42.74 | 0.00 |
| Approved Total | | 1 | 1 | 0 | 42.74 | 42.74 | 0.00 |
| Moderate Total | | 1 | 1 | 0 | 42.74 | 42.74 | 0.00 |
| | | | | | | | |
| Grand Total | | 10 | 3 | 7 | 78.77 | 50.88 | 27.89 |

Source: CAL FIRE, Plumas County GIS

Figure 4-213 Unincorporated Plumas County – Future Development in CAL FIRE LRA Fire Hazard Severity Zones

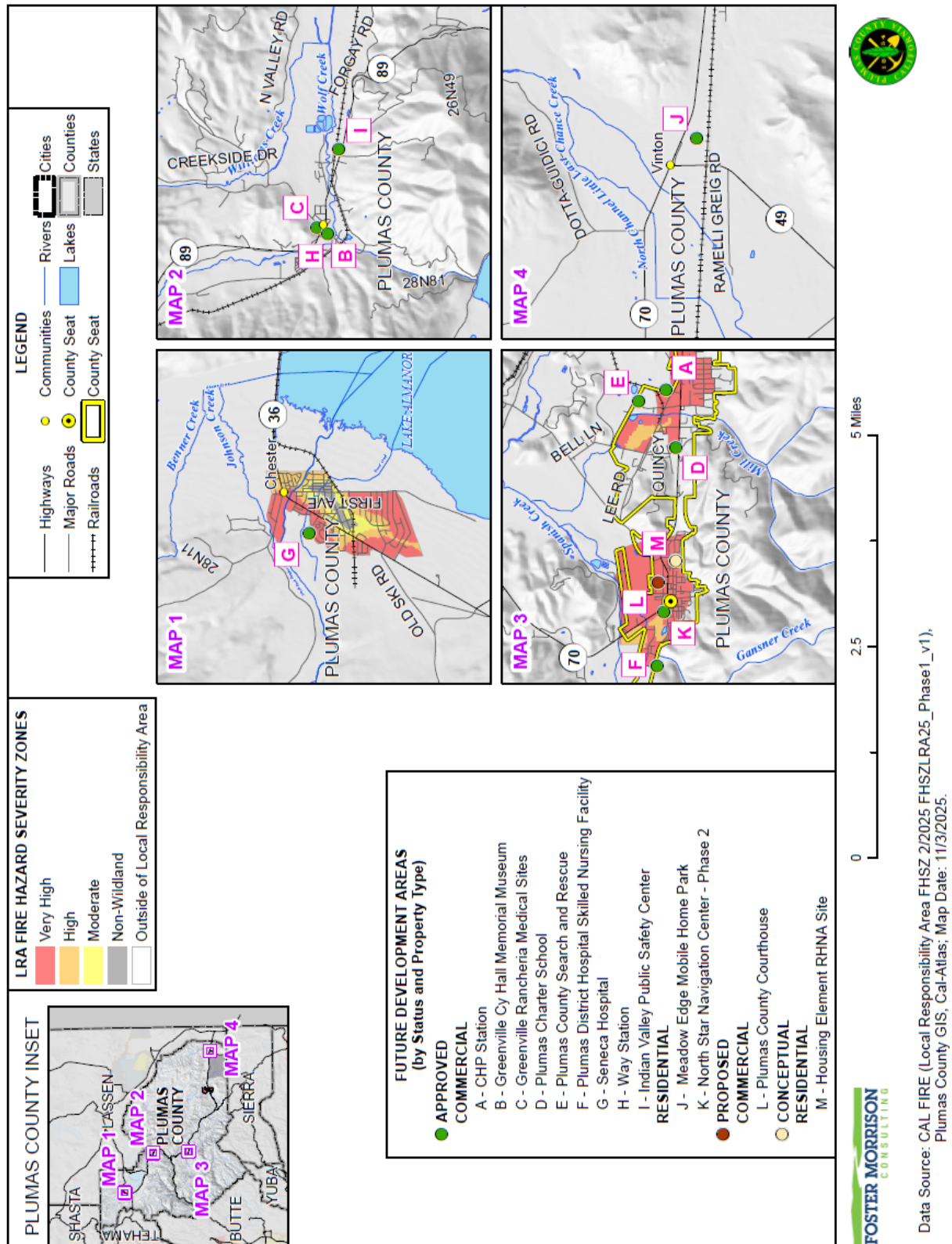


Table 4-136 Unincorporated Plumas County – Future Development in LRA FHSZs with Parcel Counts and Acreages

| Fire Hazard Severity Zone / Future Development Status and Type | Site / Map ID and Future Development Name | Total Parcel Count | Improved Parcel Count | Unimproved Parcel Count | Total Acres | Total Improved Acres | Total Unimproved Acres |
|--|---|--------------------|-----------------------|-------------------------|--------------|----------------------|------------------------|
| Very High | | | | | | | |
| Approved | | | | | | | |
| Commercial | A - CHP Station | 1 | 0 | 1 | 5.00 | 0.00 | 5.00 |
| | D - Plumas Charter School | 1 | 0 | 1 | 0.89 | 0.00 | 0.89 |
| | F - Plumas District Hospital Skilled Nursing Facility | 1 | 0 | 1 | 4.12 | 0.00 | 4.12 |
| | G - Seneca Hospital | 1 | 0 | 1 | 11.80 | 0.00 | 11.80 |
| | Commercial Total | 4 | 0 | 4 | 21.81 | 0.00 | 21.81 |
| Residential | K - North Star Navigation Center - Phase 2 | 1 | 1 | 0 | 1.00 | 1.00 | 0.00 |
| | Residential Total | 1 | 1 | 0 | 1.00 | 1.00 | 0.00 |
| Approved Total | | 5 | 1 | 4 | 22.81 | 1.00 | 21.81 |
| Proposed | | | | | | | |
| Commercial | L - Plumas County Courthouse | 1 | 1 | 0 | 2.86 | 2.86 | 0.00 |
| | Commercial Total | 1 | 1 | 0 | 2.86 | 2.86 | 0.00 |
| Proposed Total | | 1 | 1 | 0 | 2.86 | 2.86 | 0.00 |
| Conceptual | | | | | | | |
| Residential | M - Housing Element RHNA Site | 1 | 1 | 0 | 3.64 | 3.64 | 0.00 |
| | Residential Total | 1 | 1 | 0 | 3.64 | 3.64 | 0.00 |

| Fire Hazard Severity Zone / Future Development Status and Type | Site / Map ID and Future Development Name | Total Parcel Count | Improved Parcel Count | Unimproved Parcel Count | Total Acres | Total Improved Acres | Total Unimproved Acres |
|--|---|--------------------|-----------------------|-------------------------|-------------|----------------------|------------------------|
| Conceptual Total | | 1 | 1 | 0 | 3.64 | 3.64 | 0.00 |
| Very High Total | | 7 | 3 | 4 | 29.31 | 7.50 | 21.81 |
| | | | | | | | |
| Grand Total | | 7 | 3 | 4 | 29.31 | 7.50 | 21.81 |

Source: CAL FIRE, Plumas County GIS

4.4 Capability Assessment

Thus far, the planning process has identified the natural hazards posing a threat to the Plumas County Planning Area and described, in general, the vulnerability of the County to these risks. The next step is to assess what loss prevention mechanisms are already in place. This part of the planning process is the capability assessment. Combining the risk assessment with the capability assessment provides an overview of the County's net vulnerability to disasters, and more accurately focuses the goals, objectives, and proposed actions of this Plan.

A two-step approach is used to conduct the Capability Assessment for each participating jurisdiction to this LHMP Update. First, an inventory of common mitigation activities was made through the use of matrixes. The purpose of this effort was to identify policies and programs that were either in place, needed improvement, or could be undertaken if deemed appropriate. Second, an inventory and review of existing policies, regulations, plans, and programs was conducted to determine if they contributed to reducing hazard-related losses or if they inadvertently contributed to increasing such losses.

This section presents the County's mitigation capabilities that are applicable to the unincorporated County. These are in addition to, and supplement, the many plans, reports, and technical information reviewed and used for this LHMP Update as identified in Chapter 3 and in Chapter 4.

This assessment is divided into four sections: regulatory mitigation capabilities are discussed in Section 4.4.1; administrative and technical mitigation capabilities are discussed in Section 4.4.3; fiscal mitigation capabilities are discussed in Section 4.4.3; and mitigation education, outreach, and partnerships are discussed in Section 4.4.4.

4.4.1. Plumas County's Regulatory Mitigation Capabilities

Table 4-137 lists planning and land management tools typically used by local jurisdictions to implement hazard mitigation activities and indicates those that are in place in unincorporated Plumas County. Excerpts from applicable policies, regulations, plans and program descriptions follow to provide more detail on existing mitigation capabilities. *The table has been prefilled with what was in the previous plan. Please*

update, and make sure to address the notes (third) column and the last cell of the table. The final table cell needs to be filled out as well.

Table 4-137 Plumas County Regulatory Mitigation Capabilities

| Plans | In Place Y/N | Does the plan address hazards? Can the plan be used to carry out mitigation actions? When was it last updated?? |
|--|-----------------|--|
| Capital Improvements Plan | Y | Draft is still being edited but the RTP contains most of what is in the CIP |
| Climate Change Adaptation Plan | | |
| Community Wildfire Protection Plan | Y | See link: https://www.plumasfiresafe.org/wildfire-planning-documents.html |
| Comprehensive/Master Plan | Y | <p>Yes – see Element 6 “Public Health & Safety”</p> <p>Section 6.1: General Health and Safety Policies</p> <p>Section 6.2: Geologic and Seismic Hazards</p> <p>Section 6.3: Wildland Fire Hazards and Fire Protection</p> <p>Section 6.4: Flood and Dam Inundation</p> <p>Section 6.5: Hazardous Wastes</p> <p>Section 6.6: Airport Hazards</p> <p>Section 6.7: Emergency Operations</p> <p>Section 6.8: Healthy Communities</p> <p>See page 148 for implementation measures re: potential projects</p> <p>Plan goals, policies, and implementation measures can be used to implement mitigation actions. 2013</p> |
| Continuity of Operations Plan | Y | See EOP “Basic Plan” “Continuity of Government” plan starting on page 23 |
| Economic Development Plan | N | See General Plan Economics Element for economic development goals, policies, and implementation measures |
| Land Use Plan | | |
| Local Emergency Operations Plan | Y | See link to County website: https://www.plumascounty.us/1941/Emergency-Operations-Plan |
| Stormwater Management Plan | N | No master plan as far storm water goes, very few actual storm water systems, mostly surface run-off |
| Transportation Plan | Y | Plumas County Transportation Commission https://www.plumascounty.us/1900/Regional-Transportation-Plan |
| Other | | |
| Land Use Planning and Ordinances | Y/N | <p>Is the ordinance an effective way to reduce hazard impacts?</p> <p>Is the ordinance adequately administered and enforced?</p> |
| Acquisition of land for open space and public recreation use | N | |
| Building code | Y | Yes (2019 CA Building Code and Title 24) |

| | | |
|---|---|--|
| Flood insurance rate maps | Y | However, most of the County is not FEMA mapped, so there's a lot of Zone "A" (100-year) areas generally determined using approximate methodologies. Because detailed hydraulic analyses have not been performed, no BFE or flood depths are known. |
| Floodplain ordinance | Y | <p>Chapter 2, Zoning; Article 35 – Floodplain combining zone (FP)</p> <p>But the original comprehensive flood plain ordinance was adopted in 1998 and was based on the Model Flood Plain ordinance produced by the Department of Water Resources (CA DWR). At the last audit conducted by CA DWR and the Federal Emergency Management Agency (FEMA), it was recommended that the ordinance be updated to the latest state/federal Model Flood Plain ordinance.</p> <p>Update Title 8 (Building Regulations), Chapter 17 (Flood) of the Plumas County Code re: Flood Plain Ordinance and applicable Title 9 (Planning and Zoning) sections.</p> <p>Issue identified during 2011 audit by CA DWR and FEMA.</p> <p>Update Flood Plain Ordinance to the latest December 2006 CA DWR CA Model Flood Plain Ordinance.</p> <p>Coordinate with Public Works.</p> <p>Related General Plan policies:</p> <p>PHS 6.4.1 Coordination with Federal Emergency Management Agency, United States Army Corps of Engineers and Department of Water Resources Division of Flood Management</p> <p>PHS 6.4.2 Development in Floodways and Dam Inundation Areas</p> <p>PHS 6.4.4 Floodplain Development Restrictions</p> <p>PHS 6.4.7 Limit Surface Runoff</p> <p>PHS Implementation Measures 1, 10, 20</p> <p>COS 7.2.4 Stream Corridor Development</p> <p>W 9.7.2 Downstream Peak Flows</p> |
| Natural hazard-specific ordinance (stormwater, steep slope, wildfire) | Y | Implement State Responsibility Areas (SRAs) Fire Safe Regulations, various County Code sections |

| | | |
|--|---|--|
| Subdivision ordinance | N | <p>But look to develop an ordinance in 2020/2021</p> <p>The Subdivision Ordinance should:</p> <p>Update the Plumas County Code to be in conformance with the California Subdivision Map Act, including language regarding procedures for processing Certificate of Compliance and Reversion to Acreage proposals.</p> <p>Clarify the responsibilities of the Planning Director, Zoning Administrator, County Engineer, Road Commissioner, and County Surveyor in processing tentative and final maps.</p> <p>Incorporate the application requirements as approved by the Board of Supervisors in previous resolutions.</p> <p>Provide for a streamlined process that leads to development of standard conditions of approval as delineated in the wording of the ordinance.</p> <p>Incorporate goals, policies and implementation measures from the 2035 Plumas County General Plan.</p> |
| Zoning ordinance | Y | <p>Title 4, Public Safety, Chapter 1 – Disaster Response and Emergency Organization; Chapter 2 – Fire Prevention; Title 9, Planning and Zoning, Chapter 2, Zoning; Section 9-2.407.5-Flood; Article 35 Flood Plain Combining Zone (FP); Chapter 3 Subdivisions; Section 9-3.309-Flood Hazards: Drainage; Chapter 9 – State Responsibility Area Fire Safe Regulations; and Title 8, Building Regulations, Chapter 17 – Flood</p> |
| Other | | |
| How can these capabilities be expanded and improved to reduce risk? | | |
| <p>PROVIDE SPECIFIC DETAILS OF AREAS FOR IMPROVEMENT OF THESE TYPES OF CAPABILITIES AND HOW/WHY IT WILL HELP YOUR JURISDICTION.</p> <p>FROM PREVIOUS PLAN - Have a BCEGS Score</p> <p>Develop a climate action plan / climate resilience and adaptation plan</p> <p>Develop subdivision ordinance</p> <p>Develop grading and drainage ordinance</p> <p>FEMA needs to map more of the County, so property owners are not burdened with paying for a flood study to determine BFE to get an elevation cert</p> | | |

BCEGS Scores by Fire Protection Agency

BCEGS scores vary by fire protection agency. This can be seen in Table 4-138. **IS THIS STILL ACCURATE?**

Table 4-138 Plumas County – Fire Protection Agency BCEGS Scores

| ISO Rating | Department |
|------------|---|
| 4/9 | Beckwourth Fire Protection District |
| 10 | C-Road Comm. Services District |
| 4 | Chester Public Utility District |
| 9 | Crescent Mills Fire Protection District |
| 5/5X | Eastern Plumas Rural Fire District |
| 4/8b | Graeagle Fire Protection District |

| ISO Rating | Department |
|------------|--|
| 5 | Greenhorn Creek CSD |
| 4/4Y | Hamilton Branch Fire Protection District |
| 4/8 | Indian Valley CSD |
| 7/9 | La Porte Fire Protection District |
| 8B | Long Valley CSD |
| 8 | Meadow Valley Fire District |
| 3 | Peninsula Fire Protection District |
| 4/4Y | Plumas Eureka CSD |
| 5 | Portola City Fire Department |
| 10 | Prattville-Almanor Fire District |
| 3/3Y | Quincy Fire Protection District |
| 8B | Sierra Valley Fire District |
| 3 | West Almanor CSD |

Source: Plumas County OES

As indicated in the tables above, Plumas County has several plans and programs that guide the County's mitigation of development of hazard-prone areas. Starting with the Plumas County General Plan, which is the most comprehensive of the County's plans when it comes to mitigation, some of these are described in more detail below.

2035 Plumas County General Plan (Adopted December 2013)

A general plan is a legal document, required by state law, that serves as a community's "constitution" for land use and development. The plan must be a comprehensive, long-term document, detailing proposals for the "physical development of the county or city, and of any land outside its boundaries which in the planning agency's judgment bears relation to its planning" (Government Code §65300 et seq.). Time horizons vary, but the typical general plan looks 10 to 20 years into the future. The law specifically requires that the general plan address seven topics or "elements." These are land use, circulation (transportation), housing, conservation, open space, noise, and safety. The plan must analyze issues of importance to the community, set forth policies in text and diagrams for conservation and development, and outline specific programs for implementing these policies.

Goals and policies related to mitigation from the General Plan include the following:

Land Use Element

| | |
|---------------------|---|
| Goal LU-5 | To promote a development pattern that maximizes the use of existing infrastructure prior to the construction of new infrastructure. Develop a land use pattern to facilitate the delivery of community services in the most cost-effective manner possible for infrastructure construction and maintenance, fire protection, emergency medical and police. |
| Policy 1.5.3 | Provision for Fire and Life Safety Services – The County shall require development to be located adjacent to, or within, areas where fire and life safety services exist, or can be efficiently and economically provided. |

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| Goal LU 1.11 | To promote development patterns that recognize the need to conserve water resources, consistent with other stated goals. |
| Policy 1.11.1 | Groundwater Management Plans – The County shall support the development and implementation of a regional groundwater management plan and shall work with water resources agencies, water users, and other affected parties to develop basin-specific plans for high priority groundwater basins to ensure a sustainable, adequate, safe and economically viable groundwater supply for existing and future uses within the County. |

Public Health & Safety Element

| | |
|---------------------|---|
| Goal PHS 6.1 | To protect local communities from injury and damage resulting from natural catastrophes and man-made hazardous conditions. |
| Policy 6.1.1 | Development Constraints – The County shall limit the density and intensity of development in areas to the levels needed to reduce hazards to public health and safety. |
| Policy 6.1.2 | Building and Code Updates – Except as otherwise noted by State law, the County shall ensure that all new structures intended for human habitation are designed in compliance with the latest adopted editions of the California Building Standards Code. |
| Policy 6.1.3 | Hazard Awareness and Public Education – The County shall continue to promote awareness and education among residents regarding possible natural hazards, including soil conditions, landslides, earthquakes, flooding, wildfire hazards and emergency procedures. |
| Policy 6.1.4 | Public Safety Programs – The County shall promote all applicable public safety programs, including neighborhood-watch programs, hazards materials disposal, public awareness and prevention of wildfire hazards, and other public-education efforts. |

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| Goal PHS 6.2 | To identify and prevent development in “areas of unstable geologic conditions,” which include: active faults, landslides and areas of potential ground failure such as liquefaction, mudslides and subsidence. |
| Policy6.2.1 | Maintenance of Updated Geologic and Seismic Hazard Information – The County shall maintain updated geologic, seismic and avalanche hazard maps and other hazard inventory information in cooperation with the State Office of Emergency Services, California Department of Conservation—Division of Mines and Geology, United States Forest Service, California Department of Transportation and other agencies as this information is made available. |
| Policy6.2.2 | Design Measures – The County shall require earthquake resistant designs consistent with the requirements of the California Building Standards Code for all critical structures, such as fire stations, emergency communication centers, private schools, high occupancy buildings, and non-highway bridges. |
| Policy6.2.3 | Seismic Retrofitting – The County shall support and encourage seismic upgrades to older buildings that may be structurally deficient. Upgrades shall consider any applicable historic building preservation requirements. |
| Policy6.2.4 | Development on Slopes – The County shall not allow development on slopes 30 percent or greater, unless the applicant can sufficiently mitigate the inherent problems associated with developing on steep slopes. |
| Policy6.2.5 | Avalanche, Landslide and Mudflow Hazards – The County shall prohibit new subdivisions in high risk areas of known avalanche, landslide or mudflow hazards. |

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|---------------------|---|
| Goal PHS 6.2 | To identify and prevent development in “areas of unstable geologic conditions,” which include: active faults, landslides and areas of potential ground failure such as liquefaction, mudslides and subsidence. |
| Policy6.2.6 | Naturally Occurring Asbestos – The County shall work with the Northern Sierra Air Quality Management District to map locations of naturally occurring asbestos and to mitigate potential hazards from development. |
| Policy6.2.7 | Development Requirements – The County shall continue to address seismic standards of dam safety as required by the State Division of Safety and Dams. |

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| Goal PHS 6.3 | To minimize the possibility of the loss of life, injury, damage to property, and loss of habitat and natural resources as a result of fire. |
| Policy 6.3.1 | Defensible Space – The County shall review and update its Fire Safe ordinance to attain and maintain defensible space through conditioning of tentative maps and in new development at the final map and/or building-permit stage. |
| Policy 6.3.2 | Limitations in Fire Hazard Areas – The County shall consult the current Fire Hazard Severity Zone Maps during the review of all projects so that standards and mitigation measures appropriate to each hazard classification can be applied. Land use densities and intensities shall be determined by mitigation measures in areas designated with a high or very high fire hazard rating. Intensive development in areas with high or very high fire hazard rating shall be discouraged. |
| Policy 6.3.3 | Structural Fire Protection – All developments within the service boundaries of an entity which provides structural fire protection may be required to make contribution to the maintenance of the existing level of structural service proportionate to the increase in demand for service structural fire protection and Emergency Medical Services resulting from the development. |
| Policy 6.3.4 | New Development Requirements – As a requirement for approving new development, the County must find (based on information provided by the applicant and the responsible fire protection district), that concurrent with development, adequate emergency water flow, fire access – Public Health & Safety Element 140 – and fire-fighting personnel and equipment, will be available in accordance with applicable State, County, and local fire district standards. |
| Policy 6.3.5 | Emergency Access – As a requirement of new development, the applicant must demonstrate that adequate emergency access exists or can be provided to ensure that emergency vehicles can access the site and that private vehicles can evacuate the area. |
| Policy 6.3.6 | Fire Protection and Roadside Maintenance – As a condition of development, the County shall require the long-term maintenance of private roads, including roadside vegetation management, to the standards of original improvements. |
| Policy 6.3.7 | Rural Fire Protection Water System – The County shall research the feasibility of a countywide rural fire protection water system that provides a cost-effective, adequate water supply. |
| Policy 6.3.8 | Fire Protection Facility Upgrades – The County shall encourage upgrading facilities within existing fire protection districts and encourage expansion of existing districts where warranted by population density allowed under the General Plan. |
| Policy 6.3.9 | Fuel Modification – The County shall require new development within high and very high fire hazard areas to designate fuel break zones that comply with defensible space requirements to benefit the new and, where possible, existing development. |
| Policy 6.3.10 | Prescribed Burning – The County shall encourage the use of prescribed burning as a management tool for hazardous fuels reduction, timber management purposes, livestock production and enhancement of wildlife habitat. The County shall support removal of fuels and chipping and onsite distribution of chipped materials as an alternative to burning. |

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| Goal PHS 6.3 | To minimize the possibility of the loss of life, injury, damage to property, and loss of habitat and natural resources as a result of fire. |
| Policy 6.3.11 | Regional Cooperation – The County shall cooperate with Federal, State, community fire safety groups and other fire protection entities in fire prevention programs and in identifying opportunities for hazardous fuel reduction projects in zones of high and very high fire hazard either prior to or as a component of project review. |
| Policy 6.3.12 | Fire Prevention Education – The County, in cooperation with Federal and State agencies, community fire safety groups, and the local fire protection districts, shall educate the public about the hazards of wildfires, methods to reduce the potential for fires to occur, and mitigation measures, including reducing fuel loads, to lessen the impacts of wildfires. |
| Policy 6.3.13 | Landscape-Scale Fuel Modification – The County shall support fuel modification across public and private forestlands to reduce the potential for catastrophic wildfires, with the highest priority directed toward reducing hazardous fuel levels in the wildland-urban interface. |

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| Goal PHS 6.4 | To minimize the loss of life, injury or damage to property as a result of floods in Plumas County. |
| Policy 6.4.1 | Coordination with Federal Emergency Management Agency, United States Army Corps of Engineers and Department of Water Resources Division of Flood Management – The County shall continue participation in the Federal Emergency Management Agency’s National Flood Insurance Program, utilizing the Flood Insurance Rate Maps and the County’s floodplain ordinances that implement Federal and State flood management standards. The County shall continue to utilize floodplain management and flood control information provided by the Department of Water Resources Division of Flood Management and the United States Army Corps of Engineers and coordinate with these agencies when undertaking updates to the County’s floodplain ordinances and policies. |
| Policy 6.4.2 | Development in Floodways and Dam Inundation Areas – The County shall prohibit the development of new critical or high-occupancy structures within the floodway of any river, stream or other body of water. Similar structures should not be located within the inundation area resulting from failure of dams identified by the State Department of Water Resources Division of Safety of Dams. |
| Policy 6.4.3 | New Parcels in Floodplain – The County shall strongly discourage the creation of new residential parcels which lie entirely within Special Flood Hazard Areas as identified on the most current version of the Flood Insurance Rate Maps provided by the Federal Emergency Management Agency. Proposals for new parcels that are partially located within designated Special Flood Hazard Areas must be evaluated to determine if sufficient land is available outside the Special Flood Hazard Area to support residential development and that potential flood impacts can be sufficiently mitigated. |
| Policy 6.4.4 | Floodplain Development Restrictions – The County shall ensure that riparian areas and drainage areas within floodplains are free from development that may adversely affect floodway capacity or characteristics of natural/riparian areas or natural groundwater recharge areas. |
| Policy 6.4.5 | Multi-Purpose Flood Control Measures – The County shall encourage multi-purpose flood control projects that incorporate recreation, resource conservation, preservation of natural riparian habitat and scenic values of the County’s waterways. |
| Policy 6.4.6 | Flood Control Design – The County shall avoid flood control projects involving further channeling, straightening or lining of waterways until alternative multi-purpose modes of treatment, such as wider berms and landscaped areas in combination with recreation amenities, are studied. |

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| Goal PHS 6.4 | To minimize the loss of life, injury or damage to property as a result of floods in Plumas County. |
| Policy 6.4.7 | Limit Surface Runoff – The County shall review development projects to determine that such development can be permitted without alteration of off-site historical flood patterns or contribution to flooding hazards for downstream users. Each project with the potential to create off-site drainage shall be required to submit a plan showing how the impacts of such drainage will be addressed, both on-site and off-site. |
| Policy 6.4.8 | Storm Water Retention/Detention and Groundwater Infiltration – As appropriate, the County shall require development to incorporate storm-water retention/detention ponds to encourage groundwater recharge and to make efficient use of storm water. |

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| Goal PHS 6.7 | To provide effective emergency response to natural or human-made hazards and disasters. |
| Policy 6.7.1 | Emergency Response Services Coordination with Government Agencies – The County shall coordinate emergency response with local, State and Federal governmental agencies, community organizations, volunteer agencies and other response partners during emergencies or disasters utilizing the Standardized Emergency Management System (SEMS) and the National Incident Management System (NIMS). |
| Policy 6.7.2 | Mutual Aid Agreement – The County shall participate in established local, State and Federal mutual aid systems. Where necessary and appropriate, the County shall enter into agreements to ensure the effective provision of emergency services, such as mass care, heavy rescue, hazardous materials or other specialized functions. |
| Policy 6.7.3 | Maintenance of Emergency Evacuation Plans – The County shall continue to create, revise and maintain emergency plans for the broad range of natural and human-made disasters and response activities that could be foreseen to impact Plumas County. This shall include, but not be limited to, flooding, dam failure, extreme weather, evacuation/transportation, mass care and shelter, and animal evacuation and sheltering. Emergency Planning projects shall be in line with the County’s Emergency Operations Plan and incorporate current guidance and initiatives from State and Federal Emergency Management Agencies. |
| Policy 6.7.4 | Streets and Highways Upgrades – The County shall evaluate and strive to upgrade vital streets and highways to an acceptable level for emergency services and for public safety. |
| Policy 6.7.5 | Search and Rescue – The County should continue to provide search and rescue operation capabilities through the Plumas County Sheriff’s Department. |
| Policy 6.7.6 | Joint Exercises – The County shall encourage fire, law enforcement, emergency medical services, resource management, public health and other governmental and non-governmental response partners to periodically conduct joint training exercises with the goal of developing the best possible coordinated action and effective response times in the event of a natural or human-made disaster across all local jurisdictions. |

Conservation & Open Space Element

| | |
|----------------------|--|
| Goal COS 7.10 | To address climate change and manage its effects by pursuing programs and strategies in order to meet or exceed state requirements for reductions in GHG emissions. |
| Policy 7.10.1 | Inventory and Monitor GHG Emissions – The County shall inventory and monitor GHG emissions in County operations and in the community, consistent with Northern Sierra Air Quality Management District and/or State guidelines. |

| | |
|----------------------|---|
| Goal COS 7.10 | To address climate change and manage its effects by pursuing programs and strategies in order to meet or exceed state requirements for reductions in GHG emissions. |
| Policy 7.10.2 | Climate Action Plan – The County shall establish a Climate Action Plan that identifies strategies for increasing energy efficiency, carbon sequestration, GHG emissions reductions, and land use and transportation strategies that are consistent with appropriate climate change regulations (i.e. State of California’s Global Warming Solution Act). |
| Policy 7.10.3 | Support Statewide Climate Change Solutions – The County shall monitor and support the efforts of CAL EPA, CARB, and the NSAQMB, under AB 32 (Health and Safety Code §38501 et seq.), to formulate mitigation strategies, if any, that may be implemented by local government, and further require the County to ultimately consider any such strategies once they become available and are appropriate for rural adaptation. |
| Policy 7.10.4 | Forest Sequestration and Biomass Energy – The County shall investigate providing incentives for increased carbon sequestration on forest lands and encourage the use of forest biomass for sustainable energy generation. |
| Policy 7.10.5 | Sustainable Business Practices – The County shall encourage all businesses to take the following actions as appropriate for each business: replace high mileage fleet vehicles with hybrid and/or alternative fuel vehicles, increase the energy efficiency of facilities, transition to the use of renewable energy instead of non-renewable energy sources, adopt purchasing practices that promote emissions reductions, and reusable materials and increased recycling. |
| Policy 7.10.6 | Sustainable Agricultural Practices – The County shall promote GHG emission reductions by encouraging carbon efficient farming methods, such as no-till farming, crop rotation, cover cropping, installation of renewable energy technologies, protection of grasslands, open space, riparian, and forest lands from conversion to other uses, and development of energy-efficient structures. |
| Policy 7.10.7 | Public Awareness and Education – The County shall work to increase public awareness regarding climate change and encourage County residents and businesses to become involved in activities and lifestyle changes that will aid in the reduction of GHG emissions. |

Agriculture and Forestry Element

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| Goal AG/FOR 8.5 | Protect the supply and quality of the County’s water resources, by maintaining the proper ecological function of watersheds, including sediment transport groundwater recharge and filtration, biological processes, flood mitigations, and maintaining enough water for local and agricultural needs and uses. |
| Policy 8.5.1 | Water for Agricultural Uses – Protect sustainable supplies of water for agricultural uses. |

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| Goal AG/FOR 8.11 | Promote the utilization of forested lands to address GHG emissions. |
| Policy 8.11.1 | Forestlands as Locations for Carbon Sequestration - The County shall work through the CEQA process to comply with GHG reductions as set forth in AB 32 to create policies that encourage utilization of forestlands to serve as locations for carbon sequestration. |
| Policy 8.11.2 | GHG Emissions Mitigation – The County shall determine impacts of development projects on GHG emissions and require enforceable mitigation measures. If, after analyzing and requiring all reasonable and feasible on-site mitigation measures for avoiding or reducing GHG-related impacts, the lead agency determines that additional mitigation is required, the agency shall consider additional off-site mitigation. Priority for off-site mitigation shall be given to agricultural and forested lands serving as locations for carbon sequestration. |

Water Resources Element

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| Goal W 9.1 | To manage groundwater as a valuable and limited resource and to ensure its sustainability as a reliable water supply sufficient to meet the existing and future needs of Plumas County. |
| Policy 9.1.1 | Groundwater Management – The County shall support the development and implementation of a regional groundwater management plan and shall work with water resource agencies, such as the Sierra Valley Groundwater Management District, water users and other affected parties to develop basin-specific plans for high priority groundwater basins to ensure a sustainable, adequate, safe and economically viable groundwater supply for existing and future uses within the County. |
| Policy 9.1.2 | Groundwater Recharge Area Protection – The County shall require that all projects be designed to maintain or increase the site’s pre-development absorption of rainfall (minimize runoff), and to recharge groundwater where appropriate. Implementation would include standards that could regulate impervious surfaces, provide for water impoundments (retention/detention structures), protecting and planting vegetation, use of permeable paving materials, bioswales, water gardens, and cisterns, and other measures to increase runoff retention, protect water quality, and enhance groundwater recharge. |
| Policy 9.1.3 | Groundwater Demand Reductions – The County shall encourage the use of alternate sources of water supply as appropriate and to the maximum extent feasible in an effort to reduce demand on key groundwater resources in the county. |

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| Goal W 9.2 | To protect, restore and enhance the quality of surface and groundwater resources to meet the needs of all reasonable beneficial uses. |
| Policy 9.2.1 | Participation in Water Quality Objectives – The County shall support and assist in the development of reasonable and prudent Total Maximum Daily Loads for the impaired water bodies and pollutants of concern identified by the Central Valley Regional Water Quality Control Board to achieve compliance with adopted Total Maximum Daily Loads. Work with the Central Valley Regional Water Quality Control Board to develop and implement measures consistent with the adopted Total Maximum Daily Loads. The County shall also work closely with the Central Valley Regional Water Quality Control Board, the City of Portola, public water supply purveyors and other interested parties in the development and implementation of water quality plans and measures. |
| Policy 9.2.2 | Background Water Quality – The County shall encourage the use of water management strategies, biological remediation and the best available technology to address naturally occurring water quality problems. |
| Policy 9.2.3 | County Facilities – The County shall design, construct and maintain County buildings, roads, bridges, drainage and other facilities to minimize sediment and other pollutants in stormwater flows. |
| Policy 9.2.4 | Wildfire and Water Quality Controls The County shall, in cooperation with wildfire management agencies, such as Cal Fire, United States Forest Service and local fire protection agencies, develop a variety of land-use planning, site design and vegetation management techniques to reduce the risk of wildfires. This risk reduction shall also include post-fire erosion, sedimentation and water-quality conditions. |
| Policy 9.2.5 | Wastewater Standards and National Pollutant Discharge Elimination System (NPDES) The County shall support wastewater agencies’ efforts to meet applicable NPDES permit requirements and waste discharge requirements in compliance with the Federal Water Pollution Control Act and California’s Porter-Cologne Water Quality Control Act. |
| Policy 9.2.6 | Erosion and Sediment Control Measures The County shall ensure that Best Management Practices to control erosion and sediment will be incorporated into development design and improvements. |

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| Goal W 9.2 | To protect, restore and enhance the quality of surface and groundwater resources to meet the needs of all reasonable beneficial uses. |
| Policy 9.2.7 | Wastewater Application Management The County shall approach all wastewater applications, both individual on-site and community systems, in a manner that supports Federal, State and local wastewater regulations to ensure the protection of public health and the environment. |

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| Goal W 9.3 | To ensure that the County proactively develops and supports programs and policies for forest and watershed management to counteract trends in declining snowpack storage, accelerated Spring runoff, and declining overall runoff that threaten both larger flood events and diminished late-season water supplies. |
| Policy 9.3.1 | Water Resource Adaptation – The County shall encourage water purveyors to develop plans for responding to potential changes in weather patterns resulting from climate change effects, the sharing of water resources to improve water supply reliability and the allocation of water supply to priority users. Climate patterns will also be monitored for their ability to affect existing drainage patterns and their resultant effects to flood-prone areas. |
| Policy 9.3.2 | Forest Management – The County shall support plans and projects to improve the conditions of overstocked forestlands, especially around communities-at-risk, to reduce the potential adverse impacts from wildfires, to protect watersheds, habitats and reduce excessive evapotranspiration losses. |

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| Goal W 9.4 | To maintain sound management of the water resources in Plumas County's diverse watersheds and assure that any proposals for surface and groundwater exports are stringently reviewed to ensure that they do not undermine the County's ability to sustain an adequate supply of high-quality water for all its water users and dependent natural resources. |
| Policy 9.4.1 | Watershed Protection – The County shall require new development projects to mitigate potential impacts on surface water, recreation areas, agriculture and wildlife habitat areas. |
| Policy 9.4.2 | In-stream Flow Rate Management – The County shall support reasonable in-stream flow standards to protect aquatic habitat and fisheries while balancing water supply needs and protecting water rights within the Feather River watershed. |
| Policy 9.4.3 | Watershed and Community-Based Efforts – The County shall support the efforts of local community-based watershed groups to protect water resources and work with local groups to ensure decisions and programs take into account local opinions, priorities and needs. |
| Policy 9.4.4 | Regional Water Management – The County shall support regional efforts through the Upper Feather River Integrated Regional Water Management Plan (UFRIRWMP) to ensure coordination and adaptive management between statewide water resource planning efforts, regional priorities and local needs. The goals and objectives of the UFRIRWMP shall be considered in establishing County water resource priorities and policies. |
| Policy 9.4.5 | Watershed Program Funding – The County shall support efforts to obtain grant funding for locally sponsored watershed programs and planning efforts and projects that enhance and protect the Feather River Watershed. |
| Policy 9.4.6 | Water Export Projects on Plumas County Watercourses – The County, prior to giving its approval and support to export projects on county watercourses, will require the following information to demonstrate the export project's adherence to the requirements of California Water Code Section 10505 protecting development rights and Section 11460 protecting beneficial needs of the watersheds. |

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| Goal W 9.4 | To maintain sound management of the water resources in Plumas County's diverse watersheds and assure that any proposals for surface and groundwater exports are stringently reviewed to ensure that they do not undermine the County's ability to sustain an adequate supply of high-quality water for all its water users and dependent natural resources. |
| Policy 9.4.7 | Minimizing the Effects of Water Exports – The County shall require that exports not damage the County's environmental and economic setting by ensuring that “no unreasonable effect” occurs in the transfer and withdrawal of water resources pursuant to Section 1810 of the State Water Code. |
| Policy 9.4.8 | Hydroelectric Project Relicensing – The County shall encourage that dam relicensing projects effectively balance development values, such as electric power, flood control and water supply, with non-developmental values, such as environmental resource protection, recreation, habitat restoration and water quality, and other values that best reflect the public interest. Efforts to mitigate project impacts should not impose redirected impacts on other public or private resources. |

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| Goal W 9.5 | To encourage public water systems and their sources to provide an adequate supply to meet long-term needs and that is provided in a manner that maintains water resources for other water users while protecting the natural environment. |
| Policy 9.5.1 | Adequate Water Supply Facilities and Services – The County shall support water purveyors' plans to develop new reliable future sources of supply, while promoting water conservation and water recycling/reuse. Additionally, through the development review process, the County shall ensure that public water facilities and services will be adequate and operational to serve new development and meet capacity demands when needed. Such needs shall include capacities necessary to comply with public safety. |
| Policy 9.5.2 | Cooperative Planning for Water Supply – The County shall work with public water supply purveyors to disseminate and discuss information on the limits of available water supplies, how the supplies can be used efficiently, the possible effects of drought conditions, acceptable levels of risk of shortage for various water users, priorities for allocation of the available water supply, conditions for use of limited supplies, and limits of alternate sources that could be used or developed. |
| Policy 9.5.3 | Urban Water Management Plans – The County shall encourage and assist in the preparation of master facilities plans, and urban water management plans where required by State law, for all public water suppliers, to design and construct all facilities in accordance with sustainable yields and the planning documents of applicable jurisdictions. |
| Policy 9.5.4 | Water Supply for New Development – The County shall ensure a sufficient water supply for all new residential/non-residential development. To do this, the County shall comply with Water Code Section 10910 (Senate Bill 610) and Government Code Section 66473.7 (Senate Bill 221), or more current state code requirements. Where these codes do not apply (i.e., because the “projects” at issue do not meet the minimum size requirements for triggering duties under Senate Bill 610 or Senate Bill 221), the County shall impose conditions similar to those required by Water Code Section 10910 (Senate Bill 610) and Government Code Section 66473.7 (Senate Bill 221), or more current state code requirements, and suitable for the size and scale of the development. For projects requiring discretionary approvals from the County, the County shall identify the resultant significant environmental impacts associated with these projects, if any, along with available and feasible means to address these impacts. |
| Policy 9.5.5 | Water Rights Protection – The County shall support public agencies and private entities within Plumas County in their efforts to protect their water rights and water supply contracts. |
| Policy 9.5.6 | Consistent Fire Protection Standards – The County, in coordination with local water service purveyors, wildfire protection agencies and local fire protection agencies, shall ensure consistent and adequate standards for fire flows and fire protection for new development, with the protection of human life and property as the primary objectives. |

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| Goal W 9.5 | To encourage public water systems and their sources to provide an adequate supply to meet long-term needs and that is provided in a manner that maintains water resources for other water users while protecting the natural environment. |
| Policy 9.5.7 | Community Water Systems – The County shall require any new community water system, in the unincorporated area of the county, serving residential, industrial or commercial development to be owned and operated by a public or private entity that can demonstrate to the County adequate financial, managerial and operational resources. |
| Policy 9.5.8 | Level of Service Impacts – The County shall ensure that any new development projects do not create significant adverse impacts on existing water and wastewater infrastructure. |
| Policy 9.5.9 | Funding for Water Supply Improvements – The County shall support water/wastewater purveyors use of all appropriate and equitable financing methods (e.g., grant funding, assessment districts and development fees) to finance public facility design, construction, operation and maintenance. |

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| Goal W 9.7 | To manage stormwater from existing and future development in an efficient manner through methods that maintain natural water quality, enhance percolation for groundwater recharge, reduce potential flooding, support natural wetlands and provide opportunities for reuse. |
| Policy 9.7.1 | Natural Stormwater Drainage Courses – The County shall require that natural drainage courses, including ephemeral streams, be retained and protected from development impacts which would alter the natural drainage courses, increase erosion or sedimentation or have a significant adverse effect on flow rates or water quality. Natural vegetation within riparian and wetland protection zones shall be maintained to preserve natural drainage characteristics consistent with the policies provided in the Conservation Element. Storm-water discharges from outfalls, culverts, gutters and other drainage control facilities that discharge into natural drainage courses shall be dissipated so that they make no contribution to additional erosion and, where feasible, are filtered and cleaned of pollutants. |
| Policy 9.7.2 | Downstream Peak Flows – For new development, the County shall require that peak stormwater discharge not exceed the capacity limits of off-site drainage systems or cause downstream erosion, flooding, habitat destruction or impacts to wetlands and riparian areas. |
| Policy 9.7.3 | Maintenance of Stormwater Runoff Systems – The County shall maintain its existing stormwater runoff systems to the extent possible, to assure that these systems do not fall into a state of disrepair such that they are causing water quality degradation inconsistent with their original design function. |
| Policy 9.7.4 | Runoff Quality – The County shall require all drainage systems in new development and redevelopment to comply with applicable state and federal non-point source pollutant discharge requirements. |
| Policy 9.7.5 | Best Management Practices – The County shall require best management practices in new development and redevelopment to reduce pollutants from entering natural water bodies while allowing stormwater reuse. |
| Policy 9.7.6 | Interagency Cooperation – The County shall work with the Central Valley Regional Water Quality Control Board and local, state, and Federal flood control and water resources management agencies to adopt effective stormwater management measures. |

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| Goal W 9.8 | To increase the role of conservation and water-use efficiency to help meet domestic or municipal water supply needs. |
| Policy 9.8.1 | Water Conservation – The County shall work with local water purveyors and managers to implement a variety of water conservation measures appropriate for existing and future needs that comply with state and federal legislation and the California Urban Water Conservation Council. |

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| Goal W 9.8 | To increase the role of conservation and water-use efficiency to help meet domestic or municipal water supply needs. |
| Policy 9.8.2 | Recycled Water Use – The County shall encourage new development, redevelopment, and landscape and agricultural irrigators to use recycled water wherever practical and available; this includes striving for the highest possible quality of wastewater treatment to increase the potential use of recycled water for existing and future needs of the county. |
| Policy 9.8.3 | Compact Development – The County shall support and encourage compact forms of development and shall focus new growth within existing community plan areas to help reduce water demands, reduce landscape areas and reduce the costs of water and wastewater infrastructure. |
| Policy 9.8.4 | Existing Development – The County shall promote programs for retrofitting plumbing, providing cost rebates, identifying leaks, changing landscaping, irrigating efficiently and other methods of reducing water consumption by existing users. As appropriate, the County will assist existing users seeking grants or other funding opportunities for such water conservation projects. |
| Policy 9.8.5 | County Buildings – The County shall assess its water use in County buildings and facilities and reduce water consumption to the maximum extent possible. |
| Policy 9.8.6 | Agricultural Water Use – The County shall encourage and support water conservation for agricultural activities that increase the efficiency of water use for crop irrigation and livestock maintenance. |
| Policy 9.8.7 | Sustainable Water Practices – The County shall encourage the use of sustainable, affordable water management practices that meet state and local standards, such as greywater reuse, rainwater capture/harvest, watershed management and stormwater infiltration to reduce demands on potable supply. |
| Policy 9.8.8 | County Codes – The County shall establish a program to revise County Codes to increase, as appropriate, the use of recycled water for new commercial, residential, industrial and agricultural development. |

Other Plumas County Plans/Studies/Programs

Plumas County Drought Resilience Plan (In Process in 2025)

Plumas County is developing a Drought Resilience Plan (County DRP) to facilitate drought and water shortage preparedness for state small water systems (SSWS) and domestic wells within the County’s jurisdiction. The County DRP will include a water shortage risk assessment, a range of short-term responses, long-term mitigation strategies and actions, and other supporting capacity building that the County should consider and adapt, as appropriate, to achieve meaningful, long-term water resilience improvements for their residents.

Plumas County Climate Change and Health Profile Report (2017)

The Climate Change and Health Profile Report seeks to provide a county-level summary of information on current and projected risks from climate change and potential health impacts. This report represents a synthesis of information on climate change and health for California communities based on recently published reports of state agencies and other public data.

The content of this report was guided by a cooperative agreement between CDPH and the CDC Climate-Ready States and Cities Initiative’s program Building Resilience Against Climate Effects (BRACE). The goals of BRACE are to assist state health departments to build capacity for climate and health adaptation

planning. This includes using the best available climate science to project likely climate impacts, identifying climate-related health risks and populations vulnerable to these impacts, assessing the added burden of disease and injury that climate change may cause, identifying appropriate interventions, planning more resilient communities, and evaluating to improve the planning effort. Communities with economic, environmental, and social disadvantages are likely to bear disproportionate health impacts of climate change.

This Climate Change and Health Profile Report is intended to inform, empower, and nurture collaboration that seeks to protect and enhance the health and well-being of all California residents. This report is part of a suite of tools that is being developed by the California Department of Public Health to support local, regional, and statewide efforts of the public health sector to build healthy, equitable, resilient, and adaptive communities ready to meet the challenges of climate change. Along with a county-level climate change and health vulnerability assessment and state guidance documents, such as *Preparing California for Extreme Heat: Guidance and Recommendations*, the profile provides a knowledge base for taking informed action to address climate change.

Plumas County Communities Wildfire Protection Plan (2019)

The purpose of this plan is to outline the risks and hazards associated with a wildland fire threat to Plumas County communities and to identify potential mitigation measures. The Plumas County Communities Wildfire Protection Plan (CWPP) is intended to provide documentation of implementing actions designed to reduce risk to homes and communities from wildfire through education and outreach programs, the development of partnerships, and implementation of preventative activities such as hazardous fuel reduction, defensible space, land use, or building codes. The emphasis of this plan is to work from the home outward into the Wildland Urban Interface, so that man-made and natural resources survive the eventual intrusion of a wildfire.

This plan is intended to: 1) meet the requirements of the Healthy Forest Restoration Act (HFRA) of 2003, 2) make the County eligible for National Fire Plan (NFP) funding assistance from the Departments of Agriculture and Interior (by meeting the requirements of HFRA), 3) provide information to assist communities in developing fuel reduction projects on private and public lands, 4) continue to serve as the Wildfire Hazard Mitigation portion of Plumas County's Multi-Hazard Mitigation Plan, which is required after November 1, 2004, for counties to be eligible to receive FEMA disaster assistance funding, and 5) provide direction in implementing the Plumas County Fire Safe Council's Mission: To reduce the loss of natural and human made resources caused by wildfire through Firewise community programs and pre-fire activities."

Lassen-Modoc Unit Strategic Fire Plan (2025)

Plumas County is served by the Lassen-Modoc Unit of CAL FIRE. The Lassen-Modoc Unit Fire Management Plan documents the assessment of the fire situation in the Unit. It includes stakeholder contributions and priorities which identify strategic targets for proactive approaches and project-based solutions. While the Unit Fire Management Plan addresses local needs, the State Board of Forestry and Fire Protection also has legislative mandates dating back to 1945 requiring it to determine the "intensity" or appropriate level of fire protection for all state responsibility areas in California (Public Resources Code

§4130). The Unit Fire Management Plan is the means of focusing efforts on local needs while working within the framework of the California Fire Plan as adopted by the Board of Forestry and Fire Protection.

It is intended to be an ever-evolving working document which can be used to identify potentially hazardous areas or communities at risk, provide guidelines for fire prevention and protection projects and to assist the Fire Safe Councils and community groups with useful information in making their communities fire safe. This document should be used as a guide that can be amended over the years as necessary and as the basic framework for fire prevention projects within the Lassen-Modoc Unit. The California Fire Plan is outlined within this document. It is the goal of the Unit to apply the California Fire Plan to accomplish a systematic assessment of the fire problem. Through this assessment, the Unit strives to develop "fire safe" communities and reduce the potential occurrence of devastating wildfires. In an effort to implement the California Fire Plan, the Lassen-Modoc Unit utilizes computer-based data and Geographic Information System (GIS) to comprehensively analyze fire hazards, assets at risk and the level of service, all of which are included in the Unit Fire Management Plan. The Unit Fire Management Plan systematically assesses the existing levels of wild/and protection services, identifies high-risk and high value areas that are potential locations for costly and damaging wildfires, ranks the areas in terms of priority needs, and prescribes actions that can be taken to reduce future losses.

Plumas County Fire Chiefs Association – Local Fire Service Mutual Aid & Rescue Plan (2023)

The purpose of this Plan is to:

- To provide for rapid, systematic, and safe mobilization, organization, and operation of necessary local government fire and rescue resources to mitigate the effects of extraordinary events;
- To provide an annually updated fire and rescue inventory of all personnel, apparatus, and equipment;
- To promote recommended, standardized training and/or exercises for and between plan participants.

The plan is intended to provide a common mutual aid operating system for all incidents, which will require a minimum of transition from day-to-day operations. Basic ICS positions are included as a beginning point in which to build an organizational structure and manage the incident. Agencies requiring an enhanced ICS structure should refer to ICS Field Operations guide 420-1.

The effectiveness of mutual aid resources is determined by the application of a predetermined system familiar to all agencies, thus basic systems have been included to provide an integrated approach known to all involved agencies.

This plan is not intended to deplete any department of apparatus beyond that to which it has agreed and committed. Companies that are already provided to the requesting agency by automatic aid or day-to-day mutual aid agreements are considered part of the maximum commitment under this plan.

Participating Agencies include the following as shown on Figure 4-214:

Figure 4-214 Participating Agencies and Signatories

Select your entity:

- ☒ Beckwourth Fire Protection District
- ☒ Bucks Lake Fire Department
- ☒ Chester Fire Department
- ☒ Crescent Mills Fire Protection District
- ☒ Eastern Plumas Rural Fire Department
- ☒ Graeagle Fire Protection District
- ☒ Greenhorn Creek Fire Departmen
- ☒ Hamilton Branch Fire Protection District
- ☒ Indian Valley Fire Department
- ☒ La Porte Fire Protection District
- ☒ Long Valley Volunteer Fire Department
- ☒ Meadow Valley Fire Protection District
- ☒ Peninsula Fire Protection District
- ☒ Plumas Eureka Fire Department
- ☒ Portola Fire Department
- ☒ Prattville Fire Department
- ☒ Quincy Fire Protection District
- ☒ Sierra Valley Fire Protection District
- ☒ West Shore Fire Protection District

Dam Failure Plan (Draft in 2023)

The County has a draft dam failure plan that would be instituted if a dam failure were to occur. This document is still in draft state but could be used during an actual dam failure event.

Dixie/Beckwourth Fire Burn Area Debris Flow/Flash Flood Emergency Operations Plan (2021)

This document establishes a uniform plan for a joint response by local governments, special districts, and allied agencies in Plumas County to the threat of or actual soil movement (debris flow) and/or flash flooding in the areas recently burned in the Dixie and Beckwourth Fires

Extreme Weather Response Plan (Draft in September 2024)

The Extreme Weather Response plan aims to identify actions needed during extreme weather events in Plumas County. Through pre-planning and resource sharing, the goal is to mitigate damage and minimize extreme weather-related health impacts within the county.

This plan is designed to identify and address the health risks of Plumas County residents during extreme weather events. This plan should also be considered during prolonged utility outages that may result during extreme weather emergencies and the potential health related issues that may arise.

The plan describes local operations during periods of extreme weather and guides local government(s) and supporting agencies.

Plumas County Hazardous Materials Response Plan (2023)

The Plumas County Hazardous Materials Response Plan ensures a coordinated response to emergency situations involving a hazardous materials release. It provides operational concepts, management structure, resources, and roles and responsibilities of all agencies charged with responding to and mitigating an incident. Following this plan will help protect human health, public and private property, and the environment.

The plan provides specific statutory authorities for local, state, and federal agencies, and the private sector. It also identifies sources of outside support which might be provided through service contracts or mutual aid. The plan should be considered as a preparedness document, intended to be read and understood before a hazmat incident occurs. It should always be used in conjunction with the Plumas County Emergency Operations Plan prepared by the Plumas County Office of Emergencies Services.

Integrated Regional Water Management Plan (2016)

This IRWM Plan articulates a coherent and durable vision for the management of water resources in the Upper Feather River (UFR) Region that highlights important actions needed to accomplish that vision through the year 2035--the planning horizon. This document is intended to be an ongoing adaptive planning tool that can evolve with a dynamic water future. It does not authorize or provide discretionary approval for any given project, nor does it establish new prescriptive compliance requirements. Rather, it provides a locally developed framework for improving understanding and undertaking the coordinated actions that will be needed to address the major water-related challenges/needs and conflicts facing the Region through the planning horizon.

The focus and direction described within this IRWM Plan provides participating entities and individuals with an opportunity to envision the integration of water management across the Region and thereby accomplish more to benefit the needs of the Region. The integrated array of goals and objectives, resource management strategies (RMS), implementation projects, and the Plan's implementation framework demonstrate the potential for further strengthening and broadening the collaborative working relationships for integrated water and watershed management that have been fostered throughout the 24-month plan development process.

Plumas County Ordinances

The Plumas County General Plan provides policy direction for land use, development, open space protection, and environmental quality; however, this policy direction must be carried out through numerous ordinances, programs, and agreements. The following ordinances are among the most important tools for implementing the General Plan and/or are critical to the mitigation of hazards identified in this plan.

Disaster Response and Emergency Organization (Title 4, Chapter 1)

The Plumas County Board of Supervisors acknowledges the serious responsibility of protecting the citizens of Plumas County. The Board of Supervisors understands that citizens will rely on County government to make decisions that will directly affect their lives during a disaster. The purpose of this chapter is to provide for the preparation, maintenance, exercise and implementation of plans for the protection of persons and property within this County in the event of an emergency. This chapter also authorizes the Plumas County Office of Emergency Services and Disaster Council. (§ 1, Ord. 92-790, eff. September 3, 1992)

As used in this chapter, "emergency" means the actual or threatened existence of an event bringing great damage and possible loss of life. The words emergency and disaster are interchangeable. Some of the hazards which could cause disasters in Plumas County are hazardous materials, wild land fire, severe winter storm, landslide, flood, earthquake, volcanic eruption, multi-casualty accident and nuclear, biochemical or conventional attack.

Fire Prevention Ordinance (Title 4, Chapter 2)

Every person owning, controlling, renting, occupying with or without permission of the owner thereof, or operating any cabin, tent, store, residence, hotel, or other structure in any unincorporated territory in the County, except all territory located within the boundaries of townsites and additions to townsites as the same are laid out and designated on the official plats of maps on file of record in the office of the County Recorder, shall maintain a firebreak or clearing free from all inflammable material for thirty (30') feet from any portion of such cabin, tent, residence, store, hotel, or other occupied structure and shall keep the roofs of all such buildings or other structures free from needles, leaves, or other debris during the period from April 1 to October 31 of each year; provided, however, where a natural firebreak is declared to exist by Federal or State forestry officers, no further clearing of inflammable materials shall be required. (§ 51300, P.C.O.C.)

Building Regulations (Title 8)

The current California Building Standards Code Part 1, Part 2 [including Appendix Chapter 1, Appendix C and Appendix J (formerly Appendix 33)], Part 3 [including Annex A], Part 4 [including appendix chapters thereto, except chapter 1], Part 5 [including Appendix I], Part 6 [including appendix chapters thereto], Part 8 [with appendices], Part 9 [including Appendix Chapter 4 and Appendix H, Part 10 [including appendix thereto], Part 12 [including appendix thereto] of Title 24 of the California Code of Regulations and the Uniform Swimming Pool, Spa and Hot Tub Code, 2006 edition, as published by IAPMO are hereby adopted as the Building Standards Code of the County of Plumas. For purposes of this section, "current" means the most recent edition and any subsequent triennial edition of the California Building Standards Code. The

County's Building Standards Code also shall include by operation of law any subsequent revisions, recom compilations, or supplements of the California Building Standards Code or the Uniform Swimming Pool, Spa and Hot Tub Code, which shall be deemed effective and operative in Plumas County when they become effective and operative in the State of California. A copy shall be available for public inspection in the Office of the County Building Official. (§ 1, Ord. 82-487, eff. March 11, 1982, as amended by § 1, Ord. 85-609, eff. June 20, 1985, § 1, Ord. 89-708, eff. April 20, 1989, § 1, Ord. 90-726, eff. April 12, 1990, Ord. 91-754, eff. May 16, 1991, § 1, Ord. 92-785, eff. July 16, 1992, § 1, Ord. 96-857, eff. April 5, 1996, § 2, Ord. 99-922, eff. September 16, 1999, § 1, Ord. 01-958, eff. November 22, 2001, and § 2, Ord. 02-984, adopted November 12, 2002, § 1, Ord. 04-1017, adopted September 14, 2004, § 2, Ord. 05-1023, § 2, adopted March 1, 2005; § 1, Ord. No. 06-1043, adopted January 24, 2006; and § 1, Ord. No. 08-1067, adopted September 23, 2008)

Floodplain Ordinance (Title 8, Chapter 17)

The areas of special flood hazard identified by the Federal Insurance Administration of the Federal Emergency Management Agency on the Flood Insurance Rate Maps dated September 24, 1984, and all subsequent amendments and revisions and any subsequent Flood Insurance Study, are hereby adopted by reference and made a part of this chapter as though set forth in this chapter in full. The areas of special flood hazard are the minimum area to which the provisions of this chapter shall apply. The County shall obtain, review and reasonably utilize any base flood elevation and floodway data available from a federal, state, or other source as criteria for requiring that new construction, substantial improvements, or other man-made changes in areas of special flood hazard meet the standards of this chapter.

The County Engineer, the Building Official, the Director of Environmental Health and the Planning Director may make interpretations where needed, as to the exact location of the boundaries of the areas of special flood hazard, including where there appears to be a conflict between a mapped boundary and actual field conditions. (§ 1 (Exh. A), Ord. 98-902, eff. September 10, 1998, and § 1 (Exh. A), Ord. 01-961, eff. December 20, 2001)

Note: there are also floodplain regulations in the Zoning Ordinance (Title 9) below.

Zoning Ordinance (Title 9, Chapter 2)

The provisions of this chapter are adopted to implement the General Plan by providing a precise delineation of permitted land uses, precluding land use conflicts, and by establishing general site development standards. This chapter shall specify the uses of land in a manner which conveys full knowledge of potential uses. The application of the provisions of this chapter shall be held to be only the minimum requirements for the promotion of the public health, safety, and general welfare and to protect property owners' rights to develop consistently with the General Plan. The provisions of this chapter are not intended to repeal or in any way interfere with other existing laws, ordinances, regulations, or permits. The County is hereby divided into the following zones:

- Single-Family Residential (2-R, 3-R, 7-R);
- Multiple-Family Residential (M-R);
- Suburban (S-1);

- Secondary Suburban (S-3);
- Rural (R-10);
- Rural (R-20);
- Core Commercial (C-1);
- Periphery Commercial (C-2);
- Convenience Commercial (C-3);
- Recreation Commercial (R-C);
- Recreation (Rec-P, Rec-1, Rec-3, Rec-10, Rec-20);
- Recreation-Open Space (Res-OS);
- Heavy Industrial (I-1);
- Light Industrial (I-2);
- Limited Combining (Ltd);
- Open Space (OS);
- Lake (L);
- Agricultural Preserve (AP);
- General Agriculture (GA);
- Timberland Production (TPZ);
- General Forest (GF);
- Mining (M);
- Flood Plain Combining (FP);
- Special Plan Combining (SP) (DRA, ScA, ScR, HA, HB);
- Manufactured Home Combining (MH);
- Business Exclusion Combining (BX); and
- Farm Animal Combining (F).

The Planning and Development Agency shall maintain a County-wide set of Zoning Plan Maps which shall show the zones which apply to all property in the County. Any change in the zones shown on the Zoning Plan Maps shall be made pursuant to the provisions of Sections 65500 et seq. and 65853 of the Government Code of the State. The Planning and Development Agency shall establish and show on the Zoning Plan Maps street addresses for parcels or buildings, as necessary, and shall maintain a file of street addresses. (§ 3, Ord. 84-593, eff. January 3, 1985, as amended by § 13, Ord. 99-924, eff. November 11, 1999)

Subdivisions (Title 9, Chapter 3)

The provisions of this chapter are adopted for the purpose of adopting subdivision regulations in accordance with the provisions of the Subdivision Map Act of the State, set forth in Division 2 of Title 7 of the Government Code of the State. The provisions of this chapter are adopted to regulate the subdivision of land within the County for the purposes of sale, lease, or financing in all instances except those which are exempt under the provisions of Sections 66411, 66412, 66424, and 66428 of the Government Code of the State. The general policy governing the subdivision of land in the County shall be to permit orderly, reasonable, and beneficial growth, to discourage overdevelopment and ill-conceived subdivisions, to protect and enhance in every way possible the public health, safety, and general welfare of the citizens, and to conserve the outstanding resources of land, water, air, timber, and scenic beauty.

The Board shall have the overall legislative and governing authority regarding land subdivisions in the County, and the rulings and decisions of the Board shall be final except as an appeal or recourse to law is

provided in the Map Act, or as otherwise provided by law. The various County officers designated by the Map Act or by the provisions of Chapter 4 of Title 2 of this Code shall perform such functions and make such recommendations as are provided for in the Map Act or as are more specifically provided for in this chapter and in the various County departmental subdivision regulations approved by the Board. (§ 61202, P.C.O.C., as amended by Ord. 664 § 2, Ord. 74-64, eff. September 19, 1974, § 1, Ord. 75-99, eff. May 8, 1975, § 1, Ord. 77-211, eff. August 4, 1977, § 1, Ord. 89-714, eff. August 31, 1989, § 1, Ord. 91-762, eff. October 3, 1991, § 8(Exh. A), Ord. 98-902, eff. September 10, 1998, and § 5, Ord. 05-1026, adopted March 29, 2005)

Development Standards (Title 9, Chapter 4)

The provisions of this chapter are adopted to implement the General Plan by providing a precise delineation of its development standards and to provide for the control and design of improvements for development in accord with the Subdivision Map Act and Chapters 2 and 3 of this title. The application of the provisions of this chapter shall be held to be only the minimum requirements for the promotion of the public health, safety, and general welfare and to protect owners' rights to develop consistent with the General Plan, the Subdivision Map Act, and Chapters 2 and 3 of this title. It shall be the duty of the Department of Planning and Building Services and the Department of Public Works to administer the provisions of this chapter. The headquarters of the Ranger Units of the California Department of Forestry and Fire Protection which administer State Responsibility Area Fire protection in Plumas County shall be given reports of violations of those sections of this chapter which implement the SRA Fire Safe Regulations. Those sections are enumerated in Section 9-9.103 of Chapter 9 of Title 9 of this Code. (§ 1, Ord. 91-762, eff. October 3, 1991; § 1, Ord. No. 05-1036, § 1, adopted August 16, 2005)

SRA Fire Safe Regulations (Title 9, Chapter 9)

The provisions of this chapter are to complete integration of the SRA Fire Safe Regulations into this Code and to specify those portions of this Code which implement those regulations. The application of the provisions of this chapter and those portions of this Code which implement the SRA Fire Safe Regulations shall be held to be only the minimum requirements for the promotion of the public health, safety and general welfare. The purpose of this article is to provide for exceptions from the provisions of this Code which implement the SRA Fire Safe Regulations in a manner consistent with the General Plan and public health, safety, and welfare, where the exceptions provide the same overall practical effect as these regulations towards providing defensible space. This ordinance is certified by the Board of Forestry in lieu of SRA regulations in the County. (§ 1, Ord. 91-762, eff. October 3, 1991)

4.4.2. Plumas County's Administrative/Technical Mitigation Capabilities

Table 4-139 identifies the County personnel responsible for activities related to mitigation and loss prevention in the County. ***The table has been prefilled with what was in the previous plan. Please update, and make sure to address the notes (third) column and the last cell of the table. The final table cell needs to be filled out as well.***

Table 4-139 Plumas County Administrative/Technical Mitigation Capabilities

| Administration | In Place Y/N | Describe capability Is coordination effective? |
|--|-----------------|---|
| Staff | | Is staffing adequate to enforce regulations? Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective? |
| Chief Building Official | Y | Chief Building Official is also Director of Building Services – Chuck White is trained on hazards and mitigation and is part of the County’s rescue |
| Civil Engineer, including dam and levee safety | Y | Staff is trained on regulation enforcement with a hazard focus. Coordination is effective. |
| Community Planner | Y | Planning Director has experience with hazard mitigation. |
| Emergency Manager | Y | County Sheriff is the “Director of OES” County Administrator is also “Risk Management” All County employees are Disaster Service Workers: According to California Government Code Sections 3100-3109, all public employees are designated as Disaster Service Workers. In Plumas County, all county employees take an oath of affirmation to ensure the county has the resources and readiness to help protect public health and safety and to protect lives and property during disasters or emergencies. |
| Floodplain Administrator | Y | Staffing is adequate and trained. Coordination is being worked on to increase effectiveness. |
| GIS Coordinator | Y | GIS capabilities are strong, and the GIS Department serves all County departments with mapping needs; GIS County portal: https://mangomap.com/plumasgis/maps Maps on the portal include: -fire district query -Firewise communities map -snow load and fire hazard -Sheriff Evacuation Area Maps Static PDF Maps: https://plumascounty.us/2206/Static-PDF-Maps -State Responsibility Areas (SRA) lands for fire protection -various maps created for Fire Safe Council Link for FEMA FIRM Maps: https://plumascounty.us/2295/FEMA-Flood-Insurance-Rate-Maps-Informati |

| | | |
|---|-----|--|
| Planning Commission | Y | Coordination is effective with Commission, although only recommendation authority to Board of Supervisors on: Periodically review and recommend action on the general plan for the County; Periodically review and recommend action on any specific plans for the County; Periodically review and recommend action on the zoning ordinances of the County; and Initiate amendments to boundaries of zones and provisions of Chapter 2 of Title 9 of this Code pursuant to Section 9-2.902 of Article 9 of Chapter 2 of Title 9 of this Code. |
| Other | | |
| Technical | Y/N | Has capability been used to assess/mitigate risk in the past? |
| Grant writing | Y | OES, Planning, and Public Works (maybe others) |
| Hazard data and information | Y | OES |
| GIS analysis | Y | County GIS provides hazard analysis support as needed |
| Mutual aid agreements | Y | --Mutual Aid Radio Systems --Plumas County Fire Chiefs Association Local Fire Service Mutual Aid & Rescue Plan (updated 2016) |
| Other | | |
| How can these capabilities be expanded and improved to reduce risk? | | |
| PROVIDE SPECIFIC DETAILS OF AREAS FOR IMPROVEMENT OF THESE TYPES OF CAPABILITIES AND HOW/WHY IT WILL HELP YOUR JURISDICTION. FROM PREVIOUS PLAN - The County could expand capabilities by hiring a Fire Warden. Wildfire is the biggest hazard faced by the County, but there is no overarching entity in the County to coordinate fire response among all the fire protection districts. | | |

4.4.3. Plumas County's Fiscal Mitigation Capabilities

Table 4-140 identifies financial tools or resources that the County could potentially use to help fund mitigation activities. ***The table has been prefilled with what was in the previous plan. Please update, and make sure to address the notes (third) column and the last cell of the table. The final table cell needs to be filled out as well.***

Table 4-140 Plumas County Fiscal Mitigation Capabilities

| Funding Resource | In Place Y/N | Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions? |
|--------------------------------------|-----------------|--|
| Capital improvements project funding | N | |
| Community Development Block Grant | Y | For housing (not hazard mitigation) in the past via Plumas County Community Development Commission (housing authority) |

| Funding Resource | In Place Y/N | Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions? |
|---|-----------------|--|
| Federal funding programs (non-FEMA) | Y | --Homeland Security Grant --EMPG – Emergency Management Performance Grant --Title III Funding-Federal funding to County of Plumas |
| Fees for water, sewer, gas, or electric services | Y | Various community and public utility districts (see website for more information), along with Environmental Health (just did a fee study and raised fees) – see County department websites for fee schedules |
| Impact fees for new development | N | |
| State funding programs | Y | Cal Fire, Cal Trans, Cal EPA, Cal DWR, Cal OES, and others |
| Stormwater utility fee | N | |
| Other | | |
| How can these capabilities be expanded and improved to reduce risk? | | |
| PROVIDE SPECIFIC DETAILS OF AREAS FOR IMPROVEMENT OF THESE TYPES OF CAPABILITIES AND HOW/WHY IT WILL HELP YOUR JURISDICTION. FROM PREVIOUS PLAN - The County is seeking to integrate Capital Improvement Funding with hazard mitigation project funding. There is currently a push to assess project fees. | | |

4.4.4. Plumas County Mitigation Education, Outreach, and Partnerships

Table 4-141 identifies education and outreach programs and methods already in place that could be/or are used to implement mitigation activities and communicate hazard-related information. **The table has been prefilled with what was in the previous plan. Please update, and make sure to address the notes (third column and the last cell of the table. The final table cell needs to be filled out as well.**

Table 4-141 Plumas County Mitigation Education, Outreach, and Partnerships

| Program/Organization | In Place Y/N | How widespread are each of these in your community? |
|---|-----------------|--|
| Community newsletters | | |
| Hazard awareness campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, school programs, public events) | Y | Firewise communities, as of 3/30/2020 – there are 21 certified communities, with 4 others in process. Fire Safe council. |
| Local news | | |
| Organizations that interact with underserved and vulnerable communities | Y | County works closed with the new County VOAD group |

| Program/Organization | In Place Y/N | How widespread are each of these in your community? |
|---|-----------------|---|
| Social media | Y | The County uses social media platforms to community hazard and preparedness information and information related to hazard events and disaster declarations including information on evacuation routes and process |
| How can these capabilities be expanded and improved to reduce risk? | | |
| PROVIDE SPECIFIC DETAILS OF AREAS FOR IMPROVEMENT OF THESE TYPES OF CAPABILITIES AND HOW/WHY IT WILL HELP YOUR JURISDICTION. FROM PREVIOUS PLAN - The County is seeking to expand knowledge of evacuation routes and plans. There is a desire to put publications, mailings, and other education outreach ideas into place. There will be continued efforts to expand FireWise communities. | | |

4.4.5. Other Mitigation Efforts

The County has pursued and previously implemented other mitigation efforts not already captured in the capability assessment above. These include: **UPDATE THESE BELOW**

- The County noted a document completed titled Evaluating Treatment Longevity and Maintenance Needs for Fuel Reduction Projects Implemented in the Wildland Urban Interface of Plumas County, CA” was completed in 2021. This project assessed the current maintenance needs for projects implemented, funded, or otherwise supported by the PCFSC. This assessment will allow critical questions described in the Effectiveness Monitoring Committee (EMC) Strategic Plan (Husari and Henly 2018) to be answered spatially and quantitatively over all PCFSC treated lands in Plumas County. In addition, the project assessed treatment utilization by fire fighters and post fire severity resulting from both the North Complex (2019) and Dixie Fire (2021).
- Plumas County supports the U.S.D.A. Farm Service Agency County Emergency Board that provides technical assistance and assessment of local disasters. The team can quantify forage losses, analyzes grazing infrastructure losses, certify livestock death and other associated impacted to livestock grazing operations from drought and wildfires. The Emergency Board includes representation from the US Forest Service (Rangeland Team), University of California Cooperative Extension local livestock and natural resources advisors (Plumas-Sierra), and the Natural Resources Conservation Services (Quincy), under the leadership of the Farm Service Agency. The County Emergency Board also works with the "County Committee" that is a board of local livestock and agricultural producers that advise the local Farm Service Agency (based in Susanville).
- Evacuation maps have been created for several communities in case of wildfire. These maps show suggested primary and secondary evacuation routes out of each community. Depending on the type of emergency, there may be more than one route out of the area. Residents are asked to familiarize themselves with their surrounding neighborhood and listen for instructions from emergency personnel when asked to evacuate.
- Plumas County OES, in coordination with County GIS and Fire Safe Council, have put together a FIREWISE Program for many of the communities in the County. An interactive map of FireWise community boundaries has been put together online. This map (one of the first of its kind) can be found at <https://mangomap.com/plumasgis/maps/104226/firewise-communities-#>.
- Plumas County has EAPs on file for many of the dams in the County.

- In 2019, the County participated in a large, multi-agency wildfire exercise. There were hundreds of participants included: OES, Sheriff's Department, Cal-Fire, USFS, CHP, Peninsula Fire, PG&E, County Search/Rescue, local fire departments, community members. The County has functional exercises
- Public Works also participated with the wildfire exercise at Almanor and a couple of years prior all players also held one in the Meadow Valley area.
- Plumas County's newly updated (2020) Living with Fire publication is available online. It includes evacuation information that could be handy for many folks right now. Hard copies are available from business racks where citizens would usually find the Plumas County Visitors Guide, post offices, fire departments, the Feather Publishing office in Quincy, or at the Fire Safe Council office.
- Plumas County Fire Save Council (PCFSC) has provided 698.1 acres of Hazardous Fuel Reduction on private lands with state and federal dollars
- PCFSC has treated 8,028.5 acres of public land (Plumas National Forest) for fuel reduction and forest health using state dollars
- PCFSC has provided annual Senior/Disabled Defensible Space services, providing treatment for hundreds of participants
- Starting in 2017, PCFSC has provided annual chipping services across Plumas County. In 2019 alone the program chipped 4,720 linear feet of material across 326 locations.
- Since 2014 PCFSC has secured \$13 million in grant funds to support wildfire risk reduction activities.
- PCFSC has regularly produced Living with Fire publications for public outreach and education
- PCFSC has held multiple public showings of the documentary Wilder than Wild, as well as other public events
- 16 of Plumas County's 21 Firewise communities have been certified since 2014
- Plumas County OES hosted a Fire Preparedness Virtual Town Hall
- In 2019, inundation maps and an Emergency Action Plan were completed related to the Chester Diversion Dam.
- The County has an annual FireWise community event
- The County has put together home hardening workshops to mitigate against hazards like wildfire.
- The County has put together wildfire preparedness town hall events. These have been on Zoom recently due to the Covid outbreak.

4.5 Natural Hazards Summary

As detailed in the hazard identification section, those hazards identified as a high or medium significance in Table 4-142 are considered priority hazards for mitigation planning. Those hazards that occur infrequently or have little or no impact in the Plumas County Planning Area were determined to be of low significance and not considered a priority hazard. Significance was determined based on the hazard profile, focusing on key criteria such as frequency, extent, and resulting damage, including deaths/injuries and property, natural and cultural resources, and economic damage. The ability of a jurisdiction to reduce losses through implementation of existing and new mitigation measures was also considered as to the significance of a hazard. This assessment was used to prioritize those hazards of greatest significance in the Plumas County Planning Area, enabling the County and participating jurisdictions to focus resources where they are most needed.

Table 4-142 Hazard Identification and Initial Determination of Priority Hazards

| Hazard | Likelihood of Future Occurrence | Vulnerability | Priority Hazard |
|--|---------------------------------|----------------|-----------------|
| Ag Hazard: Severe Weather/ Pests/Weeds | Highly Likely | Medium | Y |
| Climate Change | Likely | High | Y |
| Dam Failure | Unlikely | High | Y |
| Drought & Water Shortage (w/tree mortality) | Likely | High | Y |
| Earthquake | Unlikely/Occasional | High | Y |
| Flood: 1%/0.2% annual chance (w/levee failure) | Occasional/Unlikely | High | Y |
| Flood: Localized Stormwater | Highly Likely | Medium | Y |
| Haz Mat Transportation | Occasional | Medium | Y |
| Landslide, Mudslide, and Debris Flow | Likely | Medium | Y |
| Severe Weather: Extreme Cold, Freeze, and Snow (w/avalanche) | Highly Likely | Medium | Y |
| Severe Weather: Extreme Heat | Highly Likely | Medium | Y |
| Severe Weather: Heavy Rains and Storms | Highly Likely | Medium | Y |
| Severe Weather: High Winds and Tornadoes | Highly Likely | Medium | Y |
| Volcano | Unlikely | Low | N |
| Wildfire (w/smoke and air quality) | Highly Likely | Extremely High | Y |



Chapter 5 Mitigation Strategy

44 CFR §201.6(c)(3) and §201.7(c)(3): [The plan shall include] a mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.

This section describes the mitigation strategy process and mitigation action plan for this 2026 Plumas County LHMP Update. It describes how all the participating jurisdictions met the following requirements from the 10-step planning process:

- Planning Step 6: Set Goals
- Planning Step 7: Review Possible Activities
- Planning Step 8: Draft an Action Plan

5.1 Mitigation Strategy: Overview

The results of the planning process, the risk assessment, the goal setting, the identification of mitigation actions, and the hard work of the HMPC led to the mitigation strategy and mitigation action plan for this LHMP Update. As part of the LHMP Update process, a comprehensive review and update of the mitigation strategy portions of the 2020 Plumas County and 2019 City of Portola LHMPs was conducted. Some of the initial goals and objectives from the previous LHMPs were refined and reaffirmed, some goals and objectives were deleted, and others were added. The end result is a new set of goals and objectives, to reflect the completion of, or progress towards the 2020/2019 mitigation actions, the updated risk assessment, and the new priorities of the County and all participating jurisdictions and this 2026 LHMP Update.

To support the updated mitigation strategy including updated goals, the mitigation actions from the 2020/2019 LHMPs were reviewed and assessed for their value in reducing risk and vulnerability to the Plumas County Planning Area from identified hazards and further evaluated for their inclusion in this LHMP Update (See Chapter 2 What's New). Section 5.2 below identifies the new goals and objectives of this 2026 LHMP Update and Section 5.4 details the new mitigation action plan.

Taking all of the above into consideration, the participating jurisdictions and HMPC developed the following umbrella mitigation strategy for this LHMP Update:

- Communicate the hazard information collected and analyzed through this planning process as well as mitigation success stories so that the community better understands what can happen where and what they themselves can do to be better prepared.
- Implement the mitigation action plan recommendations of this Plan.
- Use existing rules, regulations, policies, and procedures already in place.
- Monitor multi-objective management opportunities so that funding opportunities may be shared and packaged, and broader constituent support may be garnered.

5.1.1. Continued Compliance with the NFIP

Given the nature and extent of the flood hazard in the Plumas County Planning Area, an emphasis will be placed on continued compliance with the National Flood Insurance Program (NFIP) by all communities. This Chapter 5 of the Base Plan for Plumas County and the jurisdictional annex for the City of Portola, as the two eligible NFIP communities, provides an overview of their flood management programs and continued compliance with the NFIP. Although the participating districts to this LHMP Update are not eligible NFIP communities, many of their mitigation actions and projects contain measures to promote effective floodplain management throughout the Plumas County Planning Area.

To participate in the NFIP a community must adopt and enforce floodplain management regulations that meet or exceed the minimum requirements of the Program. These requirements are intended to prevent loss of life and property and to reduce taxpayer's costs for disaster relief as well as to minimize economic and social hardships that result from flooding. Participation in the NFIP provides a community with access to flood insurance.

Detailed below is a description of the County's flood management program to ensure continued compliance with the NFIP. Also to be considered are the flood mitigation actions contained in this LHMP that support the ongoing efforts by the County to minimize the risk and vulnerability of the community to the flood hazard and to enhance their overall floodplain management program.

Plumas County's Flood Management Program

Plumas County has participated in the Regular Phase of the NFIP since September 24, 1984. Since then, the County has administered floodplain management regulations that meet the minimum requirements of the NFIP. Under that arrangement, residents and businesses paid the same flood insurance premium rates as most other communities in the country.

The Community Rating System (CRS), a voluntary program under the NFIP, was created in 1990. It is designed to recognize floodplain management activities that go above and beyond the NFIP's minimum requirements. If a community implements public information, mapping, regulatory, loss reduction and/or flood preparedness activities and submits the appropriate documentation to FEMA, then its residents can qualify for a flood insurance premium rate reduction. The County does not currently participate in the CRS program.

Presently, the County manages its floodplains in compliance with NFIP requirements and implements a floodplain management program designed to protect the people and property of the County. Floodplain regulations are a critical element in local floodplain management and are a primary component in the County's participation in the NFIP.

The County will continue to manage their floodplains in continued compliance with the NFIP. An overview of the County's NFIP status and floodplain management program is discussed on Table 5-1. **FILL OUT REMAINDER OF TABLE. THOSE AREAS WE COULD BRING IN FROM LAST PLAN HAVE BEEN PREFILLED BUT NEED TO BE VERIFIED.**

Table 5-1 Plumas County NFIP Status

| NFIP Topic | | Comments |
|--|---|----------|
| Staff Resources | | |
| Who is responsible for floodplain management in your community? Provide Department/Title. Do they serve any roles other than Community Floodplain Administrator (FPA)? | | |
| Is the Community FPA or NFIP Coordinator a Certified Floodplain Manager? | No | |
| Is floodplain management an auxiliary function? | Auxiliary | |
| Provide an explanation of NFIP administration services (e.g., permit review, GIS, education or outreach, inspections, engineering capability) | | |
| What are the barriers to running an effective NFIP program in the community, if any? | | |
| Insurance Summary | | |
| How many NFIP policies are in the community? What is the total premium and coverage? | 93 policies \$159,286 in annual premiums \$61,661,100 of insurance in force | |
| How many claims have been paid in the community? What is the total amount of paid claims? How many of the claims were for substantial damage? | 59 paid losses \$1,099,373.04 in paid claims. 9 substantial damage claims | |
| How many structures (residential and non-residential) are exposed to flood risk within the community? | 1,714 in 1% annual chance flood zone 787 in 0.2% annual chance flood zone | |
| Are there Repetitive Loss (RL) and Severe Repetitive Loss Properties (SRL) structures in the community? | 4 RL 0 SRL | |
| Describe any areas of flood risk with limited NFIP policy coverage | No known places of limited coverage | |
| How does the community teach property owners or other stakeholders about the importance flood insurance? | | |
| What digital sources (like the FEMA Map Service Center, National Flood Hazard Layer) or non-regulatory tools does the community use? | | |
| Compliance History | | |
| Is the community in good standing with the NFIP? | Y | |
| Are there any outstanding compliance issues (i.e., current violations)? | N | |
| Who is responsible (Department, Title) for making substantial damage/improvement determinations? How does the community identify substantially damaged/improved structures? What is the process to make sure these structures are brought into compliance? | | |
| When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact (CAC)? | 9/29/2011CAV | |
| Is a CAV or CAC scheduled or needed? | No | |

| NFIP Topic | Comments |
|---|---|
| Regulation | |
| When did the community enter the NFIP? | 9/24/1984 |
| Are the FIRMs digital or paper? | Digital |
| Has the community adopted the NFIP minimum floodplain management criteria via local regulation? Date of current local regulation? | |
| Has the community adopted the latest effective FIRM? Date adopted? | |
| How does the community enforce local floodplain regulations and monitor compliance? | |
| Do floodplain development regulations meet or exceed FEMA or State minimum requirements? If so, in what ways? | Meet minimum requirements. |
| How are Letters of Map Change (LOMCs) tracked and compiled? | New DFIRMs are downloaded regularly which include the latest LOMCs, LOMRs, and CLOMRs |
| Provide an explanation of the permitting process. | Permit review is done |
| Community Rating System | |
| Does the community participate in CRS? If so, what is the community's CRS Class Ranking? | No |
| What categories and activities provide CRS points and how can the class be improved? | N/A |
| Does the plan include CRS planning requirements? | N/A |

Source: FEMA CIS, FEMA PIVOT, Plumas County

*FEMA CIS and PIVOT databases record this data differently; thus results utilized differ depending on the source.

5.1.2. Integration of Mitigation with Post Disaster Recovery and Mitigation Strategy Funding Opportunities

Hazard mitigation actions are essential to weaving long-term resiliency into all community recovery efforts so that at-risk infrastructure, development, and other community assets are stronger and more resilient for the next severe storm or hazard event. Mitigation measures to reduce the risk and vulnerability of a community to future disaster losses can be implemented in advance of a disaster event and also as part of post-disaster recovery efforts.

Mitigation applied to recovery helps communities become more resilient and sustainable. It is often most efficient to fund eligible infrastructure mitigation through FEMA's Public Assistance mitigation program if the asset was damaged in a storm event. Mitigation work can be added to project worksheets if they can be proven to be cost-beneficial.

Integration of mitigation into post disaster recovery efforts should be considered by all communities as part of their post disaster redevelopment and mitigation policies and procedures. Post-disaster redevelopment and mitigation policies and procedures are evaluated and updated as part of the Emergency Operations Plan (EOP) updates and other emergency management plans for each community.

These EOP's and other emergency management documents, through its policies and procedures, seek to mitigate the effects of hazards, prepare for measures to be taken which will preserve life and minimize damage, enhance response during emergencies and provide necessary assistance, and establish a recovery system in order to return the community to their normal state of affairs. Mitigation is emphasized as a major component of recovery efforts.

Mitigation Strategy Funding Opportunities

An understanding of the various funding streams and opportunities enable the communities to match identified mitigation projects with the grant programs that are most likely to fund them. Additionally, some of the funding opportunities can be utilized together. Mitigation grant funding opportunities available pre- and post- disaster include the following.

FEMA HMA Grants

Cal OES administers four main types of HMA grants: (1) Hazard Mitigation Grant Program, (2) Pre-Disaster Mitigation Program, (3) Flood Mitigation Assistance Program, and (4) Building Resilient Infrastructure and Communities. Eligible applicants for the HMA include state and local governments, certain private non-profits, and federally recognized Indian tribal governments. While private citizens cannot apply directly for the grant programs, they can benefit from the programs if they are included in an application sponsored by an eligible applicant.

FEMA Public Assistance Section 406 Mitigation

The Robert T. Stafford Disaster Relief and Emergency Assistance Act provides FEMA the authority to fund the restoration of eligible facilities that have sustained damage due to a presidentially declared disaster. The regulations contain a provision for the consideration of funding additional measures that will enhance a facility's ability to resist similar damage in future events.

Community Development Block Grants

The California Department of Housing and Community Development administers the State's Community Development Block Grant (CDBG) program with funding provided by the U.S. Department of Housing and Urban Development. The program is available to all non-entitlement communities that meet applicable threshold requirements. All projects must meet one of the national objectives of the program – projects must benefit 51 percent low- and moderate-income people, aid in the prevention or clearance of slum and blight, or meet an urgent need. Grant funds can generally be used in federally declared disaster areas for CDBG eligible activities including the replacement or repair of infrastructure and housing damaged during, or as a result of, the declared disaster.

Small Business Loans

SBA offers low-interest, fixed-rate loans to disaster victims, enabling them to repair or replace property damaged or destroyed in declared disasters. It also offers such loans to affected small businesses to help them recover from economic injury caused by such disasters. Loans may also be increased up to 20 percent

of the total amount of disaster damage to real estate and/or leasehold improvements to make improvements that lessen the risk of property damage by possible future disasters of the same kind.

Increased Cost of Compliance

Increased Cost of Compliance (ICC) coverage is one of several resources for flood insurance policyholders who need additional help rebuilding after a flood. It provides up to \$30,000 to help cover the cost of mitigation measures that will reduce flood risk. ICC coverage is a part of most standard flood insurance policies available under NFIP.

5.2 Goals and Objectives

44 CFR §201.6(c)(3)(i) and §201.7(c)(3)(i): [The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

Up to this point in the planning process, the participating jurisdictions, along with the HMPC, have organized resources, assessed hazards and risks, and documented mitigation capabilities. The resulting goals, objectives, and mitigation actions were developed based on these tasks. The HMPC held a series of meetings and exercises designed to achieve a collaborative mitigation strategy as described further throughout this section. Appendix C documents the information covered in these mitigation strategy meetings, including information on the goals development and the identification and prioritization of mitigation alternatives by the HMPC and participating jurisdictions.

During the initial goal-setting meeting, the HMPC reviewed the results of the hazard identification, vulnerability assessment, and capability assessment. This analysis of the risk assessment identified areas where improvements could be made and provided the framework for the HMPC to formulate planning goals and objectives and to develop the mitigation strategy for the Plumas County Planning Area.

Goals were defined for the purpose of this mitigation plan as broad-based public policy statements that:

- Represent basic desires of the community;
- Encompass all aspects of community, public and private;
- Are nonspecific, in that they refer to the quality (not the quantity) of the outcome;
- Are future-oriented, in that they are achievable in the future; and
- Are time-independent, in that they are not scheduled events.

Goals are stated without regard to implementation. Implementation cost, schedule, and means are not considered. Goals are defined before considering how to accomplish them so that they are not dependent on the means of achievement. Goal statements form the basis for objectives and actions that will be used as means to achieve the goals. Objectives define strategies to attain the goals and are more specific and measurable.

HMPC members were provided with the list of goals from the 2020 and 2019 LHMPs as well as a list of other sample goals to consider. The team was told that they could use, combine, or revise the statements provided or develop new ones, keeping the risk assessment in mind. Each member was asked to provide three goal statements. Goal statements were collected and grouped into similar themes and provided to the

HMPC. Some of the statements were determined to be better suited as objectives or actual mitigation actions and were set aside for later use. Next, the HMPC developed objectives that summarized strategies to achieve each goal. Edits and refinements to these new goals and resulting objectives were provided by the HMPC until the team came to consensus on the final goals and objectives for this 2026 LHMP Update.

Based on the risk assessment review and goal setting process, the HMPC identified the following goals, which provide the direction for reducing future hazard-related losses within the Plumas County Planning Area.

Goal #1: Minimize loss of life and injuries and protect public health, property, and the environment from natural hazards

- Minimize impact to all populations, including vulnerable and underserved populations
- Minimize impact to existing and future development, both public and private
- Minimize economic and natural resource impact
- Promote resiliency strategies

Goal #2: Minimize losses and damages, and provide protection for critical facilities, infrastructure, and services from hazard impacts

- Implement critical facility upgrades and mitigation measures to current standards and codes to better withstand future hazard events and to ensure reliability of critical services (e.g., communications, power, water)
- Update and maintain a GIS database of critical facilities to include: Essential Services, At-Risk Populations, and Hazardous Materials Facilities

Goal #3: Increase community and public awareness, education, preparedness, and self-reliance to natural hazards

- Enhance public and stakeholder outreach, education, and preparedness programs to include all hazards of concern
- Increase public and stakeholder knowledge about the risk and vulnerability to identified hazards and how to be more self-reliant in mitigating risks from natural hazards
- Provide viable local resources and information (i.e., training, technical assistance, education) to promote implementation of self-reliant mitigation actions and to support informed decision-making before, during, and after a disaster
- Provide public and stakeholder education and outreach specific to evacuation routes, available emergency communication modes, and roles and responsibilities

Goal #4: Strengthen and improve communities' capabilities, capacity, and effectiveness to mitigate hazards, reduce losses, and be prepared for, respond to, and recover from a disaster event in Plumas County

- Improve coordination of local, state, and federal resources and community partners
- Enhance emergency communication capabilities (e.g., cell phones, radios, sirens, reverse 911)
- Ensure continuity of government operations

- Increase use of shared resources, enhance resource availability, and build local resources in a meaningful way to support all mitigation partners (i.e., government, community, individuals)
- Establish and maintain mutual aid agreements for all phases of emergency management

Goal #5: Build capacity and capabilities to increase disaster resilience among historically underserved populations, individuals with access and functional needs, and communities disproportionately impacted by disasters and climate change

- Identify vulnerable and underserved populations and communities within the County
- Incorporate equity metrics, tools, and strategies into all mitigation planning, policy, funding, outreach, and implementation efforts

Goal #6: Minimize life safety issues, property loss and damage, environmental and natural resource impacts, and economic impacts associated with wildfires, the #1 natural hazard of concern in Plumas County

- Reduce the threat of catastrophic wildfire to lives, structures, and the environment through proactive management
- Reduce the wildfire risk and vulnerability and promote wildfire resilient communities
- Follow best available science to reduce the potential for catastrophic wildfire
- Implement a fire-adapted community concept approach at broader county-wide geographic and policy scales
- Develop a Countywide fuels management implementation strategy to reduce fuel loading and catastrophic wildfire in and surrounding Plumas communities
- Promote a wholistic approach to mitigating wildfire through restoration of the beneficial functions of natural resources and fire ecology
- Coordinate comprehensive fire protection strategies among all federal, state, and local agencies and across all property boundaries
- Increase community education and outreach of wildfire mitigation strategies (e.g., fuels management, defensible space, home hardening) including those to be undertaken by private property owners
- Promote and enhance fire-fighting capabilities (e.g., access roads, water supply, etc.)
- Improve community infrastructure for wildfire prevention, preparedness and response including locating safety zones, augmenting community water supplies, and reducing fire hazard along transportation, power, water, and other critical infrastructure
- Enhance and update the county wildfire hazard codes including enforcement capabilities to address new LRA and SRA mapping of fire hazard severity zones
- Continue land use planning efforts to ensure increased fire protection in new developments
- Update, maintain, and implement Community Wildfire Protection Plans

Goal #7: Minimize the loss of agricultural and natural resource productivity (foundation of rural economy) from natural hazards

- Promote local research, education, and technical assistance on sustainable agriculture and forestry practices
- Support education and training of public and private land managers on hazard mitigation and disaster resilience
- Foster agricultural and natural resource resilience to natural hazards through implementation of best management practices and restoration activities

Goal #8: Apply best available science and authoritative data to design, implement, and prioritize projects that enhance resilience to natural hazards and climate change impacts

- Make better use of technology (e.g., GIS, public notification, alert and warning, communications)
- Identify and implement opportunities to build resilience to changing climate conditions
- Implement climate adaptation measures including enhanced standards to reduce the influence and consequences of climate change (e.g., increasing temperatures, changing hydrology) on natural hazards

Goal #9: Maximize funding opportunities for natural hazard mitigation, preparedness, response, and recovery

- Collaborate with all levels of local, state, and federal mitigation partners
- Identify and track mitigation grant funding opportunities and maintain eligibility for grant programs
- Identify, consolidate, and pursue eligible mitigation projects for multi-benefit (rather than competing against each other for similar projects and limited grant funding)
- Establish and implement a countywide multi-agency committee to promote, coordinate, and track mitigation action development and project implementation
- Improve community's ability to be competitive/successful with grant funding opportunities from application development to project delivery

5.3 Identification and Analysis of Mitigation Actions

44 CFR §201.6(c)(3)(ii) and §201.6(c)(3)(ii): [The mitigation strategy shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

In order to identify and select mitigation actions to support the mitigation goals, each hazard identified in Section 4.1 was evaluated at the completion of the risk assessment as part of the second prioritization process to determine which hazards were priorities for mitigation strategy planning. Only those hazards that were determined to be a priority hazard for each participating jurisdiction were considered further in the development of hazard-specific mitigation actions. Those hazards not considered a priority for mitigation strategy development were eliminated from further consideration because the risk of a hazard event to the participating jurisdiction is unlikely, the vulnerability of the participating jurisdiction is low, or capabilities are already in place to mitigate adverse impacts. Further, the resulting mitigation strategy presented in this Chapter focuses on those mitigation actions that each jurisdiction has the authority, resources, and capacity to consider for implementation over the next 5-years covered by this LHMP Update. Table 5-2 and Table 5-3 provide a listing of priority hazards by jurisdiction to be addressed in the mitigation strategy portion of this Plan.

Table 5-2 Plumas County Planning Area: Mitigation Action Priority Hazards by Jurisdiction

| Hazard | Plumas County | City of Portola | Chester PUD | Feather River RCD | Gold Mountain CSD | Indian Valley CSD |
|--|---------------|-----------------|-------------|-------------------|-------------------|-------------------|
| Ag Hazard: Severe Weather/ Pests/Weeds | X | | | | | |
| Climate Change | X | X | | X | | |
| Dam Failure | X | X | | | | X |
| Drought & Water Shortage (w/tree mortality) | X | X | X | | X | X |
| Earthquake | X | X | | | X | X |
| Flood: 1%/0.2% annual chance (w/levee failure) | X | X | X | | | X |
| Flood: Localized Stormwater | X | X | X | X | X | X |
| Hazardous Materials Transportation | X | X | | | | |
| Landslide, Mudslide, and Debris Flow | X | X | | X | X | X |
| Severe Weather: Extreme Cold, Freeze, and Snow (w/avalanche) | X | X | X | | X | |
| Severe Weather: Extreme Heat | X | | | | X | |
| Severe Weather: Heavy Rains and Storms | X | X | X | | X | |
| Severe Weather: High Winds and Tornadoes | X | X | | | X | X |
| Volcano | | | | | | |
| Wildfire (w/smoke and air quality) | X | X | X | X | X | X |

Table 5-3 Plumas County Planning Area: Mitigation Action Priority Hazards by Jurisdiction

| Hazard | Plumas Corp/Plumas Fire Safe Council | Plumas Eureka Community Services District | South Feather Water & Power Agency |
|--|--------------------------------------|---|------------------------------------|
| Ag Hazard: Severe Weather/ Pests/Weeds | X | | |
| Climate Change | X | X | X |
| Dam Failure | | | X |
| Drought & Water Shortage (w/tree mortality) | X | X | |
| Earthquake | | X | X |
| Flood: 1%/0.2% annual chance (w/levee failure) | X | | |
| Flood: Localized Stormwater | X | X | |
| Hazardous Materials Transportation | | | |
| Landslide, Mudslide, and Debris Flow | | X | X |
| Severe Weather: Extreme Cold, Freeze, and Snow (w/avalanche) | | X | X |
| Severe Weather: Extreme Heat | X | X | |
| Severe Weather: Heavy Rains and Storms | X | X | X |

| Hazard | Plumas Corp/Plumas Fire Safe Council | Plumas Eureka Community Services District | South Feather Water & Power Agency |
|--|--------------------------------------|---|------------------------------------|
| Severe Weather: High Winds and Tornadoes | X | | X |
| Volcano | | | |
| Wildfire (w/smoke and air quality) | X | X | X |

It is important to note, however, that all the Hazards addressed in this LHMP are included in the multi-hazard public awareness mitigation actions as well as in other multi-hazard, emergency management actions, and other hazard-specific actions, providing benefits to all participating jurisdictions to this 2026 LHMP Update.

Once it was determined which hazards warranted the development of specific mitigation actions, the participating jurisdictions and HMPC analyzed viable mitigation options that supported the identified goals and objectives. The HMPC was provided with the following list of categories of mitigation actions, which originate from the Community Rating System:

- Prevention
- Property protection
- Structural projects
- Natural resource protection
- Emergency services
- Public information

The HMPC was provided with examples of potential mitigation actions for each of the above categories. The HMPC was also instructed to consider both the existing built environment and future development in considering possible mitigation actions. A facilitated discussion then took place to examine and analyze the options. Appendix C provides a detailed review and discussion of the six mitigation categories to assist in the review and identification of possible mitigation activities or projects. Also utilized in the review of possible mitigation measures is FEMA’s publication on Mitigation Ideas, by hazard type. Prevention type mitigation alternatives were discussed for each of the priority hazards. This was followed by a brainstorming session that generated a list of preferred mitigation actions by hazard.

5.3.1. Prioritization Process

Once the mitigation actions were identified, the HMPC was provided with several decision-making tools, including FEMA’s recommended prioritization criteria, STAPLEE sustainable disaster recovery criteria; Smart Growth principles; and others, to assist in deciding why one recommended action might be more important, more effective, or more likely to be implemented than another. STAPLEE stands for the following:

- Social: Does the measure treat people fairly? (e.g., different groups, different generations)
- Technical: Is the action technically feasible? Does it solve the problem?
- Aministrative: Are there adequate staffing, funding, and other capabilities to implement the project?
- Political: Who are the stakeholders? Will there be adequate political and public support for the project?

- Legal: Does the jurisdiction have the legal authority to implement the action? Is it legal?
- Economic: Is the action cost-beneficial? Is there funding available? Will the action contribute to the local economy?
- Environmental: Does the action comply with environmental regulations? Will there be negative environmental consequences from the action?

In accordance with the DMA requirements, an emphasis was placed on the importance of a benefit-cost analysis in determining action priority. Other criteria used to assist in evaluating the benefit-cost of a mitigation action includes:

- Contribution of the action to save life or property
- Availability of funding and perceived cost-effectiveness
- Available resources for implementation
- Ability of the action to address the problem

The initial list of mitigation actions from the 2020 and 2019 LHMPs and new actions identified during this planning process were reviewed and prioritized using the criteria (alternatives and selection criteria) in Appendix C.

With these criteria in mind, the HMPC were each given a set of 18 colored dots, six each of red, blue, and green. The dots were assigned red for high priority (worth five points), blue for medium priority (worth three points), and green for low priority (worth one point). The HMPC was asked to use the dots to prioritize actions with the above criteria in mind. The point score for each action was totaled. Appendix C contains the total score given to each identified mitigation action.

The process of identification and analysis of mitigation alternatives allowed the HMPC to come to consensus and to prioritize recommended mitigation actions. During the voting process, emphasis was placed on the importance of a benefit-cost review in determining project priority; however, this was not a quantitative analysis. The team agreed that prioritizing the actions collectively enabled the actions to be ranked in order of relative importance and helped steer the development of additional actions that meet the more important objectives while eliminating some of the actions which did not garner much support.

Benefit-cost was also considered in the development of the Mitigation Action Plan detailed below in Section 5.4. The cost-effectiveness of any mitigation alternative will be considered in greater detail through performing benefit-cost project analyses when seeking FEMA mitigation grant funding for eligible actions associated with this 2026 LHMP Update.

Recognizing the limitations in prioritizing actions from multiple jurisdictions and departments and the regulatory requirement to prioritize by benefit-cost to ensure cost-effectiveness, the participating jurisdictions and HMPC decided to pursue actions that contribute to saving lives and property as first and foremost, with additional consideration given to the benefit-cost aspect of a project. This process drove the development of a determination of a high, medium, or low priority for each mitigation action, and a comprehensive prioritized mitigation action plan for the Plumas County Planning Area.

5.4 Mitigation Action Plan

44 CFR §201.6(c)(3)(iii) and §201.7(c)(3)(iii): [The mitigation strategy section shall include] an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

This mitigation action plan was developed to present the recommendations developed by the HMPC for how the Plumas County Planning Area can reduce the risk and vulnerability of people, property, critical facilities and infrastructure, natural and cultural resources, and the economy to future disaster losses. Emphasis was placed on both future and existing development. This mitigation action plan summarizes who is responsible for implementing each of the prioritized actions as well as when and how the actions will be implemented. Each action summary also includes a discussion of the benefit-cost review conducted to meet the regulatory requirements of the Disaster Mitigation Act.

Table 5-4 identifies all mitigation actions for participating jurisdictions to this LHMP Update. For each mitigation action item included in Table 5-4, a detailed mitigation implementation strategy has been developed. The detailed descriptions for each mitigation action are included below for the unincorporated County and within each respective jurisdictional annex to this LHMP.

The mitigation action plan summarized below contains both new action items developed for this 2026 LHMP Update as well as old actions that were yet to be completed from the 2020 and 2019 LHMPs. Table 5-4 indicates whether the action is new or from the 2020 or 2019 LHMP and Chapter 2 contains the details for each 2020 and 2019 mitigation action item indicating whether a given action item has been completed, deleted, or deferred.

As described throughout this 2026 LHMP Update, the Plumas County Planning Area has many risks and vulnerabilities to identified hazards. Although many possible mitigation actions, as detailed in Appendix C, were brainstormed and prioritized during the mitigation strategy meetings, the resulting mitigation strategy presented in this Chapter 5 of this LHMP focuses only on those mitigation actions that are both reasonable and realistic for the communities to consider for implementation over the next 5-years covered by this 2026 Update. Thus, only a portion of the actions identified in Appendix C have been carried forward into the mitigation strategy presented in Table 5-4. Although many good ideas were developed during the mitigation action brainstorming process, the reality of determining which priority actions to develop and include in this LHMP Update came down to the actual priorities of jurisdictions, individuals and departments based in part on department direction, staffing, and potential funding. The overall value of the mitigation action table in Appendix C is that it represents a wide-range of mitigation actions that can be consulted and developed for this LHMP Update during annual plan reviews and the formal 5-year update process.

It is also important to note that the participating jurisdictions have numerous existing, detailed action descriptions, which include benefit-cost estimates, in other planning documents, such as flood and water management plans, fire plans, climate plans, and capital improvement budgets and reports. These actions are considered to be part of this LHMP, and the details, to avoid duplication, should be referenced in their

original source document. The HMPC also realizes that new needs and priorities may arise as a result of a disaster or other circumstances and reserves the right to support new actions, as necessary, as long as they conform to the overall goals of this LHMP Update.

Further, it should be clarified that the actions included in this mitigation strategy are subject to further review and refinement; alternatives analyses; and reprioritization due to funding availability and/or other criteria. The participating jurisdictions are not obligated by this document to implement any or all of these projects. Rather this mitigation strategy represents the desires of the jurisdictions to mitigate the risks and vulnerabilities from identified hazards. The actual selection, prioritization, and implementation of these actions will also be further evaluated in accordance with the mitigation categories and criteria contained in Appendix C.

It should be noted that many of the projects submitted by each jurisdiction in Table 5-4 benefit all jurisdictions whether or not they are the lead agency. Further, many of these mitigation efforts are collaborative efforts among multiple local, state, and federal agencies. In addition, the public outreach actions, as well as many of the emergency services actions, apply to all hazards regardless of hazard priority. Collectively, this multi-jurisdictional mitigation strategy includes only those actions and projects which reflect the actual priorities and capacity of each jurisdiction to implement over the next 5-years covered by this 2026 LHMP Update.

NEED ACTIONS FOR COUNTY (HAZ MAT, AND EXTREME COLD FREEZE AND SNOW)

Table 5-4 Plumas County Planning Area Mitigation Actions

| Action Title | New Action/ Previous Action | Address Current Development | Address Future Development | Continued NFIP Compliance | Mitigation Type |
|--|-----------------------------------|-----------------------------------|----------------------------------|---------------------------------|--|
| Plumas County | | | | | |
| Multi-Hazard Actions | | | | | |
| Action 1. Enhance Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness | Previous Action | X | X | X | Prevention Public Education |
| Action 2. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan | Previous Action | X | X | | Prevention |
| Action 3. Back Up Power Redundancy Project – Resilient and Continued Outpatient Medical Services at Lake Almanor Clinic, and Continued Operation of a Cooling/Warming Station for the General Public during Electrical Power Disruptions as Needed. | New Action | X | X | | Property Protection Emergency Services |
| Action 4. Resilient Community Systems Initiative | New Action | X | X | X | Prevention Property Protection Structural Projects Natural Resource Protection Emergency Services Public Information |
| Action 5. Designation of Minor County Roads and Forest Service Roads to be used as Alternate Routes around Road Closures during Wildfire and other Hazard Events. Plumas and Lassen National Forests have funding for new Road Connections to Form Alternate Routes. | New Action | X | X | | Property Protection Emergency Services |
| Action 6. Continue Bridge Replacement Program using Federal Funding Source for Evacuation and Emergency Services Access. | Previous Action | X | X | X | Property Protection Structural Projects Emergency Services |
| Action 7. Continue to Reach out to the Community Countywide to Sign Up for Emergency Alerts through the Genasys Program | New Action | X | X | | Emergency Services |
| Action 8. Plumas County General Plan Public Health & Safety Element update to incorporate Senate Bill (SB) 379 requirements | Previous Action | X | X | | Prevention |

| Action Title | New Action/ Previous Action | Address Current Development | Address Future Development | Continued NFIP Compliance | Mitigation Type |
|--|-----------------------------------|-----------------------------------|----------------------------------|---------------------------------|---|
| Agricultural Hazard Actions | | | | | |
| Action 9. Wildlife Conflict Mitigation Tools and Equipment | New Action | X | X | | Prevention Property Protection Natural Resource Protection |
| Action 10. Invasive Weed Control and Eradication | Previous Action | X | X | | Prevention Property Protection Natural Resource Protection |
| Action 11. Wildlife Conflict Mitigation Tools | New Action | X | X | | Prevention Property Protection Natural Resource Protection |
| Climate Change Actions | | | | | |
| Action 12. Develop a Climate Action Plan | Previous Action | X | X | | Prevention |
| Dam Failure Actions | | | | | |
| Action 13. Evaluate Options for Obtaining 100-year Level of Certification for the Diversion Dam (East and West Chester Levees) | Previous Action | X | X | | Property Protection Structural Projects Natural Resource Protection |
| Drought and Water Shortage Actions | | | | | |
| Action 14. County Wide Drought Resilience Plan | Previous Action | X | X | | Prevention Property Protection Natural Resource Protection |
| Earthquake Actions | | | | | |
| Action 15. Hospital Seismic Compliance (SB-1953) | Previous Action | X | X | | Structural Property Protection |
| Floods: 1%/0.2% Annual Chance, Floods: Localized Flooding, Landslide, Mudslide and Debris Flow, Severe Weather Heavy Rains and Storms Actions | | | | | |
| Action 16. Evaluate and implement Wolf Creek Channel Stabilization Projects through Greenville and Indian Valley Areas | Previous Action | X | X | X | Property Protection Natural Resource Protection |
| Action 17. Identify and Implement Bank Stabilization Projects. | Previous Action | X | X | X | Property Protection Natural Resource Protection |
| Action 18. Develop a Countywide Drainage Master Plan | Previous Action | X | X | X | Property Protection Structural Projects Natural Resource Protection |
| Action 19. FEMA Mapping Update | Previous Action | X | X | X | Prevention |

| Action Title | New Action/ Previous Action | Address Current Development | Address Future Development | Continued NFIP Compliance | Mitigation Type |
|--|-----------------------------------|-----------------------------------|----------------------------------|---------------------------------|--|
| Action 20. Evaluate Options to Repair and Maintain Levee Crown for Emergency Access Vehicles (Gates, Crown Repair, Vegetation Maintenance, etc.) | Previous Action | X | X | X | Property Protection Structural Projects Natural Resource Protection |
| Action 21. County Wide Stormwater Drainage and Grading Ordinance. | Previous Action | X | X | X | Prevention Property Protection Structural Projects Natural Resource Protection |
| Action 22. Ongoing Implementation of Stream Clearing and Culvert Maintenance Programs | Previous Action | X | X | X | Prevention Property Protection Natural Resource Protection |
| Action 23. Review and Update, as Needed, Title 8 (Building Regulations), Chapter 17 (Flood) of the Plumas County Code re: Floodplain Ordinance and Applicable Title 9 (Planning and Zoning) Sections | | | | | |
| Hazardous Materials Transportation Actions | | | | | |
| Action 24. NEED | | | | | |
| Landslide Actions | | | | | |
| Action 25. Identify and Implement Projects to Address Areas of Landslides Affecting Roadway and Railroad | Previous Action | X | X | | Property Protection Structural Projects Natural Resource Protection |
| Severe Weather: Extreme Cold, Freeze, and Snow (w/avalanche) Cold Actions | | | | | |
| Action 26. NEED | | | | | |
| Wildfire, Drought, Severe Weather: Extreme Heat, Severe Weather: High Winds and Tornadoes Actions | | | | | |
| Action 27. Promote and Implement Compliant Street/Address Reflective Signage for Public and Private Roads and Structures | Previous Action | X | X | | Property Protection Structural Projects Emergency Services |
| Action 28. Ingress/Egress Road Projects to Widen and Improve Roads for Evacuation and Emergency Services Access | Previous Action | X | X | | Property Protection Structural Projects Emergency Services |
| Action 29. Air Quality Impacts During Wildfire Events | New Action | X | X | | Property Protection Structural Projects Emergency Services |
| Action 30. Plumas County Agriculture, Forestry, and Natural Resources Resilience | Previous Action | X | X | | Property Protection Structural Projects |
| Action 31. Livestock and Companion Animal Trailer | Previous Action | X | X | | Property Protection Natural Resource Protection |

| Action Title | New Action/ Previous Action | Address Current Development | Address Future Development | Continued NFIP Compliance | Mitigation Type |
|--|-----------------------------------|-----------------------------------|----------------------------------|---------------------------------|---|
| Action 32. Continue to Evaluate and Track Available Funding Sources for Wildfire Mitigation Projects | Previous Action | X | X | | Property Protection Structural Projects Emergency Services |
| Action 33. Develop a Program to Promote and/or Incentivize Home Hardening Retrofitting including: Roofs, Vents, Siding, Windows, etc. | Previous Action | X | X | | Property Protection Structural Projects Emergency Services |
| Action 34. Plumas County General Plan Public Health & Safety Element update to address state law requirements for land classified as State Responsibility Areas (SRAs) and within Very High Fire Hazard Severity Zones (VHFHSZs) | Previous Action | X | X | | Property Protection Structural Projects Emergency Services |
| City of Portola | | | | | |
| Action 1. Public Education on Hazards in the City of Portola | Previous Action | X | X | X | Public Education |
| Action 2. Essential Facilities Retrofit and Redundant Power Sources | Previous Action | X | X | X | Property Protection Structural Projects Emergency Services |
| Action 3. Wildfire Risk and Impact Reduction | Previous Action | X | X | | Prevention Property Protection Natural Resource Protection Public Information |
| Action 4. Gulling Street Bridge Structural Rehabilitation | New Action | X | X | X | Structural Project Emergency Services |
| Action 5. Fire Suppression Enhancements | New Action | X | X | | Property Protection Natural Resource Protection Emergency Services |
| Chester Public Utility District | | | | | |
| Action 1. Asbestos Water Line Natural Disaster Hazard | New Action | X | X | | Property Protection Structural Projects |
| Action 2. Backup Power | New Action | X | X | | Property Protection Emergency Services |
| Action 3. Public Outreach Program | New Action | X | X | X | Public Information |
| Action 4. Tree and Brush Removal | New Action | X | X | | Property Protection Natural Resource Protection |
| Action 5. Wastewater Infrastructure | New Action | X | X | | Property Protection Structural Projects Natural Resource Protection |
| Action 6. Wireless Radio Meters | New Action | X | X | | Emergency Services Property Protection |

| Action Title | New Action/ Previous Action | Address Current Development | Address Future Development | Continued NFIP Compliance | Mitigation Type |
|---|-----------------------------------|-----------------------------------|----------------------------------|---------------------------------|--|
| Feather River Resource Conservation District* | | | | | |
| Action 1. Ecological Restoration | New Action | X | X | | Natural Resource Protection |
| Action 2. Plumas Public Emergency Outreach Program | New Action | X | X | X | Public Information |
| Action 3. Fuels and Vegetation Management | New Action | X | X | | Property Protection Natural Resource Protection |
| Action 4. Plumas Backup Generator and Air Purifier Loan Program | New Action | X | X | | Property Protection Emergency Services |
| Action 5. Tree Mortality Tracking and Removal | New Action | X | X | | Property Protection Natural Resource Protection |
| Gold Mountain Community Services District | | | | | |
| Action 1. Drought Impact on CSD Service | New Action | X | X | | Property Protection Structural Project Natural Resource Protection |
| Action 2. Flood/Landslide/High Wind Mitigation | New Action | X | X | X | Property Protection Structural Project Natural Resource Protection |
| Action 3. Fire Prevention Hazard and Impact on CSD Services | New Action | X | X | | Property Protection Natural Resource Protection |
| Action 4. ADDITIONAL ACTIONS | | | | | |
| Indian Valley Community Services District | | | | | |
| Action 1. Public Outreach Project | New Action | X | X | X | Public Information |
| Action 2. Dam Failure Mitigation and/or Replacement | New Action | X | X | X | Property Protection Structural Projects Natural Resource Protection |
| Action 3. IVCSD Secondary Water Source Project and Storage | New Action | X | X | | Property Protection Structural Projects Natural Resource Protection |
| Action 4. Earthquake Mitigation | New Action | X | X | | Property Protection Structural Projects |
| Action 5. Landslide, Mudslide, and Debris Flow Mitigation | New Action | X | X | X | Property Protection Structural Projects |
| Action 6. Severe Weather Mitigation | New Action | X | X | X | Property Protection Natural Resource Protection |

| Action Title | New Action/ Previous Action | Address Current Development | Address Future Development | Continued NFIP Compliance | Mitigation Type |
|--|-----------------------------------|-----------------------------------|----------------------------------|---------------------------------|--|
| Action 7. Wildfire Mitigation | New Action | X | X | | Prevention Property Protection Natural Resource Protection |
| Plumas Corp/Plumas County Fire Safe Council* | | | | | |
| Action 1. Update the Plumas County Communities Wildfire Protection Plan | New Action | X | X | | Prevention Property Protection Structural Projects Natural Resource Protection |
| Action 2. Firewise Program Promotion and Public Education | Previous Action | X | X | | Prevention Public Education |
| Action 3. WUI Map Project: Implementation of Fire Hazard Severity Zone, Insurance Rating, and Other Classification Systems for Wildfire Risk Management and Identification of Wildland Urban Interface Areas | New Action | X | X | | Prevention |
| Action 4. Biomass Management and Utilization Program | New Action | X | X | | Property Protection Natural Resource Protection |
| Action 5. Community Encompassing Firelines and Shaded Fuel Breaks | New Action | X | X | | Property Protection Natural Resource Protection |
| Action 6. Continue and Promote Defensible Space (PRC 4291) Projects including Assistance Efforts for Senior and Disabled Residents. | New Action | X | X | | Property Protection Natural Resource Protection Public Information |
| Action 7. Improve Local Plumas County Fire Department Capacity and Response Capabilities | New Action | X | X | | Emergency Services Property Protection Natural Resource Protection |
| Action 8. Countywide Green Waste Disposal and Utilization Program | New Action | X | X | | Property Protection Natural Resource Protection |
| Action 9. Hazardous Fuels Reduction – Implementation, Monitoring, and Maintenance | New Action | X | X | | Property Protection Natural Resource Protection |
| Action 10. Develop a Program to Promote and/or Incentivize Home Hardening Retrofitting including: Roofs, Vents, Siding, Windows, etc. | New Action | X | X | | Property Protection Natural Resource Protection Public Information |
| Action 11. Last Chance Creek Watershed Floodplain Restoration Project | New Action | X | X | X | Property Protection Natural Resource Protection |

| Action Title | New Action/ Previous Action | Address Current Development | Address Future Development | Continued NFIP Compliance | Mitigation Type |
|---|-----------------------------------|-----------------------------------|----------------------------------|---------------------------------|--|
| Action 12. Mountain Meadows Watershed Floodplain Restoration Project | New Action | X | X | X | Property Protection Natural Resource Protection |
| Action 13. Upper Feather River Watershed Post-Fire Water Quality Monitoring Project | New Action | X | X | X | Property Protection Natural Resource Protection |
| Action 14. Red Clover Creek Watershed Floodplain Restoration Project | New Action | X | X | X | Property Protection Natural Resource Protection |
| Action 15. Tree Mortality Action Plan – Monitoring, Prevention, and Mitigation | New Action | X | X | | Property Protection Natural Resource Protection |
| Action 16. Tributaries Forest Recovery Project | New Action | X | X | X | Property Protection Natural Resource Protection |
| Action 17. Prescribed Burning Project and Plumas Under burn Cooperative Programs | New Action | X | X | | Property Protection Natural Resource Protection |
| Plumas Eureka Community Services District | | | | | |
| Action 1. Establishment of Evacuation Routes and Resident Notification System | New Action | X | X | | Emergency Services |
| Action 2. Flood Risk Reduction for Wastewater Treatment Plant 6 (WWTP6) | New Action | X | X | X | Property Protection Structural Projects Natural Resource Protection |
| Action 3. Recycled Water Use | New Action | X | X | | Property Protection Natural Resource Protection |
| Action 4. Water Storage Tank Retrofit or Replacement | New Action | X | X | | Property Protection Structural Projects Natural Resource Protection |
| South Feather Water and Power Agency | | | | | |
| Action 1. Little Grass Valley Dam Spillway Northern Slope Stabilization and Rockfall Protection Project | New Action | X | X | X | Property Protection Structural Projects Natural Resource Protection |

*Since these District's have the same boundaries as the County, these actions augment the County's actions.

Plumas County Mitigation Actions

Multi-Hazard Actions

Action 1. Enhance Public Education and Awareness of Natural Hazards and Public Understanding of Disaster Preparedness

Hazards Addressed: Multi-hazard (Ag Hazard: Severe Weather/ Pests/Weeds, Climate Change, Dam Failure, Drought & Water Shortage (w/tree mortality), Earthquake, Flood: 1%/0.2% annual chance (w/levee failure), Flood: Localized Stormwater, Hazardous Materials Transportation, Landslide, Mudslide, and Debris Flow, Severe Weather: Extreme Cold, Freeze, and Snow (w/avalanche), Severe Weather: Extreme Heat, Severe Weather: Heavy Rains and Storms, Severe Weather: High Winds and Tornadoes, Wildfire (w/smoke and air quality))

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Plumas County plays a key role in public outreach/education efforts to communicate the potential risk and vulnerability of their community to the effects of natural hazards. A comprehensive multi-hazard public education program will better inform the community of natural hazards of concern and actions the public can take to be better prepared for the next natural disaster event.

Project Description: A comprehensive multi-hazard outreach program will ascertain both broad and targeted educational needs throughout the community. The County will work with other agencies as appropriate to develop timely and consistent annual outreach messages in order to communicate the risk and vulnerability of natural hazards of concern to the community. This includes measures the public can take to be better prepared and to reduce the damages and other impacts from a hazard event. The public outreach effort will leverage and build upon existing mechanisms, will include elements to meet the objectives of Goal 3 of this LHMP Update, and will consider:

- Using a variety of information outlets, including websites, local radio stations, news media, schools, and local, public sponsored events;
- Creating and distributing (where applicable) brochures, leaflets, water bill inserts, websites, and public service announcements;
- Displaying public outreach information in County office buildings, libraries, and other public places and events;
- Developing public-private partnerships and incentives to support public education activities.

Other Alternatives: Continue public information activities currently in place.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Existing County outreach programs will be reviewed for effectiveness and leveraged and expanded upon to reach the broader region.

Responsible Office/Partners: Plumas County, incorporated communities, and other jurisdictions

Benefits (Losses Avoided): Increase residents' knowledge of potential hazards and activities required to mitigate hazards and be better prepared. Protect lives and reduce damages, relatively low cost to implement.

Potential Funding: Local budgets (general fund, special revenue funds, CIP funding), grant funds from Cal OES (mitigation grants), FEMA (HMGP, PDM, FMA), CA DWR, or other entities.

Timeline: Ongoing/Annual public education and awareness campaign over the next 5 years.

Project Priority (High, Medium, Low): High

Action 2. Integrate Local Hazard Mitigation Plan into Safety Element of General Plan

Hazards Addressed: Multi-hazard (Ag Hazard: Severe Weather/ Pests/Weeds, Climate Change, Dam Failure, Drought & Water Shortage (w/tree mortality), Earthquake, Flood: 1%/0.2% annual chance (w/levee failure), Flood: Localized Stormwater, Hazardous Materials Transportation, Landslide, Mudslide, and Debris Flow, Severe Weather: Extreme Cold, Freeze, and Snow (w/avalanche), Severe Weather: Extreme Heat, Severe Weather: Heavy Rains and Storms, Severe Weather: High Winds and Tornadoes, Wildfire (w/smoke and air quality))

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Local jurisdictional reimbursement for mitigation projects and cost recovery after a disaster is guided by Government Code Section 8685.9 (Assembly Bill (AB) 2140).

Project Description: Specifically, this section requires that each applicable jurisdiction adopt a local hazard mitigation plan (LHMP) in accordance with the federal Disaster Mitigation Act of 2000 as part of the Safety Element of its General Plan. Adoption of the LHMP into the Safety Element of the General Plan may be by reference or incorporation.

Other Alternatives: No action

Existing Planning Mechanisms through which Action will be Implemented: Safety Element of General Plan

Responsible Office/Partners: Plumas County Planning Department

Benefits (avoided Losses): Incorporation of an adopted LHMP into the Safety Element of the General Plan will help jurisdictions maximize the cost recovery potential following a disaster.

Potential Funding: Local budgets (general fund)

Timeline: Within 1 year; upon approval by FEMA of the 2026 LHMP

Project Priority (High, Medium, Low): High

Action 3. Back Up Power Redundancy Project – Resilient and Continued Outpatient Medical Services at Lake Almanor Clinic, and Continued Operation of a Cooling/Warming Station for the General Public during Electrical Power Disruptions as Needed.

Hazards Addressed: Earthquake, Flood: 1% and 0.2% Annual Chance, Severe Weather: Extreme Cold, Freeze, and Snow, Severe Weather: Extreme Heat, Wildfire

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background (Problem Statement): Electrical Power Outage resulting in a loss of operation of the Lake Almanor Clinic Services and Building at 199 Reynolds Road, Chester CA 96020. Electrical outages may be caused by caused by electrical generation and distribution equipment failure, natural disasters such as a blizzard, floods, earthquake, wildfire, Public Safety Power Shut offs, etc., or civil unrest. . The current 200 KW emergency generator and associated equipment providing standby emergency power to the Lake Almanor Clinic building are now 19 years old, installed in November of 2006, and have a few thousand hours of use. Although the equipment is still operating as it should, and regular maintenance and testing is being completed the age of the equipment is becoming concerning, and the risk of failure of the equipment during a power outage is rising. It is the intention of Seneca Healthcare District to minimize the risk of losing the ability to operate the Lake Almanor Clinic in the event of an electrical power failure.

Project Description: Remove and replace the 200KW standby emergency generator with weather enclosure and attached diesel fuel belly tank and remove and replace the Automatic Transfer Switches that allow the transfer from Normal electric power to emergency generator power.

Other Alternatives: Leave current equipment in place and wait till failure occurs.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Seneca Healthcare District Strategic Planning Committee, Emergency Management Planning, Seneca Healthcare Board of Directors and Administration.

Responsible Office/Partners: Brady Haynes, COO Seneca Healthcare District and Jerri Nielsen, President of Seneca Board of Directors; in coordination with PCOES.

Benefits (Losses Avoided): Benefits – Continued uninterrupted outpatient healthcare for the community, operation of a cooling or warming shelter as needed, and provides the hospital a secondary site to conduct patient care in the event of a Disaster, Pandemic, or Mass Casualty Incident. The ability to access medical care is priceless and the financial losses to Seneca Healthcare District have a large impact on an already struggling rural healthcare facility.

Potential Funding: Seneca Healthcare, future Capital Equipment Budgets, Philanthropy. No grants have been investigated for this expense at this time.

Timeline: 2 – 3 years in the future. 2027-2029

Project Priority (High, Medium, Low): Project Priority is Medium to Low at this time as current construction of the Lake Almanor Community Hospital is in progress and takes priority.

Action 4. *Resilient Community Systems Initiative*

Hazards Addressed: Drought and Water Shortage, Earthquake, Flood: 1% and 0.2% Annual Chance, Severe Weather: Extreme Cold, Freeze, and Snow, Wildfire

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background (Problem Statement): Plumas County faces growing threats from natural hazards—including wildfires, severe storms, flooding, drought, and public health emergencies—that jeopardize the safety and functionality of its critical infrastructure, special districts, and community-serving foundations. These entities provide essential services such as water, sanitation, fire protection, education, and social support, yet many lack the resources, planning capacity, and physical resilience needed to withstand and recover from disasters. Without a coordinated mitigation strategy that includes these sectors, the county risks prolonged service disruptions, increased recovery costs, and greater harm to vulnerable populations. Integrating foundations, infrastructure operators, and special districts into the Local Hazard Mitigation Plan is vital to building a more resilient, prepared, and connected community.

Project Description: The RCSI is a countywide effort to enhance the disaster resilience of foundations, critical infrastructure, and special districts (e.g., water, fire, school, and utility districts). The initiative will support hazard mitigation planning, facility upgrades, and inter-agency coordination to reduce vulnerability to wildfire, flooding, severe storms, drought, and public health emergencies.

Other Alternatives:

- Goal 1: Protect life, property, and critical facilities from natural hazards.
- Goal 2: Increase community resilience through education, outreach, and partnerships.
- Goal 3: Strengthen coordination among jurisdictions and service providers.
- Goal 4: Promote hazard mitigation planning and implementation across all sectors.

Existing Planning Mechanism(s) through which Action Will Be Implemented: This mitigation action will be implemented through existing planning mechanisms including individual hazard mitigation plans developed by special districts, strategic plans and operational protocols maintained by foundations, and findings from countywide community needs assessments. These mechanisms provide a coordinated framework for integrating mitigation actions into infrastructure upgrades, service continuity planning, and community-based resilience efforts.

Mitigation Actions:

1. Facility Resilience Audits
 - Conduct hazard vulnerability assessments for buildings and infrastructure operated by foundations and special districts.
 - Identify and prioritize retrofit needs (e.g., seismic upgrades, floodproofing, defensible space, backup power).
2. Continuity and Emergency Operations Planning
 - Support development or updates of Continuity of Operations Plans (COOPs) and Emergency Operations Plans (EOPs) for special districts and nonprofits.

- Facilitate joint training and tabletop exercises with county OES and emergency responders.
- 3. Infrastructure Hardening Projects - Implement physical mitigation projects such as:
 - Backup generators for water and wastewater facilities
 - Resilience Hubs for communities
 - Fire-resistant upgrades for community centers and schools
 - Stormwater management improvements for flood-prone areas
- 4. Community Resilience Microgrants
 - Provide funding to foundations and special districts for small-scale mitigation projects (e.g., emergency supply caches, air filtration systems, fire-safe landscaping).
- 5. Resilience Coordination Network
 - Establish a countywide network of foundations, special districts, and emergency managers to share resources, coordinate during disasters, and advocate for mitigation funding.
- 6. Public Education and Outreach
 - Partner with foundations and districts to deliver hazard awareness and preparedness education to residents, especially vulnerable populations.

Responsible Office/Partners: Plumas County Office of Emergency Services (OES)/Plumas County Public Health/Special Districts/Local foundations and Nonprofits/ Tribal organizations/Utility providers, Plumas County Disaster Recovery Coordinator

Benefits (Losses Avoided):

- Reduced service disruption during disasters
- Enhanced safety and resilience of critical infrastructure
- Stronger coordination between public, nonprofit, and special district sectors
- Increased eligibility for FEMA and state mitigation funding
- Improved community preparedness and recovery capacity

Potential Funding: FEMA Hazard Mitigation Grant Program (HMGP), Building Resilient Infrastructure and Communities (BRIC), Cal OES, USDA Rural Development, Private philanthropic contributions, State Water Resources Control Board (for water-related projects)

Timeline: 2026–2030 (5-year implementation window)

Project Priority (H, M, L): High

Action 5. *Designation of Minor County Roads and Forest Service Roads to be used as Alternate Routes around Road Closures during Wildfire and other Hazard Events. Plumas and Lassen National Forests have Funding for new Road Connections to Form Alternate Routes.*

Hazards Addressed: Landslide, Mudslide, and Debris Flow, and Wildfire

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background (Problem Statement): During and after wildfires in Plumas County alternate routes are required around State Route closures during and after wildfires. Provides additional routes around wildfire road closures. Past forest fire State Route closures have necessitated long alternate routes outside the County through Susanville, down State Route 395 and through the Sierra Valley to get from Lake Almanor to Quincy.

Project Description: Intent is to connect minor Plumas County Roads to Forest Service Roads to function as alternate routes in the event of a forest fire road closure.

Other Alternatives: Maintenance or improvements to Forest Service Roads

Existing Planning Mechanism(s) through which Action Will Be Implemented: Discussions with Plumas and Lassen National Forest.

Responsible Office/Partners: Plumas and Lassen National Forest

Benefits (Losses Avoided): Benefit is potentially saving lives with additional evacuation routes. Also benefit of shorter alternate route around forest fire closed roads.

Potential Funding: Plumas and Lassen National Forest have stated that funding is possible through the National Forest.

Timeline: 2026 and ongoing during the length of this plan.

Project Priority (H, M, L): High

Action 6. *Continue Bridge Replacement Program using Federal Funding Source for Evacuation and Emergency Services Access.*

Hazards Addressed: Floods: Localized Stormwater, Wildfire

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background (Problem Statement): Plumas County owns and maintains 90 bridges with many very old and single lane bridges.

Project Description: Intent is to replace Plumas County bridges that qualify for federal funding. Bridges are required to be replaced with minimum two lane bridge.

Other Alternatives: Maintain existing bridges to ensure continued operation

Existing Planning Mechanism(s) through which Action Will Be Implemented: Bridges that qualify are replaced within the County with Federal funds. Bridges are listed in the Plumas County Capital Improvement Program.

Responsible Office/Partners: Federal Highway Administration (FHWA)

Benefits (Losses Avoided): Increased width for wildfire equipment and evacuation. Bridge replacement funding requires that the bridge be raised above the 100 year flood water elevation.

Potential Funding: Federal Funding through FHWA

Timeline: As soon as possible, within 1-5 years, dependent on Plumas County cash flow and funding.

Project Priority (H, M, L): High

Action 7. Continue to Reach out to the Community Countywide to Sign Up for Emergency Alerts through the Genasys Program

Hazards Addressed: Multi-Hazard (Avalanche, Climate Change, Dam Failure, Drought & Water shortage, Earthquake, Floods: 1%/0.2% annual chance, Floods: Localized Stormwater, Landslide, Mudslide, and Debris Flow, Levee Failure, Pandemic, Severe Weather: Extreme Heat, Severe Weather: Heavy Rains and Storms, Severe Weather: High Winds and Tornadoes, Severe Weather: Winter Storms and Freeze, Tree Mortality, and Wildfire.

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background (Problem Statement): Plumas County currently uses the Genasys Platform for reverse 911 notifications. When the data from the previous platform was transferred to Genasys, the addresses did not transfer over. We need the community to login to the system to add their addresses. If a address is not tied to a phone number, they may not get the notification.

Project Description: Increase public education for sign up and editing emergency notification addresses and phone numbers. Publications, advertising, media outreach and in person meetings.

Other Alternatives: No action

Existing Planning Mechanism(s) through which Action Will Be Implemented: Plumas County CWPP, Plumas County EOP

Responsible Office/Partners: Plumas County OES, Sheriff's Department, Fire Departments, Fire Safe Communities

Benefits (Losses Avoided): Public education; faster notification of emergency; community enhances knowledge of being prepared

Potential Funding (Local Budgets, Grant Funds, etc.): EMPG, State 911

Timeline: Ongoing

Project Priority (High, Medium, Low): Medium

Action 8. Plumas County General Plan Public Health & Safety Element update to incorporate Senate Bill (SB) 379 requirements

Hazards Addressed: Wildfire, Flood, Severe Weather, and Drought and Water Shortage

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: The Plumas County General Plan Public Health & Safety Element update is necessary to address SB 379 state law requirements that will lead to improved countywide climate resilience.

Project Description: The County of Plumas General Plan Public Health & Safety Element update focuses on addressing climate resiliency for the unincorporated areas of the County to inform the General Plan and incorporate Senate Bill (SB) 379 requirements. A vulnerability assessment will be prepared and adaptation strategies will be developed. Adaptation goals, policies, and implementation measures will inform an update of the General Plan and reflect recommendations developed through the collaborative process. In particular, because of its environment Plumas County is particularly susceptible to the impacts of changes in climate including:

- Increased incidence of wildfires
- Impacts of localized and regional flooding
- Threats due to severe weather
- Water shortages and drought conditions

The project will address the identified problems and/or deficiencies by first cataloging them in a vulnerability assessment. This critical task will include identifying and evaluating vulnerabilities that exist for Plumas County and its planning areas. An investigation of exposure to climate change, as well as potential impacts and the current capacity for the community to adapt to potential impacts, will be studied. The vulnerability assessment will provide the baseline for current climate change risks that the community faces. Once the vulnerabilities are identified, adaptation strategies will be prepared. The strategies will be carefully evaluated and prioritized based on factors including impact, cost, benefits, and feasibility. An implementation plan will be prepared that includes appropriate updates to the General Plan pursuant to Senate Bill 379 while also providing a platform for local businesses and environmental groups to use recommendations to reduce climate change risks and improve adaptability.

Other Alternatives: No action

Existing Planning Mechanism(s) through which Action Will Be Implemented: Plumas County General Plan Public Health & Safety Element

Responsible Office/Partners: Plumas County Planning Department

Benefits (Losses Avoided): People and property

Potential Funding: Grant to be identified

Timeline: 2026/2027

Project Priority (High, Medium, Low): Medium

Agricultural Hazard Actions

Action 9. Wildlife Conflict Mitigation Tools and Equipment

Hazards Addressed: Human Wildlife conflicts

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background (Problem Statement): Due to current policies and regulations, the predator population in Plumas County has increased dramatically in the last decade. This is resulting in many hazardous interactions with wildlife and economic loss.

Project Description: Provide residents with wildlife conflict mitigation equipment and nonlethal tools such as electric fencing, fladry, fox lights, drones, range riders, etc.

Other Alternatives: None

Existing Planning Mechanism(s) through which Action Will Be Implemented: Sierra County Local Hazard Mitigation Plan, Plumas County Local Hazard Mitigation Plan

Responsible Office/Partners: Plumas-Sierra Department of Agriculture/ Weights and Measures, UC ANR Cooperative Extension, Resource Conservation Districts, and Agricultural Associations.

Benefits (Losses Avoided): Increased safety for wildlife, a lowering of agricultural predator losses in Plumas County, increase in public safety, and lower economic losses.

Potential Funding (Local Budgets, Grant Funds, etc.): Grant funding will be sought through non-government organizations, National Resource Conservation Districts, and government entities.

Timeline: Ongoing

Project Priority (High, Medium, Low): High

Action 10. Invasive Weed Control and Eradication

Hazards Addressed: Noxious/ invasive weeds, fire mitigation

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background (Problem Statement): Due to the movement of livestock, people, vehicles and trains, Plumas County has a high potential for infestations of noxious/invasive weeds. The damage caused by wildfires and road contraction provides fertile, disturbed soil that is readily invaded by these pests. These pests crowd out native vegetation, damage crop land, and provide less forage for wildlife and livestock. Some invasive weeds such as Cheat Grass and Scotch Broom are known to raise the fire danger in areas where it occurs.

Project Description: To secure funding for biological, mechanical, and chemical removal of invasive/noxious weeds.

Other Alternatives: None

Existing Planning Mechanism(s) through which Action Will Be Implemented: Plumas County Local Hazard Mitigation Plan, Plumas-Sierra Weed Management Area Group

Responsible Office/Partners: Plumas-Sierra Department of Agriculture/ Weights and Measures, UC ANR Cooperative Extension, Resource Conservation Districts, and United States Forest Service.

Benefits (Losses Avoided): Improvement in native plant populations, increase in forage and crop production, and lowering of wildfire risk.

Potential Funding (Local Budgets, Grant Funds, etc.): Grant funding will be sought through non-government organizations, National Resource Conservation Districts, and government entities.

Timeline: Ongoing

Project Priority (High, Medium, Low): High

Action 11. Wildlife Conflict Mitigation Tools

Hazards Addressed: Human Wildlife conflicts

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background (Problem Statement): Due to current policies and regulations, the predator population in Plumas County has increased dramatically in the last decade. This is resulting in many hazardous interactions with wildlife and economic loss.

Project Description: Provide residents with wildlife conflict mitigation techniques and nonlethal tools such as electric fencing, fladry, fox lights, range riders, etc.

Other Alternatives: None

Existing Planning Mechanism(s) through which Action Will Be Implemented: Sierra County Local Hazard Mitigation Plan, Plumas County Local Hazard Mitigation Plan

Responsible Office/Partners: Plumas-Sierra Department of Agriculture/ Weights and Measures, UC ANR Cooperative Extension, Resource Conservation Districts, and Agricultural Associations.

Benefits (Losses Avoided): Increased safety for wildlife, a lowering of agricultural predator losses in Plumas County, increase in public safety, and lower economic losses.

Potential Funding (Local Budgets, Grant Funds, etc.): Grant funding will be sought through non-government organizations, National Resource Conservation districts, and government entities.

Timeline: Ongoing

Project Priority (High, Medium, Low): High

Climate Change Actions

Action 12. Develop a Climate Action Plan

Hazards Addressed: Climate Change

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Governor Schwarzenegger issued Executive Order S-3-05 in June 2005, setting GHG emission targets for the State to meet, starting with a reduction to 2000 GHG emission levels by 2010, 10% below 1990 levels by 2020 and concluding with a reduction to 80% below 1990 numbers by 2050. In 2006, Governor Schwarzenegger signed AB 32, which established the first set of limits on GHG emissions for the state of California and put into place the regulatory framework needed to reach those targets. AB 32 set the 10% below 1990 GHG emissions level as a target to be achieved by 2020. In order to meet this goal, the California Air Resources Board has developed GHG emissions reporting procedures. In 2008, Governor Schwarzenegger signed SB 375, which sets out planning concepts intended to reduce vehicle travel by promoting more compact development; ideas which are incorporated in this General Plan. A goal of SB 375 is to help curb GHG emissions. Taken together, both S-3-05 and AB 32 set the emission targets that Plumas County will eventually be required to attain. While explicit thresholds and requirements have yet to be developed, various state agencies have begun to examine proposed land use plans and specific projects for their potential GHG impacts. Three important steps in helping to reduce potential climate change impacts are the creation of an inventory of existing GHGs and a plan to reduce these emissions.

Project Description: Prepare a Climate Action Plan that identifies strategies for increasing energy efficiency, carbon sequestration, GHG emissions reductions, and land use and transportation strategies that are consistent with appropriate climate change regulations (i.e., State of California's Global Warming Solution Act). Step 1 – GHG inventory. Step 2 – GHG Reduction Plan. Step 3 – Develop a Strategy for Carbon Sequestration.

Other Alternatives: No action

Existing Planning Mechanism(s) through which Action Will Be Implemented: Plumas County General Plan Conservation and Open Space (COS) Element, 7.10.2 Climate Action Plan

Responsible Office/Partners: Plumas County Planning Department

Benefits (Losses Avoided): Reduced risk to people and property from climate change.

Potential Funding: Staff time

Timeline: 2028-2029

Project Priority (H, M, L): Medium

Dam Failure Actions

Action 13. Evaluate Options for Obtaining 100-year Level of Certification for the Diversion Dam (East and West Chester Levees)

Hazards Addressed: Flood

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: FEMA flood maps show the 100-year floodplain within the East and West Chester Levees.

Project Description: Research options for certifying levees to FEMA standards.

Other Alternatives: No action

Existing Planning Mechanism(s) through which Action Will Be Implemented: No existing planning mechanism currently exists.

Responsible Office/Partners: Plumas County Planning Department and Public Works Department

Benefits (Losses Avoided): People and property protection

Potential Funding: Staff time

Timeline: 2028

Project Priority (H, M, L): Medium

Drought and Water Shortage Actions

Action 14. County Wide Drought Resilience Plan

Hazards Addressed: Drought

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Plumas County is in need of a County Wide Drought Resilience Plan.

Project Description: Develop County Wide Drought Resilience Plan.

Other Alternatives: No action.

Existing Planning Mechanism(s) through which Action Will Be Implemented: This action creates a planning mechanism.

Responsible Office/Partners: Plumas County Flood Control, OES and Environmental Health

Cost Estimate: \$125,000

Benefits (Losses Avoided): Drought resilience plan will be in place for potential short- or long-term drought. This plan will be implemented by the County Drought Task Force as needed.

Potential Funding: \$125,000 from DWR for Direct Technical Assistance to comply with SB 552

Timeline: Currently being drafted for approval

Project Priority (H, M, L): High

Earthquake Actions

Action 15. Hospital Seismic Compliance (SB-1953)

Hazards Addressed: Earthquake

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background (Problem Statement): California instituted a series of seismic compliance standards in 1994 following the catastrophic Northridge Earthquake. The state instituted a series of milestones over the years, ultimately leading up to the most stringent 2030 compliance standards.

Project Description: Retrofit existing hospital structure to improve its ability to withstand a major earthquake event. Standard requires all hospitals to maintain operations (uninterrupted) during a localized 8.0 earthquake by 2030. Work includes bracing of structure, equipment, and installation of independent utility systems (water/sewage/electricity).

Other Alternatives: N/A

Existing Planning Mechanism(s) through which Action Will Be Implemented: PDH is currently working with HCAI and its architects/engineers towards seismic compliance and is on track to adhere to the mandated milestones/timelines.

Responsible Office/Partners: HCAI

Benefits (Losses Avoided): Prevention of loss of acute care hospital services in a seismic event.

Potential Funding (Local Budgets, Grant Funds, etc.): Received a grant from HCAI's Small and Rural Hospital Relief program for approximately \$2.8M to meet structural seismic compliance.

Timeline: Ongoing-January 1, 2030

Project Priority (High, Medium, Low): High

Floods: 1%/0.2% Annual Chance, Floods: Localized Flooding, Landslide, Mudslide and Debris Flow, Severe Weather Heavy Rains and Storms Actions

Action 16. Evaluate and implement Wolf Creek Channel Stabilization Projects through Greenville and Indian Valley Areas

Hazards Addressed: Severe Weather: Heavy Rains and Storms, Landslide, Mudslide, and Debris Flow

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background (Problem Statement): Problems with channel bank stabilization over the years.

Project Description: Intent is to provide erosion protection by means of rip rap or other mitigation methods to prevent stream bank erosion and protect surrounding development.

Other Alternatives: None

Existing Planning Mechanism(s) through which Action Will Be Implemented: Plumas Corp has studies along with Plumas National Forest

Responsible Office/Partners: Plumas County Public Works

Benefits (Losses Avoided): Protection of Wolf Creek Channel protects the surrounding areas from flooding during high water flows.

Potential Funding: State and Federal Grants (HMA funding)

Timeline: As soon as possible depending on funding availability

Project Priority (H, M, L): High

Action 17. Identify and Implement Bank Stabilization Projects.

Hazards Addressed: Landslide, Mudslide, and Debris Flow, Severe Weather: Heavy Rains and Storms

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background (Problem Statement): Plumas County has bank stabilization problems near multiple bridges as follows: Chandler Road Bridge, North Valley Bridge, Mill Creek Erosion, Wapaunsie Creek Erosion, and Stampfli Lane Bridge Erosion. Gravel buildup on Smith Creek Erosion needs to be removed to prevent the creek from overflowing Johnsville-Graeagle bridge.

Project Description: Intent is to provide erosion protection by means of rip rap upstream and downstream of bridges to reduce turbidity of the stream from erosion and remove gravel buildup on Smith Creek.

Other Alternatives: None

Existing Planning Mechanism(s) through which Action Will Be Implemented: Upper Feather River IRWM and included in the Capital Improvement Program

Responsible Office/Partners: Plumas County Public Works

Benefits (Losses Avoided): Prevent damage to bridge abutments during high water events.

Potential Funding: IRWM Grant Funding

Timeline: 1-5 years; As soon as funding becomes available

Project Priority (H, M, L): High

Action 18. Develop a Countywide Drainage Master Plan

Hazards Addressed: Floods: Localized Stormwater, Severe Weather: Heavy Rains and Storms

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background (Problem Statement): The drainages across Plumas County have been added and modified over the past 150 to 200 years without any overall plan for moving high flows through multiple developed towns.

Project Description: Intent is to complete a comprehensive drainage master plan for Plumas County. To better plan for future, record storm water events, as well as the accommodations of new, proposed site development, in the County requires a Drainage Hydraulic Study for drainage basins that exist. Drainage Master Plan should focus on higher population density towns within the County where drainage is more complex, particularly in Quincy/East Quincy, Chester, and Greenville.

Other Alternatives: None

Existing Planning Mechanism(s) through which Action Will Be Implemented: The Drainage Master Plan is listed in the Plumas County Capital Improvement Program.

Responsible Office/Partners: Public Works Department

Benefits (Losses Avoided): Increase efficiency of the Countywide drainage to prevent or minimize flooding during a record storm water event.

Potential Funding: HMA Grant Funding Local Budgets (general fund, special revenue funds, CIP funding)

Timeline: 2026-2031

Project Priority (H, M, L): High

Action 19. FEMA Mapping Update

Hazards Addressed: Floods: 1%/0.2% annual chance, Severe Weather: Heavy Rains and Storms

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background (Problem Statement): FEMA Flood Insurance Rate Map (FIRM) maps have not been updated since March 2, 2005

Project Description: There are three primary methods by which a community's flood hazard maps are updated. The first is through a FEMA-initiated study/mapping project and subsequent revision of the effective National Flood Insurance Program (NFIP) flood maps. The second method is through a community-initiated revision under Part 65 of the NFIP regulations. The third is through a study/mapping project undertaken by a participant in the FEMA Cooperating Technical Partners (CTP) Program.

Other Alternatives: Letter of Map Revision (LOMR) is option for specific parcel revisions

Existing Planning Mechanism(s) through which Action Will Be Implemented: None

Responsible Office/Partners: Plumas County Public Works / Engineering

Benefits (Losses Avoided): FEMA mapping update would primarily revise maps for any changes that have occurred in the past 15 years, increasing accuracy for development.

Potential Funding: Federal Grants such as HMGP or BRIC; Local Budgets (general fund, special revenue funds, CIP funding)

Timeline: 2026-2031

Project Priority (H, M, L): High

Action 20. Evaluate Options to Repair and Maintain Levee Crown for Emergency Access Vehicles (Gates, Crown Repair, Vegetation Maintenance, etc.)

Hazards Addressed: Floods: 1%/0.2% annual chance, Levee Failure

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background (Problem Statement): Plumas County has many levee's that protect residences from flood waters and are owned by individual levee owners, CSD's and Central Valley Flood Control in the case of the Chester Diversion Dam. Plumas County Flood Control is tasked with maintenance responsibility for the Chester Diversion Dam and Levee system only. Other levee's within the County are privately owned and maintained.

Project Description: Intent is to evaluate options to repair and maintain levee's including emergency access vehicles, gates, crown repair and vegetation maintenance. Many levees are privately owned and maintained.

Other Alternatives: None

Existing Planning Mechanism(s) through which Action Will Be Implemented: None

Responsible Office/Partners: Plumas County Flood Control and Water Conservation District

Benefits (Losses Avoided): Maintain levee's to provide access for emergency vehicle and remove vegetation to allow levee inspection and repair during high water flows.

Potential Funding: DWR Flood Maintenance Assistance Program

Timeline: As soon as possible once funding becomes available

Project Priority (H, M, L): High

Action 21. County Wide Stormwater Drainage and Grading Ordinance.

Hazards Addressed: Floods: Localized Stormwater

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background (Problem Statement): Plumas County is in need of a County Wide Stormwater Drainage and Grading Ordinance.

Project Description: Develop County Wide Stormwater Drainage and Grading Ordinance to standardize development related to stormwater and grading issues.

Other Alternatives: None

Existing Planning Mechanism(s) through which Action Will Be Implemented: None

Responsible Office/Partners: Plumas County Public Works, Building and Planning

Benefits (Losses Avoided): With standardized procedure for stormwater drainage and grading, Countywide drainage will be improved.

Potential Funding: Current funding in place; Local Budgets (general fund, special revenue funds, CIP funding)

Timeline: Within 1 year from the start of the plan

Project Priority (H, M, L): High

Action 22. Ongoing Implementation of Stream Clearing and Culvert Maintenance Programs

Hazards Addressed: Floods: Localized Stormwater

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background (Problem Statement): Plumas County has many stream channels that require vegetation management and clearing. Public Works maintains storm drainage facilities and water crossing at County Roads extending out to the County right-of-way. Caltrans maintains State Highways in a similar manner. In most cases, responsibility of channel vegetation management beyond the roadway right-of-way falls on adjacent to stream property owners.

Project Description: Plumas County Public Works performs regular routine maintenance of storm drainage facilities and water crossings at approximately 168 locations through the County. Privately owned stream channels require property owner's permission to conduct vegetation management in addition to a funding source.

Other Alternatives: None

Existing Planning Mechanism(s) through which Action Will Be Implemented: Lake and Streambed Alteration Agreement for County-Wide Routine Maintenance Program for Plumas County was completed in 2022. This document streamlines the process of obtaining permits for routine maintenance of storm drainage facilities and water crossings.

Responsible Office/Partners: Public Works Engineering Department

Benefits (Losses Avoided): Regular vegetation management and stream clearing will reduce the risk of flooding by improving the efficiency of the streams to drain heavy flows.

Potential Funding: State and Federal grants, HMA funding; Local Budgets (general fund, special revenue funds, CIP funding)

Timeline: 1-5 years; As soon as possible, depending on funding availability

Project Priority (H, M, L): High

Action 23. Review and Update, as Needed, Title 8 (Building Regulations), Chapter 17 (Flood) of the Plumas County Code re: Floodplain Ordinance and Applicable Title 9 (Planning and Zoning) Sections

Hazards Addressed: Flood

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: The original comprehensive flood plain ordinance was adopted in 1998 and was based on the Model Flood Plain ordinance produced by the Department of Water Resources (DWR). At the last audit conducted by DWR and FEMA in 2011 it was recommended that the ordinance be updated to the latest state/federal Model Flood Plain ordinance.

Project Description: Update Flood Plain Ordinance to the latest December 2006 DWR CA Model Flood Plain Ordinance. Coordinate with Public Works. Conduct Planning Commission workshops. Refer to General Plan policies and implementation measures:

- PHS 6.4.1 Coordination with Federal Emergency Management Agency, United States Army Corps of Engineers and Department of Water Resources Division of Flood Management
- PHS 6.4.2 Development in Floodways and Dam Inundation Areas
- PHS 6.4.4 Floodplain Development Restrictions
- PHS 6.4.7 Limit Surface Runoff
- PHS Implementation Measures 1, 10, 20
- COS 7.2.4 Stream Corridor Development
- W 9.7.2 Downstream Peak Flows

Other Alternatives: No action.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Plumas County Code, Title 8 (Building Regulations), Chapter 17 (Flood) and Plumas County General Plan

Responsible Office/Partners: Plumas County Planning Department and Public Works Department

Benefits (Losses Avoided): People and property protection

Potential Funding: Staff time

Timeline: 2026/2027

Project Priority (H, M, L): Medium

Hazardous Materials Transport Actions

Action 24. DO YOU HAVE ONE? NOT REQUIRED BY FEMA.

Landslide, Mudslide, and Debris Flow Actions

Action 25. *Identify and Implement Projects to Address Areas of Landslides Affecting Roadway and Railroad*

Hazards Addressed: Floods: Localized Stormwater, Landslide, Mudslide, and Debris Flow, Severe Weather: Heavy Rains and Storms

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background (Problem Statement): During heavy rains, County Roadways have historically experienced landslides covering the roadways and slip outs, where the roadway is eroded and undermined on the downslope side. The typical problem for slope stability tends to be lack of extent of right-of-way. The problem of slip outs tends to be waterways shifting during heavy flows and eroding banks below the roadway.

Project Description: Potential areas of landslides can be identified from past problems, but other factors like changing stream location and forest fires affect slope stability. These areas will be identified and prioritized based on potential for damage. Locations that pose a high risk for slides can potentially be stabilized prior to landslides occurring.

Other Alternatives: For reoccurring slides, retaining walls provide another option

Existing Planning Mechanism(s) through which Action Will Be Implemented: None

Responsible Office/Partners: Public Works Engineering Department

Benefits (Losses Avoided): Increase efficiency of the Countywide drainage to prevent or minimize flooding during a record storm water event.

Potential Funding: HMA Grant Funding; Local Budgets (general fund, special revenue funds, CIP funding)

Timeline: 2026-2031

Project Priority (H, M, L): High

Severe Weather: Extreme Cold, Freeze, and Snow (w/avalanche) Cold Actions

Action 26. NEED

Wildfire, Drought, Severe Weather: Extreme Heat, Severe Weather: High Winds and Tornadoes Actions

Action 27. Promote and Implement Compliant Street/Address Reflective Signage for Public and Private Roads and Structures

Hazards Addressed: Wildfire

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background (Problem Statement): Compliant Street/Address reflective signage for public and private roads and structures is critical during wildfires for first responders, evacuation routes, and alternate evacuation routes. Public Resources Code (PRC) 4290 regulations require, “Standards for signs identifying streets, roads, and buildings.”

Project Description: Plumas County Public Works has in house reflective sign making capability for street and address signage. Street signs for Plumas County Roads are updated on an as needed basis. Street signs for private roads and address signs can be purchased from Public Works at cost. Street signs can also be produced for Forest Service Roads for evacuation routes, but a funding source would need to be established.

Other Alternatives: Private companies can also produce reflective street and address signs.

Existing Planning Mechanism(s) through which Action Will Be Implemented: None

Responsible Office/Partners: Public Works Engineering Department

Benefits (Losses Avoided): Proper reflective signage and street signs help first responders efficiently respond.

Potential Funding: HMGP grants, HMA funding

Timeline: 2026 and ongoing throughout the duration of this plan.

Project Priority (H, M, L): Medium

Action 28. Ingress/Egress Road Projects to Widen and Improve Roads for Evacuation and Emergency Services Access

Hazards Addressed: Wildfires, Severe Weather: High Winds and Tornadoes

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background (Problem Statement): There are many County, Private and Forest Service Roads within Plumas County that do not have a secondary evacuation route and are not wide enough for two-way traffic. This combination creates a hazard for emergency services access during wildfire evacuation and other evacuations, while residents are evacuating. This situation is compounded when a one-lane bridge must be crossed on the one lane road. This is also a problem on private and Forest Service Roads.

Project Description: Intent is to survey County Roads in Plumas County that have inadequate width for two-way traffic and only one evacuation route. Widen roads to two-way roads when funding source is determined. It would be beneficial for Private Roads and Forest Service Roads with insufficient width for two-way traffic to be surveyed by other agencies.

Other Alternatives: Develop second evacuation route

Existing Planning Mechanism(s) through which Action Will Be Implemented: None

Responsible Office/Partners: Public Works Department, GIS Department.

Benefits (Losses Avoided): Efficient evacuation of residents while allowing emergency services access.

Potential Funding: CalFire Grants

Timeline: 1-5 years; As soon as possible, depending on funding

Project Priority (H, M, L): High

Action 29. *Air Quality Impacts During Wildfire Events*

Hazards Addressed: Air Quality - Smoke impacts from wildfires

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background (Problem Statement): The growing impact from wildfires in California is undeniable. Historic forest management practices along with climate change have led to mega-fires and year-round fire seasons impacting communities statewide. Wildfire smoke impacts populations living hundreds of miles away and often lasts for days and weeks at a time. Poor air quality poses a health risk to all individuals. Children, adolescents, pregnant women, the elderly, the immunocompromised and those with pre-existing chronic diseases and lung conditions are especially vulnerable to the health impacts of poor air quality events. Wildfire smoke creates and often exacerbates poor air quality situations. One of the most dangerous components that exist in wildfire smoke is particulate matter (PM). PM particles are so fine that they are inhaled deep into the lungs and enter the bloodstream. Plumas County has been impacted by surrounding wildfires and even out of state ones in the last five years. The smoke lingers low to the ground for multiple days making it extremely unhealthy to conduct business, school and sport activities. Many of the homes, buildings, office spaces, schools, and shopping centers have very old HVAC systems leaving them vulnerable to smoke infiltrating indoors.

Project Description: Provide the community with clean air spaces during wildfire smoke. Mitigations will include:

- Increased public outreach on smoke impacts and how people can protect themselves during smoke events, including the issuing of health advisories, factsheets on staying indoors and keeping doors and windows closed, limiting the amount of time spent outdoors depending on the air quality and what time of day is best to go outside. Additional information is shared via our website and Facebook pages on the air quality and measures to protect against smoke impacts.

- What the air quality is in the area based on currently deployed monitoring equipment. Additional indoor monitors can be deployed in areas that act as clean air shelters.
- Air Purifiers: Vary in sizes that can easily be customized to the need of the person. For homes, small offices, and portable classrooms, these units are very quiet and highly efficient at circulating clean air.
- Filters: Filters can be expensive to swap out during wildfire smoke events because of how frequently it has to be done. This is problematic because consumers will tend to go with the cheapest available option, which in most cases doesn't really do much for their air. If assistance to purchase filters is available this would be extremely helpful and beneficial.
- Scrubbers: Although very loud, commercial scrubbers get the job done in a larger/high-capacity room. Provide schools and large-scale businesses/offices with an inventory of scrubbers that could be deployed when needed.
- There are many "Clean Air Centers" in Plumas County that have air purifiers and replacement filters ready for when there is a smoke event. The location of clean air shelters within Plumas County for the public to retreat to in order to not be in poor air quality conditions. Locations in Plumas County include, the libraries, Plumas Fairgrounds, and several churches. Depending on where the fire is and what communities are being impacted, these clean air shelter locations will be activated.
- Indoor Air Monitors: PurpleAir now offers indoor monitors that are easy to read just by looking at the color on the bottom rim. These use the Air Quality Index color guide. Indoor monitors will be provided when a clean air shelter is activated.
- Air Purifiers: Vary in sizes that can easily be customized to the need of the person. For homes, small offices
- Air quality information is continuously available on our website at myairdistrict.com
- Additional outdoor monitors will be deployed depending on conditions.

Other Alternatives: Brochures, handbooks, guides, and handouts.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Clean air shelters are established throughout Plumas county and are activated when air quality levels reach Unhealthy for Sensitive Groups.

- Health Advisories are issued with information on how to protect oneself from the impacts of wildfire smoke. Health Advisories are issued when air quality levels reach Unhealthy for Sensitive Groups.
- Public outreach during smoke events on air quality conditions and how the community can protect themselves.
- A mitigation effort to prevent wildfires is our Green Waste program through the Targeted Airshed Grant program in Portola through the Green Waste Vouchers and Neighborhood Bin Program. These programs provide residents the ability to dispose their green waste at our local transfer station or in bins given to residents based on approval of an application. Free green waste disposal occurs during the months of June and October.

Responsible Office/Partners: Northern Sierra Air Quality Management District along with the Office of Emergency Services and the Public Health Department

Benefits (Losses Avoided): Protect human health from adverse air quality.

Potential Funding (Local Budgets, Grant Funds, etc.): Limited grant funds for indoor monitors.

Timeline: Within 1 to 3 years

Project Priority (High, Medium, Low): High priority during wildfire season (typically June through October)

Action 30. *Plumas County Agriculture, Forestry, and Natural Resources Resilience*

Hazards Addressed: Climate Change, Drought, Tree Mortality

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Well documented climate change trends and projections indicate that Plumas County communities and landscapes will continue to be impacted by climate driven disturbances such as drought, tree mortality and wildfire. Because Plumas county communities and economies are inherently linked to agriculture, forest health, and natural resources there is a need for awareness, capacity building, and technical assistance to promote and implement best management practices to be more resistant and resilient to these disturbances.

Plumas County experienced extreme drought conditions during the 2012-2016 statewide drought. This resulted in:

- Diminished water supply for domestic, agriculture, and forestry use: Agricultural wells were running dry; reduced water supply for surface water irrigation of pasture and hay, lack of sufficient water in the creeks limited water drafting sites for road maintenance and inhibited/delayed forest management activities
- Lack of rangeland forage for both wildlife and livestock production: this results in reductions of agricultural and livestock yields thereby affecting the local agricultural economy.
- Tree mortality events which threatened and damaged homes and road and power infrastructure resulting in large mitigation costs.
- Increased dependence on groundwater. Over pumping of groundwater resulted in cones of depression in the water table in Sierra Valley. This necessitated the deepening of ground water wells and the abandonment of certain wells due to sand intrusion.
- Negative effects on soil health and increased challenges with the management and control of invasive species.

While Plumas County experienced “extreme” drought conditions in the last drought, other parts of the State experienced “exceptional” drought conditions, indicating that the northern sierra could be vulnerable to even more catastrophic drought events. Education and technical assistance regarding best management practices, water conservation measures, and countywide mitigation strategies are needed to prepare for and mitigate impacts of future drought events.

Project Description: This project includes concerted and coordinated efforts to provide outreach, education, and technical assistance to Plumas County land owners and land managers to promote drought prevention and mitigation strategies. As evidenced above, climate change and drought driven disturbances are broad in nature and reach and include but are not limited to reduction in water storage, flow, and utilization, agricultural yields, forest health and tree mortality. Projects that fit within these programs include:

- Continued work with UC Davis to look at crop varieties to reduce dependence on water;

- Identification and implementation of projects to enhance soil health;
- Continue education and training of land managers;
- Develop Countywide drought mitigation strategies;
- Continue and expand tree mortality detection, monitoring, prevention and mitigation strategies;
- Implement programs to increase sprinkler efficiency; and
- Manage, control, and eradicate invasive plant species and pests.

Other Alternatives: None

Existing Planning Mechanism(s) through which Action Will Be Implemented: Plumas-Sierra Agricultural Department and UC Cooperative Extension are skilled staff currently serving agricultural and livestock producers, and forest landowners and managers. The Plumas Fire Safe Council helps to host/Coordinate the County tree mortality group.

Responsible Office/Partners: Critical primary partners and stakeholders include:

- Plumas-Sierra County Department of Agriculture
- UC Cooperative Extension
- Plumas County Fire Safe Council
- Resource Conservation Districts
- Plumas County Public Works
- Feather River Watershed Group
- Feather River Integrated Regional Watershed Management (IRWM) plan

Benefits (Losses Avoided): Benefits of these programs include greater economic and community resilience of the county, improved forest health, reduced wildfire risk, and improved sustainability of agriculture and livestock production. Avoided Losses could easily be within the range of millions of dollars considering the dependence of Plumas County communities on natural resources and the contributions of the watershed to the state water project supply.

Potential Funding: A portion of the costs are currently funded by existing programs, however, this limits the capacity for prevention and mitigation measures. As a result, programs are more reactive to drought-driven issues and events rather than pro-active in terms of prevention and mitigation. Additional funds would be needed to increase existing program capacity to serve the county communities. Potential funding may be available through the Sierra Nevada Conservancy Watershed Improvement Program, Title II and III RAC grants, CDFA grants for Soil Health, SB1 grants through the IRWM process, and CALFIRE Forest Health grants.

Timeline: Ongoing

Project Priority (H, M, L): High

Action 31. Livestock and Companion Animal Trailer

Hazards Addressed: Wildfire, Flood, Evacuation

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Plumas County does not currently own a trailer suitable for the transport of livestock and/or companion animal crates. Plumas County currently owns a horse trailer that can be used for the transport of horses and/or the emergency equipment required to care for them.

Many people will refuse to evacuate if they cannot move their companion animals and/or livestock during a disaster. Others will try to walk their animals out or just turn them loose, which creates a major hazard for evacuees and first responders alike. In this area we also have the problem of people either not having transportation for their animals or insufficient transportation for their animals. Large producers with 50 or more animals are covered under the Ag Pass Program in Plumas County.

Project Description: To purchase a multi-species appropriate bumper pull livestock trailer.

Other Alternatives: A second combination horse trailer.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Plumas County Emergency Operations Plan, Local Hazard Mitigation Plan,

Responsible Office/Partners: Plumas-Sierra Department of Agriculture, UC Cooperative Extension, and Plumas County Animal Services

Benefits (Losses Avoided): Efficient evacuation of people and their companion animals, horses and livestock results in lives saved.

Potential Funding: FEMA grants, Red Rover grant, Humane Society of the United States, International Fund for Animal Welfare grant, local donations and sponsorships.

Timeline: As soon as funding is available as this is urgent. Desire within a year, but will pursue it during the 5 year lifecycle of this LHMP.

Project Priority (H, M, L): High

Action 32. Continue to Evaluate and Track Available Funding Sources for Wildfire Mitigation Projects

Hazards Addressed: Wildfire, Tree Mortality

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Plumas County land base is primarily under federal ownership, which means that in addition to significant forested area there is limited tax-based income. As a result, Plumas County benefits from grant funds for local initiatives. Grant opportunities come from local, state, federal, and private sources. A publicly available clearinghouse for grant information would benefit local entities seeking funding for wildfire mitigation activities.

Project Description: The Plumas County Fire Safe Council will continue to compile forest health, hazardous fuel reduction, defensible space/home hardening, outreach, and fire department related grant opportunities monthly. The Fire Safe Council will continue to distribute the information via email list and will add the information to plumasfiresafe.org as well as promote the fact that this information is available.

Other Alternatives: There are currently many venues for interested parties to access regional information about grant opportunities. Regular email updates are available from the Sierra Nevada Conservancy, Sierra Business Council, CAL FIRE, California Office of Planning and Research, California Fire Safe Council, and the NFPA, among many others. The alternative is for interested parties to sign up directly for these listservs and to independently evaluate each funding opportunity for relevance.

Existing Planning Mechanism(s) through which Action Will Be Implemented: N/A

Responsible Office/Partners: Plumas County Fire Safe Council in coordination with partners

Benefits (Losses Avoided): Plumas County entities will be more likely to take advantage of local, state, federal, and private opportunities for grant funding.

Potential Funding: Existing budgets (County General Fund)

Timeline: Annually over the life cycle of this LHMP.

Project Priority (H, M, L): High

Action 33. Develop a Program to Promote and/or Incentivize Home Hardening Retrofitting including: Roofs, Vents, Siding, Windows, etc.

Hazards Addressed: Wildfire

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: Plumas County has a longstanding history over the last three decades of community awareness of the wildfire threat and working to increase fuel reduction efforts around communities. While fuel reduction efforts mitigate fuels accumulations and fire behavior in the wildland urban interface and intermix (WUI), residential homes and adjacent structures may still be vulnerable to fire ignition and loss. Home ignition in the WUI may still be possible to do ember ignition or ignition from lower severity ground fire if fire resistant design and materials are not in place. This gap in a community wildfire protection strategy may not effectively reduce the risk of home loss unless we address both sides of the equation: fuel reduction and home vulnerability.

Findings from case studies such as the 2010 Fourmile Canyon fire and the 2012 Waldo Creek Fire suggest that homes may burn and be loss even where fuel reduction has mitigated fire behavior near homes, and the primary factor in home loss is structure design, materials, and maintenance – particularly when firefighting resources are not available or insufficient to provide individual home level structure protection and triage.

Many of the homes in Plumas County are in the Wildland urban intermix which poses challenges for wildfire suppression in terms of community fire protection and structure triage. In addition, many of these homes and subdivisions were built prior 2008 when current fire standards were enacted. As a consequence, a large majority of homes in Plumas County may not meet current fire code and may be in need of structure retrofits to improve resistance to fire.

Common home vulnerabilities in Plumas County communities include wood siding, attached wooden decks/structures, non-tempered glass windows, eave and soffit design/screening, lack of sufficient water resources, and outbuilding siting/maintenance/design. As a result, the Plumas County communities may continue to be vulnerable to large scale home and economic loss despite widespread defensible space efforts.

Project Description: The overall goal of this project is to outreach, educate, provide technical assistance, and ultimately support financial assistance through grants to help Plumas County residents with home hardening retrofits. FEMA has funded a variety of hazard mitigation activities including structure vulnerability retrofits for different natural hazards including wildfire as evidenced by the Big Bear Lake Shake Shingle Roof Replacement in 2010.

The Plumas County Fire Safe Council is well known throughout the county for its public outreach, support of NFPA Firewise USA Sites, and direct fuel reduction assistance programs to landowners – many of which focus on defensible space. This proposal intends to build on existing organizational strengths to add additional capacity to develop technical assistance for home ignition zone assessments and developing home hardening/retrofitting programs as envisioned in State assembly bill AB38. This project would include collaboration between, Plumas County Fire Safe Council, local fire departments, the planning department, and support from UC Cooperative Extension.

This Project proposes two phases of implementation.

The first phase is providing outreach, education, and technical assistance for home ignition zone assessment of homes, commercial structures, and community infrastructure. This includes developing outreach materials about wildfire and the built environment, providing workshops and educational offerings to educate residents about home hardening and preparedness, and developing programs to provide site specific home consultations on the home ignition zone to help residents identify, assess, and prioritize home hardening retrofits to make their home more resistant to wildfire. This outreach effort would be well paired with defensible space programs already being delivered to Plumas county residents

The second phase is to provide home retrofitting assistance program to improve structural resistance to wildfire, or to improve community infrastructure for wildfire preparedness as described in Calif. Assembly Bill AB38. This would include developing and implementing cost-share, grant funded, or incentive based projects and programs to help residents with projects that improve home resistance to fire and enhance community wildfire preparedness and protection. Home retrofit projects may include replacement of out of code structure vents, installing fire resistant roofing, siding or windows, and/or installing snow protectors on propane regulators. Community wildfire preparedness and protection project may include installation of secondary water supplies, developing community water supplies, developing community safety zones or temporary areas of last resort refuge, or improving fire safety of power, communications, and road infrastructure. These implementation efforts would likely need to be implemented in a phased manner.

Other Alternatives: Currently, there are no other alternative programs such that the de facto alternative is not providing residents home hardening support.

Existing Planning Mechanism(s) through which Action Will Be Implemented: State Assembly Bill AB38 provides state level direction and guidance to develop programs to mitigate fire hazard and support communities by delivering programs that improve wildfire preparedness. Home hardening & retrofitting is included in these activities.

Responsible Office/Partners: County Agencies (OES, Building & Planning Departments); Plumas County Fire Safe Council, UC Cooperative Extension, CAL FIRE, Office of State Fire Marshall

Benefits (Losses Avoided): Reduction of the loss of homes in a wildfire event would be the largest benefit (loss avoided).

Potential Funding: AB38 opens potential avenues for funding which still remain to be seen and may be uncertain during current state and federal economy challenges.

Ideally Phase 1 could include: \$150- \$200K to develop the staffing, materials and outreach programs for a two to three year period. This would fund staffing for a Home ignition zone assessment consultation, preferably a candidate with professional forestry or wildland fire fighting skillset who can also assess defensible space as well as the home ignition zone.

Phase 2: First phase of implementation could be \$500K-\$1million as an annual program. This is within the same context and scale as the Big Bear Lake Shake Roof replacement program which was limited in scope and scale to a smaller community. A county wide program offered for 5 years could reach into a \$5 million or greater program.

Timeline: This project should be ongoing considering the need; however for purposes of LHMP planning, a 5 year timeline would be utilized. Considering this, a two to three year timeline would be necessary for phase 1 outreach and development. Implementation of the initial stages of phase 2 (Home retrofitting) could occur in a phased approach anywhere in years 2 to 5 of the five year planning horizon.

Project Priority (H, M, L): High

Action 34. Plumas County General Plan Public Health & Safety Element update to address state law requirements for land classified as State Responsibility Areas (SRAs) and within Very High Fire Hazard Severity Zones (VHFHSZs)

Hazards Addressed: Wildfire

Goals Addressed: 1, 2, 3, 4, 5, 6, 7, 8, 9

Issue/Background: The Plumas County General Plan Public Health & Safety Element update is necessary to address newly adopted state law requirements for land classified as State Responsibility Areas (SRAs) and within Very High Fire Hazard Severity Zones (VHFHSZs).

Project Description: The Plumas County General Plan Public Health & Safety Element Update includes amending the goals and policies of the Element to fully respond to and address state law requirements for land classified as SRAs and within VHFHSZs to reduce the risk and potential of wildfire in the

unincorporated areas of the County and particularly in the WUI. For example, the Public Health & Safety Element is required by state law to include, and will be reviewed and updated, as necessary, to contain the following:

- Fire hazard severity zone maps
- Historical data on wildfires
- Information about wildfire hazard areas
- General location and distribution of existing and planned uses of land in VHFHSZs and SRAs
- Local, state, and federal agencies with responsibility for fire protection, including special districts and local OES

Though the update process, implementation measures may also be developed, including but not limited to, avoiding or minimizing the wildfire hazards associated with new uses of land; locating, when feasible, new essential public facilities outside of high fire risk areas; working cooperatively with public agencies with responsibility for fire protection; and designing adequate infrastructure if new development is located in the SRA or VHFHSZ, including access for emergency response vehicles, visible street signage, and water supplies for fire structural suppression.

Other Alternatives: No action.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Plumas County General Plan Public Health & Safety Element

Responsible Office/Partners: Plumas County Planning Department

Benefits (Losses Avoided): The County's 2035 General Plan recognizes that growth has occurred in high fire hazard areas and the combination of population growth and climate change in these fire-prone areas is putting more people and homes at a greater risk from catastrophic wildfire. Public Health & Safety Element policies in Plumas County mitigate some of the risks by directing new development to be located within existing fire districts or adjacent to areas where fire protection can efficiently be extended. There is a continuing need to develop policies that both address fire safe patterns for new development and address solutions for improving fire safety for existing communities and rural places.

Potential Funding: Federal and State Grants

Timeline: 1-3 years.

Project Priority (H, M, L): Medium



Chapter 6 Plan Adoption

44 CFR §201.6(c)(5): [The local hazard mitigation plan shall include] documentation that the plan has been formally approved by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, county commissioner, Tribal Council).

The purpose of formally adopting this 2026 Plumas County LHMP Update is to secure buy-in from each participating jurisdiction, raise awareness of the Plan, and formalize the Plan’s approval and implementation. The adoption of this LHMP Update completes Planning Step 9 of the 10-step planning process: Adopt the Plan, in accordance with the requirements of DMA 2000. For unincorporated Plumas County and the City of Portola, this adoption resolution also addresses AB 2140 requiring adoption by reference or incorporation into the Safety Element of the General Plan. Two resolutions were created – one for the County and City and one for the special districts.

The governing board for each jurisdiction has adopted this 2026 Plumas County LHMP Update by passing a resolution. A copy of the generic resolutions is included in Appendix D: Adoption Resolution.



Chapter 7 Plan Implementation and Maintenance

44 CFR §201.6(c)(4): [The plan maintenance process shall include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

Implementation and maintenance of this 2026 Plumas County LHMP Update is critical to the success of hazard mitigation in the Plumas County Planning Area. Plan implementation and maintenance is Planning Step 10 of the 10-step planning process. Accordingly, this chapter provides an overview of the overall strategy for Plan implementation and maintenance and outlines the method and schedule for monitoring, updating, and evaluating the Plan. The chapter also discusses incorporating the Plan into existing planning mechanisms and how to address continued public involvement in local hazard mitigation planning.

Chapter 3, Planning Process, includes information on the implementation and maintenance process since the adoption of the Plumas County 2020 and City of Portola 2019 LHMPs. This chapter includes information on the implementation and maintenance process for this Plan, the 2026 Plumas County LHMP Update.

7.1 Implementation

Once adopted, this 2026 Plumas County LHMP Update faces the truest test of its worth: implementation. While the Plan contains many worthwhile actions, the County and all participating jurisdictions will need to decide which action(s) to undertake first. Two factors should be considered when making that decision: the priority assigned to the mitigation actions in the Plan and funding availability. Low or no-cost actions most easily demonstrate progress toward successful Plan implementation.

An important implementation mechanism that is highly effective and low-cost is incorporation of the hazard mitigation plan recommendations and their underlying principles into other plans and mechanisms such as local general plans, stormwater and flood plans, Emergency Operations Plans (EOPs), evacuation plans, and other hazard and emergency management planning efforts by the participating jurisdictions. These jurisdictions already implement policies and programs to reduce loss to life and property from hazards. This 2026 LHMP Update builds upon the momentum developed through prior, related planning and mitigation programs and recommends implementing actions, where possible, through these other programs.

Mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and development. Implementation can be accomplished by adhering to the schedules identified for each action through sustained collaborative efforts, highlighting the mutual benefits of proposed mitigation actions, and the Plumas County jurisdictions, its stakeholders, and the public. This is achieved through the routine actions of monitoring agendas, attending meetings, and promoting mitigation initiatives to enhance the safety and sustainability of the community. Additional mitigation strategies may include consistent and ongoing enforcement of existing policies and the vigilant review of programs for coordination and multi-objective opportunities to enhance mitigation.

Simultaneously, it is important to continuously monitor potential funding opportunities to finance mitigation actions. This may include identifying funding sources to meet local matching funds requirements under FEMA pre- and post-disaster mitigation grant programs, and other sources. When funding does become available, the participating jurisdictions will be better positioned to capitalize on the opportunity.

Responsibility for Implementation of Goals and Activities

The elected officials, executive leadership teams, responsible staff and departments, and emergency management offices of the participating jurisdictions are charged with implementation of various activities in the 2026 LHMP Update. During annual reviews as described later in this section, each participating jurisdiction should conduct an assessment of progress toward meeting the goals and activities of the LHMP Update. At that time, recommendations may be made to modify timeframes for the completion of identified mitigation actions, identify funding sources, and work with responsible entities to implement the actions. On an annual basis, the priority of various mitigation actions may be adjusted. Some activities that are found not to be feasible may be removed from the Plan entirely, while other mitigation actions unforeseen during the Plan development process may be added.

7.1.1. Role of the LHMP Update Planning Committee in Implementation and Maintenance

With adoption of this Plan, each participating jurisdiction will be responsible for LHMP implementation and maintenance. The HMPC identified in Chapter 3 (or a similar committee) will reconvene annually to ensure mitigation strategies are being implemented, and the County and City continue to maintain compliance with the NFIP. The Plumas County, Office of Emergency Services (County OES), will continue in its role as project lead for LHMP implementation and maintenance. As such, County OES, as LHMP project lead, and all participating jurisdictions will continue their relationship, and will plan to convene the same or similar HMPC when preparing the subsequent LHMP Update. The County OES project lead, with support from participating jurisdictions and the LHMP Update HMPC will:

- Act as a forum for hazard mitigation issues;
- Disseminate hazard mitigation ideas and activities to all participants;
- Pursue the implementation of high-priority, low/no-cost recommended actions;
- Ensure hazard mitigation remains a consideration for community decision makers;
- Maintain a vigilant monitoring of multi-objective cost-share opportunities to help the community implement the Plan's recommended actions for which no current funding exists;
- Monitor and assist in the implementation and update of this Plan;
- Report on Plan progress and recommended changes to the governing boards for all participating jurisdictions; and
- Inform and solicit input from the public.

The primary duty of the County and all participating jurisdictions and the HMPC is to see the LHMP Update successfully carried out and to report to their governing boards and the public on the status of LHMP implementation and mitigation opportunities. Other duties include reviewing and promoting mitigation

proposals, considering stakeholder concerns about hazard mitigation, passing concerns on to appropriate entities, and posting relevant information about the LHMP on the websites of participating jurisdictions.

7.2 Maintenance

Plan maintenance implies an ongoing effort to monitor and evaluate LHMP implementation and to update the Plan as progress, roadblocks, or changing circumstances are encountered.

7.2.1. Maintenance Schedule

Plumas County OES, as project lead, in conjunction with the LHMP leads for all participating jurisdictions, is responsible for initiating Plan reviews. In order to monitor progress and update the mitigation strategies identified in the mitigation action plan, County OES, LHMP leads from other participating jurisdictions, and the HMPC will revisit this Plan annually each year and following a hazard event to review and document progress on Plan implementation. Plumas County OES will also submit a five-year written update to the State and FEMA Region IX, unless disaster or other circumstances (e.g., changing regulations) require a change to this schedule. With this 2026 LHMP Update anticipated to be fully approved and adopted in early 2026, the next required written update of the Plan must be completed by early 2031. Plumas County OES will initiate the Plan Update – which may include applying for grant funding to hire professional services to assist in preparing the 2031 LHMP Update. The 2031 LHMP Update development process should be initiated in 2028 to ensure the 2031 LHMP Update can be funded and completed by this 2026 Plumas County LHMP’s expiration date.

7.2.2. Maintenance Evaluation Process

Evaluation of progress can be achieved by monitoring changes in vulnerabilities identified in the Plan. Changes in vulnerability can be identified by noting:

- Decreased vulnerability as a result of implementing recommended actions;
- Increased vulnerability as a result of failed or ineffective mitigation actions;
- Increased vulnerability as a result of new development (and/or annexation); and/or
- Increased vulnerability resulting from unforeseen or new circumstances.

Updates to this Plan will:

- Consider changes in vulnerability due to action implementation;
- Document success stories where mitigation efforts have proven effective;
- Document areas where mitigation actions were not effective;
- Document any new hazards that may arise or were previously overlooked;
- Incorporate new data or studies on hazards and risks;
- Incorporate new capabilities or changes in capabilities;
- Incorporate growth and development-related changes to infrastructure inventories; and
- Incorporate new action recommendations or changes in action prioritization.

Changes will be made to this Plan to accommodate for actions that have failed or are not considered feasible after a review of their consistency with established criteria, time frame, community priorities, and/or

funding resources. All mitigation actions will be reviewed during the monitoring and update of this Plan to determine feasibility of future implementation. Updating of this LHMP will be by written changes and submissions, as the participating jurisdictions and HMPC deem appropriate and necessary, and as approved by the governing boards of each participating jurisdiction. In keeping with the five-year update process, the HMPC will convene public meetings to solicit public input on this LHMP Update and its routine maintenance, and the final product will be again adopted by the governing boards of each participating jurisdiction.

Annual Plan Review Process

For the LHMP Update review process, the County OES lead and the LHMP leads for each of the participating jurisdictions, will be responsible for facilitating, coordinating, and scheduling reviews and maintenance of the LHMP. ***The LHMP is intended to be a living document.*** The review of the 2026 LHMP Update will normally occur on an annual basis each year and will be conducted by the HMPC as follows:

- County OES will place an advertisement in the local newspaper and will utilize other public outreach mechanisms, such as e-newsletters, social media blasts, and others, advising the public of the date, time, and place for each annual review of the LHMP Update and will be responsible for leading the meeting to review the Plan.
- Notices will be mailed to the members of the HMPC: federal, state, and local agencies; non-profit groups; local planning agencies; representatives of business interests; neighboring communities; and others advising them of the date, time, and place for the review.
- County/City/District/Tribal officials will be noticed by email and telephone or personal visit and urged to participate.
- Members of any participating jurisdiction's planning commissions and other appointed commissions and groups will also be noticed by email and either by telephone or personal visit.
- Prior to the review, department heads and others tasked with implementation of the various activities will be queried concerning progress on each activity in their area of responsibility and asked to present a report at the review meeting.
- The local news media will be contacted, and a copy of the current LHMP will be available for public comment at Plumas County OES as project lead.
- After the review meeting, minutes of the meeting and an annual report will be prepared by the participating jurisdictions and the HMPC and will be placed on the County LHMP webpage.
- A copy of the 2026 LHMP Update will be continually posted on the LHMP website for the County and participating jurisdictions.

Criteria for Annual Reviews

The criteria recommended in 44 CFR 201 and 206 will be utilized in reviewing and updating the 2026 LHMP Update. More specifically, the reviews should include the following information:

- Community growth or change in the past year.
- The number of substantially damaged or substantially improved structures by flood zone, wildfire zone, or other hazard zones.

- The renovations to public infrastructure including water, sewer, drainage, roads, bridges, gas lines, and buildings.
- Natural hazard occurrences that required activation of the Emergency Operations Center(s) (EOC) and whether or not the event resulted in a federal disaster declaration.
- Natural hazard occurrences that were not of a magnitude to warrant activation of the EOC or a federal disaster declaration but were severe enough to cause damage in the community or closure of businesses, schools, or public services.
- The dates of hazard events and descriptions.
- Documented damages due to the events.
- Closures of places of employment or schools and the number of days closed.
- Road or bridge closures due to the hazard and the length of time closed.
- Assessment of the number of private and public buildings damaged and whether the damage was minor, substantial, major, or if buildings were destroyed. The assessment will include residences, mobile homes, commercial structures, industrial structures, and public buildings, such as schools and public safety buildings.
- Review of the status of implementation of projects (mitigation strategies) including projects completed will be noted. Projects behind schedule will include a reason for delay of implementation.
- Review of any changes in federal, state, and local policies to determine the impact of these policies on the community and how and if the policy changes can or should be incorporated into the next LHMP Update.

7.2.3. Incorporation into Existing Planning Mechanisms

Another important implementation mechanism that is highly effective and low-cost is incorporation of the 2026 LHMP Update recommendations and their underlying principles into other jurisdictional plans and mechanisms. Where possible, Plan participants will use existing plans and/or programs to implement hazard mitigation actions. As previously stated in Section 7.1 of this Plan, mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and development. The point is re-emphasized here. As described in this LHMP's capability assessment, the participating jurisdiction's already implement policies and programs to reduce losses to life and property from hazards. This Plan builds upon the momentum developed through previous and related planning efforts and mitigation programs and recommends implementing actions, where possible, through these other program mechanisms. These existing mechanisms include:

- General and master plans
- Emergency Operations Plans and other emergency management efforts
- Jurisdictional ordinances
- Flood/stormwater management/master plans
- Climate Plans
- Capital Improvement Plans and budgets
- Other plans and policies outlined in the capability assessment
- Other plans, regulations, and practices with a mitigation focus

Participating jurisdictions and HMPC members involved in these other planning and program mechanisms will be responsible for integrating the findings and recommendations of this LHMP with these other plans,

programs, etc., as appropriate. As described in Section 7.1 Implementation, incorporation into existing planning mechanisms will be done through the routine actions of:

- monitoring other planning/program agendas;
- attending other planning/program meetings;
- participating in other planning processes; and
- monitoring community budget meetings for other community program opportunities.

The successful implementation of this mitigation strategy will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community.

Examples of incorporation of the 2026 LHMP Update into existing planning mechanisms include:

1. As recommended by Assembly Bill 2140, the County and City should adopt (by reference or incorporation) this LHMP into the Safety Element of their General Plans. Evidence of such adoption (by formal, certified resolution and text within the body of the Safety Element) shall be provided to CAL OES and FEMA.
2. Integration of flood actions identified in this mitigation strategy with implementation priorities in existing flood and stormwater plans. Key people responsible for development and implementation of these plans participated on the HMPC.
3. Integration of wildfire actions identified in this mitigation strategy with the actions and implementation priorities established in existing and new Community Wildfire Protection Plans and other fire plans. Key projects were identified and integrated specifically into this LHMP, while others currently of lesser priority should be referenced in their source document. Actual implementation of these projects will likely occur through the CWPP's and other Fire Plans' processes through the efforts of each responsible jurisdiction and department.
4. Integration of many of the infrastructure, roads, facility, and infrastructure improvement projects with the jurisdictional Capital Improvement Programs.
5. Use of risk assessment information to inform future updates of the hazard analysis in the Emergency Operations Plans and related emergency management efforts for all participating jurisdictions.

Each jurisdiction will consider incorporation of the LHMP into planning mechanisms listed on Table 7-1.

Table 7-1 LHMP Incorporation into other Planning Mechanisms

| Jurisdiction | Safety Element/ Master Plans/ Strategic Plans | EOP / Emergency Plans/ Emergency Action Plans | CWPP / Fire Plans | CIP | Flood / Stormwater/ Watershed Plans | Drought & Water Resource Plans | Other Plans Related to Hazard Mitigation - Drought/ Water Management/ Climate Plans/ Other |
|-----------------|---|---|-------------------|-----|-------------------------------------|--------------------------------|--|
| Plumas County | X | X | X | X | X | X | X |
| City of Portola | X | X | | X | X | X | X |
| Chester PUD | X | | | X | | X | X |

| Jurisdiction | Safety Element/ Master Plans/ Strategic Plans | EOP / Emergency Plans/ Emergency Action Plans | CWPP / Fire Plans | CIP | Flood / Stormwater/ Watershed Plans | Drought & Water Resource Plans | Other Plans Related to Hazard Mitigation - Drought/ Water Management/ Climate Plans/ Other |
|--------------------------------------|---|---|-------------------|-----|-------------------------------------|--------------------------------|--|
| Feather River RCD | X | | X | X | | | X |
| Gold Mountain CSD | X | | | X | | X | X |
| Indian Valley CSD | X | X | | X | | X | X |
| Plumas Corp/Plumas Fire Safe Council | X | | X | X | X | | X |
| Plumas Eureka CSD | X | | | X | | X | X |
| South Feather Water & Power | X | X | | X | | | X |

In addition, the mitigation actions included within each jurisdictions’ mitigation strategy contain a category identifying “Existing Planning Mechanism(s) through which Action will be Implemented” that contains how each mitigation action is related to other planning mechanisms and jurisdictional programs. Those can be found in Chapter 5 of the Base Plan for the County and within each jurisdictions’ annex to this Base Plan.

Efforts should continuously be made to monitor the progress of mitigation actions implemented through these other planning mechanisms and, where appropriate, their priority actions should be incorporated into updates of this LHMP.

7.2.4. Continued Public Involvement

Continued public involvement is a crucial element of successful Plan implementation. The update process provides an opportunity to solicit participation from new and existing stakeholders and to publicize success stories from the 2026 LHMP implementation and seek additional public comment. The Plan maintenance and update process will include continued public and stakeholder involvement and input through attendance at designated committee meetings, web postings, press releases to local media, and through public hearings.

Public Involvement Process for Annual Reviews

The public will be noticed by placing an advertisement in the newspaper and will utilize other public outreach mechanisms, such as e-newsletters, social media blasts, and others specifying the date and time for the review and inviting public participation. The HMPC, local, state, and regional agencies will be notified and invited to attend and participate.

Public Involvement for Five-year Update

When the participating jurisdictions and HMPC reconvenes for the next LHMP Update, they will coordinate with all stakeholders participating in the planning process—including those that joined the committee since the planning process began—to update and revise the Plan. In reconvening, the HMPC will identify a public outreach subcommittee, which will be responsible for coordinating the activities necessary to involve the greater public. The subcommittee will develop a plan for public involvement and will be responsible for disseminating information through a variety of media channels detailing the LHMP update process. As part of this effort, public meetings will be held, and public comments will be solicited on the LHMP Update draft. In addition, continued public involvement and outreach efforts will place an emphasis on identifying and inviting representatives from underserved and vulnerable populations to be part of the next, 2031 Plumas County LHMP Update. As a starting point the underserved and vulnerable population groups identified for this 2026 LHMP Update will be contacted to invite them to the 2031 LHMP Update process with additional groups identified and added to meet the ongoing goal of mitigation planning for the whole community.