COUNTY of
DEL NORTE
★ CALIFORNIA ★

2026 Hazard Mitigation Plan

Volume 2—Jurisdictional Annexes

September 2026

TETRA TECH

2026 Del Norte County Hazard Mitigation Plan

September 2026

Tetra Tech Project Number 105S045034

PREPARED FOR

County of Del Norte
981 H Street, Suite 210
Crescent City, CA 95531

PREPARED BY

Tetra Tech, Inc.
2301 Lucien Way #120
Maitland, FL 32751
Phone: 321-441-8500
www.tetratech.com

TETRA TECH

TABLE OF CONTENTS

1. INTRODUCTION 1-1
2. UNINCORPORATED COUNTY OF DEL NORTE 2-1
3. CITY OF CRESCENT CITY 3-1
4. BIG ROCK COMMUNITY SERVICES DISTRICT 4-1
5. CRESCENT FIRE PROTECTION DISTRICT 5-1
6. ELK VALLEY RANCHERIA 6-1
7. GASQUET COMMUNITY SERVICES DISTRICT 7-1
8. HRC COMMUNITY SERVICES DISTRICT 8-1
9. KLAMATH COMMUNITY SERVICES DISTRICT 9-1
10. SMITH RIVER FIRE PROTECTION DISTRICT 10-1
11. SMITH RIVER COMMUNITY SERVICES DISTRICT 11-1

APPENDICES

Appendix A: Participating Jurisdiction Letters of Intent
Appendix B: Public Outreach

3. CITY OF CRESCENT CITY

This jurisdictional annex to the Del Norte County Hazard Mitigation Plan (HMP) provides information to assist public and private sectors in the City of Crescent City with reducing losses from future hazard events. This annex is not guidance of what to do when a disaster occurs; its focus is on actions that can be implemented prior to a disaster to reduce or eliminate damage to property and people. The annex presents a general overview of Crescent City, describes who participated in the planning process, assesses Crescent City's risk, vulnerability, and capabilities, and outlines a strategy for achieving a more resilient community.

3.1 HAZARD MITIGATION PLANNING TEAM

The City of Crescent City identified primary and alternate HMP points of contact and developed this plan over the course of several months, with input from many City departments. Andrew Leighton, Engineering Project Manager, represented the community on the Del Norte County HMP Planning Partnership and Steering Committee, and supported the local planning process by securing input from persons with specific knowledge to enhance the plan. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization.

Table 3-1 summarizes City officials who participated in the development of the annex and in what capacity. Additional documentation of the City's planning activities through Planning Partnership meetings is included in Volume 1.

Table 3-1. Hazard Mitigation Planning Team

Primary Point of Contact	Alternate Point of Contact
Name/Title: David Yeager/Public Works Director Address: 377 J Street; Crescent City, CA 95531 Phone Number: (707) 951-3275 Email: dyeager@crescentcity.org	Name/Title: Andrew Leighton/Engineering Project Manager Address: 377 J Street; Crescent City, CA 95531 Phone Number: (707) 951-3275 Email: aleighton@crescentcity.org
National Flood Insurance Program Floodplain Administrator	
Name/Title: Community Development Director Address: 377 J Street, Crescent City, CA 95531 Phone Number: (707) 464-9506	
Additional Contributors	
Name/Title: Eric Wier, City Manager Method of Participation: Oversight	

3.2 COMMUNITY PROFILE

Crescent City, California sits between the mighty Pacific Ocean, ancient California redwood forests and tribal lands, and two wild rivers. It is noted as the second largest city on the Redwoods Coast.

The city of Crescent City was founded in 1853 when 320 acres of land on which the city now sits was purchased in the name of J.F. Wendell. The town's first sawmill was erected shortly thereafter by F.E. Weston, allowing for the construction of homes and other necessary buildings. The city was incorporated in 1854. When Del Norte County formed in 1857, Crescent City became the County seat. The logging and fishing industries that historically made up the export-based economy caused boom and bust cycles of employment and population. With the decline of these industries, fluctuations in resident population have dropped. Pelican Bay State Prison was built in 1989, expanding the city limits and adding an inmate (or group quarters) population that effectively doubled the city's population. The city's population, including Pelican Bay, makes up roughly 30 percent of Del Norte County residents. As one of the few larger commercial areas within the predominantly rural northern coastal redwoods, the City generally has a higher proportion of land in commercial and service uses. Hotels and harbor uses serve the tourist and fishing industries. While there is a diverse housing stock, with many high-end beachfront homes, a high number tend to be modest wood frame rental units. The former thriving downtown commercial shopping district never recovered from the 1964 tsunami, in which much of the area was destroyed. Newer commercial development has centered on Highway 101.

Crescent City has a City Manager/Council form of government with a five-member elected City Council. The City currently employs approximately 65 full-time and 19 part-time workers. The City of Crescent City assumes responsibility for the adoption of this plan. The City Manager will oversee its implementation.

3.2.1 Service Area and Trends

Crescent City is the only incorporated city in Del Norte County and is California's northernmost coastal city, 350 miles north of San Francisco and 330 miles south of Portland, Oregon. The city is bordered by the ocean, broad beaches, coastal bluffs, forest and rural county residential development. U.S. Highway 101 bisects the 1.6 square miles of urbanized city land area.

According to the California Department of Finance and the California Department of Corrections and Rehabilitation, the City's non-incarcerated population has remained stable over the period from 2015 to 2025.

Research has shown that some populations are at greater risk from hazard events because of decreased resources or physical abilities. These populations can be more susceptible to hazard events based on a number of factors including their physical and financial ability to react or respond during a hazard, and the location and construction quality of their housing. Data from the 2022 U.S. Census indicates that 2.9 percent of the population is 5 years of age or younger, 13.5 percent is 65 years of age or older, 2.3 percent is non-English speaking, 15.1 percent is below the poverty threshold, and 14.8 percent is considered disabled.

As a coastal town, Crescent City has weather that remains cool throughout the year, with summer temperatures averaging 60-70 degrees Fahrenheit and winter temperatures averaging 40-50 degrees. Annual rainfall averages 75 inches per year, with the occasional severe winter storm bringing winds of up to 90 miles per hour. Due to its geography, and drainage to the ocean, flooding has not brought

many problems to the town. Crescent City has experienced tsunami conditions 17 times between 1943 and 1994, the most significant being the 1964 tsunami, which resulted in 12 fatalities.

In addition to the city proper, the City annexed Pelican Bay State Prison in 1991. Maps of this area appear in the Jurisdictional Risk Assessment below.

3.3 PUBLIC ENGAGEMENT

Volume 1 of this HMP describes the outreach to the public that was undertaken on behalf of all participating jurisdictions to prepare this HMP update. Del Norte County is sparsely populated with the majority of government and private services available in Crescent City, including grocery stores, hardware stores, and restaurants. The County posted information about the HMP update on the County Facebook page and on the OES website. Flyers advertising the HMP update were canvassed across Crescent City. The public was invited to participate in the planning process by responding to the public survey, attending a virtual Steering Committee meeting, attending an in-person meeting, and reviewing the draft plan.

In addition to that work, the City partnered with the County to post information about the HMP update in the few public services available in the City, including the County Administrative offices, State Farm Insurance, Crescent City Harbor, Open Door Clinic, Pacific Northwest Physical Therapy, and the Crescent City Library. Figure 3-1 shows an example outreach effort and Appendix B includes all outreach efforts.

Figure 3-1. Public Outreach by Crescent City

3.3.1 Public Feedback Integration

Of the 196 responses to the public survey, 69 respondents reported that they received services from the City. These 69 respondents were extremely or very concerned about earthquakes, tsunamis, and wildfires. They reported receiving emergency information through mass notifications, government websites and newsletters, TV/radio, and Facebook. They expressed concern about the lack of backup

power facilities, homes located in hazard areas, and vulnerable roads. The mitigation strategy was prioritized with these concerns and community limitations in mind.

3.4 STAKEHOLDER ENGAGEMENT

Volume 1 of this HMP describes the outreach to stakeholders that was undertaken on behalf of all participating jurisdictions to prepare this HMP update. This section focuses on the stakeholders invited to participate in the planning process by the County. The following organizations were invited to participate by attending a Steering Committee meeting, responding to the stakeholder survey, contributing information and expertise to the plan, and reviewing the draft plan.

3.4.1 Local and Regional Agencies Involved in Hazard Mitigation Activities

The planning process included active participation from local and regional agencies with direct responsibilities in hazard mitigation. Public works and engineering departments contributed infrastructure data and identified vulnerabilities. Emergency management officials provided guidance on preparedness and response capabilities. Fire protection services and regional water agencies offered insights into wildfire risk, water infrastructure, and emergency response coordination. These agencies played a key role in shaping mitigation strategies and ensuring alignment with existing emergency plans.

- City of Crescent City
- Del Norte County OES
- CalOES
- CalFire
- Caltrans

3.4.2 Agencies that Have the Authority to Regulate Development

Agencies with regulatory authority over land use and development were engaged to ensure that mitigation strategies could be effectively integrated into local planning frameworks. This included community development and building departments, planning commissions, and city councils. Environmental health officials also participated, offering expertise on regulatory requirements related to public health and safety. Their involvement ensured that proposed actions were feasible and aligned with local codes and ordinances.

- Del Norte County Planning Division
- City of Crescent City

3.4.3 Neighboring Communities

Agencies with regulatory authority over land use and development were engaged to ensure that mitigation strategies could be effectively integrated into local planning frameworks. This included

community development and building departments, planning commissions, and city councils. Environmental health officials also participated, offering expertise on regulatory requirements related to public health and safety. Their involvement ensured that proposed actions were feasible and aligned with local codes and ordinances.

- Del Norte County
- Elk Valley Rancheria
- Tolowa Dee-ni' Nation
- Tolowa Nation
- Yurok Tribe
- Pulikla Tribe of Yurok People
- Bertsch Oceanview Community Services District
- Big Rock Community Services District
- Crescent Fire Protection District
- Crescent City Harbor District
- Gasquet Community Services District
- Klamath Community Services District
- Smith River Community Services District
- Smith River Fire Protection District
- Del Norte County Library District

3.4.4 Representatives of Business, Academia, and Other Private Organizations

The planning team engaged representatives from the business community, academic institutions, and private sector organizations. Local businesses and utility providers contributed perspectives on economic resilience and infrastructure continuity. Academic institutions provided technical expertise and helped assess long-term risks. This diverse input helped ensure that the plan addressed the needs of the broader community and supported public-private collaboration in mitigation efforts.

- Del Norte Chamber of Commerce
- Del Norte Unified School District
- Pacific Power
- Frontier Communications
- Spectrum
- Blue Star Gas
- Pelican Bay State Prison

3.4.5 Nonprofit Organizations and Community-Based Organizations

Nonprofit and community-based organizations were included to ensure that the needs of vulnerable populations were considered in the planning process. These organizations offered valuable insights into community outreach, emergency support services, and equity considerations. Their participation helped strengthen the plan's focus on inclusive and accessible mitigation strategies.

- Del Norte Department of Health & Social Services
- Crescent City Housing Authority
- Rural Human Services
- Sutter Coast Hospital
- American Red Cross Del Norte County Chapter
- Del Norte and Tribal Lands Community Food Council

3.5 JURISDICTIONAL CAPABILITY ASSESSMENT AND INTEGRATION

Crescent City performed an inventory and analysis of existing capabilities, plans, programs, and policies that enhance its ability to implement mitigation strategies. Volume 1 describes the components included in the capability assessment and their significance for hazard mitigation planning. The jurisdictional assessment for this annex includes analyses of the following:

- Planning and regulatory capabilities
- Development and permitting capabilities
- Administrative and technical capabilities
- Fiscal capabilities
- Education and outreach capabilities
- Classification under various community mitigation programs
- Adaptive capacity to withstand hazard events

For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into day-to-day local government operations. As part of the hazard mitigation analysis, planning and policy documents were reviewed and each jurisdiction was surveyed to obtain a better understanding of their progress toward plan integration. Development of an updated mitigation strategy provided an opportunity for Crescent City to identify opportunities for integrating mitigation concepts into ongoing City procedures.

3.5.1 Planning and Regulatory Capability and Integration

Table 3-2 summarizes the planning and regulatory tools that are available to Crescent City.

Table 3-2. Planning and Regulatory Capability and Integration

Capability	Jurisdiction has this?	Citation and Date (code chapter or name of plan, date of enactment or plan adoption)	Authority (local, county, state, federal)	Responsible Person, Department or Agency
Codes, Ordinances, & Regulations				
Building Code	Yes	Crescent City Municipal Code Ch. 15 (Buildings and Construction)	Local	Joshua Clark / Building Inspector & Dan Minges / Building Official
In June of 2026, Crescent City adopted the 2025 California Building Codes, including the Residential Code, Electrical Code, Mechanical Code, Plumbing Code, Energy Code, Historical Building Code, Fire Code, Existing Building Code, Green Building Standards Codes, and the 2025 International Property Maintenance Code.				
Zoning/Land Use Code	Yes	Crescent City Municipal Code Title 17 (zoning) last amended 2026; General Plan, adopted 2021	Local	Planning Department
• Does the zoning ordinance conform to the comprehensive plan in terms of discouraging development or redevelopment within natural hazard areas? This is done during application review and not through overlay zones. • Does the ordinance contain natural hazard overlay zones that set conditions for land use within such zones? The City has Hazard mapping used in application review but no formal overlay zones. • Does the ordinance prohibit development within, or filling of, wetlands, floodways, and floodplains? This is done during application review and not through zoning ordinance provisions. See also Municipal Code 15.32 Flood Damage Prevention Ordinance. • Is a zoning code in place to encourage resilient development through density bonuses for projects outside of natural hazard areas? Yes, City has Density Bonus Ordinance, and this would be one consideration. • Do rezoning procedures recognize natural hazard areas as limits on zoning changes that allow greater intensity or density of use? No, this is done during application review and not through overlay zone. • If applicable, is there a wildland-urban interface development code in place to prohibit or limit development in high wildfire risk areas? The City has no high wildfire risk areas.				
Subdivision Code	Yes	Crescent City Municipal Code Title 16 (subdivisions) last amended 1983	Local	Planning, Building& Public Works
This is done during application review with City departments and through CEQA and not through the subdivision code. The City has few lots left to be able to subdivide so not an important factor. • Do the subdivision regulations restrict the subdivision of land within or next to natural hazard areas? This would be done during application review with City departments and through CEQA and not through the subdivision code. • Do the regulations provide for conservation subdivisions or cluster subdivisions to conserve environmental resources? This would be done during application review with City departments and through CEQA and not through the subdivision code. • Do the regulations allow density transfers where hazard areas exist? No.				
Site Plan Code	Yes	California Building Code adopted 2025 & California Green Building Standard Code 2025	Local	Planning & Building Inspection
This would be done during application review with City departments and through CEQA. Stormwater mitigation & soil condition to determine whether building site is allowed.				
Stormwater Management Code	Yes	CCMC Chapter 17.88 (Stormwater Prevention Management), last amended 2024; California Green Building Standard Code 2025	Local	Planning, Building& Public Works
This would be done during application review with City departments and through CEQA. Code prohibits illegal discharges and illicit connections. Environmental and property damage mitigation through engineered design and flow calculations (ref. Stormwater Master Plan).				

Capability	Jurisdiction has this?	Citation and Date (code chapter or name of plan, date of enactment or plan adoption)	Authority (local, county, state, federal)	Responsible Person, Department or Agency
Real Estate Disclosure Requirements	Yes	CA. State Civil Code 1102	State, local	Planning, Building & Public Works
The City has a pre-application process and is available to be done during application review with City departments and through CEQA. CA. State Civil Code 1102 requires full disclosure on Natural hazard exposure of the sale/re-sale of any and all real property.				
Growth Management	No	City 6th Cycle Housing Element, 2023	Local	Planning Dept
The 2023 Housing Element identified vacant or underdeveloped parcels that can be developed which are not subject to Hazards. The City is in compliance with State growth management mandates via 2001 adoption of General Plan and the City 6th Cycle Housing Element, 2023.				
Environmental Protection Ordinance(s)	No	CEQA, General Plan Section 6 Natural resources Adopted 2001	Local, State	Planning Dept
Currently reviewed during application process. The City complies with the California Environmental Quality Act (CEQA) and General Plan Section 6 Natural resources Adopted 2001.				
Flood Damage Prevention Ordinance	Yes	Crescent City Municipal Code, Chapter 15.32, last amended 2018	Local	Planning, Building & Public Works
New construction must meet CBC & CMCC ordinance standards. Variances require planning commission approval. See also Municipal Code 15.32 Flood Damage Prevention Ordinance				
Climate Change Ordinance	Yes	AB 691	State	State Lands Commission
AB 691 requires all trustees of state lands with annual gross revenues exceeding $250,000 to prepare and submit an analysis of sea level rise adaptation strategies to the State Lands Commission. See also https://opc.ca.gov/wp-content/uploads/2024/05/California-Sea-Level-Rise-Guidance-2024-508.pdf for specific sea level scenarios for Crescent City. AB 691 Sea Level Rise Assessment completed in 2019. Crescent City Climate Change Readiness Study completed in 2021 for the WWTP as part of an NPDES Permit requirement.				
Fire Hazard Severity Zones	Yes	Ordinance No. 855	City	City of Crescent City
On May 2, 2025, the City adopted the Local Responsibility Area Fire Hazard Severity Zones as identified by CAL FIRE.				

Capability	Jurisdiction has this?	Citation and Date (code chapter or name of plan, date of enactment or plan adoption)	Authority (local, county, state, federal)	Responsible Person, Department or Agency
Planning Documents				
General Plan	Yes	General Plan Section 7 Health and Safety Adopted 2001, Housing Element 2023	Local	Planning

- Does the future land-use map clearly identify natural hazard areas? No, hazard areas contained in separate map
- Do the land use policies discourage development or redevelopment within natural hazard areas? Yes, General Plan Section 7 Health and Safety
- Does the plan leave enough space for expected future growth in areas outside natural hazard areas? Yes. Through Housing Element policies where the City is encouraging higher densities in low hazard areas.
- The General Plan integrated and adopts the 2019 HMP in compliance with AB 2140.

Capital Improvement Plan	Yes	Capital Improvement Plan	Local	Linda Leaver / Finance Director / Crescent City

The Capital Improvement Plan is a five-year plan that is updated annually and identifies projects for roads, water, and sewer infrastructure.

- Does the capital improvement program limit spending on projects that would encourage development in areas vulnerable to natural hazards? No, in fact the CIP reflects the extreme spending required to develop and maintain projects in vulnerable areas. WWTP CCFD, CCPD, & Beachfront Park are in the tsunami inundation zone, Ranney collector is in the flood plain of the Smith river, and the elevated tank is being decommissioned due to seismic vulnerabilities, and Pebble Beach Drive is being stabilized due to storm surge erosion of the bluff.
- Do infrastructure policies limit extension of existing facilities and services that would encourage development in areas vulnerable to natural hazards? There are no policies in place to limit infrastructure improvements as a way to discourage development in vulnerable areas.
- Does the capital improvement program provide funding for hazard mitigation projects identified in the FEMA Mitigation Plan? Some projects have hazard mitigation synergies, but there isn't an account or budget line item specifically for hazard mitigation.

Floodplain Management or Watershed Plan	Yes	General Plan Section 7 Health and Safety Adopted 2001. See also Municipal Code Ch. 15.32 Flood Damage Prevention	local	Planning, Building & Public Works

- Does the plan include policies that restrict development that would increase downstream flooding? Yes, General Plan Section 7 Health and Safety Adopted 2001. See also Municipal Code Ch. 15.32 Flood Damage Prevention.
- Does the plan include policies that restrict development that would increase sedimentation or erosion? No, but the City requires adherence to the Caltrans Storm Water BMP Handbook in construction bidding process

Stormwater Management Plan	Yes	City of Crescent City General Plan Section 4E, 2001 and Local Coastal Plan Extract Policy Document, 2011	Local	Public Works

The City has a waiver from the State General Small MS4 permit and therefore is not required to have a separate Stormwater Management Plan. Stormwater is considered in application review processes in order to improve handling of storm flows.

Capability	Jurisdiction has this?	Citation and Date (code chapter or name of plan, date of enactment or plan adoption)	Authority (local, county, state, federal)	Responsible Person, Department or Agency
Open Space Plan	Yes	General Plan Sections General Plan Mapping 2017	local	Planning

Past Land Use decisions have been incorporated into the City's General Plan/Mapping for Open Space and Natural resource designations. Areas include Beachfront Park in the 1964 tsunami damaged portion of the City, setbacks from coastal bluffs and near flood zones. Public property designated Open Space includes parks, and playgrounds, vista areas, general open spaces, beaches, wooded areas, and drainage channels.

- Does the plan prioritize open green spaces? Yes, where necessary.
- Are such spaces planned in areas with high impervious surface coverage? No, mostly natural or park areas
- Does the plan keep in mind the need for tree cover to mitigate the urban heat island effect? Are tree cover expansion projects planned in high-heat areas? This is not an issue in Crescent City due to mild climate.

Economic Development Plan	Yes	Economic Development Strategic Action Plan, 2021	Local	Economic Development

The City Council adopted the Economic Development Strategic Action Plan in June 2021. The uncertainty of tsunamis is noted as affecting economic development. The Plan otherwise lacks integration with the HMP. Recipe 1Z encourages adoption of new "recipes," which could include integration. The Plan is a complementary follow-up document that builds on the 2020 Del Norte County Comprehensive Economic Development Strategy by providing detailed instructions for how to implement specific economic development related projects in the greater Crescent City area.

Transportation Plan	Yes	Del Norte Active Transportation Plan and 2024 Del Norte Regional Transportation Plan	County	Del Norte Local Transportation Commission

- Does the transportation plan limit access to hazard areas? No, emergency evacuation would be needed from these areas. Improvements such as signage and gate across jetty, bridge over Elk Creek above 100-yr flood elevation, and improving traffic flow along Front Street and Pebble Beach Dr (for both motorized and non-motorized vehicle) integrates transportation planning into HMP
- Is transportation policy used to guide growth to safe locations? The City is mostly developed. Focus is to assure emergency evacuation in all areas of the City
- Are movement systems designed to function under disaster conditions (e.g., evacuation)? The City is integrating evacuation needs with priority transportation projects
- Does the transportation plan promote compact, mixed-use development near transit hubs and away from high hazard areas? The Transportation Plan is integrated with the City's Downtown mixed use zone and transit hub.

Urban Water Management Plan	Yes	2025 Urban Water Management Plan and General Plan Section 4	Local	Department of Public Works

The Urban Water Management Plan was prepared in compliance with requirements of the California Department of Water Resources (DWR) pursuant to the Urban Water Management Planning Act (UWMP Act) and the Water Conservation Bill of 2009. The plan includes a review and evaluation of historic precipitation data, historic Smith River discharge, and historic groundwater elevations in the Smith River Plain Groundwater Basin. The General Plan, Section 4, Public Facilities and Services discusses water supply and delivery.

Capability	Jurisdiction has this?	Citation and Date (code chapter or name of plan, date of enactment or plan adoption)	Authority (local, county, state, federal)	Responsible Person, Department or Agency
Response/Recovery Planning				
Emergency Operations Plan	No	Emergency Operations Plan, 2021	County	CCFD

The City uses the County-wide plan adopted in 2021.

- Does your CEMP cover short-term response and long-term recovery to address communications, evacuation, and housing necessary for identified hazards? Yes
- Is there an adopted evacuation and shelter plan to deal with emergencies from natural hazards? Yes
- Are evacuation routes located outside of floodplains, sea level rise inundation zones, or liquefaction zones? Evacuation routes defined from high risk location to low risk location. (reference Tsunami).
- Are there emergency communication systems in place? Yes
- Are those systems deployed in areas with the highest potential hazard exposure? Yes

Plan Integration

Table 3-2 lists the local planning mechanisms currently in place for the City. Several of these mechanisms such as the General Plan, Building Code, Zoning Code, and Capital Improvement Plan have already been integrated into the HMP. These documents incorporate hazard-related policies, including seismic safety standards, floodplain development restrictions, and growth management strategies.

The HMP builds on these foundations by identifying mitigation actions that align with and support existing policies, ensuring that hazard mitigation is not treated as a standalone effort but as a coordinated component of broader community planning. As these local plans are updated, information from the HMP, such as risk assessments, vulnerability data, and prioritized projects can be incorporated to maintain consistency and reinforce long-term resilience goals.

This integration enhances the City's overall risk management framework and ensures that future HMP updates are informed by comprehensive, data-driven insights. By aligning planning efforts across departments and documents, the City strengthens its ability to mitigate risks and adapt to evolving environmental conditions.

3.5.2 Development and Permitting Capability

Table 3-3 summarizes the capabilities of Crescent City to oversee and track development.

3.5.3 Administrative and Technical Capability

Table 3-4 summarizes potential staff and personnel resources available to Crescent City and their current responsibilities that contribute to hazard mitigation.

3.5.4 Fiscal Capability

Table 3-5 summarizes financial resources available to Crescent City.

Table 3-3. Development and Permitting Capability

	Yes/ No	Comment
Do you issue development permits? • **If you issue development permits, what department is responsible?** • **If you do not issue development permits, what is your process for tracking new development?**	Yes	Planning division for review. Building department for issuance & inspection.
Are permits tracked by hazard area? (For example, floodplain development permits.)	No	-
Do you have a buildable land inventory? • **If you have a buildable land inventory, please describe**	No	Vacant lot property list in Housing Element 2023
Describe the level of buildout in your jurisdiction.	N/A	Without reference to actual numbers (additional information may be available in the City's Housing Element 2023), the City is built out with few remaining vacant parcels. However, much of the developed area is more than 40 years old. There is an opportunity to redevelop properties to contain higher densities.

Table 3-4. Administrative and Technical Capabilities

Resources	Available?	Comment
Administrative Capability		
Planning Board	Yes	The City has a planning commission
Zoning Board of Adjustment	No	-
Planning Department	Yes	SHN - The City currently contracts with SHN to provide full planning services (Planning Dept)
Mitigation Planning Committee	No	Done through Planning Dept
Environmental Board/Commission	No	Done through Planning Dept
Open Space Board/Committee	No	Done through Planning Dept
Economic Development Commission/Committee	No	Economic Development Manager – 1 Manager
Public Works/Highway Department	Yes	Public Works
Construction/Building/Code Enforcement Department	Yes	Building Department
Emergency Management/Public Safety Department	No	City coordinates with the County Office of Emergency Services.
Maintenance programs to reduce risk (stormwater maintenance, tree trimming, etc.)	Yes	Public Works

Resources	Available?	Comment
Mutual aid agreements	Yes	The City of Crescent City has a mutual aid agreement with PBSP and the US Park Service, jointly exercises powers with Crescent Fire Protection District, and provides/receives mutual aid from other law enforcement and fire response agencies without formal agreement.
Human Resources Manual - Do any job descriptions specifically include identifying or implementing mitigation projects or other efforts to reduce natural hazard risk?	No	
Technical/Staffing Capability		
Planners or engineers with knowledge of land development and land management practices	Yes	Planning Dept—1 to 3 city planners, as needed.
Engineers or professionals trained in building or infrastructure construction practices	Yes	Public Works Department Director, 2 building inspectors, and City Manager.
Planners or engineers with an understanding of natural hazards	Yes	Planning Department, Public Works Department, City Manager
Staff with expertise or training in benefit/cost analysis	Yes	Finance Director
Professionals trained in conducting damage assessments	Yes	Public Works Department – City Manager
Personnel skilled or trained in GIS and/or Hazus applications	Yes	The Admin Department includes an Information Technology (IT) division that includes 1 GIS technician and 1 IS Administrator
Staff that work with socially vulnerable populations or underserved communities	Yes	Housing Authority – 1 Director, 3 Staff
Environmental scientists familiar with natural hazards	Yes	No Scientists on City Staff. City contracts with consultants for these services.
Surveyors	No	No licensed Surveyors on City Staff. City can and has contracted for survey work on as needed basis.
Emergency manager	Yes	City Manager, Fire Chief, County Office of Emergency Services
Grant writers	Yes	Grants and Economic Development Manager – 1 Manager

Table 3-5. Fiscal Capabilities

Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants (CDBG, CDBG-DR)	Yes
Capital improvement project funding	Yes
Authority to levy taxes for specific purposes	Yes
User fees for water, sewer, gas, or electric service	Yes (Water & Sewer)
Impact fees for homebuyers or developers of new development/homes	City can but does not implement impact fees
Stormwater utility fee	City can but does not implement fees
Incur debt through general obligation bonds	Yes

Financial Resources	Accessible or Eligible to Use?
Incur debt through special tax bonds	Yes
Incur debt through private activity bonds	No
Withhold public expenditures in hazard-prone areas	No
Other federal or state funding programs	Yes
Open Space Acquisition funding programs	No

3.5.5 Education and Outreach Capability

Table 3-6 summarizes the education and outreach resources available to Crescent City. Since the previous plan was approved, the City experienced two major evacuation alerts. The first, in 2023, saw residents of Gasquet evacuating to Crescent City to escape the Smith River Complex fire. The second, in 2025, saw residents of Crescent City evacuating out of the City to escape a tsunami. An area for potential expansion or improvement of capabilities is outreach and education to residents about how to prepare to evacuate out of Crescent City or what to do if people evacuate to Crescent City.

Table 3-6. Education and Outreach Capabilities

Outreach Resources	Available?	Comment
Public information officer or communications office	Yes	
Personnel skilled or trained in website development	Yes	IT staff
Hazard mitigation information available on your website	Yes	Cal OES MyHazards/Tsunami Warning Center
Social media for hazard mitigation education and outreach	Yes	City has a Facebook page that can be utilized for this purpose.
Citizen boards or commissions that address issues related to hazard mitigation	No	-
Warning systems for hazard events	Yes	Tsunami Sirens, Everbridge notifications, Wireless Emergency Alerts
Natural disaster/safety programs in place for schools	Yes	Programs are implemented by the School District.
Organizations that conduct outreach to socially vulnerable populations and underserved populations	Yes	Del Norte Mission Possible, Del Norte DHHS, Del Norte Senior Center
Public outreach mechanisms / programs to inform citizens on natural hazards, risk, and ways to protect themselves during such events	Yes	Del Norte Community Alert System, Facebook, radio, Everbridge alerts

3.5.6 Community Classifications

Table 3-7 summarizes classifications for community programs available to Crescent City.

Table 3-7. Community Classifications

Program	Participating?	Classification	Date Classified
Community Rating System (CRS)	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	No	-	-
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	2	2024
National Weather Service StormReady Certification	Yes	-	-
Firewise Communities classification	No	-	-
National Weather Service TsunamiReady Certification	Yes	Yes	2003

3.5.7 Adaptive Capacity

Adaptive capacity is defined as “the ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities, or respond to consequences” (IPCC 2022). Each jurisdiction has a unique combination of capabilities to adjust to, protect from, and withstand a future hazard event, future conditions, and changing risk.

Table 3-8 summarizes the adaptive capacity for each identified hazard of concern and the City's capability to address related actions using the following classifications:

- **Strong** adaptive capacity means the jurisdiction does have the capability to effectively respond, plans/policies exceed minimum requirements; deployable resources all of which decreases vulnerability.
- **Moderate** adaptive capacity means minimum requirements are in place; moderate capabilities; mitigation measures are identified but not implemented widespread; jurisdiction can recover but needs outside resources.
- **Weak** adaptive capacity means the jurisdiction does not have the capability to effectively respond, which leads to an increase in vulnerability. Examples include weak/outdated/inconsistent plans, policies, codes/ordinances in place; no redundancies; limited to no deployable resources; limited capabilities to respond; long recovery.

3.6 NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE

This section provides specific information on the management and regulation of the regulatory floodplain, including current and future compliance with the National Flood Insurance Program (NFIP). The floodplain administrator listed in Table 3-1 is responsible for maintaining this information.

Table 3-8. Adaptive Capacity

Hazard	Adaptive Capacity - Strong/Moderate/Weak
Drought	Moderate
Extreme Heat	Moderate
Extreme Wind	Moderate
Excessive Rain	Moderate
Earthquake	Moderate
Flood	Moderate
Landslide	Moderate
Tsunami	Strong
Wildfire	Strong

3.6.1 Repetitive Loss

The OpenFEMA NFIP Multiple Loss Properties dataset was analyzed to gain an understanding of repetitive flood loss in the City. The dataset provides information on structures that have had multiple NFIP claims across the history of the program. According to the dataset, there are no repetitive loss or severe repetitive loss properties in the City of Crescent City.

3.6.2 Flood Vulnerability Summary

Table 3-9 provides a summary of the NFIP program in Crescent City.

Table 3-9. NFIP Summary

NFIP Topic	Comments
Flood Vulnerability Summary	
Describe areas prone to flooding in your jurisdiction.	The only area in City Limits is limited to Elk Creek flood zone and coastline coastal hazards
Do you maintain a list of properties that have been damaged by flooding?	No recent flooding events on Elk Creek have occurred that damaged properties. Storm damage along western coastal bluffs (Pebble Beach Drive) occurred in 2023
Do you maintain a list of property owners interested in flood mitigation?	No inquiries have been made since last HMP update. As part of storm damage along western coastal bluffs (Pebble Beach Drive) that occurred in 2023, 1 undevelopable property was quit claimed to the City.
How many homeowners and/or business owners are interested in mitigation (elevation or acquisition)?	
Are any RiskMAP projects currently underway in your jurisdiction? If so, state what projects are underway.	There are no RiskMAP projects within City Limits
How do you make Substantial Damage determinations?	Public Works and Building Department would use the FEMA Substantial Damage Estimator tool.
How many Substantial Damage determinations were declared for recent flood events in your jurisdiction?	There were none made since last HMP

NFIP Topic	Comments
How many properties have been mitigated (elevation or acquisition) in your jurisdiction? If there are mitigation properties, how were the projects funded?	None
Do your flood hazard maps adequately address the flood risk within your jurisdiction? If not, state why.	Yes
NFIP Compliance	
What local department is responsible for floodplain management?	Planning Dept, Community Development Director under Public Works Dept.
Are any certified floodplain managers on staff in your jurisdiction?	No
Do you have access to resources to determine possible future flooding conditions from climate change?	See https://opc.ca.gov/wp-content/uploads/2024/05/California-Sea-Level-Rise-Guidance-2024-508.pdf for specific sea level scenarios for Crescent City
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	No but it would be helpful to transfer FEMA data to City's GIS
Provide an explanation of NFIP administration services you provide (e.g., permit review, GIS, education/outreach, inspections, engineering capability)	Review City's Hazard mapping and Firmette during permit application review
How do you determine if proposed development on an existing structure would qualify as a substantial improvement?	Foundation seismic retrofit, increase in square footage, addition, or remodel which required code inspection.
What are the barriers to running an effective NFIP program in the community, if any?	Time and funding and minimal flooding concerns
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, state the violations.	No
When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?	City has not had a CAV or CAC event.
What is the local law number or municipal code of your flood damage prevention ordinance?	Municipal Code Chapter 15.32
What is the date that your flood damage prevention ordinance was last amended?	Jan 22, 2018. City code 15.32.030 states that, "The areas of special flood hazard identified by the Federal Insurance Administration through the Emergency Management Agency in a scientific and engineering report titled "The Flood Insurance Study for the City of Crescent City" dated September 29, 1986, with the accompanying Flood Insurance Rate Maps (FIRMs) and Flood Boundary and Floodway Maps (FBFMs) dated November 23, 1982, and all subsequent amendments and revisions as adopted by reference and declared to be a part of this chapter."

NFIP Topic	Comments
Does your floodplain management program meet or exceed minimum requirements? If exceeds, in what ways?	It meets minimum requirements
Are there other local ordinances, plans or programs (e.g., site plan review) that support floodplain management and meeting the NFIP requirements? For instance, does the planning board or zoning board consider efforts to reduce flood risk when reviewing variances such as height restrictions?	Planning/Planning Commission could, however, the City hasn't had development proposed in FEMA flood zones since last HMP update
Does your community plan to join the CRS program or is your community interested in improving your CRS classification?	The city does not plan to join the CRS and there is no community interest in improving our CRS classification. The number of residents in a NFIP flood zone does not justify the resources required for this application process.

3.7 JURISDICTIONAL RISK ASSESSMENT

The hazard profiles in Volume 1 provide detailed information regarding each planning partner's vulnerability to the identified hazards, including summaries of Crescent City's risk assessment results and data used to determine the hazard ranking. Key local risk assessment information is presented below.

3.7.1 Hazard Area

Hazard area maps provided below illustrate the probable hazard areas impacted within the city are shown in Figure 3-2 and Figure 3-3. These maps are based on the best available data at the time of the preparation of this plan and are adequate for planning purposes. Maps are provided only for hazards that can be identified clearly using mapping techniques and technologies and for which Crescent City has significant exposure. The maps show the location of potential new development, where available.

3.7.2 Hazard Event History

The history of natural and non-natural hazard events in Crescent City is detailed in Volume 1, where each hazard profile includes a chronology of historical events that have affected the County and its municipalities. Table 3-10 provides details on loss and damage in Crescent City during hazard events since the last hazard mitigation plan update.

Figure 3-2. Crescent City Flood, Tsunami, and NEHRP Soil Hazard Area Extent and Location

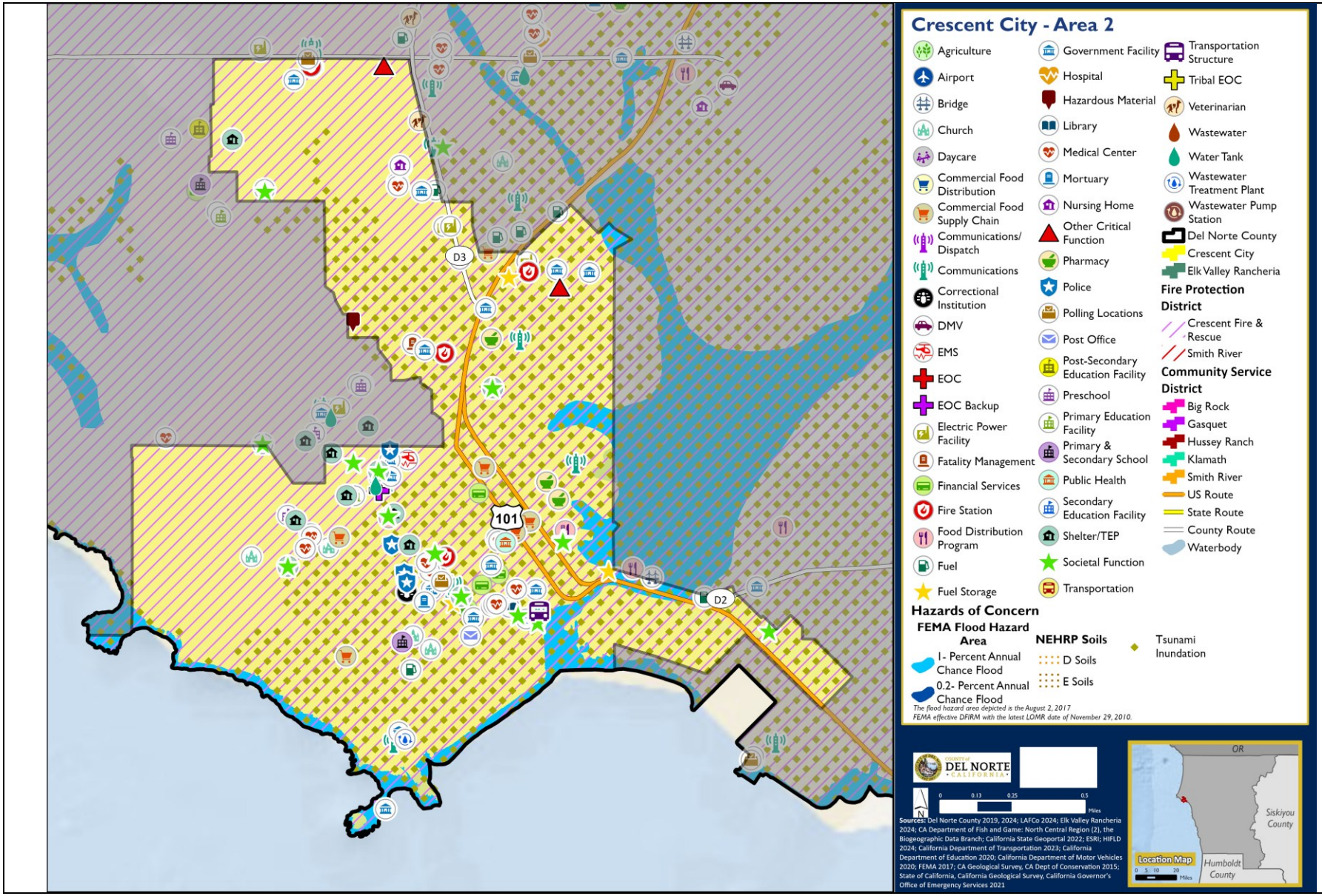

Figure 3-3. Crescent City Wildfire and Landslide Hazard Area Extent and Location

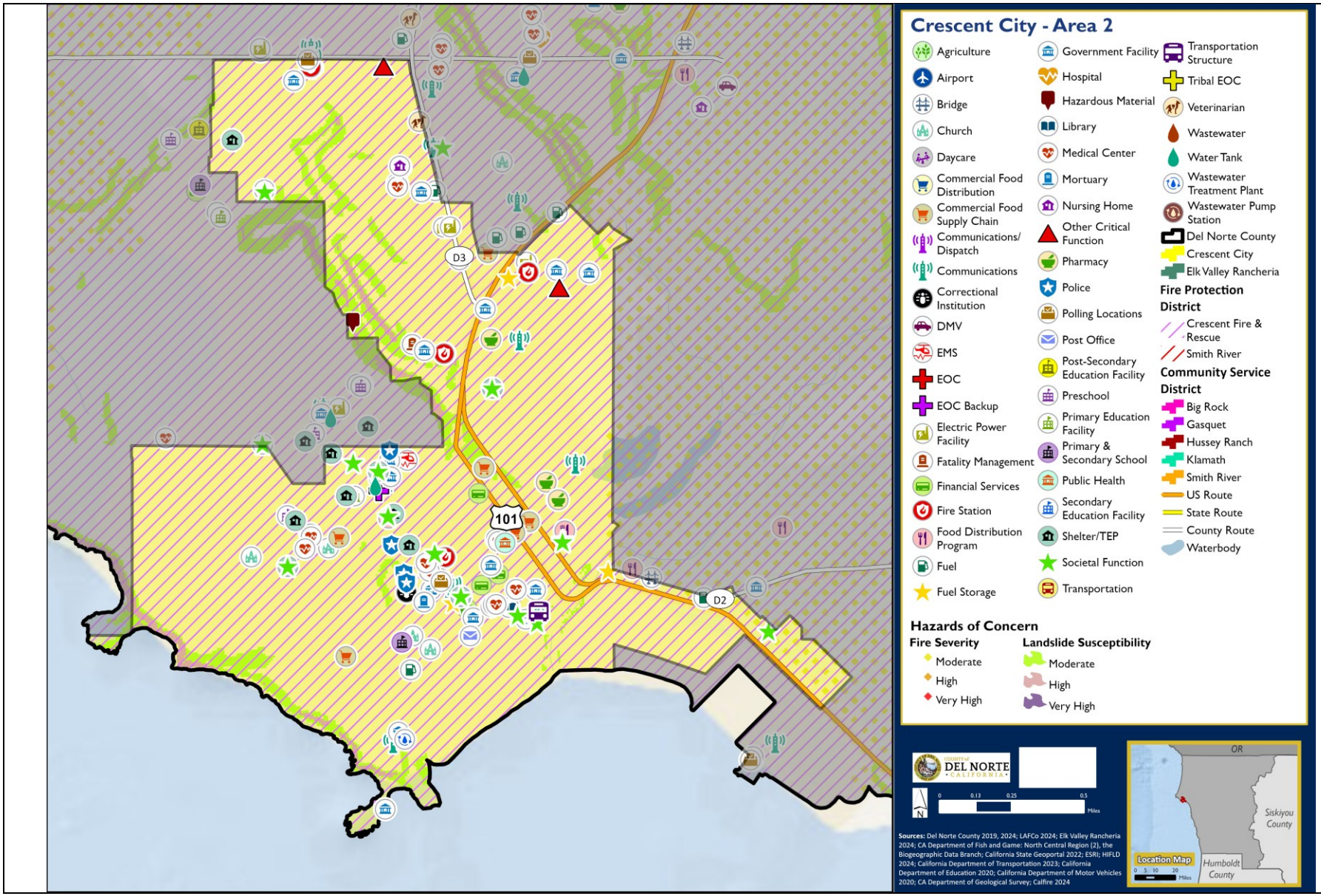

Table 3-10. Hazard Event History in Crescent City

Dates of Event	Event Type (Disaster Declaration)	County Designated?	Summary of Event	Summary of Damage and Losses in Crescent City
February 24 to March 1, 2019	Severe Storm DR-4434-CA	Yes, Federal	An atmospheric river spread across northern California and produced heavy rain that led to localized flooding. Impacts included flooding on Highway 199 along the west shoulder and northbound lane.	None
January 20, 2020 to May 11, 2023	Pandemic (COVID-19) DR-4482-CA EM-3428-CA	Yes, Federal	The first confirmed case in California was reported on January 25, 2020. Del Norte County experienced surges in COVID-19 cases in December 2020, August to September 2021, January to February 2022, and July 2022. Overall, Del Norte reported 8,005 confirmed cases and 62 fatalities between 2020 and 2023.	Projects delayed due to limited working hours; rampant inflation caused cancellation of Amador water tank rehabilitation project.
September 4 to November 17, 2020	Wildfire DR-4569-CA CA20-3	Yes, State and Federal	Record-breaking hot temperatures exacerbated existing fire conditions, leading to drier conditions and allowing wind to facilitate the rapid spread of new fires. One complex, the Slater Fire, spread into Del Norte County and caused damage to roadways.	None
December 27, 2022 to January 31, 2023	Flood DR-4683-CA CA23-1	Yes, State and Federal	Atmospheric river led to multiple heavy rainstorms and strong winds in late December and January. Strong wind caused multiple trees to fall, leading to blockages on Highways 101, 197, and 199, and Parkway Drive. Downed power lines caused multiple fires. Over 10,000 customers without power in and around Crescent City due to strong winds.	Loss of 30+ trees in city parks. CalOES refund for expenses still pending payment.
February 21 to July 10, 2023	Severe Storm, Flood DR-4699-CA EM-3592-CA CA23-3	Yes, State and Federal	Severe storms and high winds led to mudslides and landslides. Downed trees blocked portions of Highway 199.	None

Dates of Event	Event Type (Disaster Declaration)	County Designated?	Summary of Event	Summary of Damage and Losses in Crescent City
August 15, 2023	Wildfire CA23-5	Yes, State	Dry thunderstorms produced lightning strikes across the Six Rivers National Forest. 27 fires developed in the Gasquet Ranger District and grew rapidly, jumping Highway 199 causing a 3-week closure and resulting in the evacuation of the Town of Gasquet. The fire destroyed high-tension powerlines powering all of Del Norte County. The County was without power through August 25 when generators were installed. Main transmission lines were not repaired until September 10. The fire burned into October with a total of 95,000 acres burned plus 2 residences and 3 minor structures destroyed.	Loss of electricity in Crescent City for 7 days. Pacific Power brought in many generators and ran from diesel for a couple of weeks thereafter. Variable Frequency Drive at Ranney well failed on 2 pumps due to power surge. City ran on one available pump for 6 months with risk of insufficient water in case of large scale local fire. Extreme city crew overtime and emergency contracts for lift station pumping due to lack of backup generators. Failure of generator at Chlorination plant due to age of engine and extended use. Failure of generator at Ranney well due to circuit board failure. Significant smoke in area for respiratory issues.
January 13, 2024	High Wind	N/A	An atmospheric river resulted in 3 to 7 inches of rainfall in roughly 8 to 10 hours. This resulted in the highest flows on the Mad River and Redwood Creek since the 1970s. Widespread creek flooding occurred in Del Norte and Humboldt with multiple homes damaged or destroyed.	Loss of bluff in block failure on South Pebble Beach Drive between 6th & 7th streets. Repairs cost $6.5-7 million.

EM = FEMA Emergency Declaration; DR = FEMA Major Disaster Declaration

3.7.3 Hazard Ranking

The hazard profiles in Volume 1 have detailed information regarding each planning partner's vulnerability to the identified hazards. The following presents key risk assessment results for Crescent City.

The participating jurisdictions have differing degrees of vulnerability to the hazards of concern, so each jurisdiction ranked its own degree of risk to each hazard. The community-specific hazard ranking is based on problems and impacts identified by the risk assessment presented in Volume 1. The ranking process involves an assessment of the likelihood of occurrence for each hazard; the potential impacts of the hazard on people, property, and the economy; community capabilities to address the hazard; and changing future climate conditions. Crescent City reviewed the County hazard ranking and individual results to assess the relative risk of the hazards of concern to the community. During the review of the hazard ranking, Crescent City indicated the following:

- High rainfall and plentiful water supply from Smith River means that the City does not experience drought conditions
- Coastal proximity means very stable and lower temperatures compared with the rest of the County
- Winter storms bring extreme wind that cause power outages and tree fall damage in city parks
- Excessive rainfall during winter storms caused and will continue to cause landslide failure of S. Pebble Beach Drive
- Proximity to the Cascadia Subduction Zone is a major concern for the City
- Per FEMA flood maps there is only one city block of the city in a flood zone
- While the risk of wildfires within City boundaries is lower than other part of the county, smoke and power outages caused by wildfires have historically impacted the City

Table 3-11 shows Crescent City's final hazard rankings for identified hazards of concern. Hazards with a "High" or "Medium" ranking are considered to be hazards of local concern for the City. The risk assessment and mitigation strategy focus on the hazards of local concern. Hazards ranked as "Low" are not considered to be hazards of local concern and are excluded from the risk assessment and mitigation strategy. Mitigation action development uses the ranking to target hazards with the highest risk.

Table 3-11. Hazard Ranking

Hazard	Rank
Drought	Medium
Extreme Temperature	Low
Extreme Wind	Medium
Excess Rain	Medium
Earthquake	Medium
Flood	Low
Landslide	Medium
Tsunami	High
Wildfire	Medium

Note: The scale is based on the hazard rankings established in Volume 1, modified as appropriate based on review by the jurisdiction

3.7.4 Identified Vulnerabilities and Impacts

After review of Crescent City's hazard event history, hazard rankings, hazard location, and current capabilities, Crescent City identified the following vulnerabilities within the community:

- Tsunami
  - It is estimated that there are 417 structures located in tsunami inundation areas including 230 residential properties and 164 commercial properties; however, there are only 23 flood insurance policies in force in the City.

- As shown on Figure 3-2, the tsunami inundation hazard area extends from the Pacific Ocean up Elk Creek and covers most of the City. There are 96 critical facilities located in the hazard area across all eight community lifelines.
- Tsunamis pose a significant threat to community lifelines and critical facilities, disrupting essential services and hindering emergency response and recovery efforts. Water systems, including treatment plants, pipelines, and distribution networks, can sustain severe damage, leading to contamination and loss of potable water, thereby compromising public health and sanitation. Transportation infrastructure, such as roads, bridges, and airports, is highly susceptible to tsunami damage, impeding evacuation efforts and delaying the arrival of emergency services.

- Earthquake
  - The California Geological Survey (CGS) maps official Seismic Hazard Zones to establish "Zones of Required Investigation" for liquefaction and seismically induced landslides under the state's Seismic Hazards Mapping Act. Historically, these regulatory mapping resources have been heavily prioritized toward high-population, rapid-growth metropolitan centers in central and southern California. Consequently, detailed state-level liquefaction studies have not been completed for Del Norte County, and Crescent City's localized exposure to liquefaction-susceptible soils is not currently reflected on official CGS hazard maps. While the best available historical seismic data, localized environmental metrics, and regional planning records have been utilized to compile this plan, the absence of standardized, site-specific state maps creates a critical regulatory data gap for the planning area.
  - Despite the lack of formalized CGS zoning, localized geological and environmental conditions indicate that Crescent City faces a high latent risk of seismically induced ground failure. Liquefaction typically manifests in loose, young, water-saturated sands and silts subjected to violent, prolonged shaking. Crescent City features a highly concentrated population situated immediately adjacent to the Pacific Ocean, where shallow coastal groundwater tables and unconsolidated marine alluvial sediment naturally combine to create a prime environment for liquefaction. A major seismic event, such as a rupture along the high-consequence Cascadia Subduction Zone, would induce prolonged ground motions capable of triggering severe liquefaction, vertical ground settling, and lateral spreading across the city's low-lying urban footprint.
  - Under the Cascadia Megathrust 9.3-magnitude earthquake scenario, Crescent City is expected to incur $155.2 million in damage, or 5.2 percent of its total building replacement cost value.
  - Hazus estimates that a 2,500-year mean return earthquake could damage 19.2 percent of the buildings in Crescent City and generate more than 115,000 tons of debris.
  - All infrastructure in Crescent City is considered at risk to earthquakes, including all pipes, roads, bridges, dams, water and wastewater treatment facilities, and utility poles. During earthquakes, underground infrastructure, such as water and sewer systems, are especially vulnerable. Damaged or impassable roads may cut off certain populations from vital resources. The vulnerability of this unmapped hazard is critically amplified by the alignment of the region's primary transportation lifelines. US Highway 101 passes directly through the heart of Crescent City's concentrated population center and is constructed entirely over

these high-risk coastal soils. Because the highway serves as the sole high-capacity corridor for emergency response, resource distribution, and evacuation along California's remote northern coast, its failure would be catastrophic. Severe liquefaction along this transit corridor could result in widespread pavement buckling, roadbed collapse, and structural failure of critical intersections. Such damage would instantly isolate Crescent City from regional mutual aid, cripple post-disaster evacuation capabilities, and disrupt critical supply chains for days or weeks following a major earthquake.

- Flooding
  - In 2017 FEMA revised the Flood Insurance Rate Maps for the City of Crescent City. The revised maps are no longer based on the 1964 Tsunami and only reflect storm surge and flooding potential associated with the Elk Creek Floodplain. As a result, many of the critical facilities that were in a mapped 1-percent annual chance flood zone have been removed. However, critical facilities used for storing fuel and many commercial structures are located within a 1 percent chance flood zone.
  - There are 37 people in Crescent City who live in the one-percent annual chance floodplain.
  - Flooding can localize to specific parts of a community, such as certain roads, intersections, or neighborhoods, making buildings inaccessible. Entire communities can become isolated due to floodwaters, posing dangers when motorists and pedestrians attempt to traverse them. Vehicles and individuals can be swept away by flood currents, increasing the risk of drowning. Even shallow, fast-moving waters can carry people or vehicles into deeper areas, where the pressure from flowing water can trap drivers in submerged vehicles. Floodwaters often conceal hazards like electrical wires, debris, nails, and open manholes, and can weaken roads and bridges, making them unsafe for travel.
- Landslides
  - Coastal bluffs and public infrastructure located along the bluffs have been impacted by winter storms. Several locations along the coastline are experiencing landslides resulting in coastal bluff retreat. City streets, parking lots, storm drains and water and sewer lines are at risk.
  - As shown in Figure 3-3, the moderate landslide hazard area occurs in patches across the City; however, there is only one critical facility located in the hazard area – Dollar Tree.
  - Landslides pose immediate threats to human lives, often resulting in injuries or fatalities. The sudden movement of earth can destroy homes and infrastructure and disrupt essential services, leading to hazardous living conditions. Additionally, landslides can cause long-term health issues due to the displacement of communities and the potential for water contamination. In addition to displacing residents, landslides can block off or damage major roadways and inhibit travel for emergency responders or populations trying to evacuate the area.
- Drought
  - While drought has not historically been a concern for the City due to consistent water supply, drought has the potential to exacerbate wildfire impact by drying out vegetation and limiting water supply available to fight fires. In a worst case scenario, water supply would be insufficient to suppress fires.

- Extreme Wind
  - All community lifelines and critical facilities in the City are vulnerable to extreme wind events, which can cause damaged roofs and falling tree branches. However, extreme wind has the potential to be most impactful to the City when combined with wildfire. Figure 3-3 shows that the most eastern areas of the City are located in the moderate fire hazard severity zone.
- Excessive Rain
  - All community lifelines and critical facilities in the City are vulnerable to excessive rain events. However, rain by itself is unlikely to damage City facilities or infrastructure unless a damaged roof allows water inside a structure.
  - Excessive rain has the potential to contribute to flash floods, landslides, or debris flows, especially when soil is already saturated or the landscape is scarred by a recent wildfire.
- Wildfire
  - As shown in Figure 3-3, the eastern most areas of the City are located in the moderate fire hazard severity zone. There are only two critical facilities – a gas station and Casa Del Norte – and 79 people in the hazard area.
  - A wildfire has the potential to damage buildings and facilities, close roadways, and cause power outages. In 2023, most of the City experienced a week-long power outage as a result of the Smith River Complex wildfire.

Mitigation actions addressing these issues were prioritized for consideration in the action plan presented in the following section.

3.8 CONDITIONS THAT MAY IMPACT RISK

3.8.1 Population Pattern Trends

Population projections from the California Department of Finance (DOF) show that the population of Del Norte County is expected to decrease through the year 2070. Projections are not available for municipalities. However, DOF releases annual population estimates. From January 1, 2024, to January 1, 2025, Crescent City's population rose by 8.4 percent from 5,588 people to 6,056 people. Considering the percentage of children under the age of five is only 2.9 percent in Crescent City, it seems more likely that the increase in population accounts for people moving to Crescent City rather than children being born. If this is the case, this means people unfamiliar with the climate and hazard environment of Del Norte may be moving to the City.

3.8.2 Changes in Land Use and Development

Understanding how past, current, and projected development patterns have or are likely to increase or decrease risk in hazard areas is a key component to appreciating a jurisdiction's overall risk to its hazards of concern. City Code 15.32.040 identifies the Director of Community Development as responsible for the administration, implementation, and enforcement of permitting and regulation in Special Flood Hazard Areas (SFHA).

Recent and expected future development trends, including major residential/commercial development and major infrastructure development, are summarized in Table 3-12 through Table 3-14. Considering that development is not occurring in known hazard areas, the overall vulnerability of the City remains the same since the previous plan was approved.

Table 3-12. Number of Building Permits for New Construction Issued Since the Previous HMP

	New Construction Permits Issued			
	Single Family	Multi-Family	Other (commercial, mixed-use, etc.)	Total
2019				
Total Permits	N/A	N/A	N/A	N/A
Permits within SFHA	N/A	N/A	N/A	N/A
2020				
Total Permits	2	0	8	108
Permits within SFHA	0	0	0	0
2021				
Total Permits	3	0	17	124
Permits within SFHA	0	0	0	0
2022				
Total Permits	8	2	7	108
Permits within SFHA	0	0	0	0
2023				
Total Permits	2	0	5	75
Permits within SFHA	0	0	0	0

SFHA = Special Flood Hazard Area (1% flood event)

Table 3-13. Recent Major Development and Infrastructure from 2017 to Present

Property or Development Name	Type of Development	# of Units / Structures	Location (address and/or block and lot)	Known Hazard Zones*	Description / Status of Development
6-Plex	Multi-Family	6	650 D Street	None	Complete
8-Plex	Multi-Family	8	545 C Street	None	Complete
Harbor Point Senior Housing	Multi-Family	27	655 H Street	None	Complete
Roosevelt Estates	Multi-Family	56	1405 California	None	Complete
14-Plex	Multi-Family	14	708 J Street	None	Complete
2019 Storm Drain Improvements	Infrastructure	N/A	Front Street, C Street	None	Complete

* Only location-specific hazard zones or vulnerabilities identified.

Table 3-14. Known or Anticipated Major Development and Infrastructure in the Next Five Years

Property or Development Name	Type of Development	# of Units / Structures	Location (address and/or block and lot)	Known Hazard Zones*	Description / Status of Development
Battery Point	Multi-Family	162	1300 E Street	None	In Construction
Work Force Housing	Multi-Family	32	SW 3rd & F	None	Design
8-Plex	Multi-Family	8	780 J Street	None	In Construction
Redwood Downtown	Multi-Family	36	983 Third Street	None	Design
Storm Drain Improvements	Infrastructure	N/A	Front Street, K Street, F Street	None	In Construction

3.9 MITIGATION STRATEGY AND PRIORITIZATION

This section discusses the status of mitigation actions from the previous HMP, describes proposed hazard mitigation actions, and prioritizes actions to address over the next five years.

3.9.1 Past Mitigation Action Status

Table 3-15 indicates the status of all mitigation actions identified in the 2019 HMP. Actions that are still recommended but not completed or that are in progress are carried forward and combined with new actions as part of the mitigation strategy for this plan update. Previous actions that are now ongoing programs and capabilities are indicated as such and are presented in the capability assessment earlier in this annex.

Table 3-15. Status of Previous Mitigation Actions

Project #	Project	Responsible Party	Status	If incomplete, should action be included in the 2026 HMP?		
				Yes/ No	If yes, describe original problem and any action updates needed	Hazards of Concern addressed
CC-1	Where appropriate, support retro-fitting, purchase or relocation of structures located in high hazard areas, prioritizing those structures that have experienced repetitive losses and/or are located in high or medium ranked hazard. This includes critical facilities and infrastructure such as, City Hall, water supply infrastructure, storm drains, wastewater infrastructure, and clay sewer lines.	Planning	1) Police Department in progress has completed planning & is in design for PS&E. Anticipated construction of addition in 2025 2) City Hall is No Progress 3) Water Supply is in progress with 100% PS&E for Surge Tank to be constructed 2025. 4) Storm Drain planning will be completed in 2024. Published SDMP report on file. 5) WWTP is in progress for update to include seismic resilience & new water regulations. 6) Clay sewer lines have completed planning, have 90% PS&E for CIPP lining to be completed over next 5 years.	1) Yes 2) Yes 3) Yes 4) Yes 5) Yes 6) Yes	1) Addition is primarily for needed increase in space and security. Will meet new building code for seismic 2) Action is needed to address seismic and capacity needs. 3) Loss of power leads to pressure spikes in water mains and rupture. Surge tank will absorb spikes 4) SDMP calculates flood surge from all watersheds. Report will highlight necessary improvements 5) Enterococci & tsunami are new regulations requiring a complete overhaul of WWTP. 6) Inundation & Infiltration have been an ongoing burden to the WWTP. Pipe lining will reduce I&I and meet recent civil obligations	1) Seismic & Tsunami 2) Seismic & Tsunami 3) Loss of electricity, seismic, wildfire 4) Flooding & excessive rainfall 5) Tsunami 6) excessive rainfall
CC-2	Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions in the community, including the General Plan and review of projects within the coastal zone	Planning	Ongoing as part of application review. City will be updating Section 7 Health and Safety of the General Plan (Safety Element) in 2025 with general funds	Yes	Safety Element update is a State requirement.	Seismic, tsunami, fires, flood, SLR
CC-3	Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan.	City of Crescent City	Complete	No	-	-

Project #	Project	Responsible Party	Status	If incomplete, should action be included in the 2026 HMP?		
				Yes/ No	If yes, describe original problem and any action updates needed	Hazards of Concern addressed
CC-4	Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements: Enforce the flood damage prevention ordinance. Participate in floodplain identification and mapping updates. Provide public assistance/information on floodplain requirements and impacts.	City of Crescent City	Ongoing. City is up to date in its Section 15.32 Floodplain Damage Prevention Ordinance and current FEMA mapping. Flood information is relayed to applicants during application processing	Yes	A minimal area of the City is subject to flooding most is zoned Open Space or Harbor-related. Will consider appropriate approaches in Safety Element update that address some of NFIP's Community Rating System program.	Flooding
CC-5	Identify and pursue strategies to increase adaptive capacity to climate change including but not limited to conducting an analysis of sea level rise adaptation strategies pursuant to AB 619.	Planning	State SLR Guidance document See https://opc.ca.gov/wp-content/uploads/2024/05/California-Sea-Level-Rise-Guidance-2024-508.pdf for specific sea level scenarios for Crescent City	Yes	Adaptation strategies need to be formalized. Other hazards need to be considered including severe weather, fire, flooding	Severe weather, fire, flooding, coastal hazards
CC-6	Retrofit wastewater treatment plant membrane bioreactor to accept backup generator for backup power	Public Works	Complete	No	-	-
CC-7	Survey FEMA designated A zone to determine base flood elevation Survey and inventory lowest floor elevations of all existing structures (both private and public facilities) in A and X zones, to identify vulnerable structures to target for mitigation.	Public Works	Not completed, low priority for considering existing development (See FEMA mapping). Will consider more appropriate approaches in Safety Element update that address some of NFIP's Community Rating System program.	No	-	-

Project #	Project	Responsible Party	Status	If incomplete, should action be included in the 2026 HMP?		
				Yes/ No	If yes, describe original problem and any action updates needed	Hazards of Concern addressed
CC-8	Conduct coastal bluff stabilization to prevent shoreline retreat and protect public infrastructure.	Public Works	In progress – loss of bluff between 6th & 7th led to an Emergency Opening authorization. Temporary wall constructed in 2025. Permanent wall still in design and permitting.	Yes	No updates required	Severe weather
CC-9	Upgrade and install additional storm drain lines to relieve periodic flooding in downtown Crescent City.	Public Works	In progress – Front Street, B, C, D & F streets have been upgraded. F Street from 3.5-5th street to be constructed 2026. Front street Play to L and K Street from Front to 2nd to be constructed in 2025/6.	Yes	No updates required	Severe weather
CC-10	Warehouse and/or relocate critical vehicles, equipment and repair materials outside of identified hazard areas	Public Works	In progress – most critical equipment out of tsunami zone at corp. yard.	Yes	No updates required	Seismic, tsunami, fire, flood, severe weather
CC-11	Develop a post disaster action plan that includes grant funding, debris removal and long-term recovery planning components, addressing both public and private assets	Public Works	Not started City will be updating Section 7 Health and Safety of the General Plan (Safety Element) in 2025 with general funds	Yes	Safety Element update is a State requirement.	Seismic, tsunami, fires, flood, SLR, severe weather
CC-12	Establish a continuity-of-operations plan with phased return to normal operations	Planning	Not started. City will be updating Section 7 Health and Safety of the General Plan (Safety Element) in 2025 with general funds	Yes	Safety Element update is a State requirement.	Seismic, tsunami, fires, flood, SLR, severe weather
CC-13	Identify existing structures not up to adopted IBC through aggressive code enforcement	Planning	Completed	No	Covered in CC-15. New police administration building to receive addition. Other facilities not in scope.	Seismic, tsunami, fires, flood, SLR, severe weather
CC-14	Consider participation in the NFIP's Community Rating System program.	Planning	Not started. City will be updating Section 7 Health and Safety of the General Plan (Safety Element) in 2025 with general funds and will review necessary qualifications	Yes	Safety Element update is a State requirement.	Flooding

Project #	Project	Responsible Party	Status	If incomplete, should action be included in the 2026 HMP?		
				Yes/ No	If yes, describe original problem and any action updates needed	Hazards of Concern addressed
CC-15	Conduct a structural/nonstructural seismic retrofit of the City Police Department	City of Crescent City	In progress – PS&E at 90% plans. Construction anticipated 2026	No	Police building defined to be “Administrative” and therefore not critical. Combine with CC-1.	Tsunami, seismic.

3.9.2 Changes in Priorities

Since the 2019 HMP, the City has re-evaluated their mitigation priorities. Action item 6, hooking up the MBR to the generator is complete. Several action item 8 bluff stabilization, 9 storm drain upgrades, and 15 City police department seismic retrofit are ongoing due to the long-term nature of the construction project. Planning items 1-5, 7, 11-14 are all ongoing activities to maintain procedures previously established. The city has updated the Housing Element to meet state regulated changes. This has been incorporated into the city ordinances and affects/changes planning decisions. The city’s General Plan, Shoreline Management Plan, & Local Coastal Plans all need an update. The city continues to seek Grant opportunities to fund continued planning, design, and construction activities. Implementation of future priorities will likely be driven by available funding.

3.9.3 Additional Mitigation Efforts

In addition to the mitigation actions completed in Table 3-15, Crescent City identified the following mitigation efforts completed since the last HMP:

- The city has replaced and increased the capacity of the storm drainage system on Front Street, C, D and F streets to reduce localized flooding.
- The city repaired the Amador tank roof leaks, installed AWWA/OSHA compliant safety features for tank maintenance, and coated/painted the tank for longer life.
- The city has installed a SCADA water/sewer monitoring system to warn city crew of operation of either system outside of normal parameters.
- The city upgraded the WWTP MBR filters with a mem-pulse filtration system to extend the life, improve capacity, and efficiency. This project helps the city meet water regulations.
- The city has implemented MyGov permit and planning tracking to ensure municipal code and planning requirements are met.
- The city has installed a Genset connection to power the WWTP MBR MCC with the available generator in the event of a power outage
- The city has installed a new generator at the police station and another at the Wonder Stump Road PRV station.
- The city has replaced all three pumps at the Ranney Collector ensuring extended life and higher efficiency for the city’s sole source of water.

- The city has adopted an updated Housing Element to coincide with state changes. This impacts municipal code and planning.
- The city has uploaded water, sewer, storm drain, streetlight, sidewalk infrastructure into a cloud-based GIS mapping software. This makes data available on the public works mobile devices which can be updated on site as necessary. This ensures the most reliable data in the event of a natural disaster.
- The city developed a Water System Emergency Response Plan
- All sewer lines and manholes were cleaned and camera inspected for damage. Repairs are ongoing to maintain continuous utility service.
- The WWTP received an upgraded chlorine monitoring station to improve city outfall water regulations to maintain continuous utility service.
- The WWTP overhauled the belt press dewatering equipment to maintain continuous utility service
- The WWTP replaced 4 chemical containment tanks for Sodium Hypochlorite and Citric Acid to maintain continuous utility service.
- The city installed a temporary retaining wall at Pebble Beach (Phase 1) between 7th and 8th streets returning the collector street to service and added a class IV pedestrian/bicycle trail. Phase 2 is a future project to protect Pebble Beach between 9th street and Preston Island known as Pocket Beach.

3.9.4 Hazards Not Included in Mitigation Strategy

The City of Crescent City did not include actions for extreme heat. Proximity to the ocean and long-standing weather patterns means that the city maintains a relatively cool temperature throughout the year.

3.9.5 Proposed Hazard Mitigation Actions for the HMP Update

Crescent City participated in the mitigation strategy workshop for this HMP to identify appropriate actions to include in a local hazard mitigation strategy. Its comprehensive consideration of all possible activities to address hazards of concern included review of the following FEMA documents:

- FEMA 551 “Selecting Appropriate Mitigation Measures for Floodprone Structures” (March 2007)
- FEMA “Mitigation Ideas—A Resource for Reducing Risk to Natural Hazards” (January 2013)

The action worksheets included at the end of this annex list the mitigation actions that Crescent City would like to pursue in the future to reduce the effects of hazards. The actions are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in City priorities.

Table 3-16 indicates the range of proposed mitigation action categories. The four FEMA mitigation action categories are listed in the table to further demonstrate the wide range of activities and mitigation measures selected.

Table 3-16. Analysis of Mitigation Actions by Hazard and Category

Hazard	Actions That Address the Hazard, by Action Category			
	LPR	SIP	NSP	EAP
Drought	-	CC-1, CC-7,	-	-
Earthquake	-	CC-1, CC-2, CC-3, CC-4, CC-5, CC-6, CC-7, CC-8, CC-9	-	-
Excessive Rain	-	CC-2, CC-7, CC-9	-	-
Extreme Wind	-	CC-2, CC-7, CC-8, CC-9	-	-
Flood	-	CC-2, CC-4, CC-5, CC-6, CC-7, CC-9	-	-
Landslide	-	CC-2, CC-7, CC-8, CC-9	-	-
Tsunami	-	CC-1, CC-2, CC-4, CC-5, CC-6, CC-7, CC-8, CC-9	-	-
Wildfire	-	CC-2, CC-3, CC-9	-	-

Local Plans and Regulations (LPR)—These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.

Structure and Infrastructure Project (SIP)—These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct structures to reduce the impact of hazards.

Natural Systems Protection (NSP)—These are actions that minimize damage and losses and preserve or restore the functions of natural systems.

Education and Awareness Programs (EAP)—These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities

Volume 1 identifies four evaluation criteria for prioritizing the mitigation actions. To assist with rating each mitigation action as high, medium, or low priority, a numeric rank is assigned for each of the evaluation criteria. Table 3-17 provides a summary of the prioritization of all proposed mitigation actions for the HMP update.

Table 3-17. Summary of Prioritization of Actions

Project Name	Cost	Benefit	Objectives	Time Frame	Score	Priority
Amador Water Storage Tank Seismic Retrofitting	High	High	3	1-5 years	6.2	Medium
Multiple Water, Sewer Collection, and City Facilities Generator Installation	High	High	6	1-5 years	6.5	Medium
Seismic Retrofit – Kings Valley Road – Water Transmission Main Seismic Resiliency	High	High	4	1-10 years	5.3	Medium
WWTP Treatment Process Improvements	High	Medium	4	1-5 years	5.3	Medium
Purchase and Storage Facilities for Mobile Wastewater Treatment Equipment	High	Medium	5	1-5 years	5.4	Medium
Relocation of WWTP	High	Low	4	1-10 years	3.3	Low
Well Retrofitting	Medium	Medium	4	1-5 years	6.3	Medium
Installation of Hydro-Pneumatic Tank	Medium	Medium	5	1-5 years	6.4	Medium

Project Name	Cost	Benefit	Objectives	Time Frame	Score	Priority
Purchase and Storage Facilities for Mobile Potable Water Treatment Equipment	Medium	Medium	4	1-5 years	6.3	Medium

Note: Volume 1 of the HMP provides guidance on prioritizing mitigation actions. Low (0-5), Medium (5-7), High (7-9).

3.9.6 Mitigation Strategy

The following pages list the specific plan for each mitigation action, including the agency responsible for implementation, potential funding sources, and expected timeframe for completion.

CC-1 Amador Water Storage Tank Seismic Retrofitting

Lead Agency:	City of Crescent City Public Works
Supporting Agencies:	N/A
Hazards of Concern:	Drought, Earthquake, Tsunami
Description of the Problem:	In the event of an earthquake or Tsunami, the 1.5MG water tank can shift on its present foundation damaging itself, pump house, and/or piping infrastructure.
Description of the Solution:	Foundation retrofit with seismic restraints, American Water Works Association OSHA upgrades, cathodic protection, rafter rehabilitation, and flexible expansion joint for Amador Tank
Estimated Cost:	High
Potential Funding Sources:	Drinking Water State Revolving Fund
Implementation Timeline:	1-5 years
Objectives Met:	2,4,6
Benefits:	High, available water in event of loss of primary source, available fire flow capacity
Impact on Socially Vulnerable Populations:	This solution improves the resilience of the city infrastructure which benefits everyone including all socially vulnerable populations.
Impact on Future Development:	No planned capacity change for the water tank maintains current trajectory for future development.
Impact on Critical Facilities/Lifelines:	The water tank is a critical water infrastructure facility which will directly have improved resilience to earthquake and tsunami.
Impact on Capabilities:	This project will improve the resilience of the Amador water tank reducing or preventing damage due to earthquake or tsunami.
Climate Change Considerations:	This project does not respond to nor contribute to climate change risks.
Mitigation Category	Structure and Infrastructure Project
CRS Category	Preventative Measures, Property Protection
Priority	High

CC-2 Multiple Water, Sewer Collection, and City Facilities Generator Installation

Lead Agency:	City of Crescent City Public Works
Supporting Agencies:	County of Del Norte
Hazard(s) of Concern:	Earthquake, Excessive Rain, Extreme Wind, Flood, Landslide, Tsunami, Wildfire
Description of the Problem:	Loss of command and/or loss of continuous utility service.
Description of the Solution:	Install a backup generator at the following City locations: City Hall, Housing Authority, Cronk Lift Station, Harbor Lift Station, Harbor Sea Food Lift Station, Infirmary Lift Station, and Tetrapod Lift Station. Additionally, review the Ranney collector generator and replace the chlorination plant generator which is at end of life. Install a backup generator at the following DN County locations: Madison Lift Station, Modoc Lift Station, Oregon Lift Station, Pacific Lift Station, Seawood Lift Station, Small Lift Station, and Tedsen Lift Station.
Estimated Cost:	High
Potential Funding Sources:	State Water Resources Control Board
Implementation Timeline:	1-5 years
Objectives Met:	2,3,4,6,9,10
Benefits:	High, maintain command structure and housing during a natural disaster. Maintain sewer utility service.
Impact on Socially Vulnerable Populations:	This solution improves the resilience of the community's infrastructure which benefits everyone including all socially vulnerable populations.
Impact on Future Development:	No planned capacity change for the sewer infrastructure, maintains current trajectory for future development.
Impact on Critical Facilities/Lifelines:	Improves communication and health through proper handling of sewer materials during a natural disaster.
Impact on Capabilities:	Support the city's ability to respond to and recover from disasters.
Climate Change Considerations:	This project enables the city to maintain communications and operations during excessive weather, flood, landslide, and/or wildfire events. The consumption of petroleum products for the generation of electricity will contribute to greenhouse gases only while used during a natural disaster event.
Mitigation Category	Structure and Infrastructure Project
CRS Category	Preventative Measures, Property Protection, Public Information, Emergency Services
Priority	High

CC-3 Seismic Retrofit – Kings Valley Road – Water Transmission Main Seismic Resiliency

Lead Agency:	City of Crescent City Public Works
Supporting Agencies:	N/A
Hazard(s) of Concern:	Earthquake, Wildfire
Description of the Problem:	Water main from 6280 Kings Valley Road to the elevated tank at Wonder Stump Road is 1.5 miles of a 14-inch cast iron pipe which is aged, brittle, and susceptible to damage from internal pressure spikes and external impact loads. There is no alternate flow path for redundancy between these two sites which constitutes the sole conveyance of water to the city. Additionally, the small diameter pipe causes a flow restriction which increases pumping energy and limits fire flow.
Description of the Solution:	Install a 1.5 mile redundant water main from chlorination building to elevated tank preferably along a separate route for redundancy, resilience, and energy savings.
Estimated Cost:	High
Potential Funding Sources:	Drinking Water State Revolving Fund
Implementation Timeline:	1-10 years
Objectives Met:	2,3,6,10
Benefits:	Provide water through redundant water main in the event of catastrophic loss of sole water conveyance from the chlorination building to the city.
Impact on Socially Vulnerable Populations:	This solution improves the resilience of the city's water infrastructure which benefits everyone including all socially vulnerable populations.
Impact on Future Development:	While the city is not currently growth limited by the restricted water flow through the existing 14-in cast iron water main, this is a potential future limiting factor for the city's growth.
Impact on Critical Facilities/Lifelines:	There is a direct impact on the critical supply of water to the city.
Impact on Capabilities:	A redundant water main will mitigate the city's risk of complete water loss in the event of a natural disaster which disrupts the city's water supply.
Climate Change Considerations:	This project does not respond to nor contribute to climate change risks.
Mitigation Category	Structure and Infrastructure Project
CRS Category	Preventative Measures, Property Protection
Priority	High

CC-4 WWTP Treatment Process Improvements

Lead Agency:	City of Crescent City Public Works
Supporting Agencies:	N/A
Hazard(s) of Concern:	Earthquake, Flood, Tsunami
Description of the Problem:	Wastewater treatment plant (WWTP) fails to meet new state water regulations
Description of the Solution:	Working under a Time Schedule Order R1-2025-0015 the city is working to improve secondary treatment efficiency and remove additional solids in an effort to improve the disinfection process and meet the new permitting requirements.
Estimated Cost:	High
Potential Funding Sources:	State Water Resources Control Board
Implementation Timeline:	1-5 years
Objectives Met:	2,4,6,8
Benefits:	The city presently does not meet state water regulations. This project attempts to bring the city's wastewater back into regulation on a permanent basis.
Impact on Socially Vulnerable Populations:	This solution improves the resilience of the city's water infrastructure which benefits everyone including all socially vulnerable populations.
Impact on Future Development:	This project does not change the capacity of the city to process sewage only the quality of the water discharges in the outfall.
Impact on Critical Facilities/Lifelines:	This project directly affects the health of local residents and manages the hazardous sewage with the least time out of water regulations.
Impact on Capabilities:	This project mitigates the damage caused by insufficiently disinfected water discharges directly into the Pacific Ocean.
Climate Change Considerations:	This project does not respond to climate change risks. Insufficient disinfection of discharged water does not contribute to climate change but is an ecological disaster in its own right.
Mitigation Category	Structure and Infrastructure Project
CRS Category	Preventative Measures, Property Protection, Natural Resources Protection
Priority	High

CC-5 Purchase and Storage Facilities for Mobile Wastewater Treatment Equipment

Lead Agency:	City of Crescent City Public Works
Supporting Agencies:	N/A
Hazard(s) of Concern:	Earthquake, Flood, Tsunami
Description of the Problem:	Loss of wastewater treatment plant due to natural disaster
Description of the Solution:	Develop multiple “mobile” WWTPs to process raw sewage at 1 MGD temporarily until a permanent WWTP can be repaired or relocated. Purchase of mobile generators, mobile headworks screens and pumps, mobile dewatering presses, mobile MBR filtration, Class C solids retention, hauling, disposal, and equipment to reactivate the current chlorine/de-chlorine contact tank. Mobile components would be stored in a secure location out of the tsunami inundation zone.
Estimated Cost:	High
Potential Funding Sources:	State Water Resources Control Board
Implementation Timeline:	1-5 years
Objectives Met:	2,3,4,6,8
Benefits:	While it is understood that immediately following a natural disaster, the city will violate outfall water regulations. This project attempts to bring the city’s wastewater back into regulation on a temporary basis until a permanent repair or relocate solution can be accomplished.
Impact on Socially Vulnerable Populations:	This solution improves the resilience of the city’s water infrastructure which benefits everyone including all socially vulnerable populations.
Impact on Future Development:	This project does not change the capability or capacity of the city to process sewage. There is no cease/desist order preventing future development.
Impact on Critical Facilities/Lifelines:	This project directly affects the health of local residents and manages the hazardous sewage with the least time out of water regulations.
Impact on Capabilities:	This project mitigates the damage caused by loss of raw sewage containment directly into the Pacific ocean.
Climate Change Considerations:	This project does not respond to climate change risks. Loss of raw sewage containment does not contribute to climate change but is an ecological disaster in its own right.
Mitigation Category	Structure and Infrastructure Project
CRS Category	Preventative Measures, Property Protection, Natural Resource Protection
Priority	High

CC-6 Relocation of WWTP

Lead Agency:	City of Crescent City Public Works
Supporting Agencies:	N/A
Hazard(s) of Concern:	Earthquake, Flood, Tsunami
Description of the Problem:	Relocation of WWTP due to natural disaster or regulation change
Description of the Solution:	Purchase land outside of the tsunami zone for the future relocation of the WWTP.
Estimated Cost:	High
Potential Funding Sources:	General Fund, Staff Time, FEMA Hazard Mitigation Grant Program
Implementation Timeline:	1-10 years
Objectives Met:	1,3,7,8
Benefits:	Purchase of a future building site for the city WWTP will initiate the permitting process and shorten the PS&E phase in the event of a natural disaster.
Impact on Socially Vulnerable Populations:	This solution improves the resilience of the city's water infrastructure which benefits everyone including all socially vulnerable populations.
Impact on Future Development:	This project does not change the capability or capacity of the city to process sewage. There is no cease/desist order preventing future development.
Impact on Critical Facilities/Lifelines:	This project directly affects the health of local residents and manages the hazardous sewage with the least time out of water regulations.
Impact on Capabilities:	This project moves the WWTP away from the tsunami zone and outside of the coastal zone which will reduce the permitting time and cost of construction. It provides an opportunity for technology upgrades which are not presently possible at the current location.
Climate Change Considerations:	This project does not respond to climate change risks. Loss of raw sewage containment does not contribute to climate change but is an ecological disaster in its own right.
Mitigation Category	Structure and Infrastructure Project
CRS Category	Preventative Measures, Property Protection, Natural Resource Protection
Priority	High

CC-7 Well Retrofitting

Lead Agency:	City of Crescent City Public Works
Supporting Agencies:	N/A
Hazard(s) of Concern:	Drought, Earthquake, Excessive Rain, Extreme Wind, Flood, Landslide, Tsunami
Description of the Problem:	The city's sole source of water is the Ranney Collector located at the Smith River. Loss of this source due to contamination, flooding, mechanical or structural failure would leave the city with 3 days of water in accumulation tanks.
Description of the Solution:	Install a redundant water well preferably from a different aquifer and possibly construct a second chlorination building if required. Tie second well into existing water infrastructure.
Estimated Cost:	Medium
Potential Funding Sources:	North Coast Resource Partnership
Implementation Timeline:	1-5 years
Objectives Met:	2,3,4,6
Benefits:	Diversification of water reduces risk from loss of potable water.
Impact on Socially Vulnerable Populations:	This solution improves the resilience of the city's water infrastructure which benefits everyone including all socially vulnerable populations.
Impact on Future Development:	The city is limited by water diversion rights from our present water source; this project does increase the potential capacity of the city's water system.
Impact on Critical Facilities/Lifelines:	This project increases quantity, quality, and resilience of the city's water infrastructure.
Impact on Capabilities:	This project mitigates the risk of water loss in the event of a natural disaster.
Climate Change Considerations:	This project does not respond to nor contribute to climate change risk.
Mitigation Category	Structure and Infrastructure Project
CRS Category	Preventative Measures, Property Protection
Priority	High

CC-8 Installation of Hydro-Pneumatic Tank

Lead Agency:	City of Crescent City Public Works
Supporting Agencies:	N/A
Hazard(s) of Concern:	Earthquake, Extreme Wind, Landslide, Tsunami
Description of the Problem:	A rapid change in pressure in the water main due to power loss or rapid valve operation can cause a pressure spike (water hammer) to damage the brittle cast iron water mains leading to catastrophic pipe rupture and loss of the city's sole source of water.
Description of the Solution:	Installation of a hydro-pneumatic accumulation (surge) tank near the Ranney Collector pumps will absorb the pressure spikes and keep them from propagating down the water main to the nearest "weak link".
Estimated Cost:	Medium
Potential Funding Sources:	Bureau of Reclamation via Elk Valley Rancheria & City Funds
Implementation Timeline:	1-5 years
Objectives Met:	2,3,4,6,8
Benefits:	Isolation and absorption of pressure spikes makes the entire water system more resilient to unexpected changes in water pressure.
Impact on Socially Vulnerable Populations:	The Elk Valley Rancheria has worked directly with the Bureau of Reclamation to secure partial funding for this project to directly benefit tribal members within the city water distribution system.
Impact on Future Development:	This project does not increase the capacity of the city water system, which is not currently a limiting factor in the city's future development.
Impact on Critical Facilities/Lifelines:	This project improves water system resilience.
Impact on Capabilities:	This project protects the city water system against pressure spikes which could cause catastrophic water main breaks.
Climate Change Considerations:	This project does not contribute to climate change risks. The project does respond to extreme weather and wildfire risks which might be caused by climate change.
Mitigation Category	Structure and Infrastructure Project
CRS Category	Preventative Measures, Property Protection
Priority	High

CC-9 Purchase and Storage Facilities for Mobile Potable Water Treatment Equipment

Lead Agency:	City of Crescent City Public Works
Supporting Agencies:	N/A
Hazard(s) of Concern:	Earthquake, Excessive Rain, Extreme Wind, Flood, Landslide, Tsunami, Wildfire
Description of the Problem:	Loss of sole source of potable water for city. Remote location prevents importation of bottled water.
Description of the Solution:	Purchase of a portable water filtration, chlorination, and distribution equipment
Estimated Cost:	Medium
Potential Funding Sources:	FEMA Hazard Mitigation Assistance grants
Implementation Timeline:	1-5 years
Objectives Met:	2,3,4,6
Benefits:	Available water during and after a natural disaster.
Impact on Socially Vulnerable Populations:	This solution improves the resilience of the city's water infrastructure which benefits everyone including all socially vulnerable populations.
Impact on Future Development:	This project does not increase the city's water capacity. No impact on future development.
Impact on Critical Facilities/Lifelines:	This project does improve health and water which are critical lifelines.
Impact on Capabilities:	This project enables the city to mitigate, respond tom and recover from disasters due to the loss of water.
Climate Change Considerations:	This project does not respond to nor contribute to climate change risks.
Mitigation Category	Structure and Infrastructure Project
CRS Category	Preventative Measures, Natural Resource Protection
Priority	High