
Special Hazards Districts Annex – Washoe County Regional Hazard Mitigation Plan



2020 Plan Update

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1. INTRODUCTION

1.1 Washoe County Special Hazard Districts Involved in Mitigation

Several special hazard districts participated in the planning process for the 2020 Hazard Mitigation Plan (HMP) update, including the Truckee Meadows Fire Protection District (TMFPD), North Lake Tahoe Fire Protection District (NLTFPD), and Truckee River Flood Management Authority (TRFMA). These partners play critical roles in mitigating and responding to the highest priority hazards affecting Washoe County, including wildland fires and flooding. Throughout the 2020 update process, the following HMP participation roles were recorded:

Name	Position	Role in Hazard Mitigation
Lisa Beaver	Deputy Chief	TMFPD Mitigation Program Lead
Ryan Sommers	Fire Chief	NLTFPD Mitigation Program Lead
Danielle Henderson	Natural Resources Manager	TRFMA Mitigation Program Lead
E. George Robison	Deputy Director	TRFMA Program Implementation

This annex provides information on the missions of these agencies, wildland fire and flooding hazards affecting their service areas, the agencies' capabilities, and agency-specific 2020 mitigation actions.

1.2 What's New in the 2020 Update?

The 2020 update of the Washoe County Regional HMP expands the 2015 HMP by including new partners in the planning process, including the TMFPD, NLTFPD, and TRFMA. This annex represents an initial effort to define hazard risks and prioritize mitigation strategies for these agencies.

The 2020 update of the HMP also includes the following major revisions to the 2015 plan:

- Incorporation of additional hazards and more comprehensive risk assessments (see Chapter 3);
- Expanded capability assessment (see Chapter 4);
- Integration of hazard mitigation planning into existing mechanisms (see Section 4.5); and
- Comprehensive and focused mitigation strategy with prioritized mitigation actions (see Chapter 5).

See Appendix C of the Basic Plan for the completed Federal Emergency Management Agency (FEMA) Local Plan Mitigation Review Tool for the Washoe County Regional HMP.

1.3 Plan Adoption

44 CFR §201.6(c)(5) requires that the HMP be formally adopted by elected officials from each participating jurisdiction. Dates of adoption for each of the special hazards districts are listed below:

- Adopted by the Truckee Meadows Fire Protection District Board of Fire Commissioners on [date],

- Adopted by the North Lake Tahoe Fire Protection District Board of Fire Commissioners on [date], and
- Adopted by the Truckee River Flood Management Authority Board of Directors on [date].

This HMP was approved by FEMA Region IX on [Date]. Copies of the adoption resolutions for the special hazards districts are included in Appendix H of the Basic Plan.

2. DISTRICT PROFILES

2.1 Truckee Meadows Fire Protection District

The TMFPD serves most unincorporated areas of Washoe County south of Pyramid Lake (see Figure 2-1). The District provides fire suppression and advanced life support (paramedic) fire-rescue service, along with responding to other types of emergencies. The TMFPD supports the County's hazard mitigation program by reviewing plans for new construction for compliance with fire codes, conducting public outreach and education campaigns, and assisting with community risk reduction plans. The District includes 140 career employees, 75 volunteers, 11 stations staffed 24/7, eight volunteer stations, and eight active reserve firefighters. The jurisdiction is approximately 1,000 square miles and includes parts of unincorporated Washoe County (TMFPD n.d.).

2.2 North Lake Tahoe Fire Protection District

The NLTFPD provides emergency and non-emergency response services to the communities of Incline Village and Crystal Bay, Nevada, and surrounding back country areas (see Figure 2-1). The mission of the district is to "protect life and property through efficient delivery of quality community services" (NLTFPD n.d.). The district's Fuels Management Division works to reduce the community's wildland fire risk and improve forest health through effective fuels management practices. The Division provides services including fuels reduction, prescribed burns, free curbside chipping for property owners, and defensible space evaluations. The Fire Prevention Division is responsible for reduction of fire hazards through public education, inspection, and code enforcement.

2.3 Truckee River Flood Management Authority

The TRFMA is a joint effort among Washoe County, the cities of Reno and Sparks, the U.S. Army Corps of Engineers, and other stakeholders established under an Interlocal Cooperative Agreement to reduce the impacts of flooding in the Truckee Meadows region. The TRFMA's primary mission is "to plan, design, build, operate, and maintain infrastructure to reduce flood damages, safeguard public health, and create a more resilient community" (TRFMA 2017). The agency is responsible for oversight and implementation of the Truckee River Flood Management Project, which includes mitigation projects along 33 miles of the Truckee River from downtown Reno to the town of Wadsworth near Pyramid Lake (see Figure 2-2). The agency also operates and maintains a network of stream gauges that are part of a regional flood warning system, provides educational resources, and administers a program providing financial assistance for home elevation.

Figure 2-1 Fire Districts Coverage Map

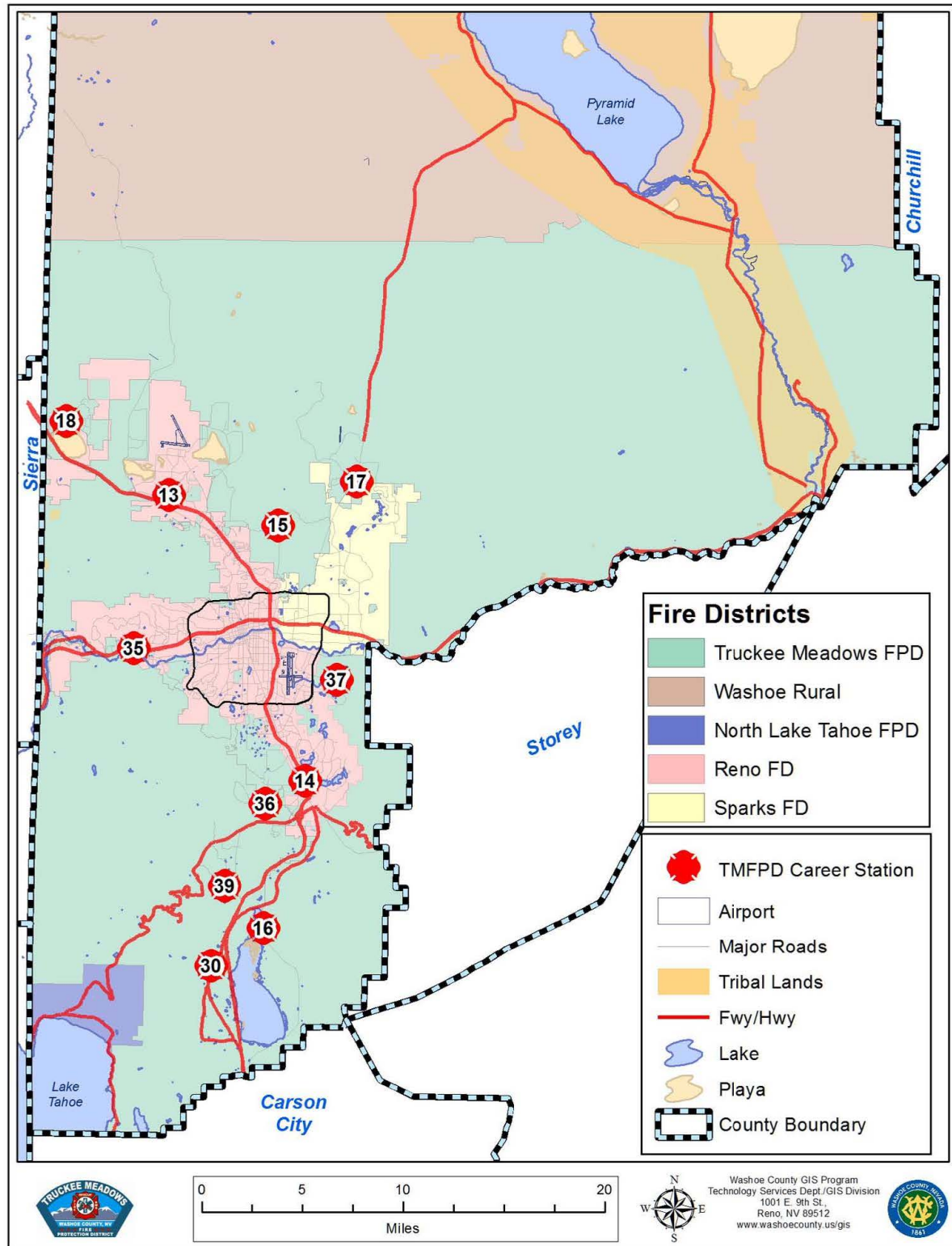
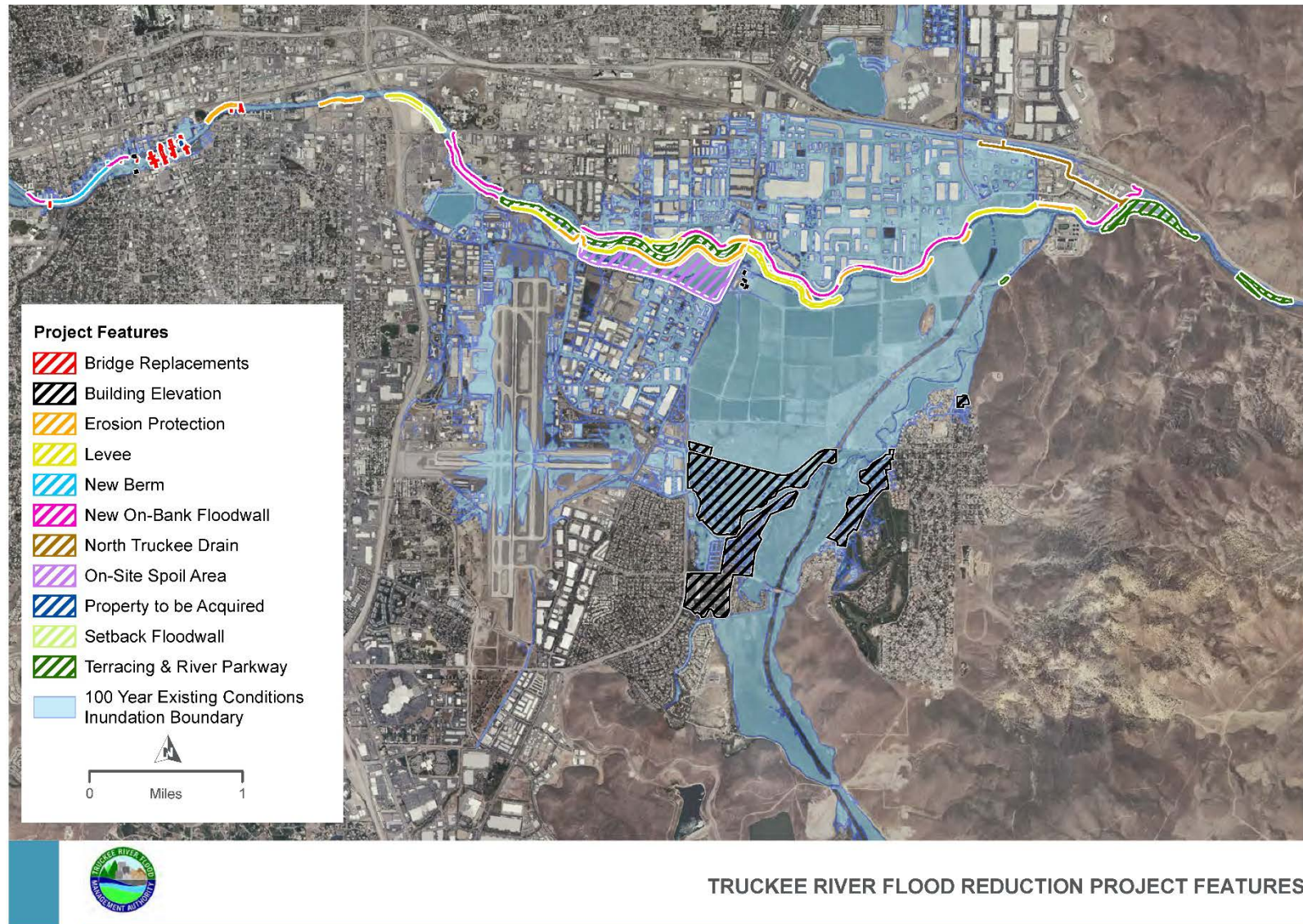



Figure 2-2 Truckee River Flood Management Project Features



3. HAZARD PROFILES AND VULNERABILITY ASESMENTS

Chapter 3 contains hazard profiles and vulnerability assessments to determine the potential impact of hazards to the people, economy, and built and natural environments within the jurisdictions of special hazard districts in Washoe County. They have been streamlined to increase the effectiveness and usability of the HMP. Additional details are provided in Appendix F of the Basic Plan.

 FEMA	<p>B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect [the special hazards districts]? (Requirement §201.6(c)(2)(i))</p> <p>B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for [the special hazards districts]? (Requirement §201.6(c)(2)(i))</p> <p>B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? 44 CFR 201.6(c)(2)(ii)</p>
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3.1 General

Washoe County has experienced several major disaster declarations that may have affected the special hazard districts. In total, the County has received 20 major disaster declarations, including four since the previous HMP update. Table 3-1 identifies the declarations since 2015 that affected the special hazard districts.

Table 3-1 Major Disaster Declarations in Washoe County since 2015

Disaster Number	Individual Assistance Program Declared	Public Assistance Program Declared	Hazard Mitigation Program Declared	Declaration Date	Title
4307	No	Yes	Yes	3/27/2017	Severe Winter Storms, Flooding, and Mudslides
4303	No	Yes	Yes	2/17/2017	Severe Winter Storms, Flooding, and Mudslides
4303	No	Yes	Yes	2/17/2017	Severe Winter Storms, Flooding, and Mudslides
4303	No	Yes	Yes	2/17/2017	Severe Winter Storms, Flooding, and Mudslides

Source: FEMA 2019

The hazard profiles and vulnerability assessments contained in this annex represent a considerable amount of work performed by the Mitigation Planning Team (MPT). Planning Team members ranked hazards using several key considerations, followed up by activities to validate hazard analysis results and identify specific areas of risk. Taking into consideration the missions of the special hazard districts participating in the 2020 HMP update, this chapter includes hazard profiles and vulnerability assessments for wildland fires and flooding.

3.2 Hazard Ranking

The hazards identified in the HMP were initially ranked based on MPT feedback during MPT Meeting #1. Because of the scope of the special hazard districts' missions, this annex focuses on wildland fire and flooding hazards. For the aggregate list of all hazard rankings included in the Washoe County Regional HMP, see Section 4.2 and Table 4-3 in the Basic Plan. The hazard rankings presented in Sections 3.3.1 and 3.3.2 of this annex are taken from Table 4-3 in the Basic Plan and incorporate aggregate rankings from the entire MPT.

3.3 Hazard-Specific Profiles and Risk Assessments

The following sections profile and assess the risks associated with hazards that are high planning priorities for the special hazards districts, including wildland fire and flooding. Each risk assessment considers the following attributes:

- **Location:** An indication of geographic areas that are most likely to experience the hazard.
- **Past Occurrences/History:** Similar to location, a chronological highlight of recent occurrences of the hazard accompanied by an extent or damage cost, if available.
- **Extent/Probability:** A description of the potential magnitude of the hazard, accompanied by the likelihood of the hazard occurring (or a timeframe of recurrence, if available).
- **Vulnerability:** A description of the potential magnitude of losses associated with the hazard. Vulnerability may be expressed in quantitative or qualitative values, depending on available data. Identifies the impact of development trends in vulnerability to each hazard since the 2015 plan update (Increased, decreased, unchanged).

Note: Hazard Descriptions, Potential Impacts from Future Climate Conditions, and Cascading Impacts can be found in Chapter 4 of the HMP Basic Plan, as these are not place-specific.

3.3.1 Wildland Fire

Wildland Fire

Probability	Magnitude	Frequency	Onset	Duration	Average	Rank
4.48	3.52	4.00	4.13	2.91	4.03	1

Location

Wildland fires are frequent natural occurrences in the arid ecosystems of the Truckee Meadows region and alpine forests surrounding Lake Tahoe. The risks from fires are highest for development in the wildland-urban interface (WUI), which in Washoe County includes areas outside of the urban centers of Reno and Sparks within the jurisdiction of the TMFPD and the communities of Incline Village and Crystal Bay on the shores of Lake Tahoe. Wildland fire potential in the TMFPD’s service area ranges from moderate to very high. Historic suppression of fires and buildup of fuels in the forests around Lake Tahoe have led to these communities’ high risk areas for fires, with wildland fire potential ranging from moderate to very high.

Past Occurrences/History

Wildland fires are an annual occurrence in Washoe County. Recent fires occurring in or near the service areas of the TMFPD and NLTFPD are listed in Table 3-1.

Table 3-2 Wildland Fires between 2015 and 2019			
Year	Fire Name	Total Acres Burned	Cause
2019	Jasper	1,165	Human
2018	Pioche	81	Human
2018	Apple	342	Human
2018	Slide	64	Human
2017	Warm Springs	921	Undetermined
2017	Hollywood	5,298	Undetermined
2017	Needle 2	970	Natural
2017	Winnemucca Ranch	4,799	Natural
2017	Truckee	98,960	Human
2017	Earthstone	41,545	Human
2017	Brenda	632	Human
2017	Aspen	315	Natural
2016	Jackpot	1,700	Human
2016	Hawken	278	Human
2016	Little Valley	2,291	Human

Source: Washoe County GIS: <https://gis.washoecounty.us/wrms>

See Appendix F of the Basic Plan for more details.

Extent and Probability

While rural communities in the WUI have the greatest risk of damage from fires, significant wildland fires can also occur in heavily populated areas. As urban areas such as Sparks continue to develop and spread outward, larger numbers of people, homes, and other structures are exposed to fire hazards. Urban development also affects the capacity of local fire districts to respond to fires. If private development outpaces investment in community services like fire response, response times may be

Wildland Fire

affected, and mutual aid agreements may need to be put into place to ensure that resources are available to quickly respond to fires. Sparks relies on an agreement with the TMFPD to provide fire response to areas of the Spanish Springs Valley. Strategies have been included in the HMP (see Section 5) to address fire response in this area.

Communities on the shores of Lake Tahoe, including Incline Village and Crystal Bay, are at risk from significant wildland fires, due to historic suppression of fires and buildup of fuels in adjacent forests. The NLTFPD and local governments recognize this risk and have developed programs to manage fuels and work with private property owners to create defensible spaces.

Weather conditions greatly influence the impact and extent of wildland fires. Drought, high temperatures, and wind contribute to dynamic and changing conditions of fires. Fuel load and vegetation contribute to the size and intensity of fires.

Wildland fires are frequent and inevitable in this region, and Washoe County generally experiences the effects of fires every year. The MPT rated fires as the highest probability hazard for the region. The vast majority of wildland fires burn between May and October.

Future Probability Trend – Wildland fire is an annual occurrence in Washoe County. Based on potential decreases in annual snow pack and increases in the frequency and magnitude of drought and heat, the County may experience an **increase** in the probability of fire in the future.

Vulnerability

The service areas of the TMFPD and NLTFPD include large areas of open space, rural agricultural and residential areas, and rapidly developing residential, industrial, and commercial areas where the cities of Reno and Sparks have exerted planning jurisdiction. As the region continues to develop, fire protection districts face challenges in meeting goals for response times. Regional economic growth has also resulted in an influx of new residents who may not be used to living with wildland fire hazards and may be more vulnerable to this hazard. Property owners play an important role in mitigating fire risks, and regional fire protection districts are one source of valuable information and strategies for property owners to reduce their vulnerability.

Property

- All of the identified critical facilities in the TMFPD service area, including four wastewater treatment plants, two power plants, one hospital, 29 schools, 20 dams, and 23 fire stations, are within areas of very low wildland fire potential
- All of the identified critical facilities in the NLTFPD service area, including one hospital, six schools, one transfer station, two dams, and three fire stations, are within areas of very low wildland fire potential

Recent Development Trends

- **Economic:** Regional economic development has resulted in demographic changes and increased urban growth that have put more people and structures in the WUI. (Increased Vulnerability)
- **Land Use:** Recent development in unincorporated areas of the County near the cities of Reno and Sparks has occurred in the WUI and has increased response times for regional fire protection districts. (Increased Vulnerability)

See Appendix F1 of the Basic Plan for a full Risk Exposure Table and Appendix F2 of the Basic Plan for maps.

3.3.2 Flooding

Flooding

Probability	Magnitude	Frequency	Onset	Duration	Average	Rank
4.22	3.35	3.39	3.04	3.39	3.50	2

Location

Riverine flooding in Washoe County occurs in the floodway and floodplains of the Truckee River and its tributaries. Significant floods on the Truckee River can have, and have had, devastating consequences in the cities of Reno and Sparks. Areas near culverts or irrigation ditches have an increased risk of flooding if these drainages are undersized or blocked by debris.

Past Occurrences/History

According to data from the National Centers for Environmental Information, part of the National Oceanic and Atmospheric Administration, Washoe County has experienced 11 reported riverine flooding or flash flooding events since January 2015. Information about these previous flood events, including their locations and reported damages, is summarized below.

In January 2017, a strong atmospheric river weather pattern brought heavy rain that caused widespread flooding across the County. Table 3-2 includes damages reported from various stations and sources in Washoe County. Total damages in Washoe County resulting from this flood event have been estimated at \$15 million.

Table 3-3 Previous Flooding Occurrences, Washoe County 2015–2018

Location	Date	Type	Estimated Damages
Vista	6/30/2015	Flash Flood	\$500,000
Empire	07/09/2015	Flash Flood	\$25,000
Huffakers Hills	01/08/2017	Flood	\$0
Reno-Tahoe International Airport	01/08/2017	Flood	\$1 million
Sutcliffe	01/08/2017	Flood	\$7 million
Crystal Bay	02/08/2017	Flood	\$0
Reno Stead Airport	02/10/2017	Flood	\$0
Sutcliffe	08/06/2017	Flash Flood	\$0
Gerlach	08/06/2017	Flash Flood	\$0
Huffakers Hills	08/22/2017	Flood	\$0
Vista	07/21/2018	Flash Flood	\$0

Source: NEIC n.d.

Notes: Event dates and reported damage amounts are approximate.

Extent and Probability

Severe floods may result in serious injuries and fatalities, as well as damage to public facilities and private property. The extent of flooding can be determined by the height of river flows in comparison to flood stages determined by U.S. Geological Survey and TRFMA stream gauges located throughout the region. It can also be measured by comparing damages with past damages of flooding.

The region experiences some flooding on average every one to three years, while major floods occur about once every decade.

Flooding

Future Probability Trend – Based on a potential increase in high-intensity precipitation events in the winter months and increased development trends (resulting in additional impervious surfaces and storm water runoff), Washoe County may be impacted by an **increase** in the probability of future floods.

Vulnerability

Riverine or flash flooding in the County often results in the washout or flooding of roadways and infrastructure in waterways, such as bridges or culverts. Due to the concentration of urban development in Reno and Sparks along the Truckee River, many critical facilities in the County are located within the 100-year or 500-year mapped floodplains and are vulnerable to riverine flooding. Flash flooding can affect smaller creeks and streams and areas near burn scars, and critical facilities outside of mapped floodplains may be affected.

- 36 critical facilities, including two wastewater treatment plants, five schools, 23 dams, and six fire stations, are at least partially within the 100-year floodplain
- 36 critical facilities, including eight hospitals, 20 schools, the Reno-Tahoe International Airport, four fire stations, and three police stations, are at least partially within the 500-year floodplain

Recent Development Trends

- **Economic:** The TRFMA, a joint powers authority created under an Interlocal Cooperative Agreement among Washoe County, the City of Reno, and the City of Sparks, is continuing to implement the Truckee River Flood Management Project by constructing, maintaining, and operating infrastructure designed to reduce flood risks. (Decreased Vulnerability)
- **Land Use:** Areas targeted for new development generally are outside of mapped floodplains. The County requires the potential impacts of new development within floodplains to be mitigated to avoid downstream flooding impacts. Residential and commercial development has resulted in creation of additional impervious surface in the closed basins of the North Valleys. (Increased Vulnerability)

Future Land Use

- Additional residential development in the communities of Wadsworth and Hidden Valley and additional industrial and commercial development proposed in the Truckee Canyon planning area near the Truckee River may increase flood risks. Development on parcels within the 100-year floodplain in the Truckee Canyon planning area will be required to comply with FEMA guidelines for development in the floodplain. Future development in the Southeast Truckee Meadows planning area, including the community of Hidden Valley, will be required to mitigate any increase in impervious surface to minimize losses associated with flooding.

See Appendix F1 of the Basic Plan for a full Risk Exposure Table and Appendix F2 of the Basic Plan for maps.

3.4 Vulnerability Assessment

3.4.1 Asset Inventory

Local assets that may be affected by hazards include residents, properties, and utilities and infrastructure. Geographic information system (GIS) data from federal, state, and local databases was used to inform the vulnerability assessment and identify critical infrastructure. Section 4.4.2 of the Basic Plan and Appendix F1 of the Basic Plan discuss the sources and types of data used in the HMP. Data collection for the vulnerability assessment was complicated by the fact that the region has never comprehensively identified critical infrastructure; therefore, the list of critical infrastructure may be incomplete. Similarly, valuation information has not been compiled within the districts, so valuation data was not available to be included in the vulnerability assessment. Washoe County and its partners are committed to continuing to refine and build on the list of critical infrastructure over the next five years to improve the data provided in the next plan update.

3.4.2 Repetitive Loss Properties

No repetitive loss properties currently exist in the special hazards districts.

3.4.3 Exposure Assessment

Table 3-4 shows exposure of identified critical facilities within the districts to natural hazards that are able to be mapped.

Table 3-4 Exposure Assessment

Type	Name	Address	Special Hazards District	Floodzone	Wildland Fire Hazard Potential
Wastewater Treatment Plant	Lemmon Valley WWTP	11000 Lemmon Dr	TMFPD, TRFMA	100-year Floodzone	1
Wastewater Treatment Plant	National Wild Horse and Burro Center	15780 SR 445	TMFPD	--	1
Wastewater Treatment Plant	Lemmon Valley WWTP	11000 Lemmon Dr	TMFPD, TRFMA	100-year Floodzone	1
Wastewater Treatment Plant	National Wild Horse and Burro Center	15780 SR 445	TMFPD	--	1
Power Plant	Steamboat Hills LP	20590 Wedge Parkway	TMFPD	--	1
Power Plant	Galena 2 Geothermal Power Plant	20590 Wedge Parkway	TMFPD	--	1
Hospital	Saint Mary's Medical Center Sun Valley Clinic	N/A	TMFPD	--	1
Hospital	Incline Village Community Hospital	N/A	NLTFPD, TRFMA	500-year Floodzone	1
Hospital	Eastern Sierra Medical Group and FASTER Care	N/A	TRFMA	500-year Floodzone	1
Hospital	Renown Medical Group Urgent Care Center Ryland	N/A	TRFMA	500-year Floodzone	1
Hospital	Life Care Center of Reno	N/A	TRFMA	500-year Floodzone	1
Hospital	Willow Springs Center	N/A	TRFMA	500-year Floodzone	1
Hospital	ARC Med Center	N/A	TRFMA	500-year Floodzone	1
Hospital	Regent Care Center of Reno	N/A	TRFMA	500-year Floodzone	1
Hospital	Saint Marys Family Walk-In Center	N/A	TRFMA	500-year Floodzone	1
School	University of Nevada Farm	N/A	TMFPD, TRFMA	500-year Floodzone	1
School	Natchez Elementary School	N/A	TMFPD	--	1
School	Sierra Nevada College	N/A	NLTFPD	--	1
School	Hidden Valley Elementary School	N/A	TMFPD	--	1
School	Incline Middle School	N/A	NLTFPD	--	1
School	Incline Elementary School 3rd - 5th School	N/A	NLTFPD	--	1
School	Lois Allen Elementary School	N/A	TMFPD	--	1
School	Lemmon Valley Elementary School	N/A	TMFPD	--	1

3. Hazard Profiles and Vulnerability Assessments

Table 3-4 Exposure Assessment

Type	Name	Address	Special Hazards District	Floodzone	Wildland Fire Hazard Potential
School	Sun Valley Elementary School	N/A	TMFPD	--	1
School	Galena Creek School (historical)	N/A	TMFPD	--	1
School	Nancy Gomes Elementary School	N/A	TMFPD	--	1
School	Alice L Smith Elementary School	N/A	TMFPD, TRFMA	100-year Floodzone	1
School	Virginia Palmer Elementary School	N/A	TMFPD	--	1
School	Elizabeth Lenz Elementary School	N/A	TMFPD	--	1
School	Piccolo Special Education School	N/A	TMFPD	--	1
School	Alyce Savage Taylor Elementary School	N/A	TMFPD	--	1
School	Incline High School	N/A	NLTFPD	--	1
School	Pleasant Valley Elementary School	N/A	TMFPD, TRFMA	100-year Floodzone	1
School	Verdi Elementary School	N/A	TMFPD	--	1
School	Brown Elementary School	N/A	TMFPD	--	1
School	Galena High School	N/A	TMFPD	--	3
School	North Valleys High School	N/A	TMFPD	--	1
School	Spanish Springs High School	N/A	TMFPD	--	1
School	Yvonne Shaw Middle School	N/A	TMFPD	--	1
School	Ester Bennett Elementary School	N/A	TMFPD	--	1
School	Ted Hunsberger Elementary School	N/A	TMFPD	--	1
School	Incline Elementary K-2nd School	N/A	NLTFPD	--	1
School	Spanish Springs Elementary School	N/A	TMFPD	--	1
School	Bishop Manogue High School	N/A	TMFPD	--	1
School	Lake Tahoe School	N/A	NLTFPD	--	1
School	Lighthouse Baptist Academy	N/A	TMFPD, TRFMA	100-year Floodzone	1
School	Mountain View Montessori School	N/A	TMFPD, TRFMA	100-year Floodzone	1

Table 3-4 Exposure Assessment

Type	Name	Address	Special Hazards District	Floodzone	Wildland Fire Hazard Potential
School	New Beginnings Child Development Center	N/A	TMFPD	--	1
School	Sage Ridge School	N/A	TMFPD	--	1
School	Teen Challenge of Nevada	N/A	TMFPD	--	1
School	Home Garden School (historical)	N/A	TRFMA	500-year Floodzone	1
School	Sierra Vista Childrens Academy	N/A	TRFMA	500-year Floodzone	1
School	Brookfield School	N/A	TRFMA	500-year Floodzone	1
School	A Plus Learning Center	N/A	TRFMA	500-year Floodzone	1
School	Aquinas School (historical)	N/A	TRFMA	500-year Floodzone	1
School	Libby C Booth Elementary School	N/A	TRFMA	500-year Floodzone	1
School	Roger Corbett Elementary School	N/A	TRFMA	500-year Floodzone	1
School	McKinley Park School (historical)	N/A	TRFMA	100-year Floodzone	1
School	Edward L Pine Middle School	N/A	TRFMA	500-year Floodzone	1
School	Huffaker Elementary School	N/A	TRFMA	500-year Floodzone	1
School	Smithridge Elementary School	N/A	TRFMA	500-year Floodzone	1
School	Regional Technical Institute	N/A	TRFMA	500-year Floodzone	1
School	Early Basics Learning Academy	N/A	TRFMA	500-year Floodzone	1
School	Koinonia Day Treatment Center	N/A	TRFMA	500-year Floodzone	1
School	Little Hearts Preschool and Kindergarten	N/A	TRFMA	500-year Floodzone	1
School	Truckee Meadows Christian Academy	N/A	TRFMA	500-year Floodzone	1
School	Stepping Stones Children's Center	N/A	TRFMA	500-year Floodzone	1
School	I Can Do Anything Charter High School	N/A	TRFMA	500-year Floodzone	1
School	Team A School	N/A	TRFMA	500-year Floodzone	1
School	Halima Academy	N/A	TRFMA	500-year Floodzone	1
Transfer Station	Incline Transfer Station	1076 Tahoe Boulevard	NLTFPD	--	1

Table 3-4 Exposure Assessment

Type	Name	Address	Special Hazards District	Floodzone	Wildland Fire Hazard Potential
Airport	Reno/Tahoe International Airport	N/A	TRFMA	500-year Floodzone	1
Dam	Hobart Creek Reservoir Dam	N/A	TMFPD	--	1
Dam	Marlette Lake Dam	N/A	TMFPD	--	1
Dam	Mill Creek No 2	N/A	NLTFPD	--	1
Dam	Greil Dam	N/A	TMFPD	--	1
Dam	Incline Lake Dam	N/A	TMFPD	--	1
Dam	Incline Lake Dam	N/A	TMFPD	--	1
Dam	Hunter Creek Reservoir	N/A	TMFPD	--	1
Dam	Herman Dam	N/A	TMFPD	--	1
Dam	Mill Creek No 1	N/A	NLTFPD	--	1
Dam	Huffaker Effluent Storage Reservoir	N/A	TMFPD	--	1
Dam	Hidden Lake Dam	N/A	TMFPD	--	1
Dam	Lightning W Ranch Dams	N/A	TMFPD	--	1
Dam	Pagni Dam	N/A	TMFPD, TRFMA	100-year Floodzone	1
Dam	Washoe Lake Dam	N/A	TMFPD	--	1
Dam	Home Ranch Canyon Dam	N/A	TMFPD	--	2
Dam	Wilcox Canyon Dam #1	N/A	TMFPD	--	1
Dam	Wilcox Canyon Dam #3	N/A	TMFPD	--	3
Dam	Jones Canyon Dam	N/A	TMFPD	--	1
Dam	Sidehill Detention Basin	N/A	TMFPD	--	1
Dam	Verdi Meadows Wastewater Disposal Dam	N/A	TMFPD	--	1
Dam	North Spanish Springs Flood Sediment Basin	N/A	TMFPD, TRFMA	100-year Floodzone	1
Dam	North Spanish Springs Flood Detention Facility	N/A	TMFPD, TRFMA	100-year Floodzone	1
Dam	IXL Ranch Dam	N/A	TRFMA	100-year Floodzone	1

Table 3-4 Exposure Assessment

Type	Name	Address	Special Hazards District	Floodzone	Wildland Fire Hazard Potential
Dam	Captain Johnson Reservoir	N/A	TRFMA	100-year Floodzone	1
Dam	Carter Reservoir	N/A	TRFMA	100-year Floodzone	1
Dam	Frog Pond	N/A	TRFMA	100-year Floodzone	1
Dam	Hill Dam Number 1	N/A	TRFMA	100-year Floodzone	1
Dam	Wall Creek Dam Lower	N/A	TRFMA	100-year Floodzone	1
Dam	Wall Creek Dam Upper	N/A	TRFMA	100-year Floodzone	5
Dam	Little High Rock	N/A	TRFMA	100-year Floodzone	1
Dam	Peavine Creek Upper Dam	N/A	TRFMA	100-year Floodzone	1
Dam	Upper Holy Lake Reservoir	N/A	TRFMA	100-year Floodzone	1
Dam	Sevier Lake	N/A	TRFMA	100-year Floodzone	1
Dam	Spanish Springs Stormwater Detention Facility	N/A	TRFMA	100-year Floodzone	1
Dam	Catnip Dam	N/A	TRFMA	100-year Floodzone	1
Dam	Double Diamond	N/A	TRFMA	100-year Floodzone	1
Dam	Rancho Haven Dam #4	N/A	TRFMA	100-year Floodzone	1
Dam	Damonte Ranch Flood Control Diversion	N/A	TRFMA	100-year Floodzone	1
Dam	Damonte Ranch Flood Detention Basin	N/A	TRFMA	100-year Floodzone	1
Dam	Damonte Ranch Wetlands Detention Basin	N/A	TRFMA	100-year Floodzone	1
Dam	Virginia Lake	N/A	TRFMA	100-year Floodzone	1
Dam	IXL Ranch Dam Lower	N/A	TRFMA	100-year Floodzone	1
Fire Station	Lemmon Valley Volunteer Fire Department Station 223	130 Nectar Street	TMFPD, TRFMA	100-year Floodzone	1
Fire Station	Silver Lake Volunteer Fire Department Station 221	11525 Red Rock Road	TMFPD	--	1
Fire Station	City of Reno Fire Department Station 17	500 Rockwell Boulevard	TMFPD	--	1
Fire Station	City of Reno Fire Department Station 15	110 Quartz Lane	TMFPD	--	1

Table 3-4 Exposure Assessment

Type	Name	Address	Special Hazards District	Floodzone	Wildland Fire Hazard Potential
Fire Station	Hidden Valley Volunteer Fire Department Station 226	3255 West Hidden Valley Drive	TMFPD, TRFMA	100-year Floodzone	1
Fire Station	Wadsworth Volunteer Fire Department 225	400 Stampmill Road	TMFPD	--	1
Fire Station	Reno Fire Department Station 16	1240 Eastlake Boulevard	TMFPD, TRFMA	100-year Floodzone	1
Fire Station	Cold Springs Volunteer Fire Department	White Lake Parkway	TMFPD	--	1
Fire Station	Pleasant Valley Volunteer Fire Department Station 237	Lakeshore Drive	TMFPD	--	1
Fire Station	Nevada Department of Forestry Station 1 - Headquarters	885 Eastlake Boulevard	TMFPD	--	1
Fire Station	Pleasant Valley Volunteer Fire Department 227	United States Highway 395	TMFPD, TRFMA	500-year Floodzone	1
Fire Station	Sierra Fire Protection District Station 30 – Bowers	3905 Old United States Highway 395 South	TMFPD	--	1
Fire Station	Sierra Fire Protection District Station 38 – Galena	16255 Mount Rose Highway	TMFPD	--	1
Fire Station	Sierra Fire Protection District Station 381 – Galena	16133 Mountain Ranch Road	TMFPD	--	1
Fire Station	Sierra Fire Protection District Station 351	165 Bridge Street	TMFPD	--	1
Fire Station	Sierra Fire Protection District Station 331 - Peavine	11005 Longview Lane	TMFPD	--	2
Fire Station	Sierra Fire Protection District Station 321 - Cold Springs	250 South Avenue	TMFPD	--	1
Fire Station	Sierra Fire Protection District Station 382 - Galena	16175 Callahan Road	TMFPD	--	1
Fire Station	North Lake Tahoe Fire Protection District Station 11	875 Tanager Street	NLTFPD	--	1
Fire Station	Sierra Fire Protection District Station 101 - Washoe Valley	345 Bellevue Road	TMFPD, TRFMA	100-year Floodzone	1
Fire Station	North lake Tahoe Fire Protection District Station 12	14 Calneva Drive	NLTFPD	--	1
Fire Station	Sierra Fire Protection District Station 39	4000 Joy Lake Road	TMFPD	--	2
Fire Station	Palomino valley Volunteer Fire Department Station 229	6015 Ironwood Road	TMFPD	--	1

Table 3-4 Exposure Assessment

Type	Name	Address	Special Hazards District	Floodzone	Wildland Fire Hazard Potential
Fire Station	North lake Tahoe Fire Protection District Station 13	965 Mount Rose Highway	NLTFPD	--	1
Fire Station	City of Reno Fire Department Station 14	12300 Old Virginia Road	TMFPD, TRFMA	500-year Floodzone	1
Fire Station	Hungry Valley Volunteer Fire Department	Eagle Canyon Drive	TMFPD	--	1
Fire Station	City of Reno Fire Department Station 6	3970 Mira Loma Drive	TRFMA	500-year Floodzone	1
Fire Station	Sparks Fire Department Station 3	1750 East Greg Street	TRFMA	100-year Floodzone	1
Fire Station	City of Reno Fire Department Station 18	3680 Diamond Peak Drive	TRFMA	100-year Floodzone	1
Fire Station	Reno Airport Authority Fire Department	1802 Riley Avenue	TRFMA	500-year Floodzone	1
Police Station	Reno-Tahoe Airport Authority Police Division	2001 East Plumb Lane	TRFMA	500-year Floodzone	1
Police Station	Nevada Department of Public Safety - Nevada Highway Patrol - Reno Station	357 Hammill Lane	TRFMA	500-year Floodzone	1
Police Station	Reno Municipal Court Marshals Division	1 South Sierra Street	TRFMA	500-year Floodzone	1

Key:

N/A = Information not available

-- = Critical facility is not in a mapped floodzone

3.5 Land Use and Development Trends


FEMA
D1. Was the plan revised to reflect changes in development? (Requirement §201.6(d)(3))

As Reno and Sparks continue to expand beyond city limits and into the service area of the TMFPD, demand for fire protection services will increase, and the Department may need to increase its resources and capacity accordingly. While the pressure from development is not as great in the communities of Incline Village and Crystal Bay on the shores of Lake Tahoe, the NLTFPD may face similar challenges due to an increasing local population. The TRFMA will similarly be charged with protection of a greater number of assets as the region grows.

The vulnerability subsection of each hazard profile in Section 3.3 outlines recent development trends to illustrate ways in which vulnerability may have changed over the past five years. Vulnerability changes have been measured for economic interests and land use trends. Each measure has been identified as having an increased, decreased, or unchanged vulnerability. Table 3-5 provides a snapshot of how vulnerability has changed since development of the 2015 HMP.


Table 3-5 Recent Development Trends

Hazard	Economic	Land Use
Wildland Fire	+	+
Flooding	-	+

+ Increased vulnerability

- Decreased vulnerability

4. CAPABILITY ASSESSMENT

 FEMA	C1. Does the plan document [the special hazards districts'] existing authorities, policies, programs, and resources, and [their] ability to expand on an improve these existing policies and programs? (Requirement §201.6(c)(3))
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4.1 Human and Technical Resources

Table 4-1 describes the special hazard districts' human and technical capabilities to engage in and improve mitigation planning and program implementation.

Table 4-1 Human and Technical Resources Integrated with Hazard Mitigation

Resource	Department	Tasks and Activities Integrated into Mitigation Planning
Regional Hazardous Materials Response Team	TMFPD	Provides response to hazardous material spills, leaks, releases, and other incidents
Firefighters	TMFPD; NLTFPD	Provides community outreach and public education to involve members of the community in reducing their risks
Fire Marshal and Inspectors	TMFPD; NLTFPD	Inspects new developments and major improvements for compliance with local adopted fire codes
Hand Crews	NLTFPD	Conducts fuels management activities to reduce risks from wildfire
Public Education Team	NLTFPD	Provides educational programs for all ages, emphasizing community safety
Community Emergency Response Team	NLTFPD	Provides emergency support for major emergencies in the NLTFPD service area
Board of Directors	TRFMA	Develops policy guidance for TRFMA activities
Licensed Engineer	TRFMA	Provides engineering services in support of the Truckee River Flood Management Project
Natural Resource Manager	TRFMA	Manages ecosystem restoration work as part of the Truckee River Flood Management Project
Other		
Hazardous Materials Planning	Fire Protection Districts	Develops capacity for local jurisdictions to prepare for and respond to hazardous materials incidents

4.2 Financial Resources

Washoe County and the special hazards districts maintain many fiscal and financial resources to support their mitigation programs. Table 4-2 identifies resources accessible for use.

Table 4-2 Accessible Financial Resources

Financial Resource	Accessible?
Community Development Block Grants	Yes
Capital Improvement Project Funding	Yes
Insurance	Yes; including general liability, errors and omissions (NLTFPD); property, casualty, excess liability, excess earthquake, network security and privacy (cyber) (TMFPD); and general liability (TRFMA)
User fees for utility services	No
Incur debt	Yes
State-sponsored grant programs	Yes

Table 4-3 identifies current and potential sources of funding to implement identified mitigation actions contained within the HMP. In addition, funding is also available from the State of Nevada and, potentially, through Washoe County.

Table 4-3 Financial Resources Integrated with Hazard Mitigation

Funding Source	Fund Administrator	Description
Local		
Washoe County General Fund	Office of the County Manager	Provides funding for mitigation efforts supporting government-wide projects and activities, including activities of the Truckee Meadows Fire Protection District (TMFPD).
Washoe County Capital Project Funds	Office of the County Manager	Provides funding for capital projects, including capital projects for the TMFPD.
North Lake Tahoe Fire Protection District (NLTFPD) General Fund	Board of Fire Commissioners	Provides funding for employee salaries, services, and supplies.
NLTFPD Capital Projects Fund	Board of Fire Commissioners	Provides funding for capital improvements.
TRFMA General Fund	Board of Directors	Provides funding for supplies, services, and employee salaries.
TRFMA Capital Project Fund	Board of Directors	Provides funding for supplies, services, and capital improvements.
Federal		
Pre-Disaster Mitigation Program	Nevada Division of Emergency Management	Provides funding to develop hazard mitigation plans and implement mitigation actions contained within.
Hazard Mitigation Grant Program	Nevada Division of Emergency Management	Provides post-disaster funds to hazard reduction projects impacted by recent disasters.
Flood Mitigation Assistance Program	Nevada Division of Emergency Management	Provides funds for flood mitigation on buildings that carry flood insurance and have been damaged by floods.
Community Development Block Grant Program	U.S. Department of Housing and Urban Development/Governor's Office of Economic Development	Funds projects that benefit low- and moderate-income communities, prevent or eliminate slums or blight, or meet urgent community development needs posing a serious and immediate threat to community health or welfare.

Table 4-3 Financial Resources Integrated with Hazard Mitigation

Funding Source	Fund Administrator	Description
Emergency Management Performance Grants Program	FEMA/Nevada Division of Emergency Management	Provides funding to states for local or tribal planning, operations, acquisition of equipment, training, exercises, and construction and renovation projects.
Flood Mitigation Assistance	Nevada Division of Emergency Management	Provides funding to support development of the flood hazard portion of state and local mitigation plans and up to 100% of the cost of eligible mitigation activities. This funding is only available to communities participating in the National Flood Insurance Program.
Earthquake State Assistance Program	National Earthquake Hazards Reduction Program/ Nevada Resiliency Advisory Committee/ Nevada Division of Emergency Management	Funds activities including seismic mitigation plans; seismic safety inspections of critical structures and lifelines; updates of building codes, zoning codes, and ordinances; and earthquake awareness and education.
State Fire Assistance Program	U.S. Forest Service/ Nevada Division of Forestry	Provides funding opportunities for local wildland-urban interface planning, prevention, and mitigation projects, including fuels reduction work, education and prevention projects, community planning, and alternative uses of fuels.
Risk Mapping, Assessing, and Planning	FEMA	Provides funding and technical support for hazard studies, flood mapping products, risk assessment tools, mitigation and planning, and outreach and support.
State		
Emergency Assistance Account	Nevada Division of Emergency Management	Provides support to state agencies and local jurisdictions during declared emergencies at the state or local level.
Disaster Relief Account	Interim Finance Committee	Provides a special account intended to stabilize the operation of the state government following a disaster. Used to match federal funding for declared disasters.
Wildfire Emergency and Mitigation Funds	Nevada Division of Forestry/ Nevada Division of Emergency Management	Administers funding from FEMA, Bureau of Land Management, and U.S. Forest Service for certain types of wildfire emergency and mitigation funding.
Earthquake Mitigation Funds	Nevada Resiliency Advisory Committee/ Nevada Division of Emergency Management	Allocates FEMA money for earthquake mitigation efforts.
Conservation Reserve Program	USDA Farm Service Agency and Natural Resource Conservation Service	Retires eligible cropland from agricultural production and plans the land with permanent grass cover to reduce wind erosion and dust hazards.
University of Nevada, Reno, partnership with the USGS National Landslide Hazards Program	USGS/University of Nevada, Reno	Conducts studies of landslide hazards.
Western States Fire Managers Grants	U.S. Forest Service/ Nevada Division of Forestry	Provides funding for fuel reduction, restoration of fire-adapted ecosystems, prevention education, and community wildfire protection planning.

Table 4-3 Financial Resources Integrated with Hazard Mitigation

Funding Source	Fund Administrator	Description
Landscape Scale Restoration Grants	U.S. Forest Service/ Nevada Division of Forestry	Provides funding for projects that cross property ownership, management and/or jurisdictional boundaries and involve collaborative efforts among multiple stakeholders to address issues identified in Nevada's Forest Action Plan.
Hazardous Fuels-Community Protection Grants	U.S. Forest Service/ Nevada Division of Forestry	Provides funding for priority fuels management projects identified in a Community Wildfire Protection Plan that are adjacent to a recent, current, or planned project on U.S. Forest Service lands.
Regional Conservation Partnership Program	U.S. Forest Service/ Nevada Division of Forestry	Provides grant funds for wildland fire restoration and other sagebrush ecosystem improvements; riparian improvements; prescribed, targeted, or deferred grazing; and brush management.
Nevada State General Fund	Nevada State Legislature	Nevada State General Fund money is used to pay the labor costs of state employees working to support statewide and local hazard mitigation activities and as non-federal cost share for federally funded projects.
Other		
Community Planning Assistance Teams	American Planners Association Foundation	Provides pro bono technical assistance for planning frameworks or community vision plans for communities needing extra assistance. Local governments are responsible for travel costs.

4.3 Legal and Regulatory Resources

Table 4-4 describes the legal and regulatory capabilities of the special hazards districts, including plans, policies, and programs that contribute to hazard mitigation activities.

Table 4-4 Legal and Regulatory Resources Integrated with Hazard Mitigation

Capability Type	Capability	Description	Key Accomplishments (2015-2019)	Hazard Mitigated
Plans	Nevada Community Wild-fire Risk/Hazard Assessment Project, North Lake Tahoe Fire Protection District	Assesses fire hazard conditions near communities in the Lake Tahoe Basin and recommends strategies to reduce risk and manage fuels.	<ul style="list-style-type: none"> Continued plan implementation 	Wildland Fire

Table 4-4 Legal and Regulatory Resources Integrated with Hazard Mitigation

Capability Type	Capability	Description	Key Accomplishments (2015-2019)	Hazard Mitigated
	Nevada Community Wildfire Risk/Hazard Assessment Project, Washoe County	Assesses fire hazard conditions near Washoe County communities and recommends strategies to reduce risk and manage fuels. This plan serves as the County's Community Wildfire Protection Plan (CWPP), along with the Landscape-scale Wildland Fire Risk/Hazard/Value Assessment.	<ul style="list-style-type: none"> Defensible space inspections are completed for all new construction within the wildland-urban interface (WUI) in the TMFPD's service area to ensure compliance with the current International Wildland Urban Interface Code. TMFPD is partnering with NV Energy on fuels mitigation for power lines and poles. 	Wildland Fire
	Landscape-scale Wildland Fire Risk/Hazard/Value Assessment, Washoe County, Nevada	Assesses wildland fire hazards in areas of Washoe County north of Pyramid Lake and provides guidance for determining mitigation priorities and implementing effective fuels reduction projects. This plan serves as the County's CWPP, along with the Nevada Community Wildfire Risk/Hazard Assessment Project for Washoe County.	<ul style="list-style-type: none"> Defensible space inspections are completed for all new construction within the WUI in the TMFPD's service area to ensure compliance with the current International Wildland Urban Interface Code. The TMFPD is partnering with NV Energy on fuels mitigation for power lines and poles. 	Wildland Fire
	Truckee River Flood Management Authority Flood Protection Plan	Describes the project elements of the Flood Protection Plan that will be implemented to reduce the impacts of flooding in the Truckee River watershed.	<ul style="list-style-type: none"> Plan updated in 2015 	Flooding
Policies	Washoe County Fire Code (2012 International Fire Code and 2012 International Wildland Urban Interface Code)	Regulates development within the jurisdiction of the Truckee Meadows Fire Protection District (TMFPD) to reduce fire risks.	<ul style="list-style-type: none"> The TMFPD enforces the 2012 International Wildland Urban Interface Code on building plans for developments located within the WUI. The TMFPD will be adopting the 2018 International Wildland Urban Interface Code and Amendments in January or February 2020. 	Wildland Fire

Table 4-4 Legal and Regulatory Resources Integrated with Hazard Mitigation

Capability Type	Capability	Description	Key Accomplishments (2015-2019)	Hazard Mitigated
	2018 International Fire Code	Regulates development within the jurisdiction of the North Lake Tahoe Fire Protection District (NLTFPD) to reduce fire risks.	<ul style="list-style-type: none"> The NLTFPD adopted the 2018 edition of the International Fire Code, effective January 2019 	Wildland Fire
	Interlocal Cooperative Agreement (Truckee River Flood Management Project) (March 11, 2011)	Created the Truckee River Flood Management Authority to manage, operate, and control the Truckee River Flood Management Project.	<ul style="list-style-type: none"> Continued policy implementation 	Flooding
	Nevada Assembly Bill No. 375	Authorizes the governing body of a flood management authority to recommend certain taxes, fees, rates, charges, levies, or assessments to fund approved flood management projects.	<ul style="list-style-type: none"> Continued policy implementation 	Flooding
Programs	Mutual Aid Agreements	Standing agreements to provide support to partners in times of need.	<ul style="list-style-type: none"> Increased capacity and capability through partnership The TMFPD and City of Sparks have enhanced their mutual and automatic aid relationships. 	All
	Public-Private Partnerships	Partnerships with private industry to accomplish mitigation strategies.	<ul style="list-style-type: none"> The NLTFPD is establishing a partnership with NV Energy for managing planned power outages. 	Wildland Fire
	Fire Prevention Program	TMFPD program to assist homeowners in creating defensible space	<ul style="list-style-type: none"> Creation of additional "green waste" disposal days in 2018 	Wildland Fire

Table 4-4 Legal and Regulatory Resources Integrated with Hazard Mitigation

Capability Type	Capability	Description	Key Accomplishments (2015-2019)	Hazard Mitigated
	Public Education and Community Risk Reduction Program	TMFPD program to educate residents on wildfire risks	<ul style="list-style-type: none"> The TMFPD is in partnership with the University of Nevada, Reno, Cooperative Extension Office on the Living with Fire Program; Nevada Wildlife Awareness Month planning committee; and the Nevada Network of Fire Adaptive Communities. The TMFPD also offers a Defensible Space Assessment Community Program. The TMFPD's Public Information Officer continues to build relationships with the local news media and regional partners and the public. 	Wildland Fire
	Fuels Management Program	NLTFPD program to reduce hazardous fuels in the WUI and create defensible space around residences and businesses	<ul style="list-style-type: none"> Completed multiple fuels reduction projects in 2019, including reduction of fuels on over 580 acres in Incline Village 	Wildland Fire
	Public Education Program	NLTFPD program to provide community education emphasizing safety	<ul style="list-style-type: none"> Continued program implementation 	Wildland Fire

4.4 National Flood Insurance Program Participation



C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3))

Washoe County and the cities of Reno and Sparks participate in the National Flood Insurance Program. Information on flood losses under the County and the cities' policies is provided in Section 5.8 of the Basic Plan and Section 4.4 of the Reno and Sparks jurisdictional annexes.

4.5 Integration of Mitigation into Existing Planning Mechanisms


Integration of the principles of mitigation into the special hazards districts' daily operations and ongoing planning activities is a priority of the districts' mitigation program. These activities will support:

- Raising awareness of the importance of hazard mitigation for the whole community;
- Facilitating an understanding that hazard mitigation is not just an “emergency services” function and building ownership of mitigation activities across the organization;
- Reduction in duplication or contradiction across district plans; and
- Maximization of planning resources through linked or integrated planning efforts.

The special hazards districts are encouraged to consider integration actions into planning mechanisms, including:

- Budget decision-making;
- Capital improvements; and
- Emergency planning mechanisms.

4.5.1 Existing Plans


 FEMA	C6. Does the Plan describe a process by which the [special hazards districts] will incorporate the requirements of the mitigation plan into other planning mechanisms, when appropriate? (Requirement §201.6(c)(4)(iii))
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The following existing plans provide ongoing opportunity for integration of hazard mitigation, and the special hazards districts will consider hazard mitigation data and principles and ensure these plans align with the HMP when these plans are updated.

Community Wildfire Protection Plans, such as the Community Wildfire Risk/Hazard Assessment Project reports prepared for areas of Washoe County include strategies to reduce wildfire risk and manage fuels. Pertinent strategies from the 2020 regional HMP update will be included in the next iterations of these plans.

Project elements from the **Truckee River Flood Management Authority Flood Protection Plan** have been included in the 2020 regional HMP update. The Washoe County MPT and TRFMA will continue to collaborate on future updates of the flood protection plan and HMP to ensure that both plans reflect the most current strategies for addressing flood risks across the Truckee Meadows region.

5. MITIGATION STRATEGY


 FEMA	C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for the [special hazards districts] being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure ? (Requirement §201.6(c)(3)(ii))
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5.1 Review of 2015 Hazard Mitigation Actions

As part of the mitigation strategy update, all mitigation actions identified in the 2015 plan were evaluated to determine what the status of the action was and whether any ongoing or incomplete actions should be included as actions in the 2020 plan update. The MPT worked through each previous action during MPT Meeting #4 to document steps taken to fulfill the action.

See Appendix A of the Basic Plan for an overview of the status of all actions from the 2015 plan update.

5.2 2020-2025 Mitigation Implementation Plan

 FEMA	C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by [the special hazards districts]? (Requirement §201.6(c)(3)(iii))
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The mitigation implementation plan lays the groundwork for how the mitigation plan will be incorporated into existing planning mechanisms and how the mitigation actions will be prioritized, implemented, and administered by the County and its partners. The implementation plan includes both short-term strategies that focus on planning and assessment activities, and long-term strategies that will result in ongoing capability or structural projects to reduce vulnerability to hazards.

See Appendix A of the Basic Plan for Mitigation Action Worksheet instructions and completed Mitigation Action Worksheets for each action listed in Table 5-1.

Table 5-1 2020-2025 Mitigation Implementation Plan

Action No.	Mitigation Action (Jurisdiction)	Action Status	Type of Action	Goals Supported (Objectives)	Lead Department	Supporting Departments	Timeline	Hazards Addressed	Anticipated Cost	Funding Available?	Funding Source	STAPLEE Score	Mitigation Effectiveness Score	TOTAL SCORE
MH-11	Identify facilities in Lake Tahoe to serve as evacuation centers and potential cooling centers, harden against wildland fires and power outages, and provide back-up power. (North Lake Tahoe Fire Protection District [NLTFPD])	New	Infrastructure/Capital Project	2 (2.2), 4 (4.1)	NLTFPD	-	1 – 3 years	All Hazards	Unknown	No	Grant	18	10	28
MH-12	Install a regional notification system for the Tahoe Basin that would handle all hazard notifications and traffic control. System would be operated from the regional traffic control center. (NLTFPD)	New	Infrastructure/Capital Project	3 (3.1)	NLTFPD	Tahoe Basin Regional Fire Protection Districts	3 – 5 years	All Hazards	\$50,000	Anticipated	Grant Existing Budget	19	4	23
MH-13	Construct regional dispatch center for the Tahoe Basin. (NLTFPD)	New	Infrastructure/Capital Project	3 (3.1)	NLTFPD	Tahoe Basin Regional Fire Protection Districts	3 – 5 years	All Hazards	\$1,000,000	Anticipated	Grant Existing Budget	19	6	25
MH-14	Upgrade power system at North Tahoe High School to allow for an emergency generator to be installed, so the high school can be used as a community evacuation center and potential cooling center. (NLTFPD)	New	Infrastructure/Capital Project	2 (2.2), 4 (4.1)	NLTFPD	-	1 – 3 years	All Hazards	\$200,000	No	Grant	18	6	24
WF-13	Adopt 2018 wildland fire code County-wide. (All Partners)	New	Plans and Regulations	5 (5.2), 6 (6.2)	Regional Fire Protection Districts	-	Immediate	Wildland Fire	No/minimal cost	Yes	Existing Budget	20	2	22
WF-14	Manage fuels to mitigate wildland fire risk along the Mt. Rose corridor. (TMFPD)	New	Preparedness and Response	5 (5.3)	TMFPD	Washoe County Emergency Management and Homeland Security	1 – 3 years	Wildland Fire	\$1,000,000	No	Grant Existing Budget	17	10	27
WF-15	Continue County chipping program and “junk the juniper” program, offering free chipping to property owners. (TMFPD)	Existing	Preparedness and Response	5 (5.3), 6 (6.3)	TMFPD	<ul style="list-style-type: none">Washoe County Emergency Management and Homeland SecurityReno-Sparks Indian Colony Emergency Management	Immediate	Wildland Fire	\$100,000	Yes	Existing Budget	19	6	25
WF-16	Review and update (as needed) evacuation plans for communities in wildland fire-prone areas and hold evacuation drills at least once every two years. (All Partners)	Existing (2015 action)	<ul style="list-style-type: none">Plans and RegulationsPreparedness and Response	5 (5.3), 6 (6.3)	Regional Fire Protection Districts	Washoe County Emergency Management and Homeland Security	Immediate	Wildland Fire	\$10,000/plan. \$50,000/year	Yes	Existing Budget	19	6	25

Table 5-1 2020-2025 Mitigation Implementation Plan

Action No.	Mitigation Action (Jurisdiction)	Action Status	Type of Action	Goals Supported (Objectives)	Lead Department	Supporting Departments	Timeline	Hazards Addressed	Anticipated Cost	Funding Available?	Funding Source	STAPLEE Score	Mitigation Effectiveness Score	TOTAL SCORE
WF-18	Harden older residential structures in the Incline Village and Crystal Bay areas against wildland fire. (NLTFPD)	New	Infrastructure/Capital Project	5 (5.3), 6 (6.3)	NLTFPD	FEMA	1 -3 years	Wildland Fire	\$10,000/structure	Anticipated	Grant	19	6	25
WF-19	Maintain and improve the local fuels management program for Lake Tahoe by maintaining the fuels management area around Crystal Bay. (NLTFPD)	New	Preparedness and Response	5 (5.3)	NLTFPD	-	Ongoing	Wildland Fire	\$250,000	Yes	Grant	20	8	28
WF-20	Hire more inspectors for the NLTFPD defensible space program to conduct outreach to the community. (NLTFPD)	New	Education and Awareness	5 (5.3), 6 (6.3)	NLTFPD	-	Ongoing	Wildland Fire	\$100,000/inspector	No	Grant	18	4	22
WF-21	Work with NV Energy to develop a CWPP for the utility and develop a community plan for response to planned power outages. (NLTFPD)	New	Plans and Regulations	5 (5.3)	NLTFPD	<ul style="list-style-type: none">Tahoe Basin Regional Fire Protection DistrictsNV Energy	1 – 3 years	Wildland Fire	\$75,000	Anticipated	Existing Budget	19	2	21
WF-22	Improve fire monitoring by installing fire cameras and working with Drone America to monitor high risk areas after lightning storms. (NLTFPD)	New	Preparedness and Response	5 (5.3)	NLTFPD	-	1 – 3 years	Wildland Fire	\$50,000	Yes; Additional Funding Needed	Existing Budget	16	6	22
FL-20	New floodwalls: Provide a berm with a buried floodwall, with the top of the floodwall set to the 100-year water surface elevation. (TRFMA)	Existing	Infrastructure/Capital Project	5 (5.7)	TRFMA	-	3 – 5 years	Flooding	\$40.7 million	Anticipated	Existing Budget Grant	17	10	27
FL-21	Booth Street Bridge: Remove Booth Street Bridge, which constricts flows and increases flood water elevations. (TRFMA, City of Reno)	Existing	Infrastructure/Capital Project	1 (1.3), 5 (5.7)	TRFMA	Reno Public Works	3 – 5 years	Flooding	\$1.4 million	Anticipated	Existing Budget Grant	17	10	27
FL-22	Jones Street Signal Improvements: Construct signal at Jones and Keystone Avenue. (TRFMA, City of Reno)	Existing	Infrastructure/Capital Project	1 (1.2), 5 (5.7)	TRFMA	Reno Public Works	3 – 5 years	Flooding	\$1.8 million	Anticipated	Existing Budget Grant	16	2	18
FL-23	New Floodwalls (Geotechnical Recommendations): Drain trench along portions of the new floodwalls per Geotechnical Report. (TRFMA)	Existing	Infrastructure/Capital Project	5 (5.7)	TRFMA	-	3 – 5 years	Flooding	\$1.5 million	Anticipated	Existing Budget Grant	17	8	25
FL-24	Pumping Station: Construct pumping station along Riverside Drive. (TRFMA, City of Reno)	Existing	Infrastructure/Capital Project	1 (1.2), 5 (5.7)	TRFMA	Reno Public Works	3 – 5 years	Flooding	\$20.7 million	Anticipated	Existing Budget Grant	17	10	27

Table 5-1 2020-2025 Mitigation Implementation Plan

Action No.	Mitigation Action (Jurisdiction)	Action Status	Type of Action	Goals Supported (Objectives)	Lead Department	Supporting Departments	Timeline	Hazards Addressed	Anticipated Cost	Funding Available?	Funding Source	STAPLEE Score	Mitigation Effectiveness Score	TOTAL SCORE
FL-25	Pedestrian Closure Gate Structures: Pedestrian gates are needed along the length of the floodwall to maintain the current pedestrian access points. A product such as FloodBreak or approved equivalent. (TRFMA, City of Reno)	Existing	Infrastructure/Capital Project	5 (5.7)	TRFMA	Reno Public Works	3 – 5 years	Flooding	\$3.2 million (includes costs for FL-28)	Anticipated	Existing Budget Grant	17	10	27
FL-26	Raise pedestrian bridge up-stream and downstream of Arlington Ave. (TRFMA)	Existing	Infrastructure/Capital Project	5 (5.7)	TRFMA	Reno Public Works	3 – 5 years	Flooding	\$1.8 million	Anticipated	Existing Budget Grant	16	8	24
FL-27	Floodproofing: Miscellaneous structures in downtown Reno require floodproofing—for example, the Post Office, Masonic building, courthouse and parking garage, Promenade assisted living home, and Methodist church. (TRFMA)	Existing	Infrastructure/Capital Project	5 (5.7)	TRFMA	Reno Public Works	3 – 5 years	Flooding	\$472,000	Anticipated	Existing Budget Grant	17	10	27
FL-28	Provide bridge protection at Arlington Ave. Bridge. (TRFMA)	Existing	Infrastructure/Capital Project	1 (1.3), 5 (5.7)	TRFMA	Reno Public Works	3 – 5 years	Flooding	\$3.2 million (includes costs for FL-25)	Anticipated	Existing Budget Grant	16	10	26
FL-29	Replace Floodwalls: Replace old, inadequate floodwalls from Arlington St. to Lake St.	Existing	Infrastructure/Capital Project	5 (5.7)	TRFMA	Reno Public Works	3 – 5 years	Flooding	\$59.4 million	Anticipated	Existing Budget Grant	17	10	27
FL-30	Sierra Street Bridge: Replace Sierra Street Bridge, which constricts flows and increases flood water elevations, with a new bridge that is hydraulically efficient and capable of passing the 100-year flood. (TRFMA, City of Reno)	Existing	Infrastructure/Capital Project	1 (1.3), 5 (5.7)	TRFMA	Reno Public Works	3 – 5 years	Flooding	\$36.4 million	Anticipated	Existing Budget Grant	16	10	26
FL-31	Center Street Bridge: Replace Center Street Bridge, which constricts flows and increases flood water elevations, with a new bridge that is hydraulically efficient and capable of passing the 100-year flood. (TRFMA, City of Reno)	Existing	Infrastructure/Capital Project	1 (1.3), 5 (5.7)	TRFMA	Reno Public Works	3 – 5 years	Flooding	\$42.0 million	Anticipated	Existing Budget Grant	16	10	26
FL-32	Lake Street Bridge: Replace Lake Street Bridge, which constricts flows and increases flood water elevations, with a new bridge that is hydraulically efficient and capable of passing the 100-year flood. (TRFMA, City of Reno)	Existing	Infrastructure/Capital Project	1 (1.3), 5 (5.7)	TRFMA	Reno Public Works	3 – 5 years	Flooding	\$22.9 million	Anticipated	Existing Budget Grant	16	10	26

Table 5-1 2020-2025 Mitigation Implementation Plan

Action No.	Mitigation Action (Jurisdiction)	Action Status	Type of Action	Goals Supported (Objectives)	Lead Department	Supporting Departments	Timeline	Hazards Addressed	Anticipated Cost	Funding Available?	Funding Source	STAPLEE Score	Mitigation Effectiveness Score	TOTAL SCORE
FL-33	Remove existing pedestrian/emergency vehicle access bridge at Wells Ave. Install new bridge upstream of Wells Ave. (TRFMA, City of Reno)	Existing	Infrastructure/Capital Project	5 (5.7)	TRFMA	Reno Public Works	1 – 3 years	Flooding	\$2.9 million (includes costs for FL-34)	Anticipated	Existing Budget Grant	16	8	24
FL-34	Bank stabilization and bridge protection around Wells Avenue at Wells Ave. Bridge. (TRFMA, City of Reno)	Existing	Infrastructure/Capital Project	1 (1.3), 5 (5.7)	TRFMA	Reno Public Works	1 – 3 years	Flooding	\$2.9 million (includes costs for FL-33)	Anticipated	Existing Budget Grant	16	10	26
FL-35	Grand Sierra Floodwall: On the south (right) bank of the Truckee River a 3,000-foot-long, 6-foot-high floodwall would be built from Glendale to Greg Street. (Costs included in Element 19 Sparks Levees and Floodwalls: Glendale to Greg.) (TRFMA, City of Reno)	Existing	Infrastructure/Capital Project	5 (5.7)	TRFMA	Reno Public Works	3 – 5 years	Flooding	\$23.1 million (includes costs for FL-36)	Anticipated	Existing Budget Grant	16	10	26
FL-36	Sparks Levees and Floodwalls Glendale to Greg: Replacement of the existing levee on the north bank with on-bank floodwalls to minimize construction and right-of-way impacts to the TMWA Glendale Water Treatment Plant. Trail can be incorporated into floodwall maintenance road. (TRFMA, City of Sparks)	Existing	Infrastructure/Capital Project	5 (5.7)	TRFMA	Sparks Public Works	3 – 5 years	Flooding	\$23.1 million (includes costs for FL-35)	Anticipated	Existing Budget Grant	16	10	26
FL-37	Mill Street Levee – Greg to Rock: Reduced south bank floodplain terracing with the associated levee move closer to the Truckee River. Reduces excavation costs and reduces impacts to the existing Pioneer Ditch. (Costs included in Element 19 Sparks Levees and Floodwalls: Glendale to Greg.) (TRFMA, City of Sparks)	Existing	Infrastructure/Capital Project	5 (5.7)	TRFMA	Sparks Public Works	3 – 5 years	Flooding	\$33.5 million (includes costs for FL-38)	Anticipated	Existing Budget Grant	17	10	27

Table 5-1 2020-2025 Mitigation Implementation Plan

Action No.	Mitigation Action (Jurisdiction)	Action Status	Type of Action	Goals Supported (Objectives)	Lead Department	Supporting Departments	Timeline	Hazards Addressed	Anticipated Cost	Funding Available?	Funding Source	STAPLEE Score	Mitigation Effectiveness Score	TOTAL SCORE
FL-38	Terracing Greg to Rock: Reduced terracing to stabilize the river bank, reduce the amount of excavation, and avoid the existing Pioneer Ditch. The terracing and associated levee are moved northward toward the Truckee River and levee ties into the McCarran Blvd. bridge. (TRFMA, City of Sparks)	Existing	Infrastructure/Capital Project	1 (1.3), 5 (5.7)	TRFMA	Sparks Public Works	3 - 5 years	Flooding	\$2.4 million	Anticipated	Existing Budget Grant	17	10	27
FL-39	Abutment, pier, and bank scour protection measures (as required) from Rock Blvd Bridge to Vista Narrows. Includes East McCarran Blvd Bridge. (TRFMA, City of Reno, City of Sparks)	Existing	Infrastructure/Capital Project	1 (1.3), 5 (5.7)	TRFMA	Reno Public Works Sparks Public Works	3 – 5 years	Flooding	\$6.1 million	Anticipated	Existing Budget Grant	16	10	26
FL-40	Mill Street Levee – Rock to McCarran: Reduced south bank floodplain terracing with the associated levee move closer to the Truckee River. Reduces excavation costs and reduces impact to the existing Pioneer Ditch. Pioneer Ditch will be piped to allow for use of the fill disposal area. (TRFMA, City of Sparks)	Existing	Infrastructure/Capital Project	5 (5.7)	TRFMA	Sparks Public Works	3 – 5 years	Flooding	\$73.3 million (includes costs for FL-41, FL-42, FL-43, and FL-48)	Anticipated	Existing Budget Grant	16	10	26
FL-41	Terracing Rock to McCarran: Reduced terracing to reduce the amount of excavation and avoid the existing Pioneer Ditch. The terracing and associated levees are moved northward toward the Truckee River and levee ties into the Rock Blvd. bridge. The land between Mill Street and the relocated levee can be used as a fill disposal site and reserved for future recreational use. (TRFMA, City of Reno)	4, 5	Infrastructure/Capital Project	1 (1.3), 5 (5.7)	TRFMA	Reno Public Works	3 – 5 years	Flooding	\$73.3 million (includes costs for FL-40, FL-42, FL-43, and FL-48)	Anticipated	Existing Budget Grant	16	6	22

Table 5-1 2020-2025 Mitigation Implementation Plan

Action No.	Mitigation Action (Jurisdiction)	Action Status	Type of Action	Goals Supported (Objectives)	Lead Department	Supporting Departments	Timeline	Hazards Addressed	Anticipated Cost	Funding Available?	Funding Source	STAPLEE Score	Mitigation Effectiveness Score	TOTAL SCORE
FL-42	Sparks Levees and Floodwalls – Rock to McCarran: Replacement of the north bank levee with on-bank floodwalls to minimize impacts to existing properties and railroad spurs. Some minor terracing on the north bank. Fill localized low lying areas on the landside of the floodwall. Trail can be incorporated into floodwall maintenance road. (TRFMA, City of Sparks)	Existing	Infrastructure/Capital Project	5 (5.7)	TRFMA	Sparks Public Works	3 – 5 years	Flooding	\$73.3 million (includes costs for FL-40, FL-41, FL-43, and FL-48)	Anticipated	Existing Budget Grant	17	10	27
FL-43	Terracing – Rock to Steamboat: Benching on north bank at Living River Parkway. Minimized terracing on south bank along Treatment Plant. Remove existing buildings as necessary. (TRFMA, City of Sparks)	Existing	Infrastructure/Capital Project	5 (5.7)	TRFMA	Sparks Public Works	3 – 5 years	Flooding	\$73.3 million (includes costs for FL-40, FL-41, FL-42, and FL-48)	Anticipated	Existing Budget Grant	15	10	25
FL-44	Main Station Farm Protection: Will flood proof select buildings and elevate the existing pads under the hay storage barns to keep hay dry. Main processing building is sufficiently elevated above flood waters. (TRFMA)	Existing	Infrastructure/Capital Project	5 (5.7)	TRFMA	-	3 – 5 years	Flooding	\$7.8 million	Anticipated	Existing Budget Grant	17	8	25
FL-45	Sparks Levees and Floodwalls – McCarran to Vista: Replacement of existing levee with on-bank floodwalls for approximately 20,000 feet east of McCarran to reduce overall footprint. Construction of levees for most of the remainder of the reach. Floodwall will be used in the vicinity of Larkin Circle to eliminate impacts to the roadway. (TRFMA, City of Sparks)	Existing	Infrastructure/Capital Project	5 (5.7)	TRFMA	Sparks Public Works	3 – 5 years	Flooding	\$54.4 million	Anticipated	Existing Budget Grant	16	10	26
FL-46	Vista Narrows Widening: Expanded benching of the Narrows extending to the first railroad bridge. (TRFMA)	Existing	Infrastructure/Capital Project	5 (5.7)	TRFMA	-	3 – 5 years	Flooding	\$91.9 million	Anticipated	Existing Budget Grant	16	10	26

Table 5-1 2020-2025 Mitigation Implementation Plan

Action No.	Mitigation Action (Jurisdiction)	Action Status	Type of Action	Goals Supported (Objectives)	Lead Department	Supporting Departments	Timeline	Hazards Addressed	Anticipated Cost	Funding Available?	Funding Source	STAPLEE Score	Mitigation Effectiveness Score	TOTAL SCORE
FL-47	Hidden Valley: Voluntary home elevation. An alternative may include floodproofing for certain residences in Hidden Valley. The method of floodproofing would probably vary from structure to structure, but all would be raised to at least the 100-year flood elevation. (TRFMA)	Existing	Infrastructure/Capital Project	5 (5.7)	TRFMA	-	3 – 5 years	Flooding	\$24.3 million (includes cost for action FL-49)	Anticipated	Existing Budget Grant	18	10	28
FL-48	Sparks Levees and Floodwalls – Rock to McCarran: Replacement of the north bank levee with on-bank floodwalls to minimize impacts to existing properties and railroad spurs. Some minor terracing on the north bank. Fill localized low-lying areas on the landside of the floodwall. Trail can be incorporated into floodwall maintenance road. (TRFMA)	Existing	Infrastructure/Capital Project	5 (5.7)	TRFMA	-	3 – 5 years	Flooding	\$73.3 million (includes costs for FL-40, FL-41, FL-42, and FL-43)	Anticipated	Existing Budget Grant	17	10	27
FL-49	Eastside Subdivision: Voluntary home elevation. Elevation of the buildings in the East Subdivision south of the Main Station Farm to above the 100-year floodwater event level. (TRFMA)	Existing	Infrastructure/Capital Project	5 (5.7, 5.8)	TRFMA	-	3 – 5 years	Flooding	\$24.3 million (includes cost for action FL-47)	Anticipated	Existing Budget Grant	17	10	27
FL-50	Non-Voluntary Home Elevation/Mitigation: as required dependent upon further analysis. (TRFMA)	Existing	Infrastructure/Capital Project	5 (5.7, 5.8)	TRFMA	-	3 – 5 years	Flooding	Unknown	Anticipated	Existing Budget Grant	13	10	23
FL-51	Rainbow Bend Home Elevation: Non-Voluntary Home Elevation/Mitigation: as required dependent upon further analysis. (TRFMA)	Existing	Infrastructure/Capital Project	5 (5.7, 5.8)	TRFMA	-	3 – 5 years	Flooding	Unknown	Anticipated	Existing Budget Grant	13	10	23
FL-52	Wadsworth Non-Voluntary Home Elevation/Mitigation: as required dependent upon further analysis. (TRFMA)	Existing	Infrastructure/Capital Project	5 (5.7, 5.8)	TRFMA	-	3 – 5 years	Flooding	Unknown	Anticipated	Existing Budget Grant	13	10	23
FL-53	Update Truckee River Flood Inundation Maps. (TRFMA)	Existing	Plans and Regulations Education and Awareness	5 (5.4), 6 (6.1)	TRFMA	-	3 – 5 years	Flooding	\$862,000	Anticipated	Existing Budget Grant	16	2	18

Table 5-1 2020-2025 Mitigation Implementation Plan

Action No.	Mitigation Action (Jurisdiction)	Action Status	Type of Action	Goals Supported (Objectives)	Lead Department	Supporting Departments	Timeline	Hazards Addressed	Anticipated Cost	Funding Available?	Funding Source	STAPLEE Score	Mitigation Effectiveness Score	TOTAL SCORE
EQ-11	Incorporate seiche warning system into the Tahoe Basin traffic control center. (NLTFPD)	Existing	Preparedness and Response	3 (3.1)	NLTFPD	<ul style="list-style-type: none">Washoe County Emergency Management and Homeland SecurityTahoe Basin Regional Fire Protection Districts	< 1 year	Earthquake	\$50,000	Anticipated	Grant Existing Budget	18	10	28
EQ-14	Harden Fire Station 13 or relocate this station to mitigate earthquake risks. (NLTFPD)	New	Infrastructure/Capital Project	5 (5.9)	NLTFPD	-	3 – 5 years	Earthquake	\$500,000 to harden. Unknown to relocate.	No	Grant	16	10	26
SS-1	Purchase additional equipment needed to quickly access emergency water supplies during severe winter storms. (NLTFPD)	New	Preparedness and Response	4 (4.1)	NLTFPD	-	1 – 3 years	Severe Storms (Winter Storm)	\$100,000	No	Grant	17	10	27

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ACRONYMS

CWPP	Community Wildfire Protection Plan
GIS	geographic information system
HMP	Hazard Mitigation Plan
MPT	Mitigation Planning Team
NLTFPD	North Lake Tahoe Fire Protection District
TMFPD	Truckee Meadows Fire Protection District
TRFMA	Truckee River Flood Management Authority
WUI	wildland-urban interface
