



# *A Flood Awareness Guide for Nevada*



**From the Nevada Silver Jackets Team**



**DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES  
DIVISION OF WATER RESOURCES**

901 South Stewart Street, Suite 2002

Carson City, Nevada 89701-5250

(775) 684-2800 • Fax (775) 684-2811

<http://water.nv.gov>

October 3, 2017

Greetings!

Welcome to the Flood Awareness Guide for Nevada. This guide was developed to help communities in Nevada understand their flood risks, different types of flooding, and the history of flooding in Nevada. It also provides a few tips for flood safety and preparedness before, during, and after a flood, and relevant information about flooding in Nevada communities that can benefit homeowners, community residents, and community officials or planners.

By educating the residents of Nevada about flood risks in areas prone to flooding events, this guide will enable them to take effective, individual preventive measures to reduce risks to safety and damage to property. It will also enable them to take local action and have a stake in planning and acting to reduce their community risks from flooding. Residents in Nevada communities will become better prepared to deal with an actual flood event and will better understand what to do in an emergency situation.

The development of this guide was made possible by the Nevada Silver Jackets team. The Nevada Silver Jackets team is composed of a group of partnering federal, state, and local agencies that are interested in the protection of life and property from flooding. The Nevada Silver Jackets team is led by the Nevada Division of Water Resources (NDWR) and supported by the U.S. Army Corps of Engineers (USACE). The goal of the NDWR Floodplain Management Program is to create flood resilient communities in Nevada that encourage the protection of life, property, water quality, environmental values, and the preservation of natural floodplain functions.

Thank you to all the Nevada Silver Jackets team partnering agencies for your commitment to mitigating flood risk and making our communities safer from flooding.



Bunny L. Bishop

A handwritten signature in cursive script that reads "Bunny L. Bishop".

State Floodplain Manager/NFIP Coordinator  
Division of Water Resources



## *A Proclamation by the Governor*

**WHEREAS**, flooding creates emergencies of great concern to the State of Nevada, with imminent threat to life and property, as well as the potential for hundreds of millions of dollars in damage to homes, businesses and infrastructure; and

**WHEREAS**, since 1955, Nevada has received 18 presidential disaster declarations for flooding, the most recent of which involved the counties of Douglas, including the Washoe Tribe of Nevada and California, Elko, including the South Fork Band of Te-Moak Tribe of Western Shoshone, Humboldt, Washoe and Carson City; and

**WHEREAS**, Nevadans are able to reduce their risk by taking actions to prepare for floods which will also help to make all communities safer and more damage resistant; and

**WHEREAS**, Nevada communities are able to reduce flood damage through floodplain management; and

**WHEREAS**, the Nevada Flood Awareness Committee was formed to raise awareness and provide information about floods, flood preparedness and flood insurance;

**NOW, THEREFORE, I, BRIAN SANDOVAL, GOVERNOR OF THE STATE OF NEVADA, do hereby proclaim the week of November 12-17, 2017 as**

### **FLOOD AWARENESS WEEK IN NEVADA**



*In Witness Whereof*, I have hereunto set my hand and caused the Great Seal of the State of Nevada to be affixed at the State Capitol in Carson City, this 12<sup>th</sup> day of October, 2017.

By the Governor: \_\_\_\_\_ Governor

*Brian K. Sandoval*  
Secretary of State

By *W. G. Hoff* Deputy

# Table of Contents

Flooding in Nevada – Why Should I Care? .....1

Where Does Flooding Occur in Nevada?.....2

Economic Impacts of Flooding .....4

Flood Myths.....4

Types of Flooding in Nevada .....6

Nevada Flood Chronology .....13

What are the Risks of Living in a Floodplain?.....17

Local Government Flood Planning Efforts .....20

Key Flood Terms.....25

Flood Safety and Preparedness.....28

Who Can I Contact for Emergency Help Immediately Following a Flood?.....33

Where Can I Get Additional Flood Recovery Assistance? .....36

Acknowledgements .....44



## Flooding in Nevada – Why Should I Care?

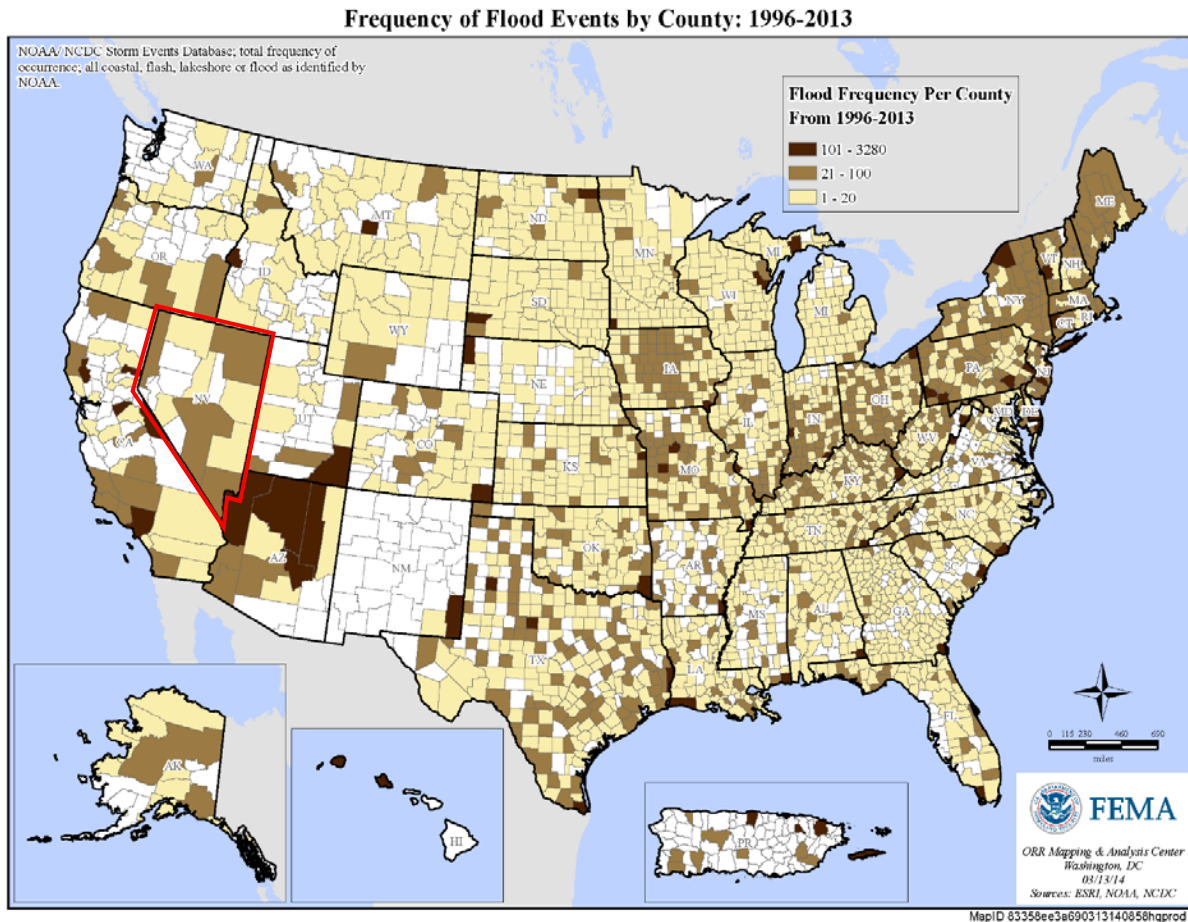
Nevada receives the lowest average annual amount of precipitation of any state in the United States, yet it experiences frequent and significant flooding. Since 1955, eighteen federally declared disasters have occurred that were related to rain and snow (see list below). And from 1996 through 2013, more than half of the counties in Nevada experienced at least one flood event, with some counties experiencing more than 20, as shown on the map on the next page.

Flooding has been documented in Nevada since the mid-1800s, but due to the dry desert environment that characterizes most of the state, many Nevada residents forget or are unaware of their flood risks. This *Flood Awareness Guide for Nevada* was created to help Nevada residents better understand those risks.

Federally Declared Disasters\* in Nevada Related to Rain and Snow since 1955

Number	Date of FEMA Declaration	Incident Description	Declaration Type
4307	03/27/2017	Severe winter storms, flooding, and mudslides	Major disaster declaration
4303	02/17/2017	Severe winter storms, flooding, and mudslides	Major disaster declaration
4202	11/05/2014	Severe storms and flooding	Major disaster declaration
1738	01/08/2008	Severe winter storms and flooding	Major disaster declaration
1629	02/03/2006	Severe storms and flooding	Major disaster declaration
1583	03/07/2005	Heavy rains and flooding	Major disaster declaration
3204	02/23/2005	Snow	Emergency declaration
3202	02/17/2005	Snow	Emergency declaration
1281	07/20/1999	Severe storms and flash flooding	Major disaster declaration
1153	01/03/1997	Severe storms and flooding	Major disaster declaration
759	02/28/1986	Severe storms and flooding	Major disaster declaration
723	09/06/1984	Heavy rains and flooding	Major disaster declaration
645	08/28/1981	Severe storms and flooding	Major disaster declaration
258	04/19/1969	Flooding	Major disaster declaration
187	01/18/1965	Severe storms, heavy rains, flooding	Major disaster declaration
142	02/14/1963	Floods	Major disaster declaration
121	02/22/1962	Floods	Major disaster declaration
63	08/31/1956	Floods	Major disaster declaration
48	12/24/1955	Floods	Major disaster declaration
36	06/21/1955	Floods	Major disaster declaration

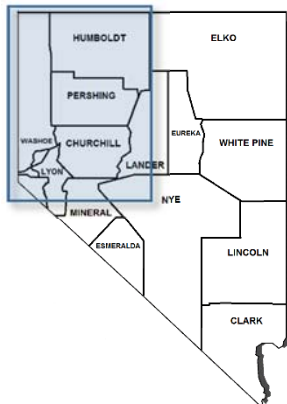
\* Declared by the Federal Emergency Management Agency (FEMA)



From 1996 through 2013, more than half of the counties in Nevada experienced between 1 and 20 (or more) floods. Elko and Clark counties experienced the most frequent flooding (per NOAA).

## Where Does Flooding Occur in Nevada?

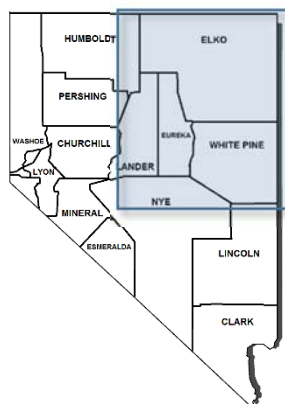
### Northwestern Nevada



**F**looding occurs regularly in the Carson, Walker, and Truckee river watersheds in northwestern Nevada and is one of the most damaging and costly natural events facing the region. Flooding in northwestern Nevada is influenced by the Sierra Nevada and the amount of snowfall it receives. Since there are no flood control structures on the Carson River, floodwater generally overflows into the Carson and Dayton valleys, inundating nearby floodplains and agricultural lands. In addition to the major winter floods that can affect the Carson, Walker, and Truckee rivers, summer flash floods also occur on smaller creeks and in alluvial fans.

In some areas of Washoe, Douglas, Humboldt, Lyon, and Storey counties, increasing development (which leads to increased run-off) has exacerbated the damaging effects of floods in the region, leading to greater economic losses.

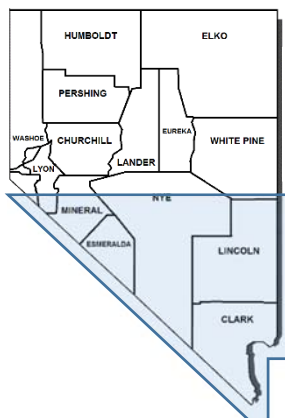
### Northeastern Nevada



One county in northeastern Nevada, Elko County, experiences two types of flooding – riverine and flash flooding. For communities located along the Humboldt River, February and March can bring riverine flooding as the winter’s snowpack begins to melt. The most extreme flooding event of this type occurs when rainfall accelerates the melting of the snowpack. Records of flooding in Elko County over the last 150 years indicate that this occurs every 30 to 35 years, most recently in February 2017.

Summer thunderstorms can release large volumes of water onto the arid soils in a short period of time, resulting in high runoff into streams and riverbeds, which can lead to flash flooding. The city of Elko last saw widespread flash flooding in 1961, which resulted in flooding of businesses along Idaho Street. In the 1970s, in conjunction with the U.S. Department of Agriculture, the city of Elko built three stormwater detention dams to reduce the damage caused by flash flooding events from the surrounding area.

### Southern Nevada



The desert southwest is an environment of extremes. Typically thought of as a dry and hot region, the area often experiences intense rainfall and subsequent flash floods. While floods can and have occurred in almost every month of the year, the most damaging storms typically occur between July and September. During these hot summer months, moist unstable air from the Gulf of Mexico is forced rapidly upward by hot air currents. The dynamics of this process can result in spectacular displays of lightning in the desert sky. Often, too, these conditions cause severe thunderstorms with intense rainfall on steep mountain slopes and hardened desert surfaces. Rainwater runs off rapidly and concentrates in the urbanized areas at lower elevations. Most residents and visitors are unaware of the flood potential or do not see flooding occur until it is too late.

## Economic Impacts of Flooding

**F**looding can have devastating impacts on local economies. The immediate impacts of flooding – damage to property, businesses, infrastructure, utilities, transportation systems, delivery systems, loss of housing and employment, lack of fresh water and food, and so on – can incur high, unanticipated costs for residents, business owners, and local governments. In addition, a history of recurring floods can discourage long-term investment or development in the area.

In Nevada’s history, many different types of flood events have resulted in extensive damages at a high cost. The failure of the Derby and Hobart dams in 1955 caused damages totaling nearly \$4

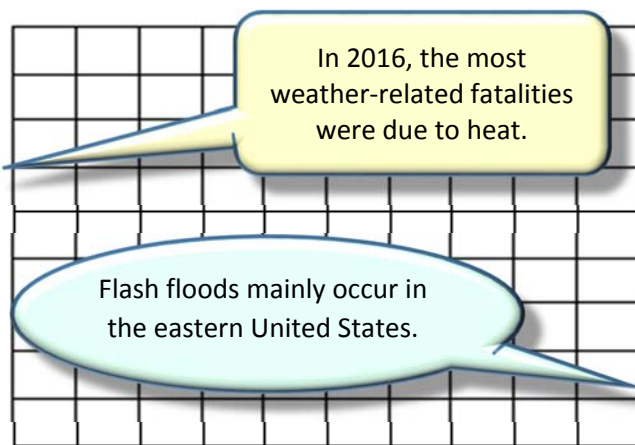


million (1955 dollars). Along the Truckee River, the New Year’s flood of 1997 caused more than \$450 million in damages (including the forced closure of the Reno-Tahoe Airport), and the winter floods of 2006 caused \$18 million of damage. In 2008 in Fernley, flooding from nearby canals resulted in damages totaling \$3.5 million. Since 1978, over \$43 million has been paid in claims statewide through the National Flood Insurance Program, or NFIP. According to the NFIP, the greatest total losses and highest total payments have occurred in Washoe and Clark counties.

## Flood Myths

**P**eople often postpone taking preventive action against flooding because they believe things about floods that are not true. Here are several common flood-related “myths” and the facts that dispel them.

### Myths

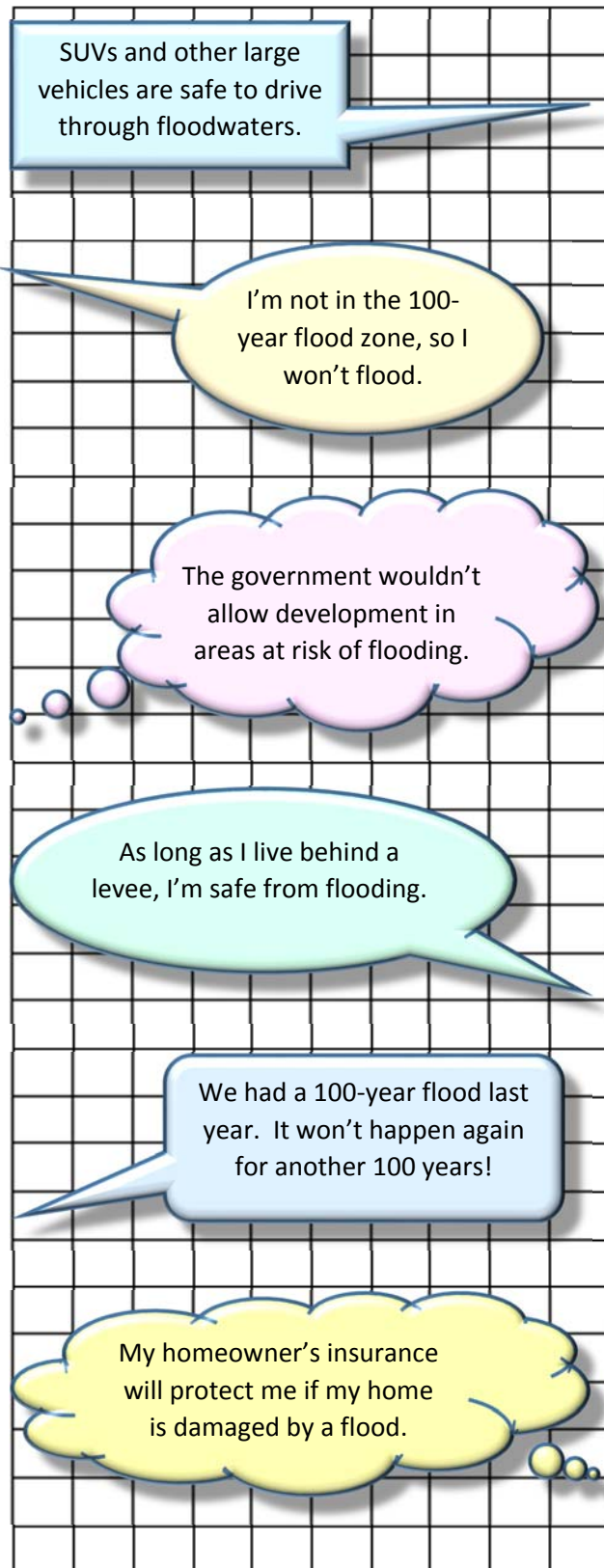


### Facts

The most weather-related deaths in 2016 were due to flooding. (Source: National Oceanic and Atmospheric Administration, or NOAA)

Flash floods occur in all 50 states, including Alaska and Hawaii. (Source: NOAA)





Just 2 feet of water can float most vehicles, and if the water is moving quickly, vehicles can be swept away. (Source: NOAA)

Risk does not stop at a line on a map. Twenty percent of flood insurance claims come from areas considered moderate to low risk for flooding. (Source: U.S. Army Corps of Engineers, Portland District)

There is no law preventing development in areas that could flood.

Levees may reduce flood risk, but they do not eliminate it. Levees can be overtopped by rising waters and can fail due to improper maintenance, erosion, and the effects of burrowing animals.

The so-called "100-year flood" has a 1 percent chance of occurring every year and may even occur more than once in the same year.

Most homeowner insurance policies do not cover flooding. Flood insurance must be purchased separately. Check with your insurance company or local floodplain manager to determine your property's flood risks.

## Types of Flooding in Nevada



Carson River flooding, 1909

The most common types of floods in Nevada are riverine flooding, flash flooding, alluvial fan flooding, and debris flow flooding. An understanding of these different types of floods can help you evaluate your flood risks and develop appropriate responses.

### Riverine Flooding

Riverine flooding generally occurs when excessive and prolonged rainfall causes a river to overtop its banks. It can also occur during winter storms when rain melts the snowpack. The impacts from riverine flooding can be widespread, as streams and rivers that are part of the same system can also be adversely affected.

Riverine flooding includes overbank flooding and flash flooding:

- ❖ *Overbank flooding.* This occurs when the volume of water within a river channel is increased and overflows onto the adjacent floodplain. According to the Federal Emergency Management Agency, or FEMA, this is the most common type of flood event, with hundreds of riverine floods occurring in the United States annually.
- ❖ *Flash flooding.* Flash floods are rapid and extreme flows of water into a normally dry area over a short period of time. They generally have a high velocity and carry a lot of debris, which can tend to make them more severe and dangerous than overbank floods. The severity depends on the intensity and duration of the rainfall and the nature of the terrain. Flash flooding occurs in every state, in both mountainous and urban areas. According to the National Weather Service, there are 2,000 communities in the United States that have the potential for this kind of flooding.

The New Year's floods of 1997, which caused tens of millions of dollars of damage in the Truckee, Carson, and Walker river watersheds, are examples of riverine flooding.



Flooding in Reno, 1997

### **Overbank Flooding Case Study: Truckee River, 1997**

The January 1997 flood was the result of near-record precipitation amounts and melting snow. Many locations in the region received three to five times their normal precipitation for December 1996 and January 1997.

Snowstorms in December deposited from 4 to 10 feet of snow above 6,000 feet in the Sierra, with 2 to 3 feet in western Nevada valleys. The snow was followed by heavy rain from December 26 through January 2, which melted much of the snowpack. Precipitation amounts from December 30 to January 2 ranged from 1 to 3 inches in western Nevada valleys to over 22 inches in the high elevation Sierra gauging stations.

The flooding claimed two lives: In Douglas County, a man was swept into the East Fork Carson River while operating a loader near its banks in Gardnerville on the evening of January 2. In Washoe County, a man

was swept into the Truckee River while retrieving personal belongings from his place of business in Sparks on January 3.

Flooding on the Truckee River destroyed or severely damaged many homes, businesses, warehouses, and roads in Placer and Nevada counties, California, particularly in the towns of Tahoe City and Truckee. In Nevada, Washoe County, Reno, Sparks, Lockwood, Wadsworth, and Nixon were heavily hit, and in Storey County, Lockwood was flooded. The Reno-Tahoe Airport, I-80, and U.S. Highway 395 were closed for 2 days.

Some 3,830 acres of the Truckee Meadows turned into a lake. Much of downtown Reno was flooded with several feet of water from West Second Street north of the river to Mill Street south of the river. All bridges crossing the river in downtown Reno were closed. The industrial area of Sparks was flooded with up to 6 feet of water, causing extensive damage to structures and contents of warehouses.

The Federal Water Master prevented catastrophic flows on the lower Truckee River by using flood control reservoirs at Stampede and Boca dams on the Little Truckee River, and Prosser Dam on Prosser Creek. If these dams had not had storage space, the 1997 flood event would have been far worse, with peak flows two to three times greater than what occurred, as estimated by the U.S. Geological Survey (USGS).

Source: USGS

<http://www.nws.noaa.gov/floodsafety/states/nv-flood.shtml>



Damage to Boulder Highway

**Flash Flood Case Study:  
Las Vegas, 1999**

Torrential rains produced severe, unprecedented flash-flooding across the Las Vegas Valley during the late morning and early afternoon of July 8, 1999. Most of the rain occurred in 90 minutes, between 10:30 a.m. and noon. Much of the Las Vegas Valley received between 1.5 and 3 inches of rain, or from 35 to 75 percent of its annual total amount (about 4 inches) during this time.

The resulting runoff from the torrential rain caused widespread street flooding and record flows in normally dry washes and flood control detention basins, as well as two deaths and \$25 million in damage (1999 dollars). Some 369 homes were damaged or destroyed. Sections of busy Interstates 15 and 95 resembled a lake, bringing traffic to a standstill. And most major intersections were under water.

Streets and washes were quickly overwhelmed by the tremendous runoff. Motorists and pedestrians were unprepared for the magnitude of these floods, resulting in more than 200 swift-water rescues being performed by the Las Vegas and Clark

County fire departments. In all, 275 storm-related emergency phone calls were logged by rescue officials in just 6 hours, with calls to 149 locations in a 15-minute period before noon.

The Governor issued a Declaration of Emergency for the area and requested assistance from the Federal Emergency Management Agency on July 15. President Clinton declared the city a disaster area on July 19. This event fell between the 50- and 100-year flood criteria along parts of the Las Vegas Wash, according to the U.S. Geological Survey.

Road flooding included parts of Las Vegas Boulevard (“The Strip”). Floodwaters inundated a number of buildings, including the Forum Shops at Caesars Palace, which had up to 2 feet of water inside. City Hall and the Mayor’s office also suffered water damage.

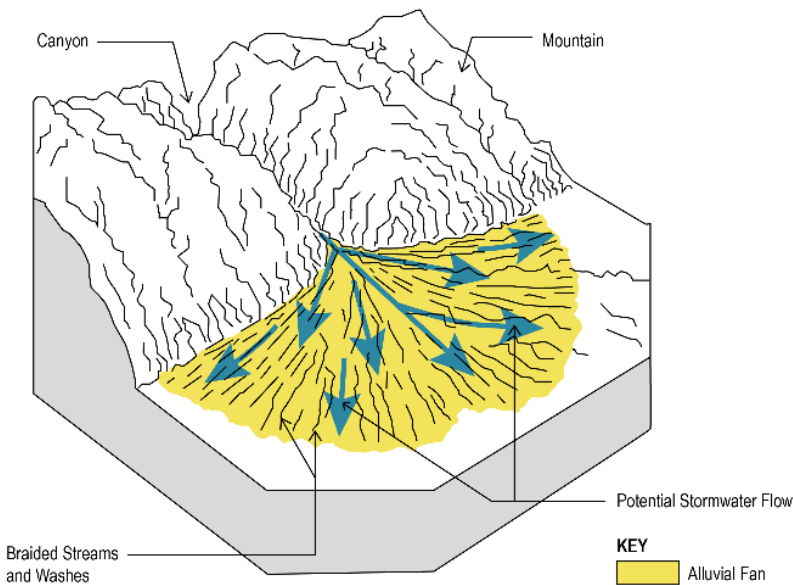
On the east side of the valley, a mobile home park near the Flamingo Wash suffered erosion resulting in one home falling into the wash and four others being destroyed. The weight of water on roofs resulted in two roof collapses – the roof of a grocery store and of a motorcycle dealership.

Source: National Weather Service  
<http://www.floodsafety.noaa.gov/states/nv-flood.shtml>



Las Vegas Boulevard near Caesars Palace Casino

## Alluvial Fan Flooding



Drawing: Characteristics of alluvial fan flooding

Alluvial fans, which occur mainly in dry mountainous regions, are deposits of rock and soil that have eroded from mountainsides and accumulated on valley floors in a fan-shaped pattern. The deposits are narrow and steep at the head of the fan, broadening as they spread out onto the valley floor.

Fans provide attractive development sites due to their commanding views, but they are vulnerable to severe flood hazards.

Channels along fans are not well defined and flow paths are unpredictable. As rain runs off steep valley walls, it gains velocity, carrying large boulders and other debris. When the debris fills the runoff channels of the fan, floodwaters spill out, spreading laterally and cutting new channels. The process is then repeated, resulting in shifting channels and a combination of erosion and flooding problems over a large area.

Like flash floods, flooding on alluvial fans can cause greater damage than typical riverine flooding due to the high velocity of water, the amount of debris carried, and the broad area affected by floodwaters. Floodwaters move at high velocities (15 to 30 feet per second are common) due to steep slopes and lack of vegetation. At these velocities, water has tremendous erosive force and damage potential. Since floodwaters are not confined to a single channel, but travel through numerous meandering channels, developments over a broad area can be threatened. During peak flow events, it is possible for water to reach any part of the fan.



Johnson Lane alluvial fan

**Alluvial Fan Case Study:  
Johnson Lane**

The Johnson Lane neighborhood is located north of Minden, near the Minden-Tahoe Airport, and is subject to flash flooding. The area sustained more than \$900,000 in damage to public infrastructure and \$1.6 million in damage to private property in 2014's flash floods. The 2015 flash floods caused roughly \$2.2 million in damage to public infrastructure.

The development of the Johnson Lane area dates back to the 1950s. Most of Johnson Lane developed without sufficient planning for stormwater conveyance. Piecemeal development of individual parcels led to ad hoc development of local infrastructure without a uniform system for conveying storm and flood waters.

The Johnson Lane area is bounded by Bureau of Land Management (BLM) lands on the northern and eastern sides, by U.S. Highway 395 to the west, and agricultural land and the Minden-Tahoe Airport to the south. Flooding

in the Johnson Lane area illustrates a common problem of urbanization encroaching on natural environments.

Water flowing from the BLM land generally follows well-formed paths and deposits sediment into Johnson Lane. As this neighborhood has continued to develop, open space for drainage has become scarce. During previous flooding, infrastructure was quickly overwhelmed by the large amount of water.

Since the floods of 2014 and 2015, residents have erected property-wide berms to protect their land from flooding. These berms have completely altered the natural drainage and have been erected with no concern for downstream properties. The floodplain management goal in Johnson Lane is to return the flow of flood water to its historic location and provide sound regional flood protection.



Damage to Johnson Lane drainage ditch  
Photo credits: John Cobourn/Matt McMackin

## Debris Flow Flooding

Debris flows are common types of fast-moving landslides that typically occur during periods of intense rainfall or snowmelt. They can carry large amounts of mud, rock, and other types of larger debris, such as trees, boulders, and even cars. Because they usually start on steep slopes, the most dangerous areas for debris flows are canyon bottoms, stream channels, and slopes where infrastructure and buildings have been constructed. Debris flows are especially dangerous to life and property because of their high speeds and the destructive force of their flow. They can destroy homes, wash out roads and bridges, carry away vehicles, and uproot trees.



Rainbow Canyon after Carpenter 1 Fire

### Debris Flow Flooding Case Study: Rainbow Canyon, 2013

On July 1, 2013, a lightning strike in Carpenter Canyon started a fire, called the Carpenter 1 Fire, which destroyed nearly 28,000 acres around Mt. Charleston in the Spring Mountains in southern Nevada. Many residents in the area were evacuated. Though the fire was eventually contained and residents were able to return, it was only the first threat to life and property in this area.

Later, several rounds of monsoon rains hit the area of the Carpenter 1 Fire burn scar. Because the earth was scorched, creating impermeable soil, the heavy precipitation ran off the mountainside and into the Rainbow Canyon neighborhood, bringing debris along with it. The significant runoff from the monsoon rains on the burn scar caused flash floods, which were fast moving debris flows

containing rocks, boulders, sediment, trees, and other debris from the burn scar. The substantial debris flows impacted homes and public infrastructure that were in the flow path.

To protect lives and property in the Rainbow Canyon Subdivision in Kyle Canyon, a temporary diversion structure was erected. The Rainbow Canyon Debris Flow Diversion Structure Project was an interagency effort involving the U.S. Army Corp of Engineers, U.S. Forest Service, Nevada Division of Emergency Management, Nevada Department of Transportation, Nevada Department of Conservation and Natural Resources, and Clark County. The structure was built to redirect flows away from the subdivision to an existing wash and then into Kyle Canyon. The temporary flood diversion structure is 2,350 feet long, 20 feet wide, and 7.5 feet high, and provides protection from a 25-year event.



Results of debris flow

Photo credits: National Weather Service

## Dam Failure Flooding

Dams provide numerous benefits to the public, including water supply, flood control, recreational opportunities, and hydroelectric power. However, because of development in the floodplains below many of Nevada's dams, when they fail they can also pose significant flood risks to populations and critical infrastructure downstream.



Example of earthen dam collapse:  
Teton Dam, Idaho, 1976

A dam failure may involve the total collapse of a dam, or it may involve a hazardous situation caused by damage to dam structures (e.g., a spillway), the overtopping of the dam from prolonged rainfall, or mis-operation, which can lead to uncontrolled releases and other hazards. Earthquakes, landslides, or severe storms with unusually high amounts of rainfall within a drainage basin also increase the risk of dam failure. Nevada has experienced several dam failures in the last 50 years. Fortunately, none have resulted in loss of life.



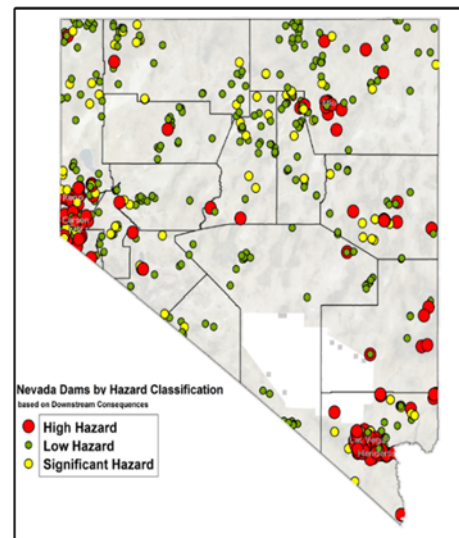
Example of damaged spillway: Oroville Dam,  
northern California, 2017

Currently, there are 850 dams being operated in the state. Based on the periodic visual inspections of many of the dams in Nevada by the Nevada Division of Water Resources Dam Safety Program, over 150 have a high hazard potential, 110 a significant hazard potential, and about 420 a low hazard potential (see map below for locations).

Property owners, residents, and anyone working or living below a dam should do their research and learn the facts in order to understand the risks of living downstream of a dam.

To learn more about dam safety, dam inspections, and the risks of living below a dam, visit the State of Nevada Division of Water Resources Dam Safety program at:

[http://water.nv.gov/programshomes.aspx?program=Dams and Dam Safety.](http://water.nv.gov/programshomes.aspx?program=Dams%20and%20Dam%20Safety)





## Nevada Flood Chronology

Nevada has a long history of flooding. The photos on the following pages depict some of the most significant historic flooding events the state faced between 1907 and 2006. To learn more about Nevada's flood history, visit the U.S. Geological Survey's Nevada Flood Chronology website at: <https://nevada.usgs.gov/crfld/>.



❖ Flooding of the Truckee River on Virginia Street in Reno, 1907



❖ Flooding on Bridge Street by the Upper Humboldt River, 1910



❖ Damage caused by flooding in Mazuma on the Upper Humboldt River, 1912



❖ Truckee River flooding, 1928



❖ Flooding of the Truckee River on First Street in Reno, 1950



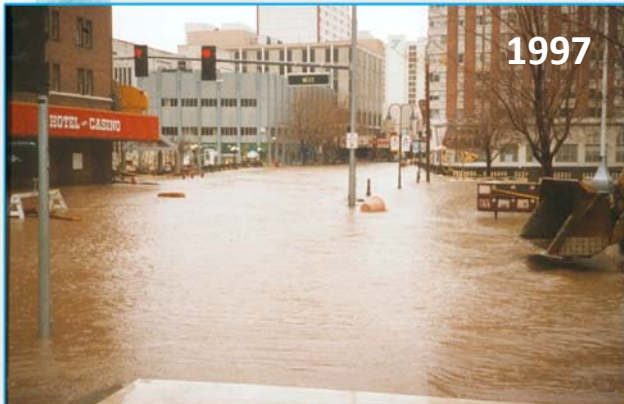
❖ Flooding of the Truckee River on Virginia Street in Reno, 1950



❖ Flooding of the Truckee River in downtown Reno, December 1955. (Photo credit: Nevada Historical Society)



❖ Flooding of the Truckee River in Reno, 1997



- ❖ Truckee River flooding of Virginia Street in Reno, 1997

“It was almost like people didn’t believe it was going to happen, so there was little preparation until the water was above the banks in downtown Reno.” – Paul Urban, local resident, recounting the 1997 flooding in the Reno area.



- ❖ Flooding of the Sparks industrial area caused by the Truckee River, 1997



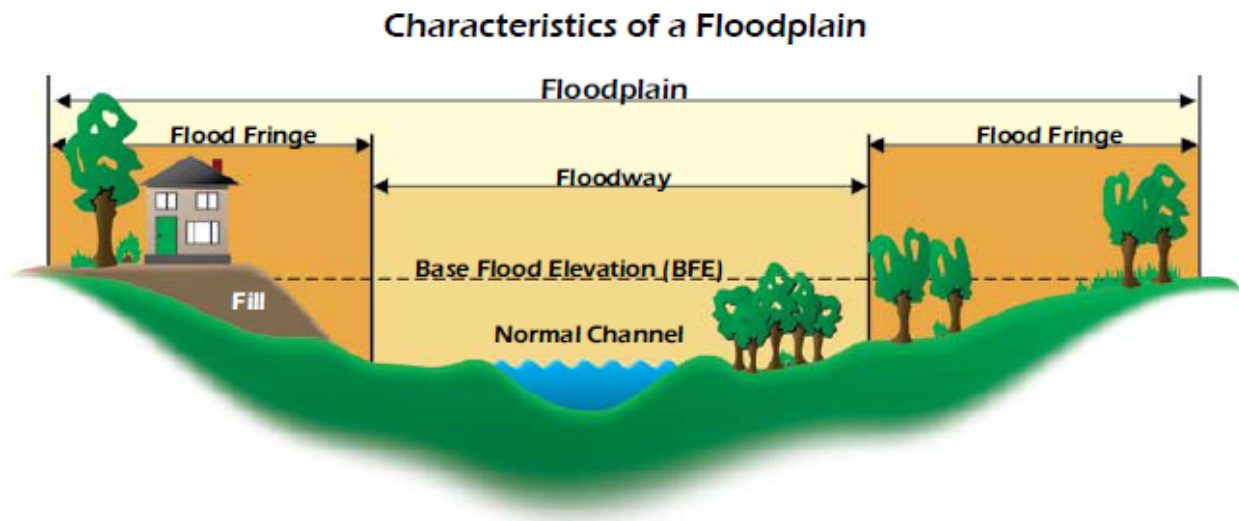
- ❖ Humboldt River flooding of cropland in Lovelock, 2006

“Somebody had gone into Sturgeons Restaurant and said, “the Brinkerhoffs are going under,” and within five minutes the restaurant was cleared and everyone was down here to help.” – Karen Brinkerhoff, owner of Brinkerhoff’s Fish Farm, Lovelock.

## What Are the Risks of Living in a Floodplain?

For as long as people have lived in Nevada, they have been drawn to live by its rivers – for access to water for irrigation and consumption, for hunting and fishing, for compelling natural vistas, for recreation, as a means of navigation, or for many other meaningful reasons. But as development has increased along the banks of Nevada’s rivers – in the floodplains of those rivers – so, too, have the risks of flooding.

### What is a Floodplain?



Source: FEMA NFIP Guidebook: A Local Administrator’s Guide to Floodplain Management and the National Flood Insurance Program

A floodplain is the land area that borders a river (or coastal waters) that is subject to flooding. It is typically a low-lying, relatively flat area that has been built up with sedimentary deposits over a long period of time. As shown in the illustration above, it includes the normal river channel, the base flood elevation, the floodway, and the flood fringes.

**The normal river channel** is the natural, leveed, or otherwise controlled channel where the river flows when it is not overtopping its banks.

**The base flood elevation**, or BFE, is the computed elevation to which flood waters are anticipated to rise during the base (*1 percent annual chance*) flood event. The 1 percent annual chance, or so-called 100-year, flood event is that event which has a 1 percent chance of occurring in any year. The BFE is the National Flood Insurance Program’s regulatory requirement for the elevation or flood proofing of structures. **The relationship between the BFE and a structure’s elevation determines the flood insurance premium.**

**The floodway** comprises the normal river channel and adjacent overbank areas necessary to effectively convey floodwaters. It is the region of the floodplain that carries most of the floodwater downstream, often at a high velocity and with destructive force. Development is a problem in the floodway if it causes a net rise to the floodwaters downstream, if it obstructs flowing water, or if it diverts floodwaters onto other developed property. Obstructions in the floodway can cause damages within the floodway as well as to the flood fringes.

**The flood fringes** are lands that are at or below the BFE that will be inundated during a 1 percent chance flood event but, due to physical characteristics of the floodplain, do not effectively convey floodwaters. The floodway and the BFE of the 1 percent chance flood are determined using hydraulic modeling techniques.

As a rule, flood damages are especially common on floodplains where development has not properly taken the dynamics of the river into account.

### *What Protects People Living in the Floodplain from Riverine Flooding?*

The longer people have lived near rivers, the more they have learned about a river's natural tendency to overflow its banks and inundate the floodplain. And the more they have learned about how to try to control it. The most common structural measures used to control rivers and to protect the people living and working in its floodplains are levees and dams.

Levees are generally earthen structures built directly on or set back from a river's banks. Under the best of circumstances, they are designed to protect the leveed area from flooding anticipated during the worst known weather conditions for the area being leveed. Levees may be augmented by the presence of flood walls, hardened cores, pumping stations, and other methods to ensure the levee's effective performance during exceptional storm conditions.

Dams are concrete or earthen structures designed to collect runoff from a watershed, store it in a reservoir, and release it at controlled rates that do not exceed downstream channel capacities. Water stored in reservoirs may be used for water supply, irrigation, hydropower, recreation, environmental needs, or other purposes. (Photo is of Hoover Dam.)



Under "normal" weather conditions, levees and dams perform their functions effectively, protecting those who live in the floodplain from loss or harm. But history has repeatedly shown that new meteorological conditions will eventually arise that will require us to rethink our flood risks and how we reduce those risks. A storm larger than ever anticipated may occur, or perhaps a series of storms in a short period of time that overtops or breaches a levee, or requires dam releases that are beyond what the downstream channel can handle but are necessary to protect the

dam from failing. These are the occasional circumstances that should be considered when deciding to live in a floodplain, and are a realistic reminder of the importance of purchasing flood insurance.

In addition to structural flooding solutions like dams and levees, there are also many non-structural measures that business and homeowners can take to protect their properties from flooding. For more information on such measures, see “nonstructural floodproofing” in the Key Flood Terms section in this booklet.

### *What are the Principles that Guide Floodplain Management?*

Floodplain management seeks to ensure the wise use of the nation’s floodplains in order to reduce flood losses and risks to life and safety. A “wise use” of a floodplain is one that reduces flood losses while also protecting the natural resources and ecological functions of the floodplain.

Management of floodplains is a decision-making process generally carried out by local government officials and floodplain managers. FEMA has suggested four strategies to serve as foundational guidance for good floodplain management. They are:

- ❖ **Modify human susceptibility to flood damage.**  
Reduce disruption by avoiding hazardous, uneconomic, or unwise use of floodplains.
- ❖ **Modify the impact of flooding.**  
Assist individuals and communities to prepare for, respond to, and recover from a flood.
- ❖ **Modify flooding itself.**  
Develop projects that control floodwater.
- ❖ **Preserve and restore natural resources.**  
Renew the vitality and purpose of floodplains by reestablishing and maintaining floodplain environments in their natural state.

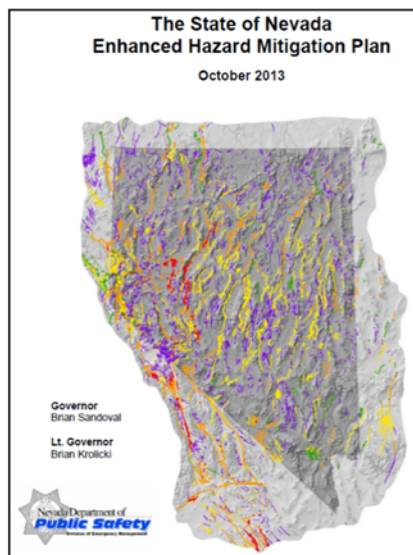
But many elements are involved in translating strategic guidelines into effective day-to-day floodplain management. The process begins with the writing and enforcement of ordinances, usually specific to a community, that govern land use and building construction within the floodplain. Identification and correction of specific flood risks, zoning, lot size and coverage, open space and landscaping requirements, adoption of certain building codes, and development of sound engineering requirements for stormwater control are all examples of good floodplain management. Regulations implementing these measures are enforced by local officials, referred to as floodplain managers, whose primary responsibility is to ensure that all construction and land use activities within the floodplain are carried out in compliance with local ordinances.

As long as development continues in the floodplains of Nevada’s rivers, floodplain managers will continue to upgrade and refine the measures they must take to protect both the development and the people who live and work there from damaging floods.

## Local Government Flood Planning Efforts

State and local government agencies and other organizations in Nevada take the threat of flooding seriously. In response to these threats, they have sponsored many ongoing planning efforts that focus on preparing local communities for future flooding, with an emphasis on public outreach for local flooding risks. Below are just a few of the ongoing planning efforts for flood preparation and preparedness across Nevada.

### *Nevada Hazard Mitigation Plan*



The 2013 State of Nevada Enhanced Hazard Mitigation Plan update summarizes Nevada's statewide hazard mitigation goals, strategies, and priorities. The original plan was approved by FEMA in 2004 and is revised every 5 years. An updated plan is due in 2018. The Plan assesses the state's main hazards and the risks and potential future losses they pose. The planning committee consisted of representatives from a variety of state and local agencies, including the Nevada Division of Emergency Management, Nevada Division of Water Resources, Washoe Tribe, City of Las Vegas Emergency Management, Carson City Fire Department, Nevada State Hospital Association, and many others. The participation of a variety of agencies and expertise provides a platform for the integration of the Enhanced Hazard Mitigation Plan into other ongoing state and local planning efforts.

### *Carson Water Subconservancy District*

The Carson Water Subconservancy District, or CWSD, is a unique multi-county, bi-state agency dedicated to establishing a balance between the needs of the communities within the Carson River watershed and the function of the river system. The thirteen-member Board of Directors consists of representatives from each of the five counties within the Carson River watershed plus two representatives from the agricultural community. While the CWSD has no regulatory authority of its own, its mission is to work within existing governmental frameworks to promote cooperative action for the watershed that crosses both agency and political boundaries. One of their guiding principles is to maintain the riverine and alluvial fan floodplains of the Carson River watershed to accommodate flood events. The CWSD strives to





involve all counties and communities within the watershed in the efforts to preserve the rich history and unique resources of the Carson River watershed.

### *Clark County Regional Flood Control District*



The Clark County Regional Flood Control District was created in 1985 to develop a coordinated and comprehensive Master Plan to solve flooding problems, to regulate land use in flood-hazard areas, to fund and coordinate the construction of flood control facilities, and to develop and contribute to the funding of a maintenance program for Master Plan flood control facilities. The District also provides public education regarding flood dangers and monitors rainfall and flow data during storms, disseminating that information to appropriate public works and safety crews. The service area for the District includes Clark County and the incorporated cities of Boulder City, Henderson, Las Vegas, Mesquite, and North Las Vegas. District's website: <http://www.ccrfcd.org/>

### *Truckee River Flood Management Authority*



The Living River Plan for the Truckee River is a project of cooperative action among state, county, tribal, and private non-profit entities. In the Reno-Sparks-Washoe county area along the Truckee River, where the greatest number of repetitive loss properties occurs, several state agencies are cooperating with the Truckee River Flood Management Authority on their Living River Plan, which has common goals to reduce flood hazards. The Authority's mission includes: preventing the disruption of commerce, transportation, communication, and essential services, which has adverse economic impacts; preventing the waste of water resulting from floods; providing for the conservation, development, use, and disposal of water and the improved quality of water; providing for ecosystem restoration and enhanced recreational facilities; and safeguarding public health. The plan includes replacement of and improvements to many bridges, levees, and floodwalls, as well as construction of terraces and berms. The project will also include the acquisition, elevation, or demolition of repetitive loss buildings. Authority's website: <http://www.trfma.org>

### *Douglas County Community Development – Engineering Division*



Douglas County received \$285,000 in 2017 through a FEMA grant to begin an area drainage master plan (ADMP) for the Johnson Lane development. Douglas County will also be contributing \$95,000 from its general fund towards the ADMP. The plan will identify and quantify flood hazard risks to stakeholders and residents, and develop flood risk mitigation alternatives. Potential projects and solutions for improving how the infrastructure can handle flooding will also be examined in the plan.

The purpose of the ADMP is to provide a prioritized list of projects and costs to begin working toward a solution for the flooding issues in Johnson Lane. The scope of the ADMP will include important and updated survey information.

Increased storms over the past several years have led to significant deposits of sediment in Johnson Lane, leading to changes in local topography. In addition to a changing landscape, the roadway network and a large number of berms that were erected have redirected floodwaters from their historical drainage patterns. The ADMP will study the drainage of the entire watershed and verify how changes in one area will affect flow paths in other areas. This comprehensive watershed review will identify deficiencies in the current drainage network and prioritize a list of 10 to 15 projects to mitigate flooding. These proposals will also include anticipated costs to construct and maintain the projects.

Douglas County adopted a 20-year Master Plan in 1996. The Master Plan, or Comprehensive Plan, is required by Nevada Revised Statutes (Chapter 278.150) for the purpose of providing long-term guidance on the development of cities, counties, and regions in Nevada. The 15-Year Update of the Douglas County Master Plan (2011) was adopted by the Douglas County Board of Commissioners on March 1, 2012. The Master Plan is updated every 5 years, and an update is anticipated to be completed by the end of 2017.

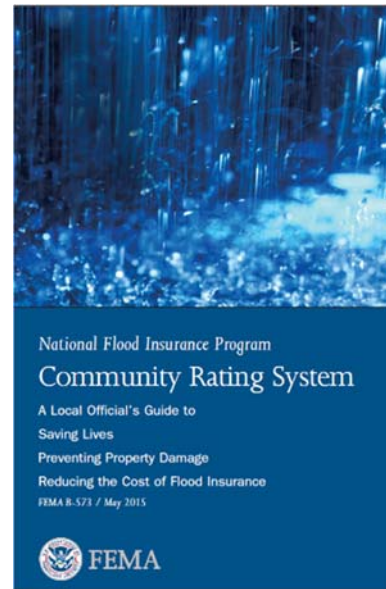
*Resources:*

- ❖ Current Master Plan (2011)  
<http://www.douglascountynv.gov/1136/Current-Master-Plan-2011>
  
- ❖ Master Plan Update (2016)  
<http://www.douglascountynv.gov/1137/Master-Plan-Update-2016>
  
- ❖ Press Release: FEMA Funding Awarded (2016)  
<http://www.douglascountynv.gov/documentcenter/view/5502>
  
- ❖ Douglas County Website  
<http://www.douglascountynv.gov>

## FEMA – Community Rating System

Within FEMA’s National Flood Insurance Program, or NFIP, is the Community Rating System, or CRS, which encourages communities to go beyond the minimum NFIP standards and participate in other floodplain management activities. The primary incentive for participation in the CRS is the reduction of flood insurance premium rates for policyholders, which can range from 5 to 45 percent. Certain floodplain management activities can also help projects qualify for other types of federal assistance. The three main goals of the CRS are:

1. Reduce flood damage to insurable property.
2. Strengthen and support the insurance aspects of the NFIP.
3. Encourage a comprehensive approach to floodplain management.



Communities can participate in the CRS by performing some or all of the 19 public information and floodplain management activities provided in the program, with each activity receiving a certain number of points. The total number of points enters the community into a certain class, which determines the discount on flood insurance premiums the community is eligible to receive. Examples of the 19 possible activities include: elevation certificates for new construction in a floodplain, flood hazard outreach projects, maintenance of flood-related data, and flood protection measures.

The CRS has saved Nevadans over \$650,000 in flood insurance costs. As of October 1, 2016, there are 10 Nevada communities participating in the CRS:

- ❖ Carson City
- ❖ Clark County
- ❖ Douglas County
- ❖ City of Henderson
- ❖ Lander County
- ❖ City of Las Vegas
- ❖ City of Mesquite
- ❖ City of North Las Vegas
- ❖ Storey County
- ❖ Washoe County

### The Benefits of Flood Mitigation

A community’s flood mitigation measures can provide many benefits. They can help avoid property losses, avoid business and education interruptions, avoid loss of critical infrastructure, enhance ecosystems, revitalize neighborhoods, improve public spaces, enhance public safety, and increase competitiveness for the community. Research and analysis show that the economic benefits from such measures have the potential to outweigh their costs by as much as 5:1. While finding funds for flood mitigation projects can pose a challenge for many communities, creative local solutions and diverse financing sources can ease this financial strain. For example, there are several federal and other governmental assistance programs in place to assist homeowners and community leaders with the financial burden.

As an additional benefit, after investing in flood mitigation measures, many participating communities are able to improve their Community Rating System (CRS) class number and receive further discounts on flood insurance, thereby putting money back into the local economy.

For more information on the benefits of flood mitigation, visit [www.floodeconomics.com](http://www.floodeconomics.com).

Flood Risk Management is a *Shared Responsibility!*



## Key Flood Terms

### **100-year flood**

A flood that has a 1 percent chance of occurring in any given year.

### **Advisory**

A report or warning information, for example, as issued by the National Weather Service when minor or nuisance flooding is occurring or imminent.

### **Base Flood**

A flood having a 1 percent chance of being equaled or exceeded in any given year.

### **Base Flood Elevation (BFE)**

The computed elevation to which flood waters are anticipated to rise during the base (1 percent annual chance) flood event. The 1 percent annual chance, or 100-year, flood event is that event that has a 1 percent chance of occurring in any year. The BFE is the regulatory requirement for the elevation or flood proofing of structures. The relationship between the BFE and a structure's elevation determines the flood insurance premium.

### **Breach**

A failure – such as a gap or tear – in a flood water retaining structure such as a sand bag wall, levee, or dam.

### **cfs**

Cubic feet per second; the discharge rate measured 1 foot wide and 1 foot deep, of water moving at an average velocity of 1 foot per second, equaling 448.8 gallons per minute.

### **Dam**

An artificial barrier constructed for the purpose of storage, control, or diversion of water that is 25 feet or more in height from the natural bed of the stream to the maximum water storage elevation, and has an impounding capacity at a maximum water storage elevation of fifty acre-feet or more.

### **Evacuation**

Withdrawal of people, pets, equipment, or belongings from an endangered area. Evacuations can be ordered by civil authorities.



Example of a levee breach



Flooding in Winnemucca, 1984

**Flood**

An overflow of water onto normally dry land. The inundation of a normally dry area caused by rising water in an existing waterway, such as a river, stream, or drainage ditch. Ponding of water at or near the point where the rain fell.

**Flood Insurance Rate Map (FIRM)**

Official map of a community on which FEMA has delineated the Special Flood Hazard Areas (SFHAs), the Base Flood Elevations (BFEs), and the risk premium zones applicable to the community. Flood insurance is

required for properties located within an SFHA and for properties with a federally backed mortgage.

**Flood Hazard Areas**

A flood hazard area is any area subject to inundation by the base flood or at risk from channel migration including, but not limited to, an aquatic area, wetland, or closed depression.

**Floodplain**

Any land area susceptible to being inundated by floodwaters from any source.

**Floodplain Management**

The operation of an overall program of corrective and preventive measures for reducing flood damage, including, but not limited to, emergency preparedness plans, flood-control works, and floodplain management regulations.

**Floodproofing**

Any combination of structural and nonstructural additions, changes, or adjustments to structures, which reduce or eliminate risk of flood damage to real estate or improved real property, water and sanitation facilities, or structures with their contents.

**Floodway**

The channel of a river and the portion of the floodplain that carries most of the floodwaters. Regulations require that the floodway be kept open so that flood flows are not obstructed or diverted onto other properties. Communities must regulate development in floodways to ensure there are no increases in upstream flood elevations.

**Levee**

A man-made structure, usually an earthen embankment, designed and constructed to contain, control, or divert the flow of water to provide protection from temporary flooding.

**National Flood Insurance Program (NFIP)**

The federal program administered by FEMA under which flood-



prone areas are identified and flood insurance is made available to the owners of the property in participating communities.

### **Nonstructural Floodproofing**

Permanent or contingent measures applied to a structure and/or its contents that prevent or provide resistance to damage from flooding. Nonstructural floodproofing measures differ from structural measures in that they focus on reducing the consequences of flooding instead of focusing on reducing the probability of flooding. Examples of nonstructural floodproofing measures include:

- ❖ Elevation –  
Lifting a structure to an elevation above the base flood using fill material, piers, piles, or columns.
- ❖ Relocation –  
Removing a structure from the floodplain and transporting it to a new location entirely outside the floodplain.
- ❖ Buyout / Acquisition –  
Purchasing the structure and property and demolishing or relocating it. The land is then no longer available for development.
- ❖ Dry flood proofing –  
Using measures to prevent floodwater from entering a structure, such as flood barriers at openings or a sump pump for drainage.
- ❖ Wet flood proofing –  
Using water-resistant materials which allow floodwaters to enter the structure during a flood.

### **Overtop**

The flow of water over a dam, embankment, or levee.

### **Repetitive Loss Structure**

An NFIP-insured structure that has had at least two paid flood losses of more than \$1,000 each in any 10-year period since 1978.

### **Special Flood Hazard Area (SFHA)**

The land area that is covered by the floodwaters of the base flood, where the NFIP's floodplain management regulations must be enforced, and where the mandatory purchase of flood insurance applies. The SFHA includes several flood zones that are identified on the FIRMs.

### **Warning**

A preliminary notice of an order or action which is to follow. A National Weather Service warning is issued when flooding is occurring or is imminent.

## Flood Safety and Preparedness

**F**looding is inevitable in Nevada. Whether or not you live in or near a floodplain, it is wise to have a plan in place to protect yourself, your family, and your property from future flooding. The following three sections can help you prepare before a flood event, ensure your safety during a flood event, and help with the recovery effort afterwards.



1

### WHAT TO DO BEFORE A FLOOD

#### ***Learn your flood risk –***

Determine if your property lies within or near a floodplain by contacting your local floodplain manager or home insurance agent.

#### ***Purchase flood insurance –***

Damage from flooding is not typically covered by homeowner's insurance, so purchase flood insurance to ensure you are protected. Contact your local insurance agent to secure a policy or call the National Flood Insurance Program (NFIP) Help Center at 1-800-427-4661. It can take 30 days for a new flood insurance policy to take effect, so do not get caught off guard by postponing your flood insurance!

#### ***Make a plan –***

Include evacuation routes from your home, work, and school; the transportation you will use; and a plan for communicating with each member of your household.

#### ***Prepare an emergency safety kit –***

Include supplies that will last you, your family, and your pets at least 3 days. The kit should contain water, food, flashlight and batteries, first aid kit, medications (7-day supply), copies of personal documents, extra cash, and a radio. Store it in a safe place that is easily accessible during an emergency. See suggested kit contents on next page.

#### ***Floodproof your home and property –***

Make minor changes that will have long-term effects on your home's ability to withstand flooding. For example, elevate critical utilities such as the air conditioning system, water heater, furnace, and electrical panels. If you have experienced recurring flooding, consider elevating your entire home. To help prevent basement flooding, waterproof your basement and ensure that you have a functioning sump pump. Install a water alarm to alert you if water is accumulating in the basement. Other measures can be taken to secure the home from the outside, including the removal of debris from gutters and around the structure, and the placement of sandbags around the property.



**Are you Prepared?**

Nearly half of U.S. adults do **NOT** have the resources and plans in place in the event of an emergency.

Store at least a **3-day supply** of non-perishable, easy to prepare food.

Store a **3-day supply** of water: one gallon per person, per day.

**48%** of Americans do **NOT** have emergency supplies.

**44%** of Americans do **NOT** have first aid kits.

**20%** of Americans get emergency info from mobile apps. Keep a charger handy in an emergency.

**20%** of Americans use social media for alerts and warnings. Make sure to keep a charger handy in an emergency.

**52%** of Americans do **NOT** have copies of crucial personal documents.

Don't forget your pets! You need a **3-day supply** of food and water per pet.

**Prepare supplies for home, work, and vehicles. Emergencies can happen anywhere.**

For more information visit: [emergency.cdc.gov](http://emergency.cdc.gov)

U.S. Department of Health and Human Services  
Centers for Disease Control and Prevention

Emergency Supply Kit. Source: Center for Disease Control  
<https://emergency.cdc.gov/preparedness/kit/disasters/>

**Recommended Items to Include in a Basic Emergency Supply Kit:**

- Water, one gallon of water per person per day for at least three days, for drinking and sanitation
- Food, at least a three-day supply of non-perishable food
- Battery-powered or hand crank radio and a NOAA Weather Radio with tone alert and extra batteries for both
- Flashlight and extra batteries
- First aid kit
- Whistle to signal for help
- Dust mask, to help filter contaminated air and plastic sheeting and duct tape to shelter-in-place
- Moist towelettes, garbage bags and plastic ties for personal sanitation
- Wrench or pliers to turn off utilities
- Can opener for food (if kit contains canned food)
- Local maps

Emergency Supply Checklist from FEMA



<https://www.fema.gov/media-library/assets/documents/90354>

For a checklist from the Red Cross, visit:

[https://www.redcross.org/images/MEDIA\\_CustomProductCatalog/m4340128\\_Flood.](https://www.redcross.org/images/MEDIA_CustomProductCatalog/m4340128_Flood.)

For more information on knowing your flood risk and being prepared for the next flood, visit:

**NevadaFloods.org**  
 NEVADA FLOODS. ARE YOU PREPARED?

## National Flood Insurance Program



policy under their company's name. Standard homeowner's or property insurance policies do not include flood insurance.

In 1968, Congress established the National Flood Insurance Program, or NFIP, to provide federal flood insurance to property owners in communities that participate in the NFIP. The NFIP is administered by FEMA and was designed to (1) lower the costs of disaster assistance by making affordable flood insurance available to the public, and (2) ensure sound floodplain management practices. The NFIP policy is available through FEMA's Direct Servicing Agent or through the Write Your Own program, which allows private insurance companies to write and service the federal flood insurance

A community must be a participant in the NFIP in order for property owners to obtain federal flood insurance. This means that the community must agree to adopt and enforce minimum floodplain management standards after identifying their flood risks and hazards.

### NFIP Nevada

Currently every county in Nevada, except for Esmeralda County, participates in the NFIP. As of September 2017 there were 12,510 policies in place in Nevada, providing over \$3 billion in coverage. From 1978 to 2017 over \$43 million was paid in claims. The largest number of flood insurance claims paid were for properties in Washoe and Clark counties.

### Flood Insurance Rate Maps

A Flood Insurance Rate Map, or FIRM, is the official map for a community in which FEMA delineates the floodplains, special hazard areas, and risk premium zones applicable to flooding hazards. The special flood hazard areas are areas that fall within the 100-year flood boundary. FIRMs are used to determine flood insurance eligibility. The information they provide can inform local planning processes and affect the design and construction of new and existing buildings.



**Need Sandbags for your Home or Business?**

Most counties will provide sandbag materials to the public. Check your county's website for information about if and where sandbag filling stations will be provided.



2

**WHAT TO DO  
DURING A FLOOD*****Stay informed*** –

Monitor local radio and television, internet, and social media for information and updates. The National Oceanic and Atmospheric Administration, or NOAA, has a 14-station Weather Radio channel in Nevada that broadcasts weather information. Visit the NOAA Weather Radio website to learn more: <http://www.nws.noaa.gov/nwr/>

***Obey evacuation orders*** –

Evacuate areas subject to flooding immediately. If you have time, disconnect utilities and appliances and turn off your power before leaving your home. Make sure to grab your emergency kit and lock your home as you leave.

***Avoid floodwaters*** –

Do not walk through floodwaters even if it does not seem dangerous or threatening. It only takes six inches of moving water to knock you off your feet. Do not drive into flooded roadways or around a barricade: *Turn Around, Don't Drown!* Water may be deeper than it appears and can hide many hazards (e.g., sharp objects, washed out road surfaces, electrical wires, chemicals, etc.). A vehicle caught in swiftly moving water can be swept away in a matter of seconds. Twelve inches of water can float a car or small SUV, and 2 feet of water can carry away large vehicles. If you are trapped by moving water, move to the highest possible point and call 911 for help.



## 3

WHAT TO DO  
AFTER A FLOOD***Return home –***

But only after it has been deemed safe to return. Be cautious of flooded areas and areas where the floodwaters have already receded, exposing debris and other hazards such as eroded roads and walkways. Do not drive through areas that are flooded, and avoid standing water, as it may be electrically charged. Photograph damage to your property and belongings for insurance purposes. Begin to dry out your home as soon as possible.

***Notify your insurance agent –***

Contact them as soon as possible after flooding. Inform them of any repairs you plan to do immediately, and make sure to follow the insurance company's direction about whether or not to wait for an adjuster to inspect your home. Document the damages and conversations you have with your insurance company and other parties during the recovery process.

***Continue to stay informed –***

Be attuned to additional warnings and other issues that may arise after a significant flooding event.

## Who Can I Contact for Emergency Help Immediately Following a Flood?



For assistance immediately following a flood,  
**CALL 9-1-1.**

You can also contact:

- ❖ Your county's Emergency Response Office for assistance after a flood (see list below), and
- ❖ The voluntary organizations listed below, following the list of County Emergency Response Offices

### County Emergency Response Contact Information

***Carson City, NV***

Carson City Fire Department, Emergency Management Division – Phone: 775-887-2210

***Churchill County, NV***

Churchill Emergency Management – Phone: 775-423-4188

***Clark County, NV***

Clark County Emergency Management – Phone: 702-455-5710

***Douglas County, NV***

East Fork Fire Protection District – Phone: 775-782-9040

***Elko County, NV***

Elko County Sheriff – Phone: 775-738-3421

***Esmeralda County, NV***

Esmeralda County Emergency Management – Phone: 775-485-3757

***Eureka County, NV***

Eureka County Public Works – Phone: 775-237-5372

***Humboldt County, NV***

Humboldt County Sheriff's Office – Phone: 775-623-6419

***Lander County, NV***

Lander County Sheriff – Phone: 775-635-1100

***Lincoln County, NV***

Lincoln County Emergency Management – Phone: 775-962-2376

***Lyon County, NV***

Lyon County Emergency Management – Phone: 775-463-6531

***Mineral County, NV***

Mineral County Emergency Management – Phone: 775-945-0728

***Nye County, NV***

Nye County Department of Emergency Management – Phone: 775-751-4278

***Pershing County, NV***

Pershing County Office of Emergency Management – Phone: 775-273-4556

***Storey County, NV***

Storey County Emergency Management – Phone: 775-847-0986

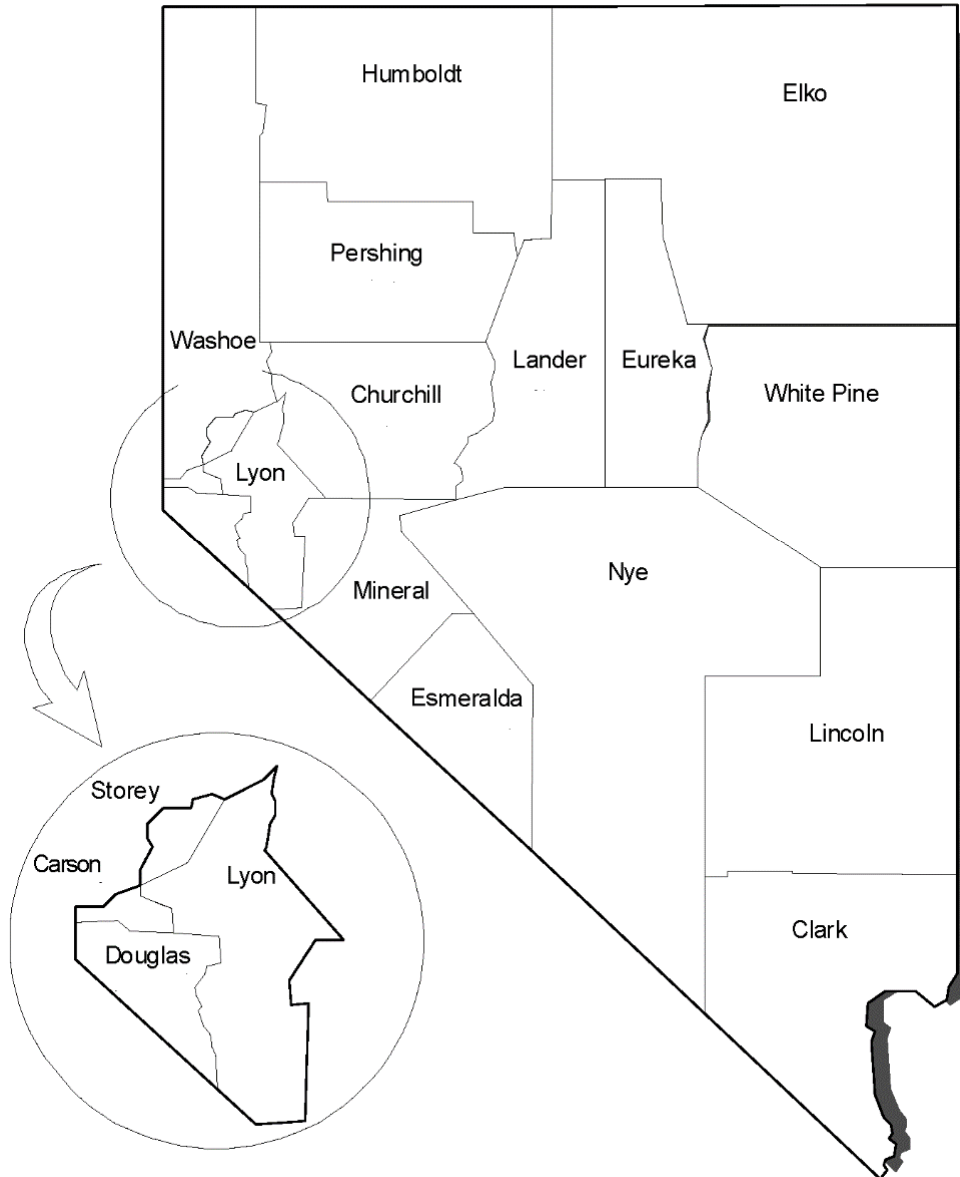
**Washoe County, NV**

Washoe County Office of Emergency Management – Phone: 775-337-5898

**White Pine County, NV**

White Pine County Emergency Management – Phone: 775-293-6503

**COUNTY MAP OF NEVADA**



Source: Nevada Department of Taxation

## Voluntary Organizations Offering Emergency Help

The American Red Cross, Salvation Army, and other voluntary organizations active in disaster relief can and will provide immediate aid in the way of clothing, emergency food, medical assistance, emergency shelter, clean-up help, transportation help, and furniture. This assistance is available upon the request of an individual or government agency during any significant emergency.

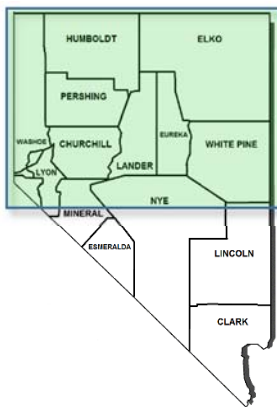


## Where Can I Get Additional Flood Recovery Assistance?

Assistance may be provided by the federal government, State of Nevada, local governments, and other organizations following significant disasters, including flood events. The following is a list of resources available to help with your recovery.

### Local Assistance

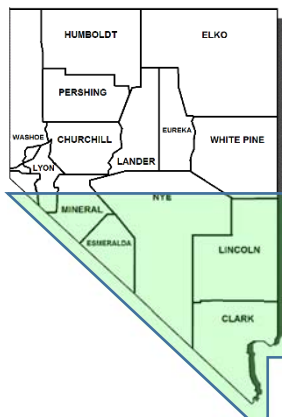
#### RED CROSS – Northern Nevada Chapter



The Northern Nevada Chapter, located in Reno, has provided services to the Armed Forces; emergency relief for hundreds of families impacted by earthquakes, wildfires, floods, search and rescue operations; and countless other forms of assistance. There are several Service Center offices located in Elko, Winnemucca, and Incline Village.

Contact Information: 4750 Longley Lane Suite 101  
 Reno, NV 89502-5981  
 Phone: (775) 856-1000

#### RED CROSS – Southern Nevada Chapter



In 2014, the Red Cross of Southern Nevada assisted over 1,200 people following disasters. The chapter is responsible for the following areas: Las Vegas, North Las Vegas, Henderson, Boulder City, Laughlin, Sandy Valley, Indian Springs, Good Springs, Overton, Logandale, Moapa, Mesquite, Lincoln, Nye, and Esmeralda counties.

Contact Information: 1771 East Flamingo Road, Suite 206-B  
 Las Vegas, NV 89119  
 Phone: (702) 791-3311



## Nevada Housing Authority

### Weatherization Assistance Program Service Providers

**What they do:** The Nevada Housing Authority's Weatherization Assistance Program helps low income residents reduce home energy costs while ensuring their health and safety. Types of weatherization services include carbon monoxide detector installation, pipe insulation, heating and cooling system repairs, and outdoor weatherization materials. See below for the Weatherization Assistance Service Providers throughout Nevada.

#### ❖ Las Vegas and Southern Rural Clark County:

##### **HELP of Southern Nevada:**

1640 East Flamingo Road, Suite 100

Las Vegas, NV 89119

Phone: (702) 369-4357

<http://www.helpsonv.org/programs-weatherization.php>

##### **City of Henderson:**

Neighborhood Services

P.O. Box 95050

240 Water Street, MSC 132

Henderson, NV 89009-5050

Phone: (702) 267-2000

[http://www.cityofhenderson.com/neighborhood\\_services/weatherization.php](http://www.cityofhenderson.com/neighborhood_services/weatherization.php)

#### ❖ North Las Vegas and Northern Rural Clark County:



##### **Las Vegas - Clark County Urban League:**

3575 West Cheyenne Avenue, Suite 101

Las Vegas, NV 89032

Phone: (702) 636-3949

<http://lvul.org/>

❖ Churchill, Elko, Esmeralda, Eureka, Humboldt, Lander, Lincoln, Mineral, Nye, Pershing, and White Pine Counties:



**Rural Nevada Development Corporation (RNDC):**

1320 East Aultman Street

Ely, NV 89301

Phone: (775) 289-8519/Toll Free: (866) 404-5204

<http://www.rndcnv.org/>

(Also see website for RNDC's Homeowner, Housing Rehabilitation Program)

❖ Washoe County:



**Community Services Agency (CSA):**

1090 East 8th Street

Reno, NV 89512

Phone: (775) 786-6023

<http://www.csareno.org>

❖ Carson, Douglas, Lyon and Storey Counties:



**Nevada Rural Housing Authority (NRHA):**

3695 Desatoya Drive

Carson City, NV 89701

Phone: (775) 887-1795, ext. 124

<http://www.nvrural.org/>

*USDA Rural Development*



**Single Family Housing Repair  
Loans and Grants**

Also known as the Section 504 Home Repair Program, this organization provides loans to very low income homeowners to repair, improve or modernize their homes. They also provide grants to elderly, very low income homeowners to remove health and safety hazards.

**Fallon Field Office:**

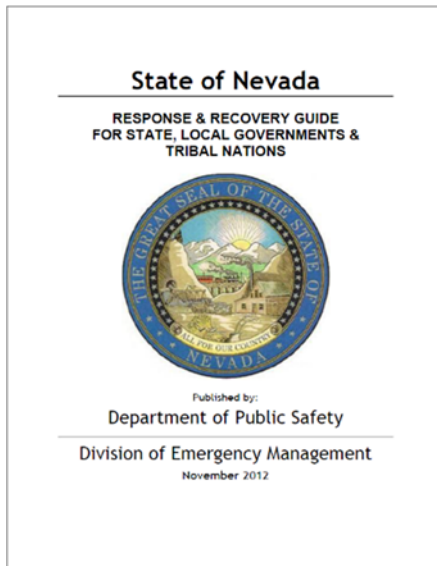
111 Sheckler Road

Fallon, NV 89406

Phone: (775) 423-5124 ext. 100/Fax: (855) 612-1209

<https://www.rd.usda.gov/programs-services/programs-services-individuals>

## State Assistance



Response & Recovery Guide for State, Local, Governments & Tribal Nations (170-page guide)

Available at:

[http://dem.nv.gov/uploadedFiles/demnv.gov/content/About/Response\\_Recovery\\_Guide.pdf](http://dem.nv.gov/uploadedFiles/demnv.gov/content/About/Response_Recovery_Guide.pdf)

**For additional information, also visit these sites:**

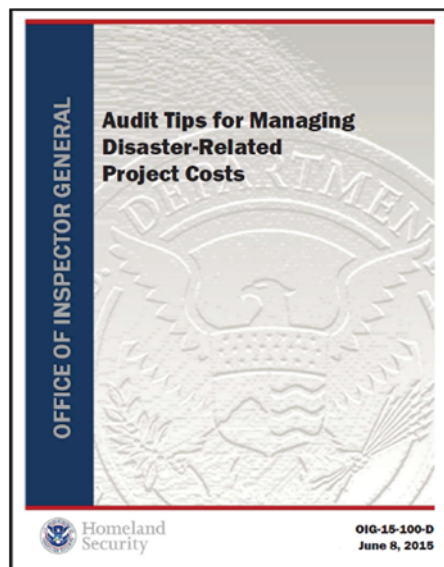
Division of Emergency Management – Homeland Security:  
[http://dem.nv.gov/Home/DEM\\_Home/](http://dem.nv.gov/Home/DEM_Home/) and  
[http://dem.nv.gov/Resources/Flood\\_Information\(1\)/](http://dem.nv.gov/Resources/Flood_Information(1)/)

State of Nevada Division of Water Resources:  
<http://water.nv.gov/>



## Federal Assistance

### *Audit Tips for Managing Disaster-Related Project Costs*



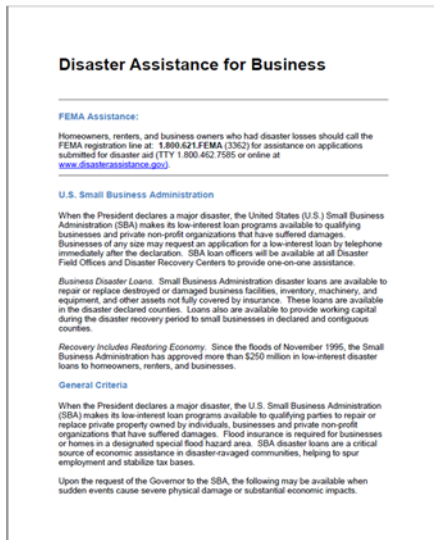
Using this report will help Disaster Assistance applicants:

- ❖ Document and account for disaster-related costs
- ❖ Minimize the loss of FEMA disaster assistance funds
- ❖ Maximize financial recovery
- ❖ Prevent fraud, waste, and abuse of disaster funds

Available at:

[http://dem.nv.gov/uploadedFiles/demnv.gov/content/About/OIG-15-100\\_OIG%20Audit%20Tips\\_Final\\_6-8-15.pdf](http://dem.nv.gov/uploadedFiles/demnv.gov/content/About/OIG-15-100_OIG%20Audit%20Tips_Final_6-8-15.pdf)

## Disaster Assistance for Business



When the President declares a major disaster, the United States Small Business Administration, or SBA, makes its low-interest loan programs available to qualifying individuals, businesses, and private non-profit organizations that have suffered damages. These loans are available for replacing or repairing facilities, inventory, machinery, and other assets not covered under insurance.

SBA makes a physical disaster declaration based on one of the following criteria:

- ❖ At least 25 homes or 25 businesses (or combination) have uninsured losses of 40 percent or more of the estimated fair replacement value or pre-disaster fair market value, whichever is lower.
- ❖ At least three businesses, each sustaining uninsured losses of 40 percent or more of the estimated fair replacement value or pre-disaster fair market value, whichever is lower, which causes 25 percent or more of the work force in their community to be unemployed for at least 90 days.

For physical disaster loans, businesses of any size, and private, non-profit organizations may request an application for a low-interest Physical Disaster Loan of up to \$1.5 million by telephone immediately after the presidential declaration. In addition, these loans are also available to qualifying homeowners, renters, and non-farm businesses for personal property loss including clothing, furniture, and automobiles. Real property loans are for repairs and restoration of homes to their pre-disaster condition.

For more information about the types of SBA disaster loans available, visit:

<https://www.sba.gov/loans-grants/see-what-sba-offers/sba-loan-programs/disaster-loans>

[http://dem.nv.gov/uploadedFiles/demnv.gov/content/About/Disaster%20Assistance%20for%20Business%20rev%20012016\(1\).pdf](http://dem.nv.gov/uploadedFiles/demnv.gov/content/About/Disaster%20Assistance%20for%20Business%20rev%20012016(1).pdf)

## FEMA – Presidential Disaster Declaration



FEMA

Under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C § 5121-5206, states, through their governors, can request a Presidential Disaster Declaration through the Federal Emergency Management Agency, or FEMA. There are two types of declarations the President can authorize to provide supplemental federal disaster assistance:

1. Emergency Declarations

Assistance from an emergency declaration may not exceed \$5 million, and the request must be submitted within 30 days of when the disaster occurred.

2. Major Disaster Declarations

A major disaster declaration will include funding for both emergency and permanent work following a disaster, and must be submitted within 30 days of the disaster.

Based on the type of declaration that is made, there are three categories of disaster assistance that may be available to states following a presidentially declared disaster. However, depending on the kind of declaration, not every type of assistance under the three categories may be available. The three types of assistance are individual assistance, public assistance, and hazard mitigation assistance and are described in detail below.

### Individual Assistance

❖ Individual and Households Program:

- Aid provided to individuals and households whose property was damaged or destroyed and the losses are not covered by insurance.
- Several types of assistance are covered under this program, including temporary housing, repair, replacement, permanent housing construction, and assistance for other needs.

❖ Small Business Administration Disaster Loans:

Loans to repair or replace homes, personal property, or businesses that were damaged and not covered by insurance. (See the Disaster Assistance for Business section for additional details.)

❖ Disaster Unemployment Assistance:

Unemployment benefits and re-employment services to individuals who become unemployed due to major disasters.

- ❖ **Legal Services:**  
Free legal services available for low-income disaster victims.
- ❖ **Special Tax Considerations:**  
Taxpayers who have suffered a casualty loss can deduct the loss on their federal income tax return.
- ❖ **Crisis Counseling:**  
Short-term crisis counseling services can be provided to people affected by presidentially declared disasters.

### Public Assistance

Public assistance is provided for the repair, restoration, reconstruction, or replacement of a public facility or type of infrastructure that has been damaged or destroyed by a declared disaster. Applicants for this type of assistance generally include state and local government entities and some private non-profit organizations. A request for public assistance must be submitted within 30 days after the area has been declared eligible for assistance.

### Hazard Mitigation Assistance

Hazard mitigation assistance includes sustainable measures to reduce or eliminate the long-term risks of natural hazards, including flooding. Mitigation can reduce the loss of life and property, and reduce the costs of responding to and recovering from disasters. The federal government can provide up to 75 percent of the cost, with the state or local government providing the remaining 25 percent. The types of mitigation measures covered under this assistance include the acquisition and demolition, relocation, elevation, or floodproofing of damaged or flood-prone properties.

GIS data for disaster declarations is available at: <https://gis.fema.gov/DataFeeds.html>

### *USDA – Farm Service Agency Natural Disaster Assistance*



Although Nevada is an arid state, farming and agriculture are among the state's primary industries. Since 2007, Nevada has experienced a 32 percent increase in new farmers in the state. The Farm Service Agency, or FSA, provides assistance for agricultural-related losses as a result of natural disasters, including flood, fire, drought, tornadoes, and pest infestation. The Secretary of Agriculture can designate counties as disaster areas in order to provide emergency loans to agricultural producers who have suffered losses from a disaster. Emergency assistance programs

include financial assistance for: producers of farm-raised fish, livestock, and honeybees; emergency forest restoration; and noninsured crop producers.



The Nevada FSA is headquartered in Reno. There are also FSA offices in Elko, Ely, Fallon, Lovelock, Minden, Winnemucca, and Yerington.

State FSA Office:  
1365 Corporate Blvd, Suite 200  
Reno, NV, 89502  
Phone: (775) 857-8500

### *Housing and Urban Development – Nevada*

The Department of Housing and Urban Development, or HUD, is a federal agency that is responsible for overseeing the nation's housing needs and providing fair housing opportunities, such as subsidized housing. Contact the HUD field offices below for inquiries related to housing needs and community development.

Las Vegas Field Office:  
U.S. Department of Housing and Urban Development  
302 East Carson Street, 4th Floor  
Las Vegas, NV 89101-5911  
Phone: (702) 366-2100/Fax: (702) 388-6244

Reno Field Office:  
U.S. Department of Housing and Urban Development  
745 West Moana Lane, Suite 360  
Reno, NV 89509  
Phone: (775) 824-3700/Fax: (775) 824-4978

## Acknowledgements

The image features a central logo for the Nevada Silver Jackets team, which includes a cartoon bee character and the text "SILVER JACKETS", "Be Risk Aware!", "WITH AGENCIES", and "ONE SOLUTION". This central logo is surrounded by five other logos, all connected by a circular dotted line. Clockwise from the top left, the logos are: the US Army Corps of Engineers (a red castle icon), the Carson Water Subconservancy District (a blue square with a landscape scene), the National Weather Service (a blue circular logo with a lightning bolt and the text "NATIONAL WEATHER SERVICE"), the Douglas County logo (a green triangle with a mountain and river scene, and the text "DOUGLAS COUNTY", "NEVADA", "EST. 1861", and "GREAT PEOPLE ▲ GREAT PLACES"), and the Great Seal of the State of Nevada (a circular seal with a landscape scene and the text "THE GREAT SEAL OF THE STATE OF NEVADA" and "ALL FOR OUR COUNTRY").

**US Army Corps of Engineers**

CARSON WATER  
SUBCONSERVANCY DISTRICT

**SILVER JACKETS**  
Be Risk Aware!  
WITH AGENCIES ONE SOLUTION

NATIONAL WEATHER SERVICE

NEVADA EST. 1861  
**DOUGLAS COUNTY**  
GREAT PEOPLE ▲ GREAT PLACES

THE GREAT SEAL OF THE STATE OF NEVADA  
ALL FOR OUR COUNTRY

This publication is the result of a collaborative effort by the members of the Nevada Silver Jackets team.

For more information on the Nevada Silver Jackets team, visit <https://silverjackets.nfrmp.us/State-Teams/Nevada> or send an email to [nvsilverjackets@usace.army.mil](mailto:nvsilverjackets@usace.army.mil)