

**Risk Communication and Project Engagement  
FEMA Mapping Activity Statements 11, 12 &  
Communication and Mitigation Strategies 1  
(Period of July 1, 2022, to June 30, 2023)**

These activities are associated with the

**Carson River Watershed  
REGIONAL FLOODPLAIN MANAGEMENT PLAN  
And the  
NevadaFloods.org Flood Awareness Campaign of the  
Nevada Floodplain Manager’s Office, Division of Water  
Resources**

Submitted for:

**Carson River Watershed CRS Communities**

**Carson City, Nevada  
Douglas County, Nevada  
Storey County, Nevada**

**September 22, 2023**

**Prepared by:**



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This report outlines regional floodplain management actions and lists the activities in the Community Outreach and Flood Awareness efforts conducted in Carson River Watershed which occurred during the period of July 1, 2022, to June 30, 2023. In addition to requirements of mapping activities statements (MAS) 11 & 12 and communication and mitigation strategies (COMS) 1, the Carson River Watershed Regional Floodplain Management Plan (FMP) informs and guides Carson Water Subconservancy District's (CWSD) floodplain management activities as part of the Integrated Watershed Management Process.

## **1.0 Background**

In 2008, the [Regional Floodplain Management Plan](#) was formally adopted by the boards of the Carson Water Subconservancy District, Douglas, Carson City, Lyon, and Churchill Counties in Nevada, and Alpine County, California, to provide a consistent approach to planning efforts, programs and projects, help protect community members from flooding hazards, and conserve floodplain lands. CWSD staff updated the plan in 2013 and again in 2018 and adopted by all the counties in the Watershed including Storey County. Section 3.0 describes the 2018 Revision process and document updates.

### ***Federal Emergency Management Agency Cooperating Technical Partner***

In 2005, CWSD became a [Cooperative Technical Partner \(CTP\) with](#) Federal Emergency Management Agency (FEMA). Through this program, CWSD can apply for funding from FEMA to conduct floodplain mapping, flood studies, mitigation planning, public outreach, and other projects that reduce flood risk in the Carson River Watershed. Since 2005, CWSD has received thirteen CTP funding grants from FEMA. Each grant application includes activities to accomplish in a Mapping Activity Statement (MAS) or a Communication and Mitigation Strategies (COMS), The MAS or COMs are documents that identify various flood or hazard mitigation studies and risk communication and outreach (See specifics in Section 3.3 and 3.5 below).

### ***FEMA Risk MAP Program***

In 2011, CWSD and various federal, state, and county government bodies signed the first [FEMA Region IX Risk MAP \(Mapping, Assessment, and Planning\) Charter](#) agreement formalizing collaborative efforts for flood management in the Carson River Watershed. In October 2016, Storey County became a signatory to the Charter. This collaboration enhances hazard mitigation plans, improves community resilience after flooding, protects beneficial functions of floodplains, and raises awareness about local flood risks. A Risk MAP Charter meeting occurred November 18, 2022, to discuss and identify projects for CWSD to pursue for the next FEMA funding round. The agenda and meeting notes are available at [www.CWSD.org](http://www.CWSD.org).

## 2.0 Carson River Coalition Stakeholder Process

### *Carson River Coalition*













#### *Meetings*

The Carson River Coalition (CRC) is a bi-state, multi-county stakeholder group, hosted by the CWSD and funded by CWSD and the Nevada Division of Environmental Protection (NDEP). Planners, engineers, floodplain managers, and other staff members from all watershed counties participate in this group. In addition, employees from other local; state and federal entities; and non-governmental agencies such as conservation districts, State Floodplain Manager, State Division of Emergency Management, FEMA, US Bureau of Reclamation, National Weather Service and The Nature Conservancy participate in CRC working groups. CRC meetings are open to the public. Meeting information is available at <https://www.cwsd.org/crc-meetings/> at the bottom of the webpage.

#### *Carson River Watershed Literacy Campaign*

With Environmental Protection Agency (EPA) funding, CWSD has spearheaded a watershed literacy campaign. Over the past five years, this campaign has installed watershed boundary signs on Nevada highways; updated the online Carson River Watershed interactive map website; created a Spanish version of the watershed online interactive map. Throughout 2022, CWSD released 12 videos for the “I Am Carson River Watershed” campaign (<https://iamcarsonriver.org/>). These videos focus on water quality, but they also lay a foundation to be able to discuss watersheds, floodplains, and the value of open space. Watershed moments like [“Make your Yard a Sponge”](#) promote a healthy watershed by encouraging residents to act with short videos CWSD provided [campaign resources](#) to counties to share on their websites. The campaign also include a web page for residents to take the [watershed pledge](#). First, residents select the action they will take. Next, the resident can watch a video to learn how to keep our watershed and our waters healthy. Table 2.0 lists the icons and pledge for each activity.

Carson River Regional Floodplain Management – Risk Communication and Project Engagement

Table 2.0 I Am Carson River Watershed Videos and Pledge Actions			
Icon	Pledge Action	Icon	Pledge Action
 BAG IT	I will pick up my pet's waste in my backyard, neighborhood or on the trail and dispose of it properly.	 USE A CAR WASH	I will keep oils, salts, grime, and chemicals out of our storm drains and rivers by using a car wash.
 MAKE YOUR YARD A SPONGE	I will capture stormwater on my property and let it soak into the ground instead of sending it down storm drains by creating raingardens, redirecting my down spouts to landscaping and reducing hard surfaces on my property.	 CURB CHEMICAL USE	I will reduce my chemical use by reading labels properly, using only what's needed, and finding alternative natural pest reduction methods.
 PROMOTE POLLINATORS	I will promote pollinator habitat by adding pollinator friendly native plants and ornamentals, creating solitary bee hotels, and curbing my pesticide use in my garden and beyond!	 FOSTER HEALTHY SOIL	I will practice the 5 principles of healthy soil: 1) minimize ground disturbance 2) reducing bare soil 3) building diversity of plants, animals, and insects, 4) keeping living roots in the soil; and 5) Integrating animals: Worms, insects, and livestock where appropriate
 RECREATE RESPONSIBLY	When recreating (camping, hiking, biking, fourwheeling, etc.), I will dispose of any waste (trash, human and pet waste, chemicals) by putting them in the proper receptacles (trash cans, recycling, or sewer dump facility).	 RECYCLE MOTOR OIL	I will take my used motor oil to my local auto parts store, garage, or recycling center to prevent contamination of water and soil!
 EXPLORE YOUR WATERSHED	I will visit 3 new parks, trails or open space areas in the Watershed I've never been to before!	 PITCH IN	I will dispose of my trash properly because I know a more pristine environment looks nicer but also means a healthier watershed.
 STOP INVASIVE SPECIES IN YOUR TRACKS	I will practice the Play Clean Go principles: 1) REMOVE plants, animals and mud from my boots, gear, pets, and vehicles 2) CLEAN my gear before entering and leaving the recreation site 3) STAY on designated roads and trails 4) USE CERTIFIED or local firewood and hay; and 5) CLEAN, DRAIN, and DRY my boat to prevent spreading aquatic invasives	 ENGAGE IN YOUR WATERSHED	I will be a steward and engage in my watershed. I will find fun and meaningful ways to volunteer and foster a healthy Carson River Watershed.

### 3.0 Community Rating System Activities

The [2018 Carson River Watershed Regional FMP](#) divides implementation strategies into eight categories and provides suggested actions for each category. Table 3.1 correlates suggested actions in the 2018 Regional FMP to FEMA’s Community Rating System categories (Table 3.2). This section outlines CRS work completed by CWSD between July 1, 2021 - June 30, 2022.

Table 3.1 Correlation of CRS Categories to Suggested Actions of 2018 Regional FMP

CRS Categories	2018 Regional Floodplain Management Plan Suggested Actions
310, 320, 350, 410, 420, 450 510, 520, 530	Protect Natural Floodplain Function and Values
430	Set Higher Regulatory Standards
410, 440	Collect Flood Data Information and Maintenance
410, 430, 440, 510	Balance Channel Migration and Bank Erosion Monitoring
330	Increase Floodplain and Flood Hazard Outreach and Education
510, 540	Reduce Infrastructure Impact
440, 530	Map/Study Alluvial Fans
320, 450	Minimize Stormwater Impacts

Table 3.2 CRS activities outlined in CRS Coordinator’s Manual (2017)

CRS Category	ACTIVITY
300 Public Information Activities	310 Elevation Certificates 320 Map Information 330 Outreach Projects 340 Hazard Disclosure 350 Flood Protection Information 360 Flood Protection Assistance 370 Flood Insurance Promotion
400 Mapping and Regulatory Activities	410 Additional Flood Data 420 Open Space Preservation 430 Higher Regulatory Standards 440 Flood Data Maintenance 450 Stormwater Management
500 Flood Damage Reduction Activities	510 Floodplain Management Planning 520 Acquisition and Relocation 530 Flood Protection 540 Drainage System Maintenance
600 Flood Preparedness Activities	610 Flood Warning Program 620 Levee Safety 630 Dam Safety

The following sections provide an overview of CWSD’s work conducted for each CRS category during this reporting period. Please refer to CWSD’s 2022 Engagement Plan, Appendix A at the end of this document.

**300 - Public Information Activities**

**310 Elevation Certificate Activities:** *This activity’s objective maintains correct FEMA Elevation Certificates and other needed certifications for new and substantially improved buildings in Special Flood Hazard Area (SFHA).*

*CWSD Progress during this period on Elevation Certificates Activities include:*

- CWSD staff does not address Elevations Certificates in our public interactions, but we refer questions regarding elevation certificates to the appropriate city or county staff.

**320 Map Information Activities:** *This activity’s objective provides information about local flood hazard and flood-prone areas that need special protection because of their natural functions.*

CWSD risk communication and outreach demonstrates the watershed model. During the demonstrations, staff uses plain language to underscore the importance of conserving open space areas to protect because of their natural floodplain functions. During the demonstration, staff tries to touch on the following.

Figure 1: Watershed Model Demonstration



Nevada's Governor Sisolak completely engaged in this demonstration.  
Carson City, 2019

*Natural Flood and Erosion Control:*

*Floodplains provide flood storage and room to move that reduces flood velocities, peak flows, and sediment buildup.*

*Water Quality:*

*Floodplains filter polluted runoff, process organic waste, and curb shifts in water temperatures.*

*Groundwater recharge:*

*Floodplains allow water to slow down and sink into the ground. As water soaks into the ground, it collects in underground spaces called aquifers, so instead of water flowing out to the desert and evaporating, water aquifers keep water in our community. Floodplain plants and soil store incredible amounts of water. So as surface flows decrease, water continues to seep out and keep more water in our river and streams.*

*Biological Productivity:*

*Floodplains enrich the soil, so they are ideal for farmers and ranchers to grow plants and animals. Floodplains keep our watershed healthy because they promote biodiversity and stabilize ecosystem frameworks.*

*Fish and Wildlife Habitat:*

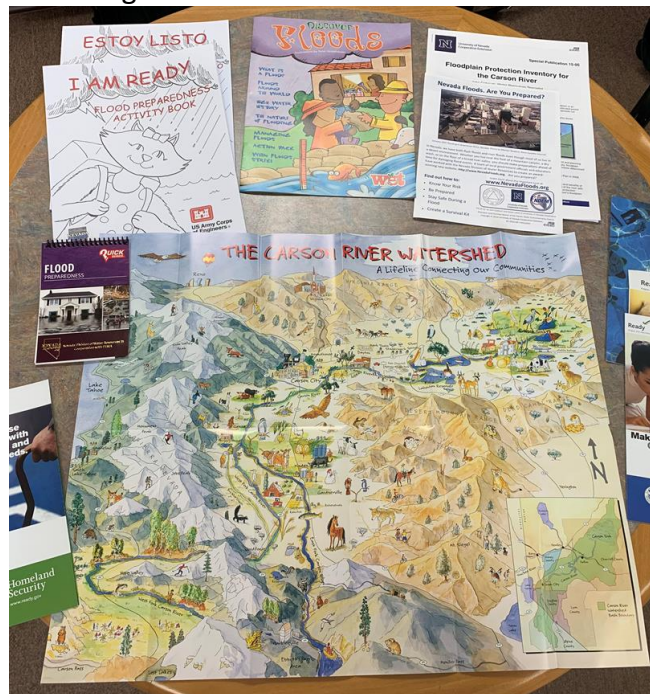
*Floodplains maintain a rich array of plants, bugs, birds, fish, and animals to keep their habitat vital and healthy. Animals love to feed and breed here; the Carson River our watershed is an important bird area and flyway, so whether ducks and geese and other birds live here year-round or migrate through in summer and fall, they can find good places to nest and raise their families. Our watershed is also a place for rare and endangered species such as the Lahontan Cutthroat trout, Sage Grouse, Yosemite Toad, Western Yellow Billed Cuckoo, and the Western Pond turtle. (We refer to the 2017 Carson River Adaptive Stewardship Plan section 3.5, for talking points <https://www.cwsd.org/wp-content/uploads/2017/12/Final-CRWASP-2017-Update-Plan-Part-1.pdf>)*

## Carson River Regional Floodplain Management – Risk Communication and Project Engagement

The presenter offers each person a watershed map at the end of their demonstration. The map refers people to CWSD's [interactive watershed map](#). Figure 2 documents paper materials offered and include:

- [Carson River Watershed Map](#)
- I Am Ready Flood Preparedness Activity provided through USACE Silver Jackets partnership (English and Spanish)
- [Nevada Floods. Are you prepared?](#) (English and Spanish)
- Discover Floods (Project Wet)
- [Floodplain Protection Inventory of the Carson River](#)
- Various Ready.gov and QuickSeries Guides

Figure 2: Printed Outreach Materials



### Douglas County

- Buckeye Creek Basin Design project considered potential sites and conceptual designs for a detention basin to reduce flows from Buckeye Creek. This study began July 2022 and will conclude September 2023. Mike Kellogg, of JE Fuller, presented the study to the CWSD's Board of Directors on July 17, 2023, and by the Douglas County commissioners on July 18, 2023.
- CWSD conducted a floodway encroachment analysis to finalize the Carson Valley Physical Map between January 2022 to September 2022. This project was the last step before FEMA could accept Carson Valley's Physical Map Revision (PMR). FEMA will issue preliminary maps in late 2023.
- Walker River Watershed Flood Risk Analysis project began in early 2023 and will conclude in 2025. This project will assess flood risk and determine projects to increase resilience in Douglas and Lyon County. This portion of South Douglas County has unincorporated communities in Double Springs, Holbrook Junction, Topaz Lake, and Topaz Ranch Estates and surrounding homes in the Walker River Watershed. The Climate and Social Justice Index lists these areas of the county as underserved.



## Carson River Regional Floodplain Management – Risk Communication and Project Engagement

- Fish Springs and Pinenut Creek Culvert Study will determine culvert improvements and refine potential detention sites and designs for a detention basin to reduce flows from Buckeye Creek. An upstream feasibility project delayed this project start until summer of 2023. Work will continue through August 2024. Jeff Weagel, of J-U-b Engineering, will present the results of this project to CWSD’s Board of Directors the Douglas County Commissioners in the summer of 2024.

### Douglas County and Carson City

- CWSD received funding to conduct a Clear Creek Letter of Map Revision (LOMR) project in Carson City, Douglas County, and on Washoe Tribal lands. This project updates flood insurance rate maps (FIRMs) in the Clear Creek watershed and includes multiple changes from development and a new highway. The project began in May 2021 and is nearing completion. Andrea Jacobsma, of Cardno, presented the study results to CWSD, Carson City and Douglas County boards in February 2023.

### Carson City

- East Carson City Area Drainage Master Plan (ADMP) commenced in May 2022. Public project kickoff occurred June 21, 2022. Mapped alluvial fans and drainage areas in East Carson City help city staff to understand flood hazards and present mitigation alternatives. City staff requested residents provide data and pictures regarding flooding they have experienced. Only a handful of residents attended the kickoff meeting. For the next meeting, a field visit occurred on November 16, 2022. City staff invited residents to meet at locations where flash flooding is common. More residents came and provided feedback with this approach. This project also identified potential mitigation projects to better plan for flooding, infrastructure improvements, and maintenance. The project concluded in May 2023 and Stefani Bell from Michael Baker International presented the study results and recommendations to CWSD’s Board of Directors on May 17, 2023, and Carson City’s Board of Supervisors on May 18, 2023.
- Southeast Carson City ADMP commenced in April 2022, and a public project kickoff occurred June 2022. This project will be complete by December 2023. Mapped alluvial fans and drainage areas in East Carson City help city staff to understand flood hazards and present mitigation alternatives. This project also identified potential mitigation projects to better plan for flooding, infrastructure improvements, and maintenance. The contractor asked residents to share flood experiences and pictures they had experienced. Targeted outreach was successful in the various neighborhoods that staff visited. Geoff Brownell will present the study and mitigation recommendations to CWSD and city board in late 2023.

### Storey County

- Virginia City Area Drainage Master Plan commenced in April 2022. In June 2022, a public outreach kickoff informed residents about the project goals and how the county would use the information from the study. Mapped alluvial fans and drainage areas in Virginia City and Six Mile Canyon of Storey County help city staff to understand flood hazards and present mitigation alternatives. This project also identified potential mitigation projects to better plan for flooding, infrastructure improvements, and maintenance. The contractor asked residents to share flood experiences and pictures they had experienced. County staff have scheduled a public meeting in October 2023 so residents can hear about the results of the drainage study and potential solutions.

### Carson River Watershed

- In 2022, CWSD finalized a web interface to access flood information that is not in the regulatory floodplain. This interface is available to county staff and residents and can be accessed at <https://gis.mbakerintl.com/carsonwatersubconservancydistrict/>.

**330 Outreach Project Activities:** *The objective of this activity is to provide the public with information needed to increase flood hazard awareness and to motivate actions to reduce flood damage, encourage flood insurance coverage, and protect the natural functions of floodplains.*

CWSD risk communication and outreach demonstrates the watershed model. During the demonstrations, staff uses plain language to underscore the importance of conserving open space areas to protect because of their natural floodplain functions. During the demonstration, staff tries to touch on the following.

#### *Natural Flood and Erosion Control:*

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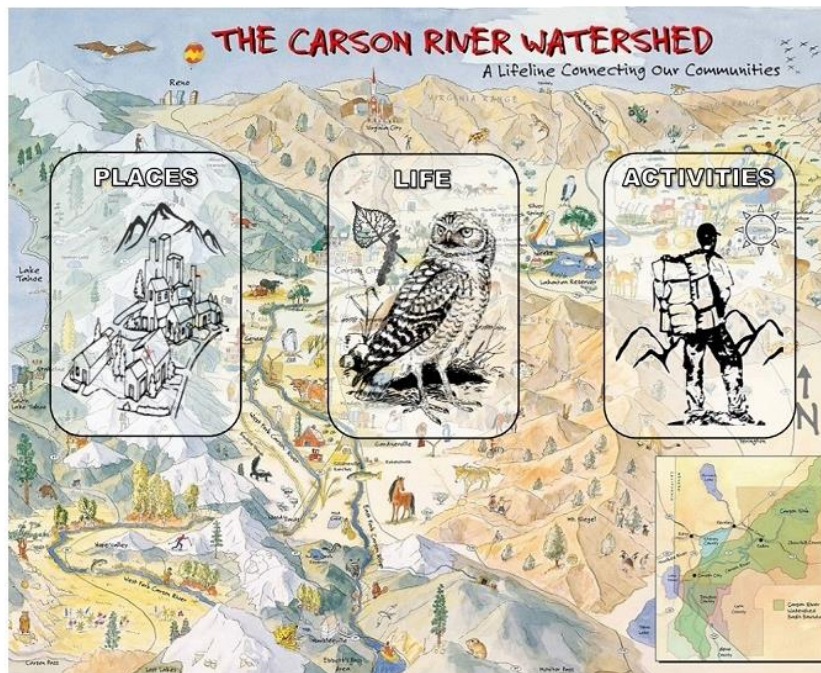
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*The presenter offers each person a watershed map at the end of their demonstration. The map refers people to CWSD's [interactive watershed map](#).*

Figure 3: Interactive Map Screenshot

**Click below to explore the places, life and activities  
in the Carson River Watershed.**

 [Haz clic aquí para español](#)



*CWSD Progress during this period on Outreach Project Activities include:*

#### Douglas County

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- Carson City installed a high-water mark mural in its open space wetlands. This mural, along multiuse trail one, connects the city to the Carson River under the East 5<sup>th</sup> street bridge. This mural not only is beautiful, but it is also an outreach tool to underscore how floodplains and open space work together to reduce flood danger to people and their property. The new mural depicts Carson City’s rich wildlife habitat. The mural includes an interpretive sign that describes how open space and floodplains work together. On August 7, 2022, county supervisor Maurice White revealed the mural. A Disaster Preparedness Festival was held in conjunction with the mural unveiling. FEMA highlighted this project in November 2022 CTP collaboration monthly newsletter and it is listed as a best practice on FEMA’s September 2022 [blog post](#).

Figure 4: Disaster Preparedness Festival



### Storey County

- Virginia City Area Drainage Master Plan commenced in April 2022. In June 2022, a public outreach kickoff informed residents about the project goals and how the county would use the information from the study. Mapped alluvial fans and drainage areas in Virginia City and Six Mile Canyon of Storey County help city staff to understand flood hazards and present mitigation alternatives. This project also identified potential mitigation projects to better plan for flooding, infrastructure improvements, and maintenance. The contractor asked residents to share flood experiences and pictures they had experienced. County staff have scheduled a public meeting in October 2023 so residents can hear about the results of the drainage study and potential solutions.

### Carson River Watershed

- In 2022, CWSD finalized a web interface to access flood information that is not in the regulatory floodplain. This interface is available to county staff and residents and can be accessed at <https://gis.mbakerintl.com/carsonwatersubconservancydistrict/>.

Table 3.3 Map Information Outreach

Project Meetings & Outreach				
DATE (S)	PROJECT	Location	EVENT OUTREACH DESCRIPTION	~ Residents /Adults # Reached
6/21/2022	VC ADMP	Piper's Opera, Virginia City, NV	Open House Public meeting for project kickoff	38
6/21/2022	East CC ADMP	Carson City Sheriff's office	Open House Public meeting for project kickoff	3
8/30/2022	Southeast CC ADMP	Carson City Sheriff's office	Open House Public meeting for project kickoff	8
11/22/2022	East CC ADMP	East Carson City	Multiple location in Study Area	12
8/29/2023	Southeast CC ADMP	Four locations in S. Carson City	Met with residents at 4 locations in study area	48
10/12/2023	VC ADMP	Piper's Opera, Virginia City, NV	This meeting will provide project results and mitigation alternatives to residents	
<b>Project Outreach Total:</b>				109

- CWSD utilized FEMA funding to assist counties in the Flood Awareness Week Outreach Program (FAW) held in November 2022. CWSD maintains a webpage with [flood preparedness information for watershed residents](#). The FAW planning committee is led by Nevada’s Floodplain Management office and met regularly to prepare for November FAW. FAW activities included state and county proclamations and newspaper advertisements.

Table 3.4 Public Outreach

Public Outreach		
DATE (S)	EVENT/OUTREACH EFFORT	~ Residents/Adults # Reached
8/6/2022	Ag Heritage Days	20
8/20/2022	Martin Slough Open House	25
9/10/2022	Carson City Source Water protection outreach	40
9/24/2022	Candy Dance	150
10/15/2022	Carson Valley Trails Festival	40
10/27/2022	Boonanza	550
11/15/2022	Douglas County Outreach Event	20
11/17/2022	Bryant Building Outreach	45
4/22/2023	Flood Awareness and Risk Communication at Fallon Paiute Shoshone Tribal Earth Day Celebration	40
5/6/2023	Flood Awareness and Risk Communication at Washoe Tribal Earth Day Celebration	40
6/1/2023	Douglas LID Outreach	30
6/17/2023	Sheep Foundations	310
<b>Total</b>		<b>1310</b>

- CWSD staff highlights [NevadaFloods.org](http://NevadaFloods.org) website and the FEMA map service center at its outreach events. The NevadaFloods.org website has copies of the county and state proclamations.
- CWSD’s flood awareness school program recovered in 2022-2023 school year. FAW school outreach elements include:
  - The Floodplain model demonstrates and defines watersheds and floodplains to educators and students. The presenter also discusses how floodplains work, flooding, risk, and the importance of floodplain protection.
  - “I Am Ready” flood preparedness activity books are provided by US Army Corps of Engineers. Classroom flood preparedness education uses the “I Am Ready” books for two purposes – teachers provide a count of booklets needed, so it is easy to track participant numbers. The flood awareness educator provides coloring books the week prior to flood awareness event. Students demonstrate how they acted on their knowledge when they return with their emergency information page filled in. As a reward, they receive program

swag with nevadafloods.org logo – such as yoyo’s, Great Basin wildflower seeds, or a flood awareness bag.

- The flood awareness educator developed a relay race game to underscore the importance of disaster preparedness. Teams of 4-6 students race across field / gym and select items for a family of four with a dog to grab as they “evacuate” After the race, students brainstorm about items they may have forgotten.
- This program is still recovering after the pandemic. High staff turnover has made it difficult to connect with teachers and school administrators at schools. The program connected with more students this period than in pre-pandemic years. Table 3.5 lists FAW school outreach in each CRS community and Table 3.6 lists FAW outreach throughout the Watershed. Here is a summary of attendance in CRS Counties:

Table 3.5 School Outreach Events in CRS communities

Risk Communication and Outreach in CRS Communities		
County	~ Educators/ Adults # Reached	~ Students Reached
Douglas County	96	851
Carson City	95	316
Storey County	4	23

Demonstrating this model is exhausting, but worth it if children and their families learn to respect water when it is flooding.

Figure 5: Watershed Model





Table 3.6 School Outreach Events

<b>School Outreach - River Wranglers and CWSD Staff</b>				
<b>DATE (S)</b>	<b>School</b>	<b>EVENT OUTREACH DESCRIPTION</b>	<b>~ Educators/ Adults # Reached</b>	<b>~ Students Reached</b>
3/22/2023	Gardnerville Elementary, Douglas County	Flood Awareness and Safety preparedness at trout release	3	30
3/29/2023	CVMS - Douglas County	Flood Awareness and Safety preparedness at Flood Awareness Education Event w/Outdoor Science Class	3	66
3/30/2023	CVMS - Douglas County	Flood Awareness and Safety preparedness at Flood Awareness Education Event w/Outdoor Science Class	3	66
4/5/2023	Hugh Gallagher - Storey	Flood Awareness and Safety preparedness at Carson River Workday	4	23
4/10/2023	Oasis Academy, Churchill County	Flood Awareness and Safety preparedness at Carson River Workday	7	122
4/11/2023	Pinon Hills ES, Douglas County	Flood Awareness and Safety preparedness at Carson River Workday	17	50
4/17/2023	Homeschool Students, Douglas, and Carson City students	Flood Awareness and Safety preparedness at Ag in the Classroom	20	45
4/27/2023	Fourth grade, most schools in Churchill County	Flood Awareness and Safety preparedness at Ag in the Classroom	50	350
5/4/2023	Silver Stage Elementary School, Lyon	Flood Awareness and Safety Preparedness at CCRWD	4	118
5/15/2023	Numa Elementary - Churchill	Flood Awareness and Safety Preparedness	10	158
5/16/2023	Numa Elementary - Churchill	Flood Awareness and Safety Preparedness	10	155
5/19/2023	Riverview ES - Lyon	Flood Awareness and Safety Preparedness at Farmer's Market Outreach	15	150
5/22/2023	Bordewich Bray ES-Carson	Flood Awareness and Safety Preparedness at Field Day	15	93

School Outreach - River Wranglers and CWSD Staff				
DATE (S)	School	EVENT OUTREACH DESCRIPTION	~ Educators/ Adults # Reached	~ Students Reached
5/23/2023	Eagle Valley Middle School-Carson	Flood Awareness and Safety Preparedness at Field Day	50	100
5/30/2023	Minden ES - Douglas	Flood Awareness and Safety preparedness at Ag in the Classroom	12	355
5/31/2023	Minden ES - Douglas	Flood Awareness and Safety preparedness at CCRWD	19	40
6/2/2023	Gardnerville Elementary (second grade), Douglas County	Flood Awareness and Safety Preparedness at Field Day	10	75
6/6/2023	Minden ES - Douglas	Flood Awareness and Safety preparedness at CCRWD	8	75
6/7/2023	Legacy Christian Academy, Carson City	Ag in the Classroom	20	100
6/8/2023	Scarselli ES-Douglas	Flood Awareness and Safety preparedness at Conserve the Carson River Workday	11	71
		Total:	291	2242

*In March, staff cancelled three events because of the weather.*

**Table 3.6a Cancelled School Outreach Events**

Cancelled School Outreach - River Wranglers and CWSD Staff				
DATE (S)	School	EVENT OUTREACH DESCRIPTION	~ Educators/ Adults # Reached	~ Students Reached
3/3/2023	Montessori - Carson City	Flood Awareness and Safety preparedness at trout release	0	0
3/9/2023	CC Meneley - Douglas	Flood Awareness and Safety preparedness at trout release	0	0
3/10/2023	Fritsch - Carson City	Flood Awareness and Safety preparedness at trout release	0	0

**340 Hazard Disclosure Activities:** *This activity's objective discloses a property's potential flood hazard to prospective buyers before the lender notifies them of the need for flood insurance.*

CWSD staff coordinates with city/county staff at public meetings to provide hazard maps of its flood projects to residents in the Carson River Watershed. At these public meetings, community residents can ask questions, discuss their property with project engineers, resource professionals, and city/county staff to better understand their specific flood hazards. Messaging directs watershed residents to NevadaFloods.org. Residents can search this website to discover their flood risk and find out if they need flood insurance on any given parcel. Staff also underscores the affordability of flood insurance for buildings not in SFHAs. Table 3.3 in the Map Information Outreach section indicate 60 residents in Carson City were reached by project teams and were informed of their flood hazards in East and Southeast Carson City as a result. Storey County outreach will occur in October 2023.

**350 Flood Protection Information Activities:** *This activity's objective provides the public with information about flood protection that is more detailed than that provided through outreach projects.*

*CWSD Progress during this period on Flood Protection Information Activities include:*

- Public and Project outreach slowly reemerged in 2022-2023 and risk communication and outreach exceeded pre-pandemic levels. Refer to Tables 3.3-3.6.
- CWSD staff created a Carson City library display for the month of November 2022.
- CWSD's website provides link to the Floodplain Management Plan and its updates, on [www.cwsd.org](http://www.cwsd.org). One of the core tenets of this plan is floodplain conservation.
- CWSD updates County/City floodplain and emergency manager information and is available on the Flood Awareness section on [www.cwsd.org](http://www.cwsd.org).
- Floodplain protection and flooding articles were included in CWSD's newsletter, "[Watershed Connections](#)" that is distributed to over 1000 individuals throughout the six counties located in the Carson River watershed.
- CWSD's website and floodplain management plan lists areas targeted to protect because of their natural floodplain functions. UNR Cooperative Extension staff created the [2015 Floodplain Protection Inventory on the Carson River](#). CWSD's website discusses the need to conserve floodplain lands and refers visitors to the report.
- The website also includes an [interactive watershed map](#), in English and Spanish. It provides site visitors with information about the watershed, and the plants and animals who live in it. Refer to the messages below.

CWSD risk communication and outreach demonstrates the watershed model. During the demonstrations, staff uses plain language to underscore the importance of conserving open space areas to protect because of their natural floodplain functions. During the demonstration, staff tries to touch on the following.

*Natural Flood and Erosion Control:*

*Floodplains provide flood storage and room to move that reduces flood velocities, peak flows, and sediment buildup.*

*Water Quality:*

*Floodplains filter polluted runoff, process organic waste, and curb shifts in water temperatures.*

*Groundwater recharge:*

*Floodplains allow water to slow down and sink into the ground. As water soaks into the ground, it collects in underground spaces called aquifers, so instead of water flowing out to the desert and evaporating, water aquifers keep water in our community. Floodplain plants and soil store incredible amounts of water. So as surface flows decrease, water continues to seep out and keep more water in our river and streams.*

*Biological Productivity:*

*Floodplains enrich the soil, so they are ideal for farmers and ranchers to grow plants and animals. Floodplains keep our watershed healthy because they promote biodiversity and stabilize ecosystem frameworks.*

*Fish and Wildlife Habitat:*

*Floodplains maintain a rich array of plants, bugs, birds, fish, and animals to keep their habitat vital and healthy. Animals love to feed and breed here; the Carson River our watershed is an important bird area and flyway, so whether ducks and geese and other birds live here year-round or migrate through in summer and fall, they can find good places to nest and raise their families. Our watershed is also a place for rare and endangered species such as the Lahontan Cutthroat trout, Sage Grouse, Yosemite Toad, Western Yellow Billed Cuckoo, and the Western Pond turtle. (We refer to the 2017 Carson River Adaptive Stewardship Plan section 3.5, for talking points <https://www.cwsd.org/wp-content/uploads/2017/12/Final-CRWASP-2017-Update-Plan-Part-1.pdf>)*

**360 Flood Protection Assistance:** *This activity's objective provides one-on-one help to people who are interested in protecting their property from flooding.*

*CWSD Progress during this period on Flood Protection Assistance Activities include:*

- CWSD staff collaborates with people who inquire about how they can protect their property from flooding in flood outreach efforts.
- CWSD staff also refers property owners with specific questions to appropriate city or county staff member.

**370 Flood Insurance Promotion:** *This activity's objective improves flood insurance coverage in the community.*

*CWSD Progress during this period on Flood Insurance Promotion Activities include:*

- CWSD staff coordinates with staff from counties, state and FEMA at various outreach events listed in sections 320, 330 and 340 to include flood insurance promotion. Flood awareness week events include FEMA flood insurance specialists so residents can ask specific questions. Common messaging themes include:
  - Consider purchasing flood insurance even if the property is outside of a special flood hazard area.
  - Check out Nevadafloods.org to know your flood risk.
  - Money spent on flood insurance (aka mitigation) reduces disaster costs.

## 400 Mapping and Regulatory Activities

**410 Flood Hazard Mapping Activities:** *This activity's objective improves the quality of the mapping that is used to identify and regulate development as risk from flood hazards.*

CWSD Progress during this period on Flood Hazard Mapping Activities include:

### Douglas County

- Buckeye Creek Basin Design project considered potential sites and conceptual designs for a detention basin to reduce flows from Buckeye Creek. This study began July 2022 and will conclude September 2023. Mike Kellogg, of JE Fuller, presented the study to the CWSD's Board of Directors on July 17, 2023, and by the Douglas County commissioners on July 18, 2023.
- CWSD conducted a floodway encroachment analysis to finalize the Carson Valley Physical Map between January 2022 to September 2022. This project was the last step before FEMA could accept Carson Valley's PMR. FEMA will issue preliminary maps in late 2023.
- Walker River Watershed Flood Risk Analysis project began in early 2023 and will conclude in 2025. This project will assess flood risk and determine projects to increase resilience in Douglas and Lyon County. This portion of South Douglas County has unincorporated communities in Double Springs, Holbrook Junction, Topaz Lake, and Topaz Ranch Estates and surrounding homes in the Walker River Watershed. The Climate and Social Justice Index lists these areas of the county as underserved.
- Fish Springs and Pinenut Creek Culvert Study will determine culvert improvements and refine potential detention sites and designs for a detention basin to reduce flows from Buckeye Creek. An upstream feasibility project delayed this project start until summer of 2023. Work will continue through August 2024. Jeff Weagel, of J-U-b Engineering, will present the results of this project to CWSD's Board of Directors the Douglas County Commissioners in the summer of 2024.

### Douglas County and Carson City

- CWSD received funding to conduct a Clear Creek LOMR project in Carson City, Douglas County, and on Washoe Tribal lands. This project updates flood insurance rate maps (FIRMs) in the Clear Creek watershed and includes multiple changes from development and a new highway. The project began in May 2021 and is nearing completion. Andrea Jacobsma, of Cardno, presented the study results to CWSD, Carson City and Douglas County boards in February 2023.

### Carson City

- East Carson City Area Drainage Master Plan (ADMP) commenced in May 2022. Public project kickoff occurred June 21, 2022. Mapped alluvial fans and drainage areas in East Carson City help city staff to understand flood hazards and present mitigation alternatives. City staff requested residents provide data and pictures regarding flooding they have experienced. Only a handful of residents attended the kickoff meeting. For the next meeting, a field visit occurred on November 16, 2022. City staff invited residents to meet at locations where flash flooding is common. More residents came and provided feedback with this approach. This project also identified potential mitigation projects to better plan for flooding, infrastructure improvements, and maintenance. The project concluded in May 2023 and

Stefani Bell from Michael Baker International presented the study results and recommendations to CWSD's Board of Directors on May 17, 2023, and Carson City's Board of Supervisors on May 18, 2023.

- Southeast Carson City ADMP commenced in April 2022, and a public project kickoff occurred June 2022. This project will be complete by December 2023. Mapped alluvial fans and drainage areas in East Carson City help city staff to understand flood hazards and present mitigation alternatives. This project also identified potential mitigation projects to better plan for flooding, infrastructure improvements, and maintenance. The contractor asked residents to share flood experiences and pictures they had experienced. Targeted outreach was successful in the various neighborhoods that staff visited. Geoff Brownell will present the study and mitigation recommendations to CWSD and city board in late 2023.

### Storey County

- Virginia City Area Drainage Master Plan commenced in April 2022. In June 2022, a public outreach kickoff informed residents about the project goals and how the county would use the information from the study. Mapped alluvial fans and drainage areas in Virginia City and Six Mile Canyon of Storey County help city staff to understand flood hazards and present mitigation alternatives. This project also identified potential mitigation projects to better plan for flooding, infrastructure improvements, and maintenance. The contractor asked residents to share flood experiences and pictures they had experienced. County staff have scheduled a public meeting in October 2023 so residents can hear about the results of the drainage study and potential solutions.

### Carson River Watershed

- In 2022, CWSD finalized a web interface to access flood information that is not in the regulatory floodplain. This interface is available to county staff and residents and can be accessed at <https://gis.mbakerial.com/carsonwatersubconservancydistrict/>.

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**420 Open Space Preservation:** *This activity's objective will:*

- 1) *Prevent flood damage by keeping flood-prone lands free of development, and*
- 2) *Protect and enhance the natural functions of floodplains.*

Figure 6: High Water Mark Mural Project



*Carson City, 8-2022. One of our favorite projects this year in Carson City was a high-water mark mural that underscored how floodplains and open space work together.*

*CWSD Progress during this period for Open Space Preservation efforts include:*

- Through the Carson River Coalition (CRC) Floodplain Management Group, CWSD works with counties to promote preserving open spaces in the Carson River Watershed. The *Living River Approach*, in CWSD's Regional FMP, recognizes the importance of balancing the natural floodplain form and function of the river by conserving open floodplain lands. All outreach messaging includes a discussion about the open space floodplains in the Carson River Watershed and the value they provide for flood protection, water quality enhancement, and groundwater recharge. The CRC encourages audiences to advocate for open space preservation and funding.
- Carson City installed a high-water mark mural in its open space wetlands. This mural, along multiuse trail one, connects the city to the Carson River under the East 5<sup>th</sup> street bridge. This mural not only is beautiful, but it is also an outreach tool to underscore how floodplains and open space work together to reduce flood danger to people and their property. The new mural depicts Carson City's rich wildlife habitat. The mural includes an interpretive sign that describes how open space and floodplains work together. On August 7, 2022, county supervisor Maurice White revealed the mural. A Disaster Preparedness Festival was held in conjunction with the mural unveiling. FEMA highlighted this project in November 2022 CTP collaboration monthly newsletter and it is listed as a best practice on FEMA's September 2022 [blog post](#).

**430 Higher Regulatory Standards:** *This activity's objective credits community for regulations to protect existing and future development and natural floodplain functions that exceed the minimum criteria of the National Flood Insurance Program (NFIP).*

*CWSD Progress during this period on Higher Regulatory Standards Activities include:*

- CWSD is working collaboratively with City or County planners and floodplain managers to update local flood regulations.
- Staff presented draft ordinances for adoption in Douglas County. The Douglas County Board of Commissioners adopted the updated floodplain ordinance on September 7, 2023.
- City staff will present Carson City's floodplain ordinances to the board for adoption in October 2023.
- Storey County used the same language template and chose to fund an update of their floodplain ordinances in conjunction with the Project.

**440 Flood Data Maintenance:** *This activity's objective makes community floodplain data more accessible, current, useful, and/or accurate so that the information contributes to the improvement of local regulations, insurance rating, planning, disclosure, and property appraisals.*

*CWSD Progress during this period on Flood Data Maintenance Activities include:*

- CWSD has a website page which directs watershed residents [to community floodplain data](#) with links to [NevadaFloods.org](#) and the [FEMA Map Service Center](#).
- In 2022, CWSD finalized a web interface to access flood information that is not in the regulatory floodplain. This interface is available to county staff and residents and can be accessed at <https://gis.mbakerintl.com/carsonwatersubconservancydistrict/>.

**450 Stormwater Management:** *This activity's objective prevents future development from increasing flood hazards to existing development, to protect existing hydrologic functions within the watershed, and to maintain and improve water quality.*

*CWSD Progress during this period on Stormwater Management Activities include:*

- CWSD promotes Low Impact Development (LID) Use in the Carson River Watershed. In 2018, CWSD received Clean Water 208 funding to update LID ordinances throughout the watershed. This project examined existing LID language and provided draft LID ordinance language to Douglas, Lyon, and Carson City. The 2018 LID language may be adopted in the drainage manual Douglas County is developing.
- On March 18, 2021, Carson City adopted a new drainage manual that became effective on July 1, 2021. The manual requires development and redevelopment to incorporate LID and outlines a suite of LID practices a developer can choose from to include in their design for project implementation. LID projects which capture polluted stormwater benefit a community's floodplain management program. <https://www.carson.org/home/showpublisheddocument/76280/637624691903200000>
- Contractors are conducting four area drainage studies (refer to section 410) in the Carson River Watershed. These studies assist city/county staff and board members by informing decisions by identifying areas likely to flood, considering infrastructure, mapping flooding, and providing alternative solutions to reduce alluvial and stormwater flooding.



- In 2022, CWSD finalized a web interface to access flood information that is not in the regulatory floodplain. This interface is available to county staff and residents and can be accessed at <https://gis.mbakerintl.com/carsonwatersubconservancydistrict/>.

## 500 Flood Damage Reduction Activities

**510 Floodplain Management Planning:** *This activity’s objective credits community for the overall strategy of programs, projects, and measures that will reduce the adverse impact of the hazard on the community and help meet other community needs.*

CWSD Progress during this period on Floodplain Management Planning activities include:

### Floodplain Management Working Group

CWSD’s Watershed Program Manager facilitates the Carson River Coalition Floodplain Management Working Group. This group meets quarterly on the fourth Wednesday of January, April, July, and October from 1:30 pm to 3:30 pm. Table 3.7 lists meeting dates. County and regional floodplain & stormwater projects typically attend these meetings. The group also discusses implementation of river rehabilitation and flood projects funded by other state and federal entities. [Agendas and Meeting notes](#) are available on CWSD’s website.

Table 3.7 Carson River Coalition Floodplain Management Meetings

Stakeholder Outreach				
DATE (S)	Project	LOCATION	EVENT/OUTREACH EFFORT	Approximate # Reached
7/27/2022	Stakeholder Outreach	Virtual via Zoom	Carson River Coalition Floodplain Management Working Group	30
10/26/2022	Stakeholder Outreach	Virtual via Zoom	Carson River Coalition Floodplain Management Working Group	25
1/25/2023	Stakeholder Outreach	Virtual via Zoom	Carson River Coalition Floodplain Management Working Group	28
5/31/2023	Stakeholder Outreach	Virtual via Zoom	Carson River Coalition Floodplain Management Working Group	24
			<b>Stakeholder Outreach Total</b>	<b>107</b>

### Risk MAP Discovery

In 2011, CWSD staff conducted the Risk MAP Discovery process to better understand the local flood risk and mitigation efforts to spur watershed-wide discussions about increasing the area’s resilience after flooding. The [FEMA RiskMAP Discovery Report](#) was updated in 2018 and is part of the [2018 Regional FMP](#). An update of the Regional FMP began in 2023.

Please contact CWSD staff with any questions or comments regarding the above report:

Ed James, General Manager 775.887.7456; [edjames@cwsd.org](mailto:edjames@cwsd.org)

Debbie Neddenriep 775.887.1260; [debbie@cwsd.org](mailto:debbie@cwsd.org)

## CWSD 2022 Engagement Plan, Appendix A:

**Table 1. Outreach Objectives & Messages**

Audience	Objectives	Primary Messages	Supporting Messages
<b>Community Officials &amp; Business Community</b>	Community engagement will raise awareness of: <ul style="list-style-type: none"> <li>▪ local flood risk;</li> <li>▪ value of floodplains;</li> <li>▪ importance of flood preparedness as part of community emergency management.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Communities lose \$7<sup>1</sup>for each flood disaster for every \$1 spent to plan &amp; prepare for floods.</li> <li>▪ See video Carson River Floodplains are Worth Conserving: What officials need to know - <a href="https://www.youtube.com/watch?v=ZGco3s6K_AY">https://www.youtube.com/watch?v=ZGco3s6K_AY</a></li> <li>▪ See video Carson River Floodplains are Worth Conserving: A Case for Developers - <a href="https://www.youtube.com/watch?v=aR9aaecjmbA">https://www.youtube.com/watch?v=aR9aaecjmbA</a></li> <li>▪ Nevada Floods, Be Prepared.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Disaster cost less when communities invest in flood preparedness.</li> <li>▪ Open floodplains lands provide many benefits: they reduce danger from flood water, filter, and recharge groundwater, and provide habitat for plants and animals.</li> <li>▪ Know your flood risk by visiting NevadaFloods.org.</li> </ul>
<b>Homeowners, and Renters</b>	Community engagement will raise awareness of: <ul style="list-style-type: none"> <li>▪ local flood risk;</li> <li>▪ value of floodplains;</li> <li>▪ how to protect home, property, and person before, during, and after a flood; and</li> <li>▪ the importance of a personal emergency plan.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Nevada Floods, Be Prepared</li> <li>▪ See Video: Carson River Floodplains Are Worth Conserving: Agriculture is a good fit <a href="https://www.youtube.com/watch?v=2TTYIS3oxC0&amp;t=112s">https://www.youtube.com/watch?v=2TTYIS3oxC0&amp;t=112s</a></li> <li>▪ Flood Insurance reduces flood losses: \$7* is lost for each flood disaster for every \$1 spent to plan &amp; prepare for floods.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Disaster cost less when communities invest in flood preparedness.</li> <li>▪ Open floodplains lands provide many benefits: they reduce danger from flood water, filter, and recharge groundwater, and provide habitat for plants and animals.</li> <li>▪ Know your flood risk by visiting NevadaFloods.org.</li> </ul>
<b>Educators and School Children</b>	Community engagement will raise awareness of: <ul style="list-style-type: none"> <li>▪ local flood risk;</li> <li>▪ value of floodplains;</li> <li>▪ how to protect home, property, and person before, during, and after a flood; and</li> <li>▪ the importance of a personal emergency plan.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Understand what rivers and alluvial fans are in the Carson River Watershed and characteristics of their floods at various times of year.</li> <li>▪ Understand what a "watershed" and "floodplains" are.</li> <li>▪ There are even ways for students to prepare for floods.</li> <li>▪ Share what you learned about flooding when you go home.</li> </ul>	<ul style="list-style-type: none"> <li>▪ You live in a Watershed with many floodplains.</li> <li>▪ Low-lying lands next to rivers are prone to flooding. Floodplains give water space to spread out and slow down runoff from storms and snowmelt.</li> <li>▪ Distribute an activity book that lists items to include in an emergency kit, a fill-in portion 'in case of emergencies,' and a section for adults to discuss preparedness with kids.</li> </ul>

**Table 2: Suggested Actions #30-34 of [2018 Carson River Watershed Regional Floodplain Management Plan](#)**

<sup>1</sup> Mitigation Saves. National Institute of Business Sciences. [https://www.nibs.org/files/pdfs/ms\\_v4\\_overview.pdf](https://www.nibs.org/files/pdfs/ms_v4_overview.pdf). Accessed 12/16/2022.

SA #	CRS	SUGGESTED ACTION	Responsible Party	Existing or Potential Funding Partner	
<b>FLOODPLAIN AND FLOOD HAZARD OUTREACH AND EDUCATION (30-34)</b>					
<b>FLOODPLAIN AND FLOOD HAZARD OUTREACH AND EDUCATION (30-34)</b>	30	330	Continued implementation of watershed-wide outreach and education program about floodplain importance and flooding hazards.	FAW Working group which includes CWSD, Federal, State and Local Jurisdictions	FEMA; NDWR, and Federal, state and local partners
	31	330	Promote and participate in Annual Flood Awareness Week (FAW) and events throughout the year with the objective of providing information about protection of floodplains, flooding and flood hazards to the general public.	FAW Working group which includes CWSD, Federal, State and Local Jurisdictions	All Federal, state and local funding sources
	32	330	Develop and update media in conjunction with FAW working group (social media, videos, brochures, web content, press releases etc.) for distribution throughout watershed with consistent messages and information for the general public.	FAW Working group which includes CWSD, Federal, State and Local Jurisdictions	CWSD, NDWR, USACE
	33	330	Promote FAW partner websites (e.g., NevadaFloods.org, National Weather Service, CWSD, and county websites) which provide information on the Regional Floodplain Management Plan, floodplain protection, flood risk, emergency preparedness, and emergency contact information. Link to one another's websites and social media sites to amplify message.	In conjunction with Flood Awareness Campaign led by NDWR, CWSD, NOAA -NWS Reno specifically address flood risk and local jurisdictions have websites as well which also link to these websites.	CWSD, NDWR, NOAA -NWS Reno
	34	330	Utilize special Events, River Work Days, and other outreach opportunities in conjunction with FAW working group to raise awareness of flooding hazards and importance of floodplains.	FAW Working group which includes CWSD, Federal, State and Local Jurisdictions	All Federal, state and local funding sources