

CARSON RIVER FLOODPLAIN MANAGEMENT PLAN APPENDICES

**APPENDIX A: 2025 CARSON RIVER FLOODPLAIN MANAGEMENT PLAN
UPDATE/REVISION PROCESS OVERVIEW**

**APPENDIX B: 2018 RAPID EVALUATION OF THE CARSON RIVER
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APPENDIX A: 2025 CARSON RIVER FLOODPLAIN MANAGEMENT PLAN
UPDATE/REVISION PROCESS OVERVIEW

2025 Carson River Floodplain Management Plan Revision Process

Section 6.2 Monitoring and Revision calls for an update of the CRFMP to be completed on an as needed basis, not to exceed five years. CWSD worked with stakeholders, including the Carson River Coalition Floodplain Management Working Group, and county staff. Local floodplain administrators and emergency managers were vital for this revision. The update process is as follows:

- Work with stakeholders to determine format and required revisions/updates to the plan.
- Interview jurisdictions in the Carson River Watershed regarding the floodplain management plan and update their corresponding suggested actions.
- Complete draft revisions and send them to stakeholders for comment.
- Finalize draft of the revised plan based on input from stakeholders.
- Provide final draft to stakeholders for final comment.
- Incorporate stakeholder comments and present final draft revisions to CWSD Board, April 16th, 2025, for adoption by CWSD.
- Present final CRFMP to Counties and other stakeholders for adoption.
- Complete Appendix G post adoption by CWSD and stakeholders to include adoption documents.

2025 CARSON RIVER FLOODPLAIN MANAGEMENT PLAN UPDATE OVERVIEW

As stated above, CWSD staff worked with the CRC Floodplain Management Working Group on the 2024 revision of this plan. The stakeholders decided the 2024 CRFMP update would include the following:

- a. Complete reorganization of format, figures, pictures, and appendices.
- b. Content of plan updated and rewritten.
- c. Incorporation of 2024 County progress into documents and appendices
- d. Updated Suggested Actions table and adjusted stormwater section

These sections were added/significantly updated:

- Flood Hazards and Risk: Stormwater
- Flood Hazards and Risk: Flood After Fire
- Flood Risk Reduction Floodplain Protection: Stormwater Mitigation (4.8)
- Implementation: Mitigation Barriers (5.1)

Suggested Action #49 was added and Suggested Actions #44 - #48 were reworded.:

- i. SA #44: Retain and infiltrate stormwater to reduce flood risk, capture groundwater and improve water quality.
- ii. SA #45: Plan for and mitigate cumulative effects of existing watershed urbanization, including stormwater runoff, to reduce flood hazards in new development proposals.
- iii. SA #46: Incorporate GI/LID methods to reduce stormwater flooding on site in all development and redevelopment proposals.
- iv. SA #47: Adopt model LID ordinances created for Watershed.
- v. SA #48: Utilize best management practices to reduce stormwater/ urban runoff and mitigate stormwater flooding.
- vi. SA#49: Protect and buffer natural drainage ways (existing green infrastructure) from development to ensure historic and natural flows are maintained.

This revision reflects best available information through December 2024, all links and references cited were confirmed and updated sources. However, if older references were still valid but no longer accessible online, that information was not changed. Appendices A-F have been changed to reflect current state of progress, projects, and other. Links to the 2018 Rapid Evaluation of the Carson River and 2018 Risk Map Discovery documents are included in the CRFMP. A cover page containing acknowledgements and electronic references are provided. Updated tables and maps of future projects have been updated for the Discovery Report.

The 2024 CRFMP plan has an updated table of contents, list of tables, and list of figures. Draft revisions were sent out to the CRC Floodplain and River Management Working Group in March 2025. Feedback was received and utilized for the second and final version of the draft. The 2024 CRFMP revision will be presented for adoption to CWSD's Board of Directors. Once adopted by CWSD, it will be presented to each County for adoption. Each County's formal actions or resolutions adopting the 2024 Revision will be added to Appendix G.

Section 2.2, Community Rating System, discusses FEMA's 510 Floodplain Management Plan Checklist and describes how the CRFMP meets the FEMA requirement for Floodplain Management Planning. The CRS annual report can be viewed in Appendix D. A CRS crosswalk will be created once this document is approved by each county.

MEETINGS

Stakeholder meetings included a kickoff meeting, community interviews, and a workshop to review county documents, are listed in Table A-1 below. Table A-2 lists attendees for each stakeholder meeting. The agendas and notes for the kickoff meeting and the final workshop are attached thereafter. One agenda for all county interviews is attached since they were the same for each meeting. Notes for these interviews were not specifically taken since the meeting consisted in filling out the questionnaires at the meeting. These interviews were used to update county lists of future projects (Appendix C) and county progress on suggested actions (Appendix E). The project was delayed until CWSD's contractor completed the Walker River Flood Risk Analysis. CRFMP project updates were also provided [at CRC Floodplain Management Working Group meetings](#) which are open for anyone to attend. Meetings for the Carson River Floodplain Management Plan.

Table A-1: Stakeholder Meetings for the Carson River Floodplain Management Plan

Date	Stakeholder Meetings
August 30, 2023	CRFMP Kickoff Meeting
October 4, 2023	Carson City Interview
October 25, 2023	CRC Floodplain Management Working Group Meetings
November 3, 2023	Douglas County Interview
November 7, 2023	Lyon County Interview
November 30, 2023	Churchill County Interview
December 11, 2023	Alpine County Interview
December 13, 2023	Storey County Interview
January 24, 2024	CRC Floodplain Management Working Group Meetings
April 24, 2024	CRC Floodplain Management Working Group Meetings
July 24, 2024	CRC Floodplain Management Working Group Meetings
October 23, 2024	CRC Floodplain Management Working Group Meetings
October 24, 2024	CRFMP Workshop to review county portions*

Table A-2: Attendees of Stakeholder Meetings for the Carson River Floodplain Management Plan

Date	Attendees to County Meetings	Title	Email
October 4, 2023	Carson City Interview		
	Brianna Greenlaw, PE, CFM	Carson City Stormwater Program Manager	bgreenlaw@carson.org
	Jon Bakkedahl MS, CEM, NVEM	Carson City Deputy Emergency Manager	jbakkedahl@carson.org
	Amanda Singleton	Carson City Assistant Stormwater Program	asingleton@carson.org
	Ed James	CWSD General manager	edjames@cwsd.org
	Debbie Neddenriep	CWSD Water Resources Specialist 2	debbie@cwsd.org
	Max Robinson	CWSD Water Resources Specialist	max@cwsd.org
November 3, 2023	Douglas County Interview		
	Courtney Walkder	Douglas County Stormwater Program Manager	bgreenlaw@carson.org
	John Erp	Douglas County Road Department Manager	jbakkedahl@carson.org
	Kara Easton	Douglas County Emergency Manager	keaston@douglasnv.us
	Debbie Neddenriep	CWSD Water Resources Specialist 2	debbie@cwsd.org
	Max Robinson	CWSD Water Resources Specialist	max@cwsd.org
November 7, 2023	Lyon County Interview		
	Louis Cariola	Carson City Stormwater Program Manager	bgreenlaw@carson.org
	Taylor Allison	Carson City Deputy Emergency Manager	jbakkedahl@carson.org
	Ed James	CWSD General manager	edjames@cwsd.org
	Debbie Neddenriep	CWSD Water Resources Specialist 2	debbie@cwsd.org
	Max Robinson	CWSD Water Resources Specialist	max@cwsd.org
November 30, 2023	Churchill County Interview		
	Robin Shofield	Community Planning and Liaison Officer	
	Laurie Nicholas	USBR Area Manager: Lahontan Office	lnicholas@usbr.gov
	Ed James	General Manager: CWSD	edjames@cwsd.org
	Gary Fowkes	Road Supervisor	gary.fowkes@churchillcountynv.gov
	Marie Henson	Building Official	marie.henson@churchillcountynv.gov
	Chris Spross	Assistant County Manager	cspross@churchillcountynv.gov
	Ben Shawcroft	General Manager: TCID	ben@tcid.org
	Robert Frank	NAS Fallon EMO	robert.frank8.civ@us.navy.mil
	Steven Endacott	Emergency Manager	endacottsteve@charter.net
	Jack Worsley	USBR Area Manager: Lahontan Basin Area	jworsley@usbr.gov
	Nancy Upham	District Manager at Churchill County Mosquito, Vector and Weed Control District	director@ccmosquito.org
	Christy Sullivan	District Clerk: LSCD	Christy.Sullivan@nv.nacdn.net
	Dean Patterson	Senior Planner	planning-ap@churchillcounty.org
	Debbie Neddenriep	CWSD Water Resources Specialist 2	debbie@cwsd.org
	Lindsay Marsh	CWSD Water Resources Specialist	lindsay@cwsd.org

Table A-2: Attendees of Stakeholder Meetings for the Carson River Floodplain Management Plan

Date	Attendees to County Meetings	Title	Email
December 11, 2023	Alpine County Interview		
	Sam Booth	Community Development Department Title: Director	sbooth@alpinecountyca.gov
	Alexa Burke	Community Development Department Title: Planner II	aburke@alpinecountyca.gov
	Kimra McAfee	Executive Director: Alpine Watershed Group	awg.kimra@gmail.com
	Isabella Kurtz	Climate Resiliency Fellow	awg.isabella@gmail.com
	Kaitlyn Garber	Climate Resiliency Fellow	awg.kaitlyn@gmail.com
	Rachel Maurer	Headwaters Coordinator	awg.rachel@gmail.com
	Sarah Traiman	Community Development Department Title: Planner II	straiman@alpinecountyca.gov
	Lindsay Marsh	CWSD Water Resources Specialist	lindsay@cwdsd.org
	Debbie Neddenriep	CWSD Water Resources Specialist 2	debbie@cwdsd.org
December 13, 2023	Storey County Interview		
	Kathy Canfield	Planning Manager: Storey County	kcanfield@storeycounty.org
	Jason Weirsbecki	Director: Storey County Public Works	jwierzbicki@storeycounty.org
	Sarah Fichtner	State Floodplain Manager & NFIP Coordinator	sfichtner@water.nv.gov
	Adam Wilson	Storey County Emergency Manager	awilson@storeycounty.org
	Mike Northan	Operations and Projects Coordinator	mnorthan@storeycounty.org
	Lyndi Renaud	Planning Assistant: Storey County	lrenaud@storeycounty.org
	Debbie Neddenriep	CWSD Water Resources Specialist 2	debbie@cwdsd.org
	Lindsay Marsh	CWSD Water Resources Specialist	lindsay@cwdsd.org
October 24, 2024	CRFMP Workshop to review county portions*		
	Kathy Canfield	Planning Manager: Storey County	kcanfield@storeycounty.org
	Sarah Fichtner	Floodplain Coordinator/ NFIP coordinator: NDWR	Soverton@water.nv.gov
	Brenda Hunt	Watershed Program Manager	brenda@cwdsd.org
	Debbie Neddenriep	CWSD Water Resources Specialist 2	debbie@cwdsd.org
	Ed James	General Manager: CWSD	edjames@cwdsd.org
	Lindsay Marsh	CWSD Water Resources Specialist	lindsay@cwdsd.org
	Dean Patterson	Senior Planner; Churchill County	planning-ap@churchillcounty.org
	Amanda Singleton	Carson City Assistant Stormwater Program	asingleton@carson.org
	Courtney Walkder	Douglas County Stormwater Program Manager	bgreenlaw@carson.org
	Adam Wilson	Storey County Emergency Manager	awilson@storeycounty.org
	Tom Young	Chief Hydraulic Engineer: NDOT	tyoung@dot.nv.gov
	Tristan Wadsworth	Storey County: Analyst	twadsworth@storeycounty.org
	Richard Black	Env. Manager, Tribal Emergency Response, Commissioner, FPST	richard@enviro-fpst.org

Table A-2: Attendees of Stakeholder Meetings for the Carson River Floodplain Management Plan

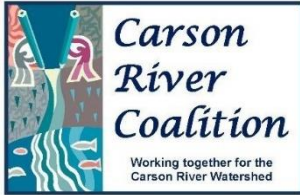
Date	Attendees to County Meetings	Title	Email
October 24, 2024	CRFMP Workshop to review county portions*		
	Mitch Blum	P.E. CFM, HDR Inc.	Mitchell.Blum@hdrinc.com
	Christy James	Facilitator	
	Chris Fritsen	Branch Sup. Nonpoint Source Pollution; NDEP	cfritsen@ndep.nv.gov
	Rachel Maurer	Headwaters Coordinator	awg_rachel@gmail.com
	Eric Simmons	Senior Engineer, CFM; FEMA	Eric.Simmons@fema.dhs.gov
	Jason Villarreal	Bureau of Reclamation- Carson City	jvillarreal@usbr.gov
	Julian Pecce	P.E., C.F.M. Project Manager - Surface Water Planning:	Julian.Pecce@mbakerintl.com

*Finalizing CRFMP was delayed until contractor finished Walker River Flood Risk Analysis.

The public was invited to learn more about the update to the CRFMP at several meetings. Member of public who requested information will receive links to review plans. They are listed below. In addition, the plan will be presented to county executive boards in May, June, and July of 2025.

Table A-3: Public Meetings for the Carson River Floodplain Management Plan

Date	Public Meetings
March 5, 2024	CRC Forum
March 3, 2025	CRC Forum
November 13, 2024	Douglas County Map and Project Outreach
November 13, 2023	Douglas County Map and Project Outreach



Carson River Coalition Meeting
Floodplain Management Plan Update Meeting
Meeting Agenda
Wednesday, August 30, 2023
1:30 -3:30pm

Contact: Debbie Neddenriep (775)887-1260, debbie@cwsd.org

Location: **HYBRID MEETING:**

CWSD Conference Room: 777 E William Street, Suite 209m Carson City, NV 89701

Join Zoom Meeting

<https://us02web.zoom.us/j/84419875485?pwd=RitWWXJRUKdsNW04VE5QUS9tM3NVZz09>

Meeting ID: 844 1987 5485

Passcode: 706486

Meeting Purpose:

The purpose of this kickoff meeting is to discuss what we want to include in the update of Carson River Floodplain Management Plan (RFMP). The CRC Floodplain Management working group is the steering committee for this process. The RFMP will be updated and presented to each county board for adoption.

Please review documents Before 8/30/2023 meeting:

- a. [Carson River Watershed Floodplain Management Plan](#)
- b. [Plan Appendices \(especially Appendix C Discovery\)](#)
- c. Suggested Actions (Attached)
- d. CRC Main Message: *Protect the floodplain from future development. Once the floodplain and especially the river's meander belt corridor are impacted by development, the river loses the ability to reestablish its natural functions. Agricultural fields near the channel are critical for floodwater attenuation, ground water recharge, non-point source pollution buffering and providing habitat for wildlife.* This message was crafted in 2003 and reaffirmed in 2013.
- e. The *Living River Approach* recognizes the importance of balancing the river's natural floodplain form and function with various land uses.

Agenda

1. (1:30) Welcome (CWSD Staff)
2. Member Introductions (10 minutes)
3. Description of Plan / Update Process Brenda
 - a. How it fits in with living river/ integrated ws planning & management (Brenda)
 - b. Plan overview – who what where when why how (Debbie)
 - c. **CRC – Floodplain management working group is the steering committee for this process.**
 - d. Discuss suggested actions (Brenda)
 - e. Project timeline (DebN)
4. Discuss Roles and Possible Plan Sections (examples below) that need to be updated (Debbie)
 - a. County Staff:
 - i. We will be coming out September/October to get answers to community questions

- ii. Other staff to include: emergency managers, can you invite?
 - iii. Future Projects Lists Discovery Appendix E (p80-87 of report)
 - iv. County Progress Updates of Suggested actions (E3-E46)
- b. CWSD staff:
 - i. Plan
 - ii. Board Approval Appendices
- c. Conservation District Staff
 - i. River rehab / restoration projects?
- d. Tribal Staff
 - i. Washoe -
 - ii. FPST -
- e. Contractor – Michael Baker Inc.
 - i. Demographics, Discovery Map, etc, finalize ...
- f. Other – NGOS
 - i. The Nature Conservancy
 - ii. Nevada Land Trust

5. Sections that need to be added

- a. CWSD staff and CRS counties
 - i. CRS Crosswalk to Improve Plan Score for CRS communities (would need county staff help on this one)
 - ii. Updated Floodplain Inventory
 - iii. Ecosystem Services – add verbiage to plan
 - 1. Data need to keep track of damages as they occur over time

6. Review Work Plan with items added (Max)

7. Discuss Schedule

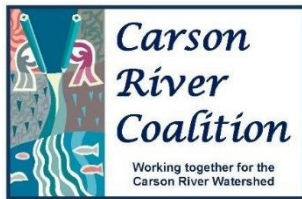
- a. **Set county interview dates: Will send out doodle polls to county staff**

b. **Tentative Project Schedule (Meetings bold)**

August 30, 2023	CRC Update kickoff meeting
September /October 2023	County Interviews Alpine: Douglas: Carson City: Storey Lyon Churchill:
December 1, 2023	County Mitigation and Progress due MBI mpas & tables due
February 29, 2024	CRS crosswalk Due; MBI mpas & tables due
March 20 or 27, 2024	CRC Review Draft Plan Meeting
April / May	Final Edits/ MBI compose document
July 24, 2024	Final Draft presented to CRC
August 2024	Present Plan to CWSD board
October – December 2024	Plan presented to County Boards for Adoption
January 31, 2025	Submit to FEMA / MIP

8. Upcoming meeting reminder:

- a. **October 25, 2023, 1:30 – 3:30pm CRC Floodplain Management Working Group**
- b. **March 20, 2023 or March 27, 2023? CRC RFMP Document Review Workshop**



CRC Floodplain Management Working Group Floodplain Management Plan Update Meeting Meeting Notes Wednesday, August 30, 2023

In Attendance:

Name	Title	Acronym	Organization
Taylor Allison	Emergency/Communication Manager	Lyon	Lyon County Emergency Management
Polly Boardman	Vice President, CTS PMO Director	MB	Michael Baker, Intl
Mitch Blum	Professional Engineer (PE), Certified Floodplain Manager (CFM)	HDR	HDR, Inc.
Lyndsey Boyer	Open Space Manager	CCPROS	Carson City Recreation, Parks & Open Space
Kathy Canfield	Planning Manager , AICP	Storey	Storey County Planning Department
Louis Cariola	Community Development Director, AICP	Lyon	Lyon County Community Development
Tom Dallaire	Community Development Planner, CFM	Douglas	Douglas County Community Development
Farina Kazi	Project Consultant, Denver Office	MB	Michael Baker, Intl
Sara Fichtner	Floodplain Mapping Coordinator	NDWR	Nevada Division of Water Resources
Chris Fritsen	Branch Supervisor for Nonpoint Source Pollution	NDEP	NDEP, Bureau of Water Quality Planning
Brianna Greenlaw	Stormwater Program Manager, PE, CFM	CCPW	Carson City Public Works
Brenda Hunt	Watershed Program Manager	CWSD	Carson Water Subconservancy District
Ed James	General Manager, PE	CWSD	Carson Water Subconservancy District
Lori Leonard	River Fork Ranch Preserve Manager	TNC	The Nature Conservancy
Mareena Lovejoy	Senior Natural Resource Specialist	CC PROS	Carson City Recreation, Parks & Open Space
Debbie Neddenriep	Water Resource Specialist 2, CFM	CWSD	Carson Water Subconservancy District
Dean Patterson	Senior Planner	Churchill	Churchill County Planning Department
Julian Pecce	Project Manager	MB	Michael Baker, Intl
Max Robinson	Water Resource Specialist 1	CWSD	Carson Water Subconservancy District
Catrina Schambra	Administrative Assistant	CWSD	Carson Water Subconservancy District
Eric Simmons	Engineer, Mitigation Division	FEMA	FEMA Region 9 (DHS Flood Insurance Program)
Chris Spross	Public Works Director	Churchill	Churchill County Public Works
Christy Sullivan	District Clerk and Specialist	LCD	Lahontan Conservation District
Courtney Walker	Stormwater Program Manager	Douglas	Douglas County Public Works

Debbie Neddenriep stated the purpose of this kickoff meeting is to discuss what we want to include in the update of Carson River Regional Floodplain Management Plan. (RFMP) The CRC Floodplain Management Working Group is the steering committee for this process. The RFMP will be updated and presented to each county board for adoption.

Brenda Hunt gave a history brief history of the RFMP. The 1997 flood resulted in a 1998 Carson River Workshop which resulted in the formation of the Carson River Coalition. From this group came the [CRC Vision Statement](#), CRC [Guiding Principles](#). University of Nevada, Cooperative Extension publication [UNCE Fact Sheet 04-71](#) announced the CRC main message in its 2003 newsletter:

"Protect the floodplain from future development. Once the floodplain and especially the river's meander belt corridor are impacted by development, the river loses the ability to reestablish its natural functions. Agricultural fields near the channel are critical for floodwater attenuation, ground water recharge, non-point source pollution buffering and providing habitat for wildlife."

Through the work of the CRC the Carson River Watershed Regional Floodplain Management Plan was developed. It was originally adopted in [2008](#), updated in [2013](#) and revised in [2018](#). The plan's purpose is to create a long-term vision and develop strategies which utilize the "Living River" approach to meet floodplain management objectives to reduce flood damage impacts and conserve the floodplain of the

Carson River. Each county in the watershed has adopted each reiteration of this plan.

The RFMP is updated every five years. There are 48 suggested actions in the existing plan that fall into these categories:

- Protect Floodplain Natural Functions & Values
- Set Higher Regulatory Standards
- Collect Flood Data Information and Management
- Balance Channel Migration and Bank Erosion Monitoring
- Increase Floodplain & Flood Hazard Outreach and Education
- Reduce Infrastructure Impacts
- Map/Study Alluvial Fans
- Minimize Stormwater Impacts

Here are links to the RFMP documents to be updated:

- [Carson River Watershed Floodplain Management Plan](#)
- [Plan Appendices \(especially Appendix C Discovery\)](#)

Debbie presented the update process and the project timeline:

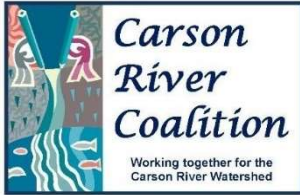
August 30, 2023	CRC RFMP Update Kickoff Meeting ✓
September - October 2023	County Interviews Alpine: Douglas: Carson City: Storey: Lyon: Churchill:
November 29, 2023	CRC RFMP Update Meeting
December 1, 2023	County Mitigation and Progress due MBI mpas & tables due
February 29, 2024	CRS Crosswalk Due; MBI mpas & tables due
March 20, 2024	CRC Review Draft Plan Meeting (WORKSHOP)
April / May	Final Edits/ MBI compose document
July 24, 2024	Final Draft presented to CRC
August 2024	Present Plan to CWSD board
October – December 2024	Plan presented to County Planning Dept & Boards for Adoption*
January 31, 2025	Submit to FEMA / MIP

*Presentations to Planning Commissions as informational only. Give counties a month notice to get on Board agendas. Planners meet usually within week of Boards: plan to present to both in same month at each county.

Upcoming meeting reminders:

October 25, 2023, 1:30 – 3:30pm CRC Floodplain Management Working Group

November 29, 2023 CRC RFMP Update Meeting



Floodplain Management Plan County Interview Update Meeting Agenda

FMP Appendix A Note: Each county was interviewed and asked to complete a spreadsheet with their progress on suggested actions and update potential projects for future flood hazard studies and planning documents. Each Agenda for county interviews was the same. The dates of each county interview are listed above in Table A-1 and the stakeholders who attended each interview are listed above in Table A-2.

Contact: Debbie Neddenriep (775)887-1260, debbie@cwdsd.org

Location: In person

Meeting Purpose:

The purpose of this kickoff meeting is to discuss what we want to include in the update of Carson River Floodplain Management Plan (RFMP). The CRC Floodplain Management working group is the steering committee for this process. The RFMP will be updated and presented to each county board for adoption.

Please refer documents:

- a. [Carson River Watershed Floodplain Management Plan](#)
- b. [Plan Appendices \(especially Appendix C Discovery\)](#)
- c. Suggested Actions (Attached)
- d. CRC Main Message: *Protect the floodplain from future development. Once the floodplain and especially the river's meander belt corridor are impacted by development, the river loses the ability to reestablish its natural functions. Agricultural fields near the channel are critical for floodwater attenuation, ground water recharge, non-point source pollution buffering and providing habitat for wildlife.* This message was crafted in 2003 and reaffirmed in 2013.
- e. The *Living River Approach* recognizes the importance of balancing the river's natural floodplain form and function with various land uses.

Agenda

1. (9:00) Welcome (CWSD Staff)
2. Member Introductions
3. Community Questionnaire
4. Floodplain Management Plan Questions
5. Emergency Management – what do we need to add for HMP/ more robust plan for this side of house
6. CRS – Process required.
 - a. County Staff: We will meet in your county to interview
 - b. CWSD staff:
 - c. Conservation District Staff
 - d. Tribal Staff
7. **Due Date: Please return this information by 12/20/2023**
8. Meeting Reminders;
 - a. **January 24, 2024, 1:30 – 3:30pm** CRC Floodplain Management Working Group
 - b. **March 20, 2023 or March 27, 2023** CRC RFMP Update Meeting

FEMA Regional Floodplain Management Plan & Discover Update Meeting

Carson River Watershed

1. List any existing planned projects from no longer being considered from previous plans (2007, 2013, 2018)
2. . Provide any feedback regarding potential flood risk projects.
3. Discuss areas of growth in your community and state where new flood hazard analyses is warranted for these areas.
4. Discuss areas where flood risk data may be outdated.
5. Discuss any new flood risk projects you are considering.

Flood Risk Reduction

6. Briefly describe your mitigation capabilities.
7. Briefly describe any hazard risk assessments your community has completed since the last Discovery (2018).
8. Describe any current or future mitigation activities planned in your community.
9. Have county floodplain ordinance been updated since draft language was provided? If so, when? If not, is there a plan to pass new ordinances?
10. Same goes for stormwater, Low Impact Development, or Green Stormwater Infrastructure ordinances?

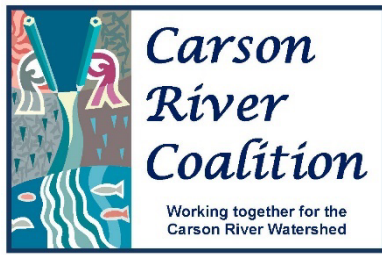
Data Requests

11. Do you have any high-water marks, photos, videos, flood stories from recent flood events?
12. Will you be providing any storm water or floodplain data generated since the last Discovery?
13. Has your community acquired any new aerial topography or LIDAR data since the last Discovery?
14. Who should we contact for any community demographic data?
15. Has your community recently completed a hazard mitigation plan, and if so, whom should we contact.
16. Please provide contact information for county / city emergency manager. (See emergency

Barriers to Mitigation – we want to add a section that discusses barriers to implementation of RFMP plan and suggested Actions.

17. Please list barriers to implementing suggested actions?
18. Please list barriers to mitigation, such as funding, politics, etc.
 - a. Ordinance updates,
 - b. Flood insurance,
 - c. Studies
 - d. Building infrastructure
19. Please list barriers to Disaster recovery

Please note any additional comments or concerns relative to your jurisdiction.



Floodplain and River Management Working Group Agenda

Wednesday, October 30, 2024
9:00am–12:00 PM

Location: *Ormsby Room, Carson City Sheriff's Office*
911 E. Musser Street, Carson City, NV 89701

We need folks to come in person, but there is a hybrid option for Items #1-5. Zoom link below.

Contact: Debbe Neddenriep, 775-887-1260

9:00 am –12:00 pm Agenda Floodplain Management Plan Update Workshop

1. Welcome & Introductions (15 mins)
2. Project Overview (15 mins)
 - A. Purpose and Background
 - B. Recent Flood Events – make sure they are captured in plan (show video)
 - C. Project Timeline – Lindsay
3. Review New Additions to Plan and what we need from Counties (60 mins)
 - A. Plan – we will send this out, please save your comments with initials:
 - B. Edits to Suggested actions (SA's)
 - C. Introduce and Discuss New Section: Barriers to Mitigation & Pathways to Mitigation Success
4. Data request: (5 mins)
 - A. Make sure we have locations of potential projects for Geodatabase maps.
 - B. Photos and high-water marks from recent floods – send photos to Dropbox
https://www.dropbox.com/scl/fo/d545khn8tvmcwlw2hqghu/ALBMTfEBYm2W_oSAvFmrsfs?rlk=ua5y2161j96z50gy8wv0krj1x&st=fd6ay1dg&dl=0
5. **Next Meeting Date: 1/22/25 3:30-4:30 pm** We have added an hour to the CRC FPMWG meeting. to finalize report and plan final steps for adoption. CWSD plans to take it to our board in February, and to county boards March and April. (5mins)
6. **BREAK - END ZOOM CALL (15 mins)**

7. County Break out Groups (45 mins)
 - A. Review County documents (these will be in appendices)
 - a. County Questionnaires
 - b. County Progress on Suggested Actions
 - c. Potential Discovery Projects Updates
 - d. Breakout Group Report Out

After this meeting, we will be sending out the following documents: FMP plan, Discovery Update table, Barriers to Mitigation Table and Writer up, Pathways to Mitigation Success Table and DRAFT Write Up

Timeline:

11/15/2024: Comments Due

1/3/2025: Final Draft from MBI/Sent to Group

1/17/2025: Final Comments DUE

2/19/2025: Present to CWSD Board

March & April Present to County Boards for Adoption

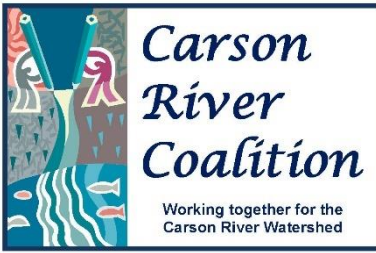
Join Zoom Meeting

<https://us02web.zoom.us/j/82578213037?pwd=awV4gfzbCdViELjlbUHKsyNGif3sAA.1>

Meeting ID: 825 7821 3037

Passcode: 743134

One tap mobile +17193594580,,82578213037#,,,,*743134# US



Floodplain and River Management Working Group Notes

Wednesday, October 30, 2024
9:00am–12:00 PM

Location: Ormsby Room, Carson City Sheriff's Office
911 E. Musser Street, Carson City, NV 89701

This meeting was changed to a hybrid meeting since county staff was unable to meet in person.

See attached list of invited versus attended stakeholders. Each county was also emailed the draft documents for each county and asked to review them.

1. Welcome

2. 9:00 am –12:00 pm **Draft Agenda** Floodplain Management Plan Update Workshop

Debbie Neddenriep and Ed James provides a project overview that reviewed the purpose and background, discussed recent flood events to ensure they are captured in plan. Lindsay Marsh discussed the updated project timeline and explained the project had been delayed while the Walker River Flood Risk Analysis was completed.

Next, Mrs. Neddenriep reviewed new additions to plan and what we need from Counties

1. Plan – we will send this out, please save your comments with initials:
2. Barriers to Mitigation
3. Pathways to Mitigation Success
4. Edits to Suggested actions (SA's)

Finally, break out groups for each County Break reviewed documents for their county for accuracy. Review County documents. These documents will update for future projects (Discovery Appendix C) and progress on suggested actions (Appendix E).

- i. County Questionnaires
- ii. Progress on Suggested Actions
- iii. Potential Projects

5. Data request:

- i. Make sure we have locations of potential projects for Geodatabase maps.
- ii. Photos and high-water marks from recent floods – send photos to Dropbox

https://www.dropbox.com/scl/fo/d545khn8tvmcwl2u2hqqu/ALBMTfEByM2W_oSAvFmrsfs?rlkey=ua5y2161j96z50gy8wv0krj1x&st=fd6ay1dg&dl=0

The next meeting was announced for January 22, 2025.

Draft documents for county review can be provided upon request.

APPENDIX B: 2018 RAPID EVALUATION OF THE CARSON RIVER
ACKNOWLEDGEMENT AND LINK

ACKNOWLEDGEMENT:

The 2018 Rapid Evaluation of the Carson River can be viewed in [Appendix B of the 2018 CRFMP](#). The Rapid Evaluation is intended to be updated with every other iteration of the CRFMP update process and now contains outdated information.

Although the document has been moved from this appendix, it can be found for reference on the CWSD webpage [Flood Hazard Reduction Plans and Documents](#) at <https://www.cwsd.org/wp-content/uploads/2020/02/2018-10-18-RFMP-Adoption-Appendices-Final-compressed.pdf>.

APPENDIX C: 2018 RISK MAP ACKNOWLEDGEMENT AND 2025 UPDATED FIGURES

2024 DISCOVERY REPORT

UPDATE TO APPENDIX E

FUTURE MITIGATION PROJECTS

FEMA REGION IX

CARSON RIVER WATERSHED, HUC 16050201, 16050202, 16050203

Alpine County, California

Carson City, Churchill County, Douglas County, Lyon County, and Storey County, Nevada



Figure 1: Stillwater Duck Blind, *Brenda Hunt*

ACKNOWLEDGEMENT:

The [2018 Risk MAP Discovery](#) can be found on CWSD's website. The Risk MAP Discovery is intended to be updated with every other iteration of the CRFMP update process and now contains outdated information.

Although the document has been moved from this appendix, it can be found for reference on the CWSD webpage [Flood Hazard Reduction Plans and Documents](#) at <https://www.cwsd.org/wp-content/uploads/2020/02/2018-10-18-RFMP-Adoption-Appendices-Final-compressed.pdf>.

The 2024 updated tables and maps have been attached to this appendix. The size of this attachment is 80.2 mb; therefore, please link to the One Drive [2024 Discovery Update](#). The Potential Mitigation Project tables for each county directly provide input for the maps shown further in Appendix C. The maps displayed in this section are updated versions of the 2018 Risk Map Discovery Maps and now show progress as of 2024. If link above does not work, please call CWSD to provide the link to the document.

APPENDIX D: COOPERATIVE TECHNICAL PARTNER PROJECT SUMMARY (2005 – 2024), CRS ANNUAL REPORTS, FIRM LINK

FEMA Cooperating Technical Partners (CTP) Grants				
Project Type	Project Elements	Grant Performance Period:	Completed	Comments
FEMA RISK Mapping Activity Statement 1				
FEMA Proj. #: EMF-2009-GR-0911	Carson River Remap and Restudy - Lahontan to Dayton Valley & Discovery See FEMA Map Service Center	9/2009-9/2011; 9/2009 -3/31/2012	3/31/2012	PMR Effective 10/20/2016
FEMA RISK Mapping Activity Statement 2				
FEMA Proj. #: EMF-2011-GR-1114	Carson River Remap and Restudy - Dayton Valley - Carson City See FEMA Map Service Center	9/26/2011-9/25/2013; - 9/26/2014	7/30/2014	PMR Effective 6/20/2019
FEMA RISK Mapping Activity Statement 3				
FEMA Proj. #: EMF-2012-GR-1211	Carson River Remap and Restudy - Carson Valley Phase 1 (H & H for Carson River) See FEMA Map Service Center	9/21/2012- 9/23/2014; 9/21/2012-9/30/2015	9/30/2015	PMR Preliminary 11/8/2023; PMR Effective* 6/2025
FEMA RISK Mapping Activity Statement 4				
FEMA Proj. #: EMF-2013-GR-2010	Grant Management	9/21/2012- 5/29/2015; extended 9/21/2012- 12/31/2016		
	Carson River Remap and Restudy - Carson Valley Phase 2 Community Outreach Evaluate Floodplain Ordinances based on new map Stillwater Report Technical Assistance for Mitigation Actions Floodplain Model Protocol & Proceures for Updates		12/31/2016 12/31/2016 9/30/2016 12/31/2016	PMR Preliminary 11/8/2023; PMR Effective* 6/2025
*PMR is tentative to be released June 2025				
FEMA RISK Mapping Activity Statement 5				
FEMA Proj. #: EMW-2014-CA-00170	Grant Management	9/26/2014- 9/24/2016; 9/26/2014-12/31/2016		
	Douglas County Smelter Creek Identification and Mitigation Project		8/8/2015	
	Churchill County Water Shunt Identification and Mitigation Project		10/20/2015	
	Public Outreach Flood Awareness Program 2016: Carson River Flooplain Inventory		12/22/2016	
	Inundation Flood Maps Upper Carson River Watershed Non-Regulatory Product		12/31/2016	
	Douglas County Alpine View Estates Restudy and Remapping Project LOMR	See FEMA Map Service Center	12/31/2016	LOMR Effective 6/7/2018
	Carson City Restudy and Remapping - Eagle Valley Golf Course A & B	See FEMA Map Service Center	12/31/2016	LOMR Effective 12/26/2017
FEMA RISK Mapping Activity Statement 6				
FEMA Proj. #: EMW-2015-CA-00087	Douglas County Stephanie Lane Drainage Identification and Mitigation Project	9/25/2015-9/24/2017	5/27/2016	
	Public Outreach Flood Awareness Program - PSA Videos Public Service Announcement (PSA) - Conserving the Carson River Floodplain as a Community Asset (:30) Agriculture's a Good Fit for Conserving the Carson River Floodplain as a Community Asset A Case for Developers to Conserve the Carson River Floodplain as a Community Asset (3:13) Our Officials in Conserving the Carson River Floodplain as a Community Asset (4:19) Carson City Inundation Maps		7/31/2017 7/31/2017 7/31/2017 7/31/2017	
	Carson City Goni Wash Restudy and Remapping Project		7/31/2017	In FEMA Review
	Lyon County Ramsey Canyon Restudy and Remapping Project		7/31/2017	In FEMA Review

FEMA Cooperating Technical Partners (CTP) Grants				
Project Type	Project Elements	Grant Performance Period:	Completed	Comments
FEMA RISK Mapping Activity Statement 7				
EMF-2016-CA-00005	Grant Management	9/19/2016-9/18/2018; 9/19/2016 - 6/30/2019		
	Douglas County Johnson Lane Area Drainage Master Plan		8/31/2018	8/31/2018
	Carson River Watershed Regional Floodplain Management Plan 2018 (Includes FEMA Discovery		8/15/2018	8/15/2018
	Carson City Voltaire Canyon Restudy and Remapping Project	See FEMA Map Service Center		LOMR Effective 6/20/2019
	Northern Nevada Public Outreach Flood Awareness		1/15/2018	1/15/2018
FEMA RISK Mapping Activity Statement 8				
EMF-2017-CA-00002	Grant Administration	9/1/2017-8/31/2019		
	(North) Dayton Valley Area Drainage Master Plan		8/31/2019	
	Floodplain Ordinances Update & Modification			
	Northern Nevada Public Outreach Flood Awareness Program			
FEMA RISK Mapping Activity Statement 9				
EMF-2018-CA-00005	Grant Management	9/1/2018-8/30/2022		
	South Dayton Valley Area Drainage Master Plan		8/31/2020	
	North Carson City Identification and Mitigation Plan	Contact CWSD for more information	9/30/2021	
	Pine Nut Wash Letter of Map Review (LOMR)		10/31/2020	In FEMA Review
	Northern Nevada Public Outreach Flood Awareness Program		10/31/2020	
FEMA RISK Mapping Activity Statement 10				
EMF - 2019-CA- 00018	Grant Administration	8/1/2019-7/29/2022	7/29/2022	
	Carson River Flood Map PMR to update FIRM below	Contact CWSD for more information	7/29/2022	In FEMA Review
	Ruhenstroth ADMP Phase 1	Contact CWSD for more information	6/30/2021	
	West Carson City Drainage Study	Contact CWSD for more information	7/31/2021	
	Carson Valley PMR Revisions		9/16/2022	
	Northern Nevada Public Outreach Flood Awareness Program	Delayed because of COVID	7/29/2022	
FEMA RISK Mapping Activity Statement 11				
EMF - 2020-CA- 00002	Grant Administration	7/1/2020-9/30/2023	9/30/2023	
	ADMP Web Access System	View ADMP Flood Hazard Map	7/31/2023	
	Ruhenstroth ADMP - Phase 2	Contact CWSD	10/31/2021	
	Clear Creek LOMR	See FEMA Map Service Center	7/31/2022	LOMR Effective
	Smelter Creek LOMR	See FEMA Map Service Center	11/30/2022	LOMR Effective
	Northern Nevada Public Outreach Flood Awareness	Contact CWSD	9/30/2023	
FEMA RISK Mapping Activity Statement 12				
	Grant Administration	7/1/2021-6/30/2024 ;	9/30/2024	
	Hotel & Meals			
	Southeast Carson City Area Drainage Study	Contact CWSD	10/31/2023	
	Buckeye Creek Detention Mitigation	Contact CWSD	8/31/2023	
	Virginia City & Six Mile Canyon Drainage Study	Contact CWSD	11/30/2023	
	East Carson City Area Drainage Plan	Contact CWSD	5/31/2023	
	Flood Risk Communication & Community Outreach includes	See CWSD Outreach Report	6/30/2024	
	Douglas County CV PMR response to comments		6/30/2022	
	Ramsey Canyon LOMR response to comments		6/30/2022	

FEMA Cooperating Technical Partners (CTP) Grants				
Project Type	Project Elements	Grant Performance Period:	Completed	Comments
Communication and Mitigation Strategies (COMS) Grant 1				
	Grant Administration / Training	9/1/2022-9/30/2025	In Progress	
	Engagement Plan		1/18/2023	
	Stagecoach ADMP	Contact CWSD	10/31/2024	
	Silver Springs ADMP	Contact CWSD	8/31/2024	
	Flood Risk Communication & Community Outreach includes	See CWSD Outreach Report	12/31/2024	
	Fish Springs/Pinenut Creek culvert study	Contact CWSD	12/31/2024	
	Walker River	Contact CWSD	11/30/2024	
	Update Carson River Floodplain Management Plan (CRFMP)	CRFMP will be uploaded once	In Progress	
Communication and Mitigation Strategies (COMS) Grant 2				
Communication and	Project Elements	Grant Performance Period:	Completed	Comments
	Grant Administration	9/1/2024-6-30-2026	All In Progress	3/2025 Paused
	Engagement Plan		In Progress	
	Training		In Progress	
	Gold Canyon ADMP		In Progress	
	South Silver Springs ADMP		In Progress	
	Flood Risk Communication & Community Outreach includes		In Progress	
	Sawmill wash & Pinenut wash Drainage		In Progress	
Additional Resources				

Please see CWSD Webpage for links to most reports: Flood Hazard Reduction Plans and Documents

<https://www.cwsd.org/flood-risk-mitigation-projects/>

Please see CWSD Web Hazard Maps: Flood Hazard Reduction Plans and Documents

<https://gis.mbakerintl.com/carsonwatersubconservancydistrict/>

Many of these studies include large data sets. Please contact CWSD staff for more information. 775-887-7450

COMMUNITY RATING SYSTEM (CRS) ANNUAL REPORT

Carson Water Subconservancy District (CWSD) has provided the most recent CRS Report to this Appendix. CRS reports prior to 2023-2024 can be provided by CWSD upon request.

**Risk Communication and Project Engagement
FEMA Mapping Activity Statements 12
(Period of July 1, 2023, to June 30, 2024)**

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 30th, 2024

Prepared by:



Lindsay Marsh, Water Resource Specialist 1
Debbie Neddenriep, CFM, Water Resource Specialist 2
Carson Water Subconservancy District
777 E. William Street, #210A
Carson City, NV 89701

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, 2023, to June 30, 2024. In addition to meeting requirements of mapping activities statements (MAS) 12, 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 2018 Carson River Watershed Regional Floodplain Management Plan (CRFMP) was formally adopted by the boards of the Carson Water Subconservancy District, Douglas, Carson City, Lyon, Storey, 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 2018 and are currently in the process of updating the plan again. Storey County adopted the CRFMP for the first time; therefore, all the counties in the Watershed have adopted this plan. Section 3.0 describes the 2018 Revision process and document updates. The plan is currently being updated.

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).

Nevada Division of Emergency Management

In 2020, CWSD was listed as a jurisdiction in Storey County's Hazards Mitigation Plan and was approved by FEMA. Therefore, CWSD is eligible to receive hazard mitigation grants. Since then, CWSD received a \$293,700 to create a 30 Year Regional Water Plan to mitigate effects of drought and climate variability from FEMA's Building Resilient Infrastructure Communities (BRIC) grant through Nevada Division of Emergency Management (NDEM). In 2024, CWSD received another BRIC grant of \$128,727 grant to further design of drainage infrastructure in the North Dayton Valley portion of Storey County from (NDEM). CWSD will work with all watershed counties in the future to pursue similar projects with regional benefits.

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. After being informed FEMA Region 9 would not be funding FY 2023, CWSD did not hold a Risk MAP Charter meeting in 2023. However, CWSD still kept in contact with county staff to identify projects for CWSD to pursue for the next FEMA funding round.

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) 319 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 2023-2024, CWSD promoted 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. They demonstrate areas of the watershed and provide an understanding of where they live in the world. They inspire residents to look up and view the natural world around them. Watershed moments are short videos like [“Make your Yard a Sponge”](#) that encourage residents to adopt actions that improve watershed health. CWSD provided [campaign resources for](#) counties to share on their websites. Residents are urged to take the [watershed pledge at](#) the campaign web page. First, residents select an action they will take to protect watershed health. Next, the resident is provided a short 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
	I will pick up my pet's waste in my backyard, neighborhood or on the trail and dispose of it properly.		I will keep oils, salts, grime, and chemicals out of our storm drains and rivers by using a car wash.
	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.		I will reduce my chemical use by reading labels properly, using only what's needed, and finding alternative natural pest reduction methods.
	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!		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
	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).		I will take my used motor oil to my local auto parts store, garage, or recycling center to prevent contamination of water and soil!
	I will visit 3 new parks, trails or open space areas in the Watershed I've never been to before!		I will dispose of my trash properly because I know a more pristine environment looks nicer but also means a healthier watershed.
	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		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 \(CRFMP\)](#) 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, 2023 - June 30, 2024.

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	510 Floodplain Management Planning 520 Acquisition and Relocation 530 Flood Protection

Reduction Activities	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, shown in Figure 1, staff tries to touch on the following.

Safety and Hazard Reduction:

- *Recent Projects to Map flood hazards.*
- *Floodplains provide flood storage that reduces flood velocities and peak flows, and sediment buildup.*
- *Floodplains keep communities safe by not allowing structures in the floodplain.*
- *Recreational spaces in the floodplains can temporarily closed during floods.*
- *Safety preparedness and safety actions to take during floods.*

As time allows, other Natural and Beneficial functions of floodplains listed below, are mentioned:

- *Natural Flood and Erosion Control*
- *Groundwater Recharge*
- *Water Quality: Floodplains filter polluted runoff, process organic waste, and curb shifts in water temperatures.*
- *Biological Productivity*
- *Fish and Wildlife Habitat*

These are Natural and Beneficial Functions of Floodplain are explained in detail in Section 330

Figure 1: Watershed Model Demonstration at Mitch Park Pond in Douglas County



The presenter offers each person a watershed map at the end of their demonstration. The map refers people to CWSD's [interactive watershed map](#). Other handout materials are shown in Figure 2, the paper materials offered 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 Quick Series Guides

Figure 2: Printed Outreach Materials



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

Douglas County

- FEMA issued preliminary maps of the Carson Valley Physical Map November 2023. The 90-Day comment period began in April and closed in July without comment. The letter of final determination for this project is expected to be issued in 2025.
- Walker River Watershed Flood Risk Analysis project began in early 2023 and concluded in June 2024. This project assessed flood risk and determined 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 determined culvert improvements and refined 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 late summer of 2024.

Carson City

- Southeast Carson City ADMP commenced in April 2022, and a public project kickoff occurred June 2022. This project was completed in 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 presented the study and mitigation recommendations to CWSD and city board in early 2024.

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 scheduled a public meeting in October 2023 so residents can hear about the results of the drainage study and potential solutions. Michelle Gamble, Lumos & Associates, will present the study and mitigation recommendations to CWSD and city board in November 2023.

Carson River Watershed

- CWSD continues, through 2024, to support a web interface that allows access to 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/>. A training is planned in late 2024 for county staff to better utilize the tool.

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 use plain language to underscore the importance of conserving open space areas to protect because of their natural floodplain functions. During the demonstration, shown in Figure 1, staff tries to touch on the following.

Safety and Hazard Reduction:

- *Recent Projects to Map flood hazards.*
- *Floodplains provide flood storage that reduces flood velocities and peak flows, and sediment buildup.*
- *Floodplains keep communities safe by not allowing structures in the floodplain.*
- *Recreational spaces in the floodplains can temporarily closed during floods.*
- *Safety preparedness and safety actions to take during floods.*

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

Figure 3: Interactive Map screenshot available at cwsd.org.



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

Douglas County

- FEMA issued preliminary maps of the Carson Valley Physical Map November 2023. The 90-Day comment period began in April and closed in July without comment. The letter of final determination for this project is expected to be issued in 2025.
- Walker River Watershed Flood Risk Analysis project began in early 2023 and concluded in June 2024. This project assessed flood risk and listed 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 determined culvert improvements and refined 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.

Carson City

- Southeast Carson City ADMP commenced in April 2022, and a public project kickoff occurred June 2022. This project was completed 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 early 2024.

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. Michelle Gamble, Lumos & Associates, will present the study and mitigation recommendations to CWSD and city board in November 2023.

Carson River Watershed

- CWSD continues, through 2024, to support a web interface that allows access to 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/>. A training is planned in late 2024 for county staff to better utilize the tool.

- Carson City installed a high-water mark at the Morgan Mill Aquatic Trailhead in East Carson City. Not only is this high-water mark at the aquatic trail, but it is also on the Carson River Recreational trail for bicyclists and hikers. Carson City finished the project late summer 2024, and outreach is planned for flood awareness week, November 10-16, 2024. This outreach tool underscores how floodplains and open space work together to reduce flood danger to people and their property. It is also a stark reminder of how high the water can get at this location. The mural includes two interpretive signs. One describes how open space and floodplains work together. It also includes a QR code so residents can find out about their flood risk. The other interpretive sign explains the mining history of the area; these two interpretive panels were paid by Waste Management and the city staff installed them. In collaboration with this high-water mark, the Nevada Silver Jackets team will install two more interpretive panels between Morgan Mill trailhead and Carson River Park.

Table 3.3 Map Information Project Outreach July 1st, 2023 – June 30th, 2024.

Project Meetings & Outreach				
DATE (S)	PROJECT	Location	EVENT OUTREACH DESCRIPTION	~ Residents /Adults # Reached
7/18/2023	Pinenut Detention	Douglas County Community Center	Project presentation in public meeting	24
7/19/2023	Pinenut Detention Study	Alpine County Commission Chambers	Project presentation to CWSD Board	19
7/20/2023	Pinenut Detention	Douglas County Commission Chambers	Project presentation to county Board	23
8/16/2023	VC ADMP	Storey County Courthouse Slammer and & County Museum	Project presentation to CWSD Board	14
8/29/2023	Southeast CC ADMP	4 locations in S. Carson City	Met with residents at 4 locations in study area	37
10/12/2023	VC ADMP	Piper's Opera, Virginia City, NV	This meeting will provide project results and mitigation alternatives to residents	13
3/20/2024	Southeast CC ADMP	CWSD Conference Room, Carson City	Project presentation to CWSD Board	15
4/1/2024	Southeast CC ADMP	Carson City Community Center	Project presentation to county Board	35
Project Outreach Total:				180

- CWSD utilized FEMA funding to assist counties in the Flood Awareness Week Outreach Program (FAW) held in November 2023. 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 in Carson River Watershed

Public Outreach in the Carson River Watershed		
DATE (S)	EVENT/OUTREACH EFFORT	~ Residents/Adults # Reached
6/1/2023	Douglas LID Outreach	25
6/17/2023	Sheep Foundations	310
7/20/2023	Washoe Tribal Outreach	10
10/7/2023	CC PW outreach and Source Water	10
8/2/2023	National Night Out	50
8/8/2023	Sheriff's Night out	45
10/26/2023	Boonanza	300
11/14/2023	Douglas County FAW and preliminary release of physical map revision	28
11/15/2023	River Fork Ranch HWM unveiling	10
4/20/2024	Fallon Paiute Shoshone Earth Day (members from Washoe Community attend this event)	75
5/4/2024	FAW- Washoe Tribal Earth Day	33
6/22/2024	Nevada Outdoor Experience	113
Total		706

- CWSD staff highlights [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 thrived in 2023-2024 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.
- Table 3.5 lists FAW school outreach in each CRS community and Table 3.6 lists FAW outreach throughout the Watershed.

Table 3.5: Summary of school outreach event attendance in CRS communities.

Risk Communication and Outreach in CRS Communities		
County	~ Educators/ Adults # Reached	~ Students Reached
Douglas County	77	630
Carson City	124	1156
Storey County	2	25

Demonstrating this model is helpful to educate children and their families about learning to respect water when it is flooding.

In March, staff cancelled three events because of the weather these are outlined in Table 3.6a.

Figure 5: Watershed Model demonstration at River Fork Ranch in Douglas County.



Table 3.6: Summary of School Outreach Events

School Outreach Events					
DATE (S)	Location	EVENT OUTREACH DESCRIPTION	School	~ Educators/ Adults # Reached	~ Students Reached
7/20/2023	Dresslerville Tribal Allotment	Carson Watashemu Day	Washoe Tribal TANF	5	10
6/8/2023	River Fork Ranch	Flood Awareness and Safety preparedness at Conserve Carson River Workday (CCRWD)	Scarselli ES-Douglas	11	71
10/13/2023	River Fork Ranch	Snapshot Day	Douglas County	9	75
10/16/2023	Fuji Park	Flood Awareness Conserve Carson River Workday (CCRWD)	Empire, Carson City	11	99
10/24/2023	Carson City	Ag In the Classroom	Seeliger Elementary School	12	270
12/6/2023	Carson Valley Middle School	Flood Awareness and Safety preparedness	Carson Valley Middle School	4	60
3/28/2024	Dayton	Flood Awareness and Safety preparedness	Hugh Gallagher ES	2	25
4/30/2024	Carson City	Flood Awareness and Safety preparedness	St. Teresa School	2	25
5/3/2024	On-Site	Ag In the Classroom	Pioneer HS	12	72
5/20/2024	On-site	Field Day	Eagle Valley Middle School	20	255
5/21/2024	On-Site	Field Day	Eagle Valley Middle School	11	120
5/22/2024	On-Site	Field Day	Eagle Valley Middle School	18	240
5/29/2024	River Fork Ranch	Field Day	Pinon Hills ES	4	36
5/30/2024	On-Site	Ag In the Classroom	Scarselli ES	15	250
6/1/2024	River fork Ranch	CCRWD	Scarselli ES-Douglas	8	60
6/4/2024	River Fork Ranch	CCRWD	Minden ES	26	78
6/22/2024	Carson City Shooting Range	Nevada Outdoor Experience	Flood Awareness and Safety Preparedness	38	75
School Outreach Total:				206	1796

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
1-Mar	Pinon Hills ES	Flood Awareness and Safety preparedness	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

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 has returned to pre-pandemic levels. Refer to Tables 3.3-3.6.
- CWSD's website provides link to the Floodplain Management Plan and its updates, on 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.
- 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.

The presenter offers each person a watershed map at the end of their demonstration. The map refers people to CWSD's [interactive watershed map](#). During the demonstration, staff tries to touch on the following:

Safety and Hazard Reduction:

- *Recent Projects to Map flood hazards.*
- *Floodplains provide flood storage that reduces flood velocities and peak flows, and sediment buildup.*
- *Floodplains keep communities safe by not allowing structures in the floodplain.*
- *Recreational spaces in the floodplains can temporarily closed during floods.*
- *Safety preparedness and safety actions to take during floods.*

As time allows, other Natural and Beneficial functions of floodplains listed below, are mentioned:

- *Natural Flood and Erosion Control*
- *Groundwater Recharge*
- *Water Quality: Floodplains filter polluted runoff, process organic waste, and curb shifts in water temperatures.*
- *Biological Productivity*
- *Fish and Wildlife Habitat*

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 Nevadafoods.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

- FEMA issued preliminary maps of the Carson Valley Physical Map November 2023. The 90-Day comment period began in April and closed in July without comment. The letter of final determination for this project is expected to be issued in 2025.
- Walker River Watershed Flood Risk Analysis project began in early 2023 and concluded in June 2024. This project assessed flood risk and listed 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 determined culvert improvements and refined 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.

Carson City

- Southeast Carson City ADMP commenced in April 2022, and a public project kickoff occurred June 2022. This project was completed 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 early 2024.

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. Michelle Gamble, Lumos & Associates, will present the study and mitigation recommendations to CWSD and city board in November 2023.

Carson River Watershed

CWSD continues, through 2024, to support a web interface that allows access to 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/>. A training is planned in late 2024 for county staff to better utilize the tool.

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.*

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. This will be included in Carson City's Carson River Master Plan.
- Carson City installed a high-water mark at the Morgan Mill Aquatic Trailhead in East Carson City. Not only is this high-water mark at the aquatic trail, but it is also on the Carson River Recreational trail for bicyclists and hikers. Carson City finished the project late summer 2024, and outreach is planned for flood awareness week, November 10-16, 2024. This outreach tool underscores how floodplains and open space work together to reduce flood danger to people and their property. It is also a stark reminder of how high the water can get at this location. The mural includes two interpretive signs. One describes how open space and floodplains work together. It also includes a QR code so residents can find out about their flood risk. The other interpretive sign explains the mining history of the area; these two interpretive panels were paid by Waste Management and the city installed them at their own cost. In collaboration with this high-water mark, the Nevada Silver Jackets team will install 2 more interpretive panels between Morgan Mill trailhead and Carson River Park.

Figure 4: Morgan Mill High Water Mark Installation.



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.
- Douglas County adopted a [Stormwater Master Plan](#). CWSD staff spoke in support of this plan when it was presented to the county commissioners when it was presented for adoption. The purpose of the plan is described in its executive summary, "This County-wide Stormwater Master Plan was developed to assist the County in meeting goals and policies to maintain safe and effective infrastructure to protect life and property, meet regulatory water quality mandates, and identify projects and programs necessary to improve, operate, and maintain facilities within Douglas County."
- City staff presented 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](#).
- CWSD continues, through 2024, to support a web interface that allows access to 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. Douglas County's stormwater master plan utilized the 2018 LID language in this report and was adopted by the County.

Contractors conducted multiple 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.

- CWSD continues, through 2024, to support a web interface that allows access to 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 and additional stakeholder outreach.

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	EVENT/OUTREACH EFFORT	Approximate # Reached
7/26/2023	Stakeholder Outreach	Carson River Coalition Floodplain Management Working Group	24
8/30/2023	Stakeholder Outreach	Flood Plain Management Plan Update Kickoff Meeting	32
10/4/2023	Stakeholder Outreach	CRFMP Stakeholder Interviews (CC)	4
10/25/2023	Stakeholder Outreach	Carson River Coalition Floodplain Management Working Group	21
11/3/2023	Stakeholder Outreach	CRFMP Stakeholder Interviews (DC)	5
12/13/2024	Stakeholder Outreach	CRFMP Stakeholder Interviews (SC)	3
1/24/2024	Stakeholder Outreach	Carson River Coalition Floodplain Management Working Group	41
4/24/2024	Stakeholder Outreach	Carson River Coalition Floodplain Management Working Group	35
Stakeholder Outreach Total			165

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 and has continued through 2024.

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

Ed James, General Manager 775.887.7456; edjames@cwsd.org

Debbie Neddenriep 775.887.1260; debbie@cwsd.org

CWSD 2022 Engagement Plan, Appendix A:

Table 1. Outreach Objectives & Messages

Audience	Objectives	Primary Messages	Supporting Messages
Community Officials & Business Community	Community engagement will raise awareness of: ▪ local flood risk; ▪ value of floodplains; ▪ importance of flood preparedness as part of community emergency management.	▪ Communities save \$7¹ on flood damage for every \$1 spent on mitigation. ▪ See video Carson River Floodplains are Worth Conserving: What officials need to know - https://www.youtube.com/watch?v=ZGco3s6K_AY ▪ See video Carson River Floodplains are Worth Conserving: A Case for Developers - https://www.youtube.com/watch?v=aR9aaecjmbA ▪ Nevada Floods, Be Prepared.	▪ Disaster cost less when communities invest in flood preparedness. ▪ Open floodplains lands provide many benefits: they reduce danger from flood water, filter, and recharge groundwater, and provide habitat for plants and animals. ▪ Know your flood risk by visiting NevadaFloods.org.
Homeowners, and Renters	Community engagement will raise awareness of: ▪ local flood risk; ▪ value of floodplains; ▪ how to protect home, property, and person before, during, and after a flood; and ▪ the importance of a personal emergency plan.	▪ Nevada Floods, Be Prepared ▪ See Video: Carson River Floodplains Are Worth Conserving: Agriculture is a good fit https://www.youtube.com/watch?v=2TTYIS3oxC0&t=112s ▪ Flood Insurance reduces flood losses: \$7* is lost for each flood disaster for every \$1 spent to plan & prepare for floods.	▪ Disaster cost less when communities invest in flood preparedness. ▪ Open floodplains lands provide many benefits: they reduce danger from flood water, filter, and recharge groundwater, and provide habitat for plants and animals. ▪ Know your flood risk by visiting NevadaFloods.org.
Educators and School Children	Community engagement will raise awareness of: ▪ local flood risk; ▪ value of floodplains; ▪ how to protect home, property, and person before, during, and after a flood; and ▪ the importance of a personal emergency plan.	▪ Understand what rivers and alluvial fans are in the Carson River Watershed and characteristics of their floods at various times of year. ▪ Understand what a "watershed" and "floodplains" are. ▪ There are even ways for students to prepare for floods. ▪ Share what you learned about flooding when you go home.	▪ You live in a Watershed with many floodplains. ▪ 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. ▪ 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.

¹ Mitigation Saves. National Institute of Business Sciences. https://www.nibs.org/files/pdfs/ms_v4_overview.pdf. Accessed 12/16/2022.

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

SA #	CRS	SUGGESTED ACTION	Responsible Party	Existing or Potential Funding Partner	
FLOODPLAIN AND FLOOD HAZARD OUTREACH AND EDUCATION (30-34)					
FLOODPLAIN AND FLOOD HAZARD OUTREACH AND EDUCATION (30-34)	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

FLOOD INSURANCE RATE MAPS (FIRM) LINK

Flood Insurance Rate Maps (FIRMs) are constantly updated as Physical Map Revisions (PMRs), Letters of Map Revisions (LOMRs) and Conditional Letters of Map Revisions (CLOMRs). To access the most recent published version of FIRMs can be seen at FEMA's Flood Map Service Center at the website below. If that does not work, an online search FEMA Flood Map Service Center.

FEMA Flood Map Service Center:

<https://msc.fema.gov/portal/home>

APPENDIX E: 2023 COUNTY PROGRESS REPORTS

2023 COUNTY PROGRESS REPORTS

The following reports are a summary of each county's progress towards the suggested actions outlined in the Floodplain Management Plan from 2018 to 2023.

2023 Alpine County Suggested Action Progress

SA #	CRS	SUGGESTED ACTION	Alpine County 2023 Update
PROTECT FLOODPLAIN NATURAL FUNCTION AND VALUE (1-8) - Refer also to Stewardship Plan Table 8.8			
1	320	Maintain Living River approach to retain river system in a more natural state that allows the river to access its floodplain. Recognize that not all areas of the river system can be allowed to migrate freely due to special designation (i.e., Superfund area) and/or existing infrastructure.	Alpine County will be presented with opportunity to adopt the 2018 Regional Floodplain Management Plan, as it has the 2008 and 2013 Plans, which states the Living River approach as one of its main goals. The county also participates in the Carson River Coalition (CRC) stakeholder process. Through Carson River Coalition (CRC) process, county worked with CWSD on the revision of the Regional Floodplain Management plan.
	420		
	510		
2	350 410	Develop, support and implement a good neighbor floodplain management policy that recognizes cumulative impacts and actions by one property owner can impact upstream, adjacent and downstream property owners.	Flood insurance rate map effective November 2023. Uses one hydraulic model from Alpine County, California to Weeks Bridge, Lyon County, Nevada.

2023 Alpine County Suggested Action Progress

SA #	CRS	SUGGESTED ACTION	Alpine County 2023 Update
PROTECT FLOODPLAIN NATURAL FUNCTION AND VALUE (1-8)	3	Investigate, identify, and implement areas where stream zone buffers would provide multi-objective benefits for river system and downstream communities. (Previously SA # 4)	96% public land so Alpine County work on suggested actions is bounded by USFS, BLM, and other public lands. A geomorphology study of west fork Carson River will begin 2024. County has applied for East Fork Geomorphology Study. Alpine County shares their work at CRC meetings. Alpine Watershed Group works in coordination with the county. Between 2013 and 2018, AWG completed East Fork Carson River stabilization project and worked with American Rivers in Hope Valley to stabilize West Fork Carson River. Some SEZ that have more significant buffers than zoning requires, in the absence of regulatory requirements. Bear Valley (outside the Carson River Watershed) has open space areas and drainage easements where they have true buffer. This has all been part of overall master plan for last 40 years. However, CEQA is a challenge to meet for a small county with limited resources. A programmatic CEQA for various elements of work within the county would be a great option to pursue with the California DWR's Integrated Watershed Management program. Between 2018 and 2023, AWG completed construction in Hope Valley to stabilize two sections of the West Fork Carson River and reconnect a portion to the floodplain, provided immediate action after the Tamarck Fire to stabilize hillsides along Musser and Jarvis drainage that feeds into the East Fork Carson River, and assisted American Rivers with outreach and monitoring of implementation of a series of beaver dam analogs and road repairs in Faith Valley to reconnect the West Fork Carson River with its floodplain and better divert runoff from the adjacent road.

2023 Alpine County Suggested Action Progress

SA #	CRS	SUGGESTED ACTION	Alpine County 2023 Update
FLOODPLAIN NATURAL FUNCTION AND VALUE (1-8)	4	310 Manage development in special flood hazard areas and other flood 410 hazard areas (those known flood hazard areas not included on most 530 current FIRMs) to provide public safety and protect the natural functions and benefits of floodplain lands. (Previously SA # 6)	Alpine Watershed Group (2018-2023). Replace old verbiage with following: Markleeville Creek Floodplain Restoration Project will go to construction in 2024 or 2025 following completion of the Markleeville Public Utility District Sewer Pump Station Relocation and Improvements Project. The restoration project will re-establish the natural form and function of Markleeville Creek at the site of the former USFS Markleeville Guard Station by removing the old bridge abutments, floodwalls, and artificial fill material, and re-vegetating all disturbed areas.
	5	320 Promote and utilize best management practices as a means of 450 protecting riparian habitat. (Previously SA #10)	Vision plan for the West Fork Carson River was funded by Lahontan Regional Water Quality Control Board. Alpine County now has an approved Clean Water Act 319 Plan for WFCR. Landowners along the lower West Fork Carson River have continued to seek out resources to fund projects that implement best management practices. The Amador RCD and NRCS have providing technical assistance and funding opportunities. The CRC has also recently helped in the conversation on BMPs on ranch land. The Vision Plan covers some of the issues that are tied to ranching in riparian habitats and acknowledges the success of projects like Rivers and Ranches at Ace Hereford Ranch.
	ECOSYSTEM SERVICES IMPORTANT to MAINTAINING LIVING RIVER APPROACH		
	6	350 Consider Floodplain and flood hazards ecosystem service objectives 420 which preserve open floodplain lands when selecting acquisition targets and establishing management strategies for open spaces. (Previously SA #3)	> 95% of Alpine County land is public land and open space; however Alpine County doesn't have a formal open space program. Alpine County has secured funding for the Markleeville Creek Floodplain Restoration Project. The County would benefit from a Land and Parks Plan that describes Turtle Rock and Airport and the way they're managed. Open spaces are actively managed considering ecosystem services.

2023 Alpine County Suggested Action Progress

SA #	CRS	SUGGESTED ACTION	Alpine County 2023 Update
PROTECT FLOOD	7	520 Identify and promote options for landowner incentive programs, such as floodplain leasing program and conservation easements that provide compensation to landowners providing ecosystem services and seek funding mechanisms. (Previously # SA 9)	Williamson Act for preservation of agricultural lands; the county has some proposals in there now, but it is not particularly valuable for floodplain preservation, but does provide benefit. On the West Fork - if it was to be argued for a Williamson Act action by the county then floodplain preservation might be legitimate reason. Ace Hereford
	8	420 Retain lands that preserve floodplain storage which maintain and/or restore connection of river with floodplain through land acquisition, conservation easements, local open space programs, TDR and PDR Programs, and other protection methods. Pursue protection of additional acreage in flood prone areas. (Previously # SA 7)	Alpine County General Plan encourages protection of floodplains and riparian areas. Conservation subdivision density bonus available for projects that protect these type of lands as permanent open space. Alpine County purchased the site of the former USFS Markleeville Guard Station located in the floodplain of Markleeville Creek; the floodplain restoration project will be constructed in 2024 or 2025. In addition, there are ongoing projects in Hope Valley to address incised banks so the West Fork Carson River can access its floodplain.
HIGHER REGULATORY STANDARDS (9-11)			
HIGHER REGULATORY STANDARDS (9-11)	9	430 Periodically review county ordinances that include floodplain protection as a purpose, account for the loss of floodplain storage volume, and mitigate losses through a variety of methods. (Previously SA # 11)	Flood plain ordinances adopted (October, 2023)
	10	430 Investigate, promote, and implement of additional flood protection measures that go beyond minimum FEMA requirements, such as improving community rating system. (Previously SA # 12)	10/2023 Flood ordinance update includes a 50 foot set back from top of bank or 2x width of the stream (whatever is greater). Non-conversions of building space. It also includes a limit of 1 foot rise by development in floodplain.
	11	430 Development and adoption of consistent floodplain management ordinance language and consistent use of hydraulic model of Carson River system. (Previously SA # 13)	Flood plain ordinances adopted (October, 2023). Though drafted, language to update hydraulic model was not included in ordinance adoption.
FLOOD DATA INFORMATION AND MAINTENANCE (12-21)			
FLOOD DATA INFORMATION AND MAINTENANCE (12-21)	12	410 Establish and adopt funding source, and protocol / procedures to consistently update watershed-wide unsteady state modeling to identify flood water storage requirements and to look at the cumulative effects of watershed development. (Previously SA #14)	Flood Insurance Rate Maps became effective for a portion of the West Fork Carson River in Alpine County , which is part of the Hydraulic Model of the Carson River. The County would benefit from a 'small' area drainage master plans, plans that affect only a few homes, because that is all that is generally affected, given the low density of the population.
	13	440 Support FEMA's Map Modernization Program and encourage FEMA to update FIRMs with current and future conditions. Significant verification of topography and other variables should be conducted prior to release of draft FIRMs. (Previously # SA 15)	This element is ongoing with FEMA.

2023 Alpine County Suggested Action Progress

SA #	CRS	SUGGESTED ACTION	Alpine County 2023 Update
FLOOD	14	Participate in FEMA's Cooperating Technical Partner Program. (Previously SA#16)	CWSD continues to be a CTP and works with Alpine County through the CRC process to identify and projects which may be of assistance to the county.
FLOOD DATA INFORMATION AND MAINTENANCE (12-21)	15	410 Collect and Maintain up-to-date and consistent data collection which includes updating flood studies as needed and conducting new studies for significant water courses and alluvial fan areas. This data should be used to update FEMA maps and/or fill local data gaps. Complete delineation of the floodway throughout river system and incorporate into FIRMs. (Previously SA #17)	Flood Insurance Rate Maps became effective November 16, 2023 for a portion of the West Fork Carson River in Alpine County. Rain gage data and stream flow data are collected in other counties; groundwater data is collected in Alpine through CASGEM and a small study area of the Mesa is also monitoring groundwater. AWG also conducts Ambient and water-quality based monitoring in the Carson River. Lahontan Regional Water Quality Control Board samples water quality in the Carson River watershed quarterly. They also collected post-storm water quality samples in 2021 and 2022 following the Tamarack Fire.
	16	410 Update flood studies and maps after significant flooding events. (Previously SA #18)	Alpine County has developed a proposed project list
	17	410 Update and Maintain Elevation Reference Marks (ERM) as- permanent monuments using NAVD88 Datum which matches base flood elevations on FEMA FIRMs. (Previously SA #19 & #20)	The need for more ERMs was discussed in the Discovery process. Alpine County maps are NAVD 88 datum.
	18	410 Develop and maintain master list of ERMs provide-to interested parties. (Previously SA #21)	Need funding to maintain a master list of ERMs to provide to interested parties.
FLOOD DATA INFORMATION AND MAINTENANCE (12-21)			
FLOOD DATA INFORMATION AND MAINTENANCE (19-21)	19	350 Develop and coordinate photo-monitoring program (on-the-ground and aerial) on a watershed level to consistently document flooding and flood hazards. (Previously SA #22)	The need for consistent photo-monitoring discussed in CRC River & Floodplain Working group meetings. A systematic plan to track flood events at specific sites needs to be created and implemented. Specific protocol would be helpful to collect flood data photos.
	20	350 Establish and maintain rain gage data network in each local jurisdiction.	Alpine County would like to implement rain gage data network; it is especially interested in monitoring vulnerable ditches.
	21	Evaluate potential impacts due to climate variability which could include changing storm patterns, rainfall amounts, and snow levels, adding uncertainty to future conditions.	Determine extent Alpine County is included in the USGS model and Drought management plan. Does it include Climate action corp? It would be great to update Dr. Lutz data. Consider Anne Knols study of snow melt affected by burn areas). Consider tree growth encroachment in upland meadows such as Hope valley.
CHANNEL MIGRATION AND BANK EROSION MONITORING (22-29)			

2023 Alpine County Suggested Action Progress

SA #	CRS	SUGGESTED ACTION	Alpine County 2023 Update
CHANNEL MIGRATION AND BANK EROSION MONITORING (22-29)	22	410 Document/map and update known and projected hazard areas including channel migration hazards and incorporated into planning processes. (Previously SA #23)	Alpine County has finished Multi-Jurisdictional Hazard Mitigation Plan which includes flood hazards. The HMP will be updated in 2024. County is also participating in Rapid Evaluation of the River System as part of the 2018 Update to the Carson River Floodplain Management Plan.
	23	440 Conduct LiDAR and/or aerial photography (on a watershed level) on a 5-year basis, or as needed, to provide updated information on channel movement and floodplain condition. (Previously SA #24)	The USGS created QL1 quality LIDAR through the 3 DEP program. The County is interested in more than just data collection. Would like to evaluate economic value of what to use it for; there are things other than flooding that are a priority.
	24	430 Conduct research and establish appropriate building set-backs in flood hazard areas to reduce severe hazards from channel migration. (Previously SA #25)	This was done in new flood plain management ordinances that were adopted October 2023.
	25	410 440 Conduct and document channel cross-sectional surveys to track long term changes in river channel. (Previously SA #26)	A Geomorph assesment is planned for the West Fork Carson River in 2024; have applied to conduct Geomorphology assessment on East Fork Carson River.
	26	410 440 Identify unstable stream banks and areas with high potential for erosion. (Previously SA #27)	
CHANNEL MIGRATION AND Bank EROSION MONITORING (22-29)	27	510 Promote the use of non-structural, bio-engineering (soft-engineering utilizing natural materials) techniques in river restoration projects in combination with other proven methods. (Previously SA #28)	Alpine County coordinates with Alpine Watershed Group, Friends of Hope Valley, and American Rivers which tries to utilize non-structural, bio-engineering (soft-engineering utilizing natural materials) techniques in river restoration projects in combination with other proven methods.
	28	440 510 Update the 1996 Fluvial Geomorphic Assessment and create a sediment transport model of the Carson River. (Previously SA #29)	In progress on West Fork Carson River with Lahontan Regional Quality Control Board. A grant application to for fluvial geomorphic assesment on the East Fork has been submitted for 2025-2027.
	29	440 510 Create a baseline study that informs management and project decisions regarding flood risks, damages, and ecosystem impacts.	American River Assesment and Prioritization (add link).
FLOODPLAIN AND FLOOD HAZARD OUTREACH AND EDUCATION (30-34)			

2023 Alpine County Suggested Action Progress

SA #	CRS	SUGGESTED ACTION	Alpine County 2023 Update
FLOODPLAIN AND FLOOD HAZARD OUTREACH AND EDUCATION (30-34)	30	330	Continued implementation of watershed-wide outreach and education program about floodplain importance and flooding hazards.
	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.
	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.
FLOODPLAIN AND FLOOD HAZARD OUTREACH AND EDUCATION (30-34)	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.
	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.
	Reduce Infrastructure Impacts (35-39)		
RE	35	510 540	Investigate opportunities and implement actions when feasible to remove existing restrictions, such as berms or uncertified levees, to allow flood waters to access floodplain.
			Alpine County works in coordination with Alpine Watershed Group, to monitor and act upon strategic activities to remove existing restrictions to allow flood waters to access floodplain. The wall for Markeville creek is being removed.

2023 Alpine County Suggested Action Progress

SA #	CRS	SUGGESTED ACTION	Alpine County 2023 Update
REDUCE INFRASTRUCTURE IMPACTS (35-39)	36	510 Limit the use of future management measures such as dams, levees, and floodwalls.	Alpine County, through CRC process, supports limiting the use of future management measures such as dams, levees, and floodwalls.
	37	540 Design future bridges and roads to protect floodplain and accommodate rather than restrict river course changes, and minimize back up of flood water.	Alpine County, through CRC process, supports bridge and road designs which protects floodplain, accommodates storage, does not restrict river course, and minimized back up of flood waters.
	38	Investigate opportunities to enhance grade control structures.	Alpine County, through CWSD board and CRC process, supports investigation of opportunities to enhance grade control structures.
	39	Inventory, categorize, and house data regarding public and private drainage and flood control infrastructure in the Carson River Watershed.	Would be good for additional information discussion and construction. Refer to diversion structures.
ALLUVIAL FAN HAZARD REDUCTION (40-43)			
ALLUVIAL FAN HAZARD REDUCTION (40-43)	40	440 Investigate extent of potential alluvial fan flood damage and include on maps.	After the Tamarack fire, Alpine County had a flash flood in burn scar area that closed highway 89 between Woodfords and Markleeville. Consider drainage studies in several fans around the county, especially in burn scar areas that affect Highway 88, Highway 89 and Highway 4.
	41	440 Conduct Area Drainage Master Plans for alluvial fans which examines infrastructure, land use, sediment transport to identify & identify alternative to mitigate and/or reduce risk.	No progress to date and most land in county is owned by Federal Government; however, drainages studies that affect highways may be useful in planning.
	42	440 Implement studies to inform and motivate land use planning & development which protects high risk areas, and/or allows flood waters and debris flows to safely move through fan flood zones;	No progress to date and most land in county is owned by Federal Government; however, drainages studies that affect highways may be useful in planning.
	43	530 Define and implement means to protect existing open alluvial fans, implement recommendations associated with SA#'s 40-43 to limit further development and/or alleviate hazards in high risk areas.	No progress to date and most land in county is owned by Federal Government; however, drainages studies that affect highways may be useful in planning.
MINIMIZE STORMWATER IMPACTS (44-49)			
	44	450 Retain and infiltrate stormwater to reduce flood risk, capture groundwater and improve water quality.	No reported progress.
	45	450 Plan for and mitigate cumulative effects of existing watershed urbanization, including stormwater runoff, to reduce flood	Topic is discussed in CRC meetings; I'm not sure if progress has been made.

2023 Alpine County Suggested Action Progress

SA #	CRS	SUGGESTED ACTION	Alpine County 2023 Update
MINIMIZE STORMWATER IMPACTS (44-49)	46	450 Incorporate GI/LID methods to reduce stormwater flooding on site in all development and redevelopment proposals.	No requirements for LID in Alpine County; however, Alpine County will be considering adding LID language to their floodplain ordinance. Through CRC process, county work with CWSD to create Low Impact Development in the Carson River Watershed. http://www.cwsd.org/wp-content/uploads/2015/07/2015-04-07-LID-Carson-Watershed.pdf . However, LID specific for development in floodplain lands is the minority of places the County develops, so in general there are minimal opportunities for retrofit in the floodplain.
	47	450 Adopt model LID ordinances created for Watershed.	LID Ordinance being conducted through CWSD with 208 Funding.
	48	320 Utilize best management practices to reduce stormwater/ urban runoff and mitigate stormwater flooding.	No change.
	49	320 Protect and buffer natural drainage ways (existing green infrastructure) from development to ensure historic and natural flows are maintained.	No update, new suggested action.

2023 Carson City Suggested Action Progress

SA #	CRS	SUGGESTED ACTION	Carson City 2023 Update	
PROTECT FLOODPLAIN NATURAL FUNCTION AND VALUE (1-8) - Refer also to Stewardship Plan Table 8.8				
MAINTAIN NATURAL FUNCTION AND VALUE (1-8)	1	320 420 510	Maintain Living River approach to retain river system in a more natural state that allows the river to access its floodplain. Recognize that not all areas of the river system can be allowed to migrate freely due to special designation (i.e., Superfund area) and/or existing infrastructure.	The 2023 Regional Floodplain Management Plan will be presented to Carson City's Board of Supervisors for potential adoption. The Living River approach is one of the main goals of the plan. Carson City provides an example to other watershed counties by funding the purchase of floodplain lands as open space. The City also participates in the Carson River Coalition (CRC) stakeholder process. Additionally, Carson City Open Space staff are working to update the 1996 Carson River Master Plan, in conjunction with the National Park Service, Rivers, Trails and Conservation Assistance program. The revised plan will have language surrounding the living river approach.
	2	350 410	Develop, support and implement a good neighbor floodplain management policy that recognizes cumulative impacts and actions by one property owner can impact upstream, adjacent and downstream property owners.	Carson City plans to adopt the 2023 Regional Floodplain Management Plan which includes a good neighbor floodplain management as one of its policies.
	3	420	Investigate, identify, and implement areas where stream zone buffers would provide multi-objective benefits for river system and downstream communities.	Carson City has developed and maintains many parks and open space areas that meet multi-objective goals; refer to SA #6.
	4	310 410 530	Manage development in special flood hazard areas and other flood hazard areas (those known flood hazard areas not included on most current FIRMs) to provide public safety and protect the natural functions and benefits of floodplain lands.	Several areas have been remapped (Goni Wash, Eagle Valley Wash, Saliman/Voltaire Drainage). Clear Creek is in the process of being remapped. There is a physical map revision of the Carson River currently in process. Carson City also expects the floodplain management ordinance to be updated in November 2023.
	5	320 450	Promote and utilize best management practices as a means of protecting riparian habitat.	Carson City owns and manages most of the Carson River riparian habitat. It is maintained by Carson City Parks, Recreation & Open Space Department. Practices include limiting formal development in the river corridor - development is limited to trailheads and trails. Additionally, staff also work to treat noxious weeds in the river corridor to maintain riparian health and maintain native riparian plant communities.
ECOSYSTEM SERVICES IMPORTANT to MAINTAINING LIVING RIVER APPROACH				

2023 Carson City Suggested Action Progress

SA #	CRS	SUGGESTED ACTION	Carson City 2023 Update
PROTECT FLOODPLAIN	6	350 420 Consider Floodplain and flood hazards ecosystem service objectives which preserve open floodplain lands when selecting acquisition targets and establishing management strategies for open spaces.	Carson City has developed and maintains open space and parks along the Carson River corridor including Morgan Mill Preserve and Open Space, Ambrose Carson River Natural Area, Carson River Park, Silver Saddle Ranch, Riverview Park, Mexican Ditch Trail, Empire Ranch Trail, Linear Ditch Trail, Buzzy's Ranch Open Space, East Silver Saddle Ranch Open Space, Mexican Dam Open Space, Golden Eagle Open Space and Carson River Canyon from Deer Run Road to Lyon County line. At Fuji Park, Carson City worked with non-profits, NDEP, CWSD, and others to develop Bailey Pond which not only provides a place for people to fish, but it also is designed to catch stormwater, channel sediment to adjacent catch basins, and filter the water before returning to Clear Creek. Clear Creek is the only tributary of the Carson River in Nevada that flows year round. The Question 18 initiative provides funds for the acquisition, development, and maintenance of open space through a local tax, the "Quality of Life Initiative".
	7	520 Identify and promote options for landowner incentive programs, such as floodplain leasing program and conservation easements that provide compensation to landowners providing ecosystem services and seek funding mechanisms.	This programmatic goal is unnecessary since the majority of the floodplain land is owned by Carson City.
	8	420 520 Retain lands that preserve floodplain storage which maintain and/or restore connection of river with floodplain through land acquisition, conservation easements, local open space programs, TDR and PDR Programs, and other protection methods. Pursue protection of additional acreage in flood prone areas (See UNCE 2015, Floodplain Protection Inventory for the Carson River)	Carson City is an exemplary in fulfilling this suggested action. Refer to SA #6. Carson City has acted on acquisition of Special Flood Hazard Areas (SFHA) in the floodplain as open space. Currently there are 3,832 acres of SFHA, 71% is open space or 2718.5 acres.
HIGHER REGULATORY STANDARDS (9-11)			
11)	9	430 Periodically review county ordinances that include floodplain protection as a purpose, account for the loss of floodplain storage volume, and mitigate losses through a variety of methods.	The Floodplain Management Ordinance update is in progress and is anticipated to be completed in November 2023. The update to the ordinance intends to meet this requirement.

2023 Carson City Suggested Action Progress

SA #	CRS	SUGGESTED ACTION	Carson City 2023 Update
HIGHER REGULATORY STANDARDS (9-11)	10	430 Investigate, promote, and implement of additional flood protection measures that go beyond minimum FEMA requirements, such as improving community rating system.	The Floodplain Management Ordinance update is in progress and is anticipated to be completed in November 2023. Ways that Carson City has exceeded flood protection initiatives or intend to elevate the current CRS Class include: lowering the substantial improvement threshold from 50% to 49% and requiring critical structures to be elevated a foot above the 500-year level. Carson City still has a 2 foot freeboard requirement for structures in the Special Flood Hazard Area. The ordinance update will include specific language requiring machinery and equipment to be elevated 1 foot above the base flood elevation.
	11	430 Development and adoption of consistent floodplain management ordinance language and consistent use of hydraulic model of Carson River system.	The Floodplain Management Ordinance update is in progress and is anticipated to be completed in November 2023.
FLOOD DATA INFORMATION AND MAINTENANCE (12-21)			
MAINTENANCE (12-21)	12	410 Establish and adopt funding source, and protocol / procedures to consistently update watershed-wide unsteady state modeling to identify flood water storage requirements and to look at the cumulative effects of watershed development.	Using FEMA grant funds, an unsteady state model of the Carson River System upstream of the Lahontan Reservoir was created. Draft protocol for updating the model was included in this effort.
	13	440 Support FEMA's Map Modernization Program and encourage FEMA to update FIRMs with current and future conditions. Significant verification of topography and other variables should be conducted prior to release of draft FIRMs.	This element is ongoing with FEMA.
	14	Participate in FEMA's Cooperating Technical Partner Program.	CWSD continues to be a Cooperating Technical Partner with FEMA. As a CWSD partner, Carson City actively engages in this partnership. Counties provide input through the Carson River Coalition (CRC) stakeholder process.
	15	410 Collect and Maintain up-to-date and consistent data collection which includes updating flood studies as needed and conducting new studies for significant water courses and alluvial fan areas. This data should be used to update FEMA maps and/or fill local data gaps. Complete delineation of the floodway throughout river system and incorporate into FIRMs.	Clear Creek Restudy currently in process. Previous FIRM updates include Ash Canyon Creek, Kings Canyon Creek, Vicee Canyon Creek, Combs Canyon Creek, Eagle Valley Creek, Saliman Road Tributary, Voltaire Canyon Creek, H Tributary, and I Tributary.

2023 Carson City Suggested Action Progress

SA #	CRS	SUGGESTED ACTION	Carson City 2023 Update
FLOOD DATA INFORMATION AND	16	410 440 Update flood studies and maps after significant flooding events.	From flash flooding in 2014-2016, riverine flooding in 2017, and flash flooding in 2023, Carson City has identified numerous watersheds for area drainage master plans and flood studies to be conducted. The East Carson City Area Drainage Master Plan and Southeast Carson City Area Drainage Master Plan were completed in 2023. Completing an addendum to the Southeast Carson City Area Drainage Master Plan that focuses on granular level issues would be beneficial. Carson City would like to work on a master plan/scoping project for the Voltaire Canyon/North Tributary drainages that produced mud flows in 2023. Carson City plans to seek funding and assistance to compile all area drainage master plans into a stormwater master plan that compiles models, incorporates proposed projects, improves existing asset information, and fills in any gaps for the entire city.
	17	410 440 Update and Maintain Elevation Reference Marks (ERM) should be as permanent monuments using NAVD88 Datum which matches base flood elevations on FEMA FIRMs.	Carson City has 99 ERMs throughout the city in the NAVD 88 datum. Verification is typically scheduled every five years. The City is working with a consultant currently to verify accuracy of the control network.
	18	410 440 Develop and maintain master list of ERMs provide-to interested parties.	Carson City's ERM are available through Carson City's storm water website at www.carsonsw.org
FLOOD DATA INFORMATION AND MAINTENANCE (12-21)			
ATION AND MAINTENANCE (19-21)	19	350 410 440 Develop and coordinate photo-monitoring program (on-the-ground and aerial) on a watershed level to consistently document flooding and flood hazards.	The need for consistent photo-monitoring has been discussed in Carson River Coalition (CRC) and floodplain management working group meetings. Carson City has an app, Carson City Connect that allows for residents to take photos of areas of concern.
	20	350 410 440 Establish and maintain rain gage data network in each local jurisdiction.	Carson City has ALERT sites in various locations throughout the watershed. These are monitored by NWS. Carson City applied for a Hazard Mitigation grant in 2022 to add an additional site in the Goni watershed and to purchase replacement equipment for all of the sites. Upgrading to the ALERT2 system was explored, but due to the connectivity to other entities that would also need to upgrade, Carson was not able to proceed. Pursuing this in the future may be beneficial for improved data quality.

2023 Carson City Suggested Action Progress

SA #	CRS	SUGGESTED ACTION	Carson City 2023 Update
FLOOD DATA INFORM	21	Evaluate potential impacts due to climate variability which could include changing storm patterns, rainfall amounts, and snow levels, adding uncertainty to future conditions.	Carson City experienced abnormal storm patterns, rainfall amounts, and snow levels January-June in 2023. While currently undergoing the Southeast Carson City Area Drainage Master Plan, it became evident that an addendum to that a master plan is needed to identify solutions to issues on a more granular level in this area. The storms in June that hit the Goni and Voltaire areas illicit great need to construct the basins in the Goni area identified in the North Carson City Area Drainage Master Plan and to investigate a mitigation project for the Voltaire Canyon and North Tributary.
	CHANNEL MIGRATION AND BANK EROSION MONITORING (22-29)		
CHANNEL MIGRATION AND BANK EROSION MONITORING (22-29)	22	410 Document/map and update known and projected hazard areas including channel migration hazards and incorporated into planning processes.	Carson City updated and adopted their Hazard Mitigation Plan in 2021, which includes flood hazards. Carson City has completed Area Drainage Master Plans for North, West, East, and Southeast Areas.
	23	440 Conduct LiDAR and/or aerial photography (on a watershed level) on a 5-year basis, or as needed, to provide updated information on channel movement and floodplain condition.	The latest survey of alluvial fan areas was conducted by USGS in Carson City and Douglas County in March 2020.
	24	430 Conduct research and establish appropriate building set-backs in flood hazard areas to reduce severe hazards from channel migration.	No action
	25	410 440 Conduct and document channel cross-sectional surveys to track long term changes in river channel.	No action has been taken towards this end. However, the Carson River Master Plan amendment will identify this as a suggested action, and Carson City can work with partners like CWSD to accomplish this task.
	26	410 440 Identify unstable stream banks and areas with high potential for erosion.	Topic discussed in Carson River Coalition (CRC) meetings. Additionally, a map will be produced in the Carson River Master Plan amendment that will identify priority areas for erosion control.
	27	510 Promote the use of non-structural, bio-engineering (soft-engineering utilizing natural materials) techniques in river restoration projects in combination with other proven methods.	Bio-engineering techniques are being used on river restoration projects being accomplished by the Conversation District and their partners. This is the preferred method for Carson City Open Space led river projects as well.
	28	440 510 Update the 1996 Fluvial Geomorphic Assessment and create a sediment transport model of the Carson River.	CWSD has identified FEMA Pre-Disaster Mitigation funding, USACE, and USBR Watershed grants as possible sources to update the 1996 Fluvial Geomorphic Assessment of the Carson River System. Carson City would participate through the CRC process to review and ground-truth its section of the river.

2023 Carson City Suggested Action Progress

SA #	CRS	SUGGESTED ACTION	Carson City 2023 Update
29	440 510	Create a baseline study that informs management and project decisions regarding flood risks, damages, and ecosystem impacts.	No action
FLOODPLAIN AND FLOOD HAZARD OUTREACH AND EDUCATION (30-34)			
30	330	Continued implementation of watershed-wide outreach and education program about floodplain importance and flooding hazards.	This program was developed in 2014 and continues throughout the watershed. (See SA #31.) CWSD and River Wranglers provide significant outreach and education opportunities throughout the watershed. Carson City staff participates in flood awareness outreach efforts throughout the year.
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.	Carson City's Board of Supervisors has presented a proclamation for Flood Awareness Week (FAW) in 2022 and 2023. NV Department of Water Resources leads the FAW working group which includes CWSD, federal, state, and local jurisdictions. Flood awareness planning and outreach efforts are ongoing and include a presence on social media.
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.	Information posted on CWSD.org, NevadaFloods.org, carsonsw.org, and social media sites. Brochures are updated biannually with new content as necessary.
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 the flood awareness campaign led by NDWR, CWSD and NOAA-NWS Reno specifically address flood risk through their social media, videos, web content, etc. Information and useful links are also posted on Carson City's stormwater website. On the high -water mark signs, partner websites or QR codes linked to their websites are included for viewers to learn more about flood risk and mitigation.
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 events occur throughout the year at events such as National Night Out, Boonanza, Carson City Source Water Protection, CWSD and River Wranglers school outreach, and during outreach presentations about flood studies or area drainage master plans. Carson City's high water marks provide continuous outreach opportunities to raise awareness of flooding hazards and the importance of floodplains. There is currently a completed high water mark mural and two proposed high water mark projects to be implemented in 2023-2024. Flood information is also provided at City offices, the library, community center, and various other locations throughout the city. A proclamation for Flood Awareness Week will take place at the first Board of Supervisors meeting in November 2023.

2023 Carson City Suggested Action Progress

SA #	CRS	SUGGESTED ACTION	Carson City 2023 Update
REDUCE INFRASTRUCTURE IMPACTS (35-39)			
REDUCE INFRASTRUCTURE IMPACTS (35-39)	35	510 540 Investigate opportunities and implement actions when feasible to remove existing restrictions, such as berms or uncertified levees, to allow flood waters to access floodplain.	No action
	36	510 Limit the use of future management measures such as dams, levees, and floodwalls.	No action
	37	540 Design future bridges and roads to protect floodplain and accommodate rather than restrict river course changes, and minimize back up of flood water.	No action
	38	Investigate opportunities to enhance grade control structures.	No action
	39	Inventory, categorize, and house data regarding public and private drainage and flood control infrastructure in the Carson River Watershed.	Carson City plans to seek funding and assistance to compile all area drainage master plans into a stormwater master plan that compiles models, incorporates proposed projects, improves existing asset information, and fills in any gaps for the entire city.
SA #	CRS	SUGGESTED ACTION	Carson City 2023 Update
ALLUVIAL FAN HAZARD REDUCTION (40-43)			
ALLUVIAL FAN HAZARD REDUCTION (40-43)	40	440 Investigate extent of potential alluvial fan flood damage and include on maps.	The latest survey of alluvial fan areas was conducted by USGS in Carson City and Douglas County in March 2020.
	41	440 Conduct Area Drainage Master Plans for alluvial fans which examines infrastructure, land use, sediment transport to identify & identify alternative to mitigate and/or reduce risk.	Carson City completed East Carson City and Southeast Carson City Area Drainage Master Plans in 2023. While they did not specifically identify alluvial fan flood damage, alluvial fan flooding is a known issue in these areas and the area drainage master plans provide flood mitigation solutions.
	42	440 530 Implement studies to inform and motivate land use planning & development which protects high risk areas, and/or allows flood waters and debris flows to safely move through fan flood zones;	No action
	43	Define and implement means to protect existing open alluvial fans from development and where development exists, implement recommendations associated with SA#'s 38-40 to limit further development and/or alleviate hazards in high risk areas.	During the first reading of the updated Floodplain Management Ordinance, the existing prohibition of manufactured homes in alluvial fan zones was questioned. Carson City staff has prepared a response recommending that the prohibition remains as manufactured homes and owners tend to be the most vulnerable and alluvial fans tend to be one of the most dangerous and unpredictable flood zones.
MINIMIZE STORMWATER IMPACTS (44-48)			
	44	450 Retain and infiltrate stormwater to reduce flood risk, capture groundwater and improve water quality.	Carson City adopted their Drainage Manual in July 2021. Developments and redevelopments with impervious surfaces greater than 10,000 square feet or more than 1 acre of disturbance

2023 Carson City Suggested Action Progress

SA #	CRS	SUGGESTED ACTION	Carson City 2023 Update
MINIMIZE STORMWATER IMPACTS (44-49)	45	450	Plan for and mitigate cumulative effects of existing watershed urbanization, including stormwater runoff, to reduce flood
	46	450	Incorporate GI/LID methods to reduce stormwater flooding on site in all development and redevelopment proposals.
	47	450	Adopt model LID ordinances created for Watershed.
	48	320 450	Utilize best management practices to reduce stormwater/ urban runoff and mitigate stormwater flooding.
	49	320 450	Protect and buffer natural drainage ways (existing green infrastructure) from development to ensure historic and natural flows are maintained.
			A Carson River inundation map was created in cooperation with the NWS. Carson City plans to seek funding and assistance to compile all area drainage master plans into a stormwater master plan that compiles models, incorporates proposed projects, improves existing asset information, and fills in any gaps for the entire city.
			Carson City adopted their Drainage Manual in July 2021. Developments and redevelopments with impervious surfaces greater than 10,000 square feet or more than 1 acre of disturbance are required to treat the 2-year, 24-hour storm with water quality controls. Any development or redevelopment except for single-family residences that cause less than 1/4 acre of disturbance are required to incorporate detention or retention on their site designed to the 10-year storm.
			Carson City adopted their Drainage Manual in July 2021 which includes LID practices and requirements.
			Carson City adopted their Drainage Manual in July 2021 which includes LID Best Management Practices that are most likely to be included in Carson City. The Drainage Manual also specifies that storm drainage improvements shall incorporate BMPs in accordance with the Nevada Handbook of Best Management Practices and CCMC Title 18, Division 13.
			No update, new suggested action

2023 Churchill County Suggested Action Progress

SA #	CRS	SUGGESTED ACTION	Churchill County 2023 Update	
PROTECT FLOODPLAIN NATURAL FUNCTION AND VALUE (1-8) - Refer also to Stewardship Plan Table 8.8				
AL FUNCTION AND VALUE (1-8)	1	320 420 510	Maintain Living River approach to retain river system in a more natural state that allows the river to access its floodplain. Recognize that not all areas of the river system can be allowed to migrate freely due to special designation (i.e., Superfund area) and/or existing infrastructure.	Churchill County has adopted the 2018 Floodplain Management Plan and operates within its guidelines and policies. A key guideline the Living River approach to floodplain management. . The county also participates in the Carson River Coalition (CRC) stakeholder process.
	2	350 410	Develop, support and implement a good neighbor floodplain management policy that recognizes cumulative impacts and actions by one property owner can impact upstream, adjacent and downstream property owners.	Churchill County has adopted the 2018 Floodplain Management Plan and operates within its guidelines and policies and includes the good neighbor floodplain management policy. .
	3	420	Investigate, identify, and implement areas where stream zone buffers would provide multi-objective benefits for river system and downstream communities. (Previously SA # 4)	no update
	4	310 410 530	Manage development in special flood hazard areas and other flood hazard areas (those known flood hazard areas not included on most current FIRMs) to provide public safety and protect the natural functions and benefits of floodplain lands. (Previously SA # 6)	Working with CWSD/HDR on a revision to the current floodplain. All comments have been resolved and the PMR is going through FEMA review process.
	5	320 450	Promote and utilize best management practices as a means of protecting riparian habitat. (Previously SA #10)	Topic discussed in CRC meetings as possible landowner stock fencing and watering incentives.

2023 Churchill County Suggested Action Progress

SA #	CRS	SUGGESTED ACTION	Churchill County 2023 Update	
PROTECT FLOODPLAIN NATURAL	ECOSYSTEM SERVICES IMPORTANT to MAINTAINING LIVING RIVER APPROACH			
	6	350 420	Consider Floodplain and flood hazards ecosystem service objectives which preserve open floodplain lands when selecting acquisition targets and establishing management strategies for open spaces. (Previously SA #3)	Section 16.12.040.3 of Churchill County Code explains planned unit developments, a specialized kind of subdivision. The Planning Commission may allow up to five units per acre if the developer provides benefits to the community such as protection and access to the Carson River corridor or protection of agriculture through the Transfer of Development Rights program.
	7	520	Identify and promote options for landowner incentive programs, such as floodplain leasing program and conservation easements that provide compensation to landowners providing ecosystem services and seek funding mechanisms. (Previously # SA 9)	See SA 6
	8	420 520	Retain lands that preserve floodplain storage which maintain and/or restore connection of river with floodplain through land acquisition, conservation easements, local open space programs, TDR and PDR Programs, and other protection methods. Pursue protection of additional acreage in flood prone areas. (Previously # SA 7)	Section 16.12.040.3 of Churchill County Code explains planned unit developments, a specialized kind of subdivision. The Planning Commission may allow up to five units per acre if the developer provides benefits to the community such as protection and access to the Carson River corridor or protection of agriculture through the Transfer of Development Rights program.
HIGHER REGULATORY STANDARDS (9-11)				
HIGHER REGULATORY STANDARDS (9-11)	9	430	Periodically review county ordinances that include floodplain protection as a purpose, account for the loss of floodplain storage volume, and mitigate losses through a variety of methods. (Previously SA # 11)	Churchill County is currently reviewing ordinances and will include floodplain ordinances in the review.
	10	430	Investigate, promote, and implement of additional flood protection measures that go beyond minimum FEMA requirements, such as improving community rating system. (Previously SA # 12)	Construction of the emergency weirs I 2017 and 2023. to control flood water down the Carson River.
	11	430	Development and adoption of consistent floodplain management ordinance language and consistent use of hydraulic model of Carson River system. (Previously SA # 13)	Churchill County is currently reviewing ordinances and will include floodplain ordinances in the review.

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SA #	CRS	SUGGESTED ACTION	Churchill County 2023 Update
FLOOD DATA INFORMATION AND MAINTENANCE (12-21)			
FLOOD DATA INFORMATION AND MAINTENANCE (12-21)	12	410 440 Establish and adopt funding source, and protocol / procedures to consistently update watershed-wide unsteady state modeling to identify flood water storage requirements and to look at the cumulative effects of watershed development. (Previously SA #14)	Hydrologic and Hydraulic data has been collected as part of the FEMA Physical Map revision of Flood Insurance Rate Maps.
	13	440 Support FEMA's Map Modernization Program and encourage FEMA to update FIRMs with current and future conditions. Significant verification of topography and other variables should be conducted prior to release of draft FIRMs. (Previously # SA 15)	Hydrologic and Hydraulic data has been collected as part of the FEMA Physical Map revision of Flood Insurance Rate Maps. . This information is available digitally.
	14	Participate in FEMA's Cooperating Technical Partner Program. (Previously SA#16)	CWSD continue to participate in FEMA's Cooperating Technical Partner Program.
FLOOD DATA INFORMATION AND MAINTENANCE (12-21)	15	410 440 Collect and Maintain up-to-date and consistent data collection which includes updating flood studies as needed and conducting new studies for significant water courses and alluvial fan areas. This data should be used to update FEMA maps and/or fill local data gaps. Complete delineation of the floodway throughout river system and incorporate into FIRMs. (Previously SA #17)	Hydrologic and Hydraulic data has been collected as part of the FEMA Physical Map revision of Flood Insurance Rate Maps.
	16	410 440 Update flood studies and maps after significant flooding events. (Previously SA #18)	Data is available from the 2023 flood.
	17	410 440 Update and Maintain Elevation Reference Marks (ERM) as- permanent monuments using NAVD88 Datum which matches base flood elevations on FEMA FIRMs. (Previously SA #19& 20)	Churchill County maps are NAVD 88 datum. At January 23, 2018 Floodplain and River Management working group reaffirmed the need for updated ERMs.
	18	410 440 Develop and maintain master list of ERMs provide-to interested parties. (Previously SA #21)	The need for master list of ERMs was affirmed in the CRC process.

2023 Churchill County Suggested Action Progress

SA #		CRS	SUGGESTED ACTION	Churchill County 2023 Update
FLOOD DATA INFORMATION AND MAINTENANCE (12-21)				
FLOOD DATA INFORMATION AND MAINTENANCE (19-21)	19	350 410 440	Develop and coordinate photo-monitoring program (on-the-ground and aerial) on a watershed level to consistently document flooding and flood hazards. (Previously SA #22)	Photos were taken during the 2017 and 2023 flood events, however, no formal program was developed for documenting flooding and flood hazards.
	20	350 410 440	Establish and maintain rain gage data network in each local jurisdiction.	No Update
	21		Evaluate potential impacts due to climate variability which could include changing storm patterns, rainfall amounts, and snow levels, adding uncertainty to future conditions.	No Update
CHANNEL MIGRATION AND BANK EROSION MONITORING (22-29)				
CHANNEL MIGRATION AND BANK EROSION MONITORING (22-29)	22	410	Document/map and update known and projected hazard areas including channel migration hazards and incorporated into planning processes. (Previously SA #23)	Topic discussed in CRC meetings but not acted on to date.
	23	440	Conduct LiDAR and/or aerial photography (on a watershed level) on a 5-year basis, or as needed, to provide updated information on channel movement and floodplain condition. (Previously SA #24)	LIDAR and aerial photography is completed every 2 years for the county assessor. Information can be evaluated.
	24	430	Conduct research and establish appropriate building set-backs in flood hazard areas to reduce severe hazards from channel migration. (Previously SA #25)	Topic discussed in CRC meetings but not acted on to date.
	25	410 440	Conduct and document channel cross-sectional surveys to track long term changes in river channel. (Previously SA #26)	Topic discussed in CRC meetings but not acted on to date in Churchill County.
	26	410 440	Identify unstable stream banks and areas with high potential for erosion. (Previously SA #27)	Topic discussed in CRC meetings but not acted on to date.
	27	510	Promote the use of non-structural, bio-engineering (soft-engineering utilizing natural materials) techniques in river restoration projects in combination with other proven methods. (Previously SA #28)	No Update
CHANNEL MIGRATION AND BANK EROSION MONITORING (22-29)	28	440 510	Update the 1996 Fluvial Geomorphic Assessment and create a sediment transport model of the Carson River. (Previously SA #27)	CWSD has identified FEMA Pre-Disaster Mitigation funding; USACE, and USBR Watershed grants as a possible source to update the 1996 Fluvial Geomorphic Assessment of the Carson River System. County would participate through CRC process to review and ground-truth its section of the river.
	29	440 510	Create a baseline study that informs management and project decisions regarding flood risks, damages, and ecosystem impacts.	No Update

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SA #	CRS	SUGGESTED ACTION	Churchill County 2023 Update
FLOODPLAIN AND FLOOD HAZARD OUTREACH AND EDUCATION (30-34)			
FLOODPLAIN AND FLOOD HAZARD OUTREACH AND EDUCATION (30-34)	30	330	Continued implementation of watershed-wide outreach and education program about floodplain importance and flooding hazards.
	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.
	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.
FLOODPLAIN AND FLOOD HAZARD OUTREACH AND EDUCATION (30-34)	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.
	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.

2023 Churchill County Suggested Action Progress

SA #	CRS	SUGGESTED ACTION	Churchill County 2023 Update
REDUCE INFRASTRUCTURE IMPACTS (35-39)			
REDUCE INFRASTRUCTURE IMPACTS (35-39)	35	510 Investigate opportunities and implement actions when feasible to remove existing restrictions, such as berms or uncertified levees, to allow flood waters to access floodplain. 540	Much of this is under the jurisdiction of BOR/TCID. Topic discussed in CRC meetings but not acted on to date and a BOR representative attends these meetings.
	36	510 Limit the use of future management measures such as dams, levees, and floodwalls.	Much of this is under the jurisdiction of BOR/TCID. Topic discussed in CRC meetings but not acted on to date and a BOR representative attends these meetings.
	37	540 Design future bridges and roads to protect floodplain and accommodate rather than restrict river course changes, and minimize back up of flood water.	Topic discussed in CRC meetings but not acted on to date.
	38	Investigate opportunities to enhance grade control structures.	Topic discussed in CRC meetings but not acted on to date.
	39	Inventory, categorize, and house data regarding public and private drainage and flood control infrastructure in the Carson River Watershed.	No Update
ALLUVIAL FAN HAZARD REDUCTION (40-43)			
ALLUVIAL FAN HAZARD REDUCTION (40-43)	40	440 Investigate extent of potential alluvial fan flood damage and include on maps.	No Update
	41	440 Conduct Area Drainage Master Plans for alluvial fans which examines infrastructure, land use, sediment transport to identify & identify alternative to mitigate and/or reduce risk.	No Update
	42	440 Implement studies to inform and motivate land use planning & development which protects high risk areas, and/or allows flood waters and debris flows to safely move through fan flood zones; 530	No Update
	43	Define and implement means to protect existing open alluvial fans, implement recommendations associated with SA#'s 38-40 to limit further development and/or alleviate hazards in high risk areas.	No Update

2023 Churchill County Suggested Action Progress

SA #	CRS	SUGGESTED ACTION	Churchill County 2023 Update
MINIMIZE STORMWATER IMPACTS (44-49)			
MINIMIZE STORMWATER IMPACTS (44-49)	44	450 Retain and infiltrate stormwater to reduce flood risk, capture groundwater and improve water quality.	No Update
	45	450 Plan for and mitigate cumulative effects of existing watershed urbanization, including stormwater runoff, to reduce flood	Regional efforts through CWSD are in process. See SA – 12.
	46	450 Incorporate GI/LID methods to reduce stormwater flooding on site in all development and redevelopment proposals.	No action to date by Churchill County. FPMP was adopted by Churchill County and calls for LID practices to be implemented. No requirements for LID in Churchill County; however, recent development of Maverick Gas Station is a prime example of LIDs. Through CRC process, CWSD created Low Impact Development in the Carson River Watershed. http://www.cwsd.org/wp-content/uploads/2015/07/2015-04-07-LID-Carson-Watershed.pdf . The CRC Floodplain and River Management working groups chose to use 208 funding to update LID ordinances . Once LID ordinance update is completed, the CRC FRM working group chose to conduct pilot projects with future Clean Water 208 funding.
	47	450 Adopt model LID ordinances created for Watershed.	LID Ordinance being conducted through CWSD with 208 Funding.
	48	320 Utilize best management practices to reduce stormwater/ urban runoff and mitigate stormwater flooding. 450	Ongoing as part of the planning review process.
	49	320 Protect and buffer natural drainage ways (existing green infrastructure) from development to ensure historic and natural flows are maintained. 450	No update, new suggested action

2023 Douglas County Suggested Action Progress

SA #	CRS	SUGGESTED ACTION	Douglas County 2023 Update*
PROTECT FLOODPLAIN NATURAL FUNCTION AND VALUE (1-8) - Refer also to Stewardship Plan Table 8.8			
1	320 420 510	Maintain Living River approach to retain river system in a more natural state that allows the river to access its floodplain. Recognize that not all areas of the river system can be allowed to migrate freely due to special designation (i.e., Superfund area) and/or existing infrastructure.	The 2024 Regional Floodplain Management Plan will be presented to the Douglas County for possible adoption early 2025. The Living River approach as one of its main goals of the plan. Through Carson River Coalition (CRC) process, county worked with UNCE to create brochure FS 123-06 The Important of Floodplains in Our Communities for use throughout the watershed. Through the Carson River Coalition (CRC) process, the County worked with staff from University of Nevada Cooperative Extension (UNCE) to create the brochure Agriculture is a Good Fit for the Floodplain. https://extension.unr.edu/publication.aspx?PubID=3014 .
2	350 410	Develop, support and implement a good neighbor floodplain management policy that recognizes cumulative impacts and actions by one property owner can impact upstream, adjacent and downstream property owners.	The 2018 Regional Floodplain Management Plan was adopted by Douglas County in November 2018. They are using the floodplain hydraulic model in relation to requirements of the Floodplain Management Plan.
3	420	Investigate, identify, and implement areas where stream zone buffers would provide multi-objective benefits for river system and downstream communities.	Douglas County requires 50 foot setbacks from the bank of any river (minimum) for development. 20.690.030.Y.5.e.i.
4	310 410 530	Manage development in special flood hazard areas and other flood hazard areas (those known flood hazard areas not included on most current FIRMs) to provide public safety and protect the natural functions and benefits of floodplain lands.	The county has worked with CWSD to update flood mapping to provide an accurate assessment of SFHAs. Carson River has been remapped and preliminary Flood Insurance Rate maps were issued November 2023. Effective FIRMS anticipated in May 2025. Smelter Creek and Clear Creek were completed May 2024. Pinenut Creek LOMR has been submitted and is in review. Alpine View LOMR became effective in 2019.
5	320 450	Promote and utilize best management practices as a means of protecting riparian habitat.	In early 2024, Douglas County published a comprehensive Stormwater Master Plan that promotes Low Impact Development (LID) and Best Management Practices (BMP). The county promotes LID and BMPs with potential to conserve riparian habitat. Douglas County is working to add LID/BMPs to code in 2024.
ECOSYSTEM SERVICES IMPORTANT to MAINTAINING LIVING RIVER APPROACH			
6	350 420	Consider Floodplain and flood hazards ecosystem service objectives which preserve open floodplain lands when selecting acquisition targets and establishing management strategies for open spaces.	2024 Actions continued as in 2013, 2018 version of this plan. Chapter 20.714 Division of Agricultural Land for Conservation Purposes address preservation of open space to protect floodplains from development, thereby maintaining a passive flood control, drainage, and ground water recharge system.

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SA #		CRS	SUGGESTED ACTION	Douglas County 2023 Update*
	7	520	Identify and promote options for landowner incentive programs, such as floodplain leasing program and conservation easements that provide compensation to landowners providing ecosystem services and seek funding mechanisms.	Douglas County offered incentive for landowners as an ballot item in 2020. The ballot question on vote would have provided a 1/4th cent from sales tax to a conservation easement fund that supported agricultural producers. These easements preserve Carson Valley floodplain. The motion failed by narrow margined and did not get added to the 2024 ballot.
	8	420 520	restore connection of river with floodplain through land acquisition, conservation easements, local open space programs, TDR and PDR Programs, and other protection methods. Pursue protection of additional acreage in flood prone areas (See UNCE 2015, Floodplain Protection Inventory for the Carson River)	Update 2015 Floodplain Inventory, possible by Douglas County GIS. The original inventory was created by UNCE through CRC process. There have been a lot of conservation easements dedicated in Douglas County. (See UNCE 2015, Floodplain Protection Inventory for the Carson River.) Douglas County has Transfer of Development Rights in

2023 Douglas County Suggested Action Progress

SA #	CRS	SUGGESTED ACTION	Douglas County 2023 Update*
HIGHER REGULATORY STANDARDS (9-11)			
HIGHER REGULATORY STANDARDS (9-11)	9	430 Periodically review county ordinances that include floodplain protection as a purpose, account for the loss of floodplain storage volume, and mitigate losses through a variety of methods.	Building code is 1' higher than FEMA regulations. Ordinance update language will be presented for adoption once FIRMs become effective (May2025). There are currently limitations for land division in SFHA. No parcels in the floodplain can be divided smaller than 19 acres unless DC code 20.50.170 is met. Also refer to SA #18.
	10	430 Investigate, promote, and implement of additional flood protection measures that go beyond minimum FEMA requirements, such as improving community rating system.	Douglas County participate in CRS program, and is working to adopt additional flood protection measures once floodplain maps are effective. The county hope to improve community rating score and considering regulations that would benefit county's CRS score .
	11	430 Development and adoption of consistent floodplain management ordinance language and consistent use of hydraulic model of Carson River system.	County created Draft Floodplain Ordinance in 2019 for future adoption. The ordinance includes language that will utilize information from 2016 Draft Model Management Distribution, and Update Guide; and Carson River Mitigation Plan. Refer to Appendix D. Update will be adopted in 2025.
FLOOD DATA INFORMATION AND MAINTENANCE (12-21)			
NCE (12-21)	12	410 440 Establish and adopt funding source, and protocol / procedures to consistently update watershed-wide unsteady state modeling to identify flood water storage requirements and to look at the cumulative effects of watershed development.	Update the model to include new development since previous - subsequent to FEMA submittal. refer to SA #11.
	13	440 Support FEMA's Map Modernization Program and encourage FEMA to update FIRMs with current and future conditions. Significant verification of topography and other variables should be conducted prior to release of draft FIRMs.	Entire county has updated LIDAR as of 2023 that was conducted in FEMA / USGS cooperative effort.
	14	Participate in FEMA's Cooperating Technical Partner Program.	CWSD continues to be a Cooperating Technical Partner & Counties provide input through CRC stakeholder process. Effective FIRMS anticipated in May 2025. Smelter Creek and Clear Creek were completed May 2024. Pinenut Creek LOMR has been submitted and is in review. Alpine View LOMR became effective in 2019.

2023 Douglas County Suggested Action Progress

SA #	CRS	SUGGESTED ACTION	Douglas County 2023 Update*
FLOOD DATA INFORMATION AND MAINTENANCE	15	410 440 Collect and Maintain up-to-date and consistent data collection which includes updating flood studies as needed and conducting new studies for significant water courses and alluvial fan areas. This data should be used to update FEMA maps and/or fill local data gaps. Complete delineation of the floodway throughout river system and incorporate into FIRMs.	Carson River has been remapped and preliminary Flood Insurance Rate maps were issued November 2023. Ruhenstroth ADMP was completed December 2021. Effective FIRMS anticipated in May 2025. Smelter Creek and Clear Creek were completed May 2024. Pinenut Creek LOMR has been submitted and is in review. Alpine View LOMR became effective in 2019. SR88 Culvert expansion at Cottonwood Slough and East Fork is complete. Buckeye Mitigation solutions were identified in early 2024, and a Fish Springs/ Pinenut Creek culvert analysis was created in 2024 and is being finalized. The county will begin to analyze Sawmill and Pinenut Wash in 2025.
	16	410 440 Update flood studies and maps after significant flooding events.	In 2023, there were many flood events occurred when low elevation snow was melted by spring rains; county staff realized alluvial channels in East Carson Valley can flood in the winter in addition to typical summer cloudbursts that cause flash floods. The county is always updating flood studies and maps when funding becomes available. Refer to Douglas County's Stormwater Master Plan.
	17	410 440 Update and Maintain Elevation Reference Marks (ERM) should be as permanent monuments using NAVD88 Datum which matches base flood elevations on FEMA FIRMs.	There are actually quite a few in Douglas County; NDOT website very useful. The need for more ERMs was discussed in the Discovery process. However, the County does not maintain ERMs.
	18	410 440 Develop and maintain master list of ERMs provide-to interested parties.	There are actually quite a few in Douglas County; NDOT website very useful. The need for more ERMs was discussed in the Discovery process. However, the County does not maintain ERMs. Master List needs to be developed for entire watershed.

2023 Douglas County Suggested Action Progress

SA #	CRS	SUGGESTED ACTION	Douglas County 2023 Update*
FLOOD DATA INFORMATION AND MAINTENANCE (12-21)			
FLOOD DATA INFORMATION AND MAINTENANCE (19-21)	19	350 410 440 Develop and coordinate photo-monitoring program (on-the-ground and aerial) on a watershed level to consistently document flooding and flood hazards.	A protocol to document HWM at specific locations specific coordinates during flood events would be helpful. There is also a need for consistent photo-at given locations. . A systematic plan to track flood events at specific sites needs to be created and implemented. Douglas County set this up in the Johnson Lane area for the ADMP. During flood events certain problem areas are photo documented and needs to be repeated.
	20	350 410 440 Establish and maintain rain gage data network in each local jurisdiction.	Douglas County is placing 2 flow gages at lower Pinenut creek and 2 rain gauges at the top as an initial test. They are willing to expand with promising results. The county is looking to NWS for rain gages and data keeping funding opportunities, as this would provide helpful data. Douglas county is coordinating with Carson City on the best tools for this data.
	21	Evaluate potential impacts due to climate variability which could include changing storm patterns, rainfall amounts, and snow levels, adding uncertainty to future conditions.	Explore frequent atmospheric weather changes with low elevation snow as an impact by climate variability. Snowmelt patterns and changes to weather can cause potential flood events.
CHANNEL MIGRATION AND BANK EROSION MONITORING (22-29)			
CHANNEL MIGRATION AND BANK EROSION MONITORING (22-29)	22	410 Document/map and update known and projected hazard areas including channel migration hazards and incorporated into planning processes.	County Hazard Mitigation Plan (2019) and will be updated in 2024. County updated Rapid Evaluation of the River System as part of the 2018 Update to the Carson River Floodplain Management Plan.
	23	440 Conduct LiDAR and/or aerial photography (on a watershed level) on a 5-year basis, or as needed, to provide updated information on channel movement and floodplain condition.	FEMA/ USGS project has provided updated LiDAR for entire county March 2023.
	24	430 Conduct research and establish appropriate building set-backs in flood hazard areas to reduce severe hazards from channel migration.	Douglas County requires 50 foot setbacks from the bank of any river (minimum) for development. 20.690.030.Y.5.e.i. Need to evaluate if that is sufficient.
	25	410 440 Conduct and document channel cross-sectional surveys to track long term changes in river channel.	Douglas County is working with the local conservation district to track changes. Refer to item #28.
	26	410 440 Identify unstable stream banks and areas with high potential for erosion.	Douglas County is working with the local conservation district to track changes. Refer to item #28.
	27	510 Promote the use of non-structural, bio-engineering (soft-engineering utilizing natural materials) techniques in river restoration projects in combination with other proven methods.	Carson Valley Conservation District utilizes these practices when appropriate.

2023 Douglas County Suggested Action Progress

SA #		CRS	SUGGESTED ACTION	Douglas County 2023 Update*
CHANNEL MIGRA BANK EROSION MONI	28	440 510	Update the 1996 Fluvial Geomorphic Assessment and create a sediment transport model of the Carson River.	CWSD did not get the Conserve Nevada funding for an update to the 1996 Fluvial Geomorphic Assessment, however, CWSD has identified FEMA Pre-Disaster Mitigation, BRIC, and FMA grants through NV Emergency Management; as a possible source. County would participate through CRC process to review and ground-truth its section of the river. The USACE could also submit a proposal to conduct a Fluvial Geomorphic Assessment. Alpine County is currently in the process of performing Fluvial Geomorphic Assessment on a fork of the Carson river and is going to be completed 2025. This will assist in procuring funding for the Nevada side of the Carson River study.
	29	440 510	Using the baseline conditions and recommendations from geomorphology and sediment transport analysis, create a decision matrix and prioritization plan to rank projects in Adaptive Stewardship Plan categories to reduce flood risk, damages and provide ecosystem benefits. Examples may include targeted projects that reduce sediment loads, improve access of the river to its floodplain, conservation easements and structure modifications.	No Update

2023 Douglas County Suggested Action Progress

SA #	CRS	SUGGESTED ACTION		Douglas County 2023 Update*
FLOODPLAIN AND FLOOD HAZARD OUTREACH AND EDUCATION (30-34)				
FLOODPLAIN AND FLOOD HAZARD OUTREACH AND EDUCATION (30-34)	30	330	Continued implementation of watershed-wide outreach and education program about floodplain importance and flooding hazards.	This program was developed in 2014 and continues throughout the watershed. (See SA #31). Significant outreach and education has occurred. The County participates in Flood Awareness outreach efforts throughout the year.
	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.	NV Department of Water Resources leads FAW Working group which includes CWSD, Federal, State and Local Jurisdictions. Significant outreach and education has occurred. Flood Awareness planning and outreach efforts are ongoing.
	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.	Information posted on CWSD.org, Nevada Floods.org, National Weather Service - Reno; and County Websites and social media sites.
	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. Information is also posted on County Websites and social media sites.
	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 Events occur throughout the year at such events as CWSD school outreach program, and during outreach presentations about new flood studies. Special events that could be utilized include Genoa's Candy Dance festival and Safety Day. Flood information is provided at county offices and community centers.
REDUCE INFRASTRUCTURE IMPACTS (35-39)				
REDUCE INFRASTRUCTURE IMPACTS (35-39)	35	510 540	Investigate opportunities and implement actions when feasible to remove existing restrictions, such as berms or uncertified levees, to allow flood waters to access floodplain.	N/A for county. Could possibly be done by Carson Valley Conservation District.
	36	510	Limit the use of future management measures such as dams, levees, and floodwalls.	N/A for county. Could possibly be done by Carson Valley Conservation District.
	37	540	Design future bridges and roads to protect floodplain and accommodate rather than restrict river course changes, and minimize back up of flood water.	Upsizes on Highway 88 and Martin Slough have been completed. All additional structures in the floodplain are molded to avoid adverse impact on the floodplain and river. NDOT is currently in the process of replacing bridges along Highway 88.
	38		Investigate opportunities to enhance grade control structures.	N/A for county. Could possibly be done by Carson Valley Conservation District.
	39		Inventory, categorize, and house data regarding public and private drainage and flood control infrastructure in the Carson River Watershed.	Drain and flood control infrastructure is inventoried and categorize as apart of the Stormwater Master Plan.

2023 Douglas County Suggested Action Progress

SA #	CRS	SUGGESTED ACTION	Douglas County 2023 Update*	
ALLUVIAL FAN HAZARD REDUCTION (40-43)				
ALLUVIAL FAN HAZARD REDUCTION (40-43)	40	440	Investigate extent of potential alluvial fan flood damage and include on maps.	Investigation on potential alluvial fan flood damage is included Stormwater Master Plan.
	41	440	Conduct Area Drainage Master Plans for alluvial fans which examines infrastructure, land use, sediment transport to identify & identify alternative to mitigate and/or reduce risk.	Area Drainage Master Plans (ADMP) have been procured for Buckeye, Pinenut, Johnson Lane, and the Ruhenstroth areas.
	42	440 530	Implement studies to inform and motivate land use planning & development which protects high risk areas, and/or allows flood waters and debris flows to safely move through fan flood zones;	The implementation of the previously completed Johnson Lane Area Drainage Master Plan has began. Douglas county is now identifying funds to implement projects in other study areas.
	43		Define and implement means to protect existing open alluvial fans from development and where development exists, implement recommendations associated with SA#'s 38-40 to limit further development and/or alleviate hazards in high risk areas.	The County is taking steps to secure funding through the procurement of recent Area Drainage Master Plans (ADMP) in order to alleviate hazards in high risk areas. Current and future development can benefit from implementation of the local ADMP as per the Stormwater Master Plan. Douglas county is working with contractors for future development by having the contractors contribute to regional improvements. This prevents developments from creating adverse effects by their existence.
MINIMIZE STORMWATER IMPACTS (44-49)				
MINIMIZE STORMWATER IMPACTS (44-49)	44	450	Retain and infiltrate stormwater to reduce flood risk, capture groundwater and improve water quality.	Stormwater Master Plan promotes stormwater infiltration.
	45	450	Plan for and mitigate cumulative effects of existing watershed urbanization, including stormwater runoff, to reduce flood	Stormwater Master Plan is addressing these issue and proposes plans to mitigate cumulative hazards.
	46	450	Incorporate GI/LID methods to reduce stormwater flooding on site in all development and redevelopment proposals.	Stormwater Master Plan encourages the adoption of LID principles in Douglas County.
	47	450	Adopt model LID ordinances created for Watershed.	Stormwater Master Plan encourages the adoption of LID principles in Douglas County.
	48	320 450	Utilize best management practices to reduce stormwater/ urban runoff and mitigate stormwater flooding.	Stormwater Master Plan promotes best management practices to reduce urban runoff in Douglas County.
	49	320 450	Protect and buffer natural drainage ways (existing green infrastructure) from development to ensure historic and natural flows are maintained.	<u>Douglas County Stormwater Master Plan</u>

*This includes county updates from the 10/30/2024 Workshop

2023 Lyon County Suggested Action Progress

SA #	CRS	SUGGESTED ACTION	Lyon County 2023 Progress
PROTECT FLOODPLAIN NATURAL FUNCTION AND VALUE (1-8) - Refer also to Stewardship Plan Table 8.8			
PROTECT FLOODPLAIN NATURAL FUNCTION AND VALUE (1-8)	1	320 Maintain Living River approach to retain river system in a more natural state that allows the river to access its floodplain. Recognize that not all areas of the river system can be allowed to migrate freely due to special designation (i.e., Superfund area) and/or existing infrastructure.	The 2018 Regional Floodplain Management Plan will be presented to Lyon County for possible adoption. The Living River approach is one of the main goals of the plan. The county also participates in the Carson River Coalition (CRC) stakeholder process.
	2	350 410 Develop, support and implement a good neighbor floodplain management policy that recognizes cumulative impacts and actions by one property owner can impact upstream, adjacent and downstream property owners.	The 2018 Regional Floodplain Management Plan will be presented to Lyon County. The plan includes a "good neighbor" floodplain management as one of its policies. Lyon County is able to track cumulative development along the river plans by using the hydraulic model of the Carson River from the County line in Carson Canyon to the Weeks Bridge. Area Drainage Master Plans along the Highway 50 corridor also inform Lyon County staff of potential flood hazards to avoid.
	3	420 Investigate, identify, and implement areas where stream zone buffers would provide multi-objective benefits for river system and downstream communities.	Lyon County shares their work at CRC meetings. The County also works with Dayton Valley Conservation District to meet multiple objectives by doing river rehab, channel clearing and bank stabilization projects on the Carson River.
	4	310 410 530 Manage development in special flood hazard areas and other flood hazard areas (those known flood hazard areas not included on most current FIRMs) to provide public safety and protect the natural functions and benefits of floodplain lands.	Lyon County section of the Carson River was remapped using detailed methods from upstream of Weeks Bridge to Carson City / Lyon County line during Physical Map Revision (PMR), and includes a mapped floodway. Ramsey Canyon two-dimensional study was also conducted in Lyon County. Lyon County is also updating Floodplain Ordinances.
	5	320 450 Promote and utilize best management practices as a means of protecting riparian habitat.	Topic discussed in CRC Floodplain Management and Agricultural Working Group meetings as possible landowner stock fencing and watering incentives.
	ECOSYSTEM SERVICES IMPORTANT TO MAINTAINING LIVING RIVER APPROACH		
	6	350 420 Consider Floodplain and flood hazards ecosystem service objectives which preserve open floodplain lands when selecting acquisition targets and establishing management strategies for open spaces.	Lyon County's Comprehensive Master Plan places high priority on moving development density out of the floodplain; open space program to be developed in the future. Rolling A Ranch is an area preserved as a natural open space area in Dayton, Nevada.
	7	520 Identify and promote options for landowner incentive programs, such as floodplain leasing program and conservation easements that provide compensation to landowners providing ecosystem services and seek funding mechanisms.	Not acted upon to date
HIGHER REGULATORY STANDARDS (9-11)	8	420 520 Retain lands that preserve floodplain storage which maintain and/or restore connection of river with floodplain through land acquisition, conservation easements, local open space programs, TDR and PDR Programs, and other protection methods. Pursue protection of additional acreage in flood prone areas (See UNCE 2015, Floodplain Protection Inventory for the Carson River)	Lyon County's Comprehensive Master Plan places high priority on moving development density out of the floodplain; incentive programs proposed for new development code.
	HIGHER REGULATORY STANDARDS (9-11)		
	9	430 Periodically review county ordinances that include floodplain protection as a purpose, account for the loss of floodplain storage volume, and mitigate losses through a variety of methods.	Lyon County updated its floodplain ordinances to reduce flood risk in 2019. The county also includes Area Drainage Master Plans in its Hazard Mitigation Plans.
HIGHER REGULATORY STANDARDS (9-11)	10	430 Investigate, promote, and implement of additional flood protection measures that go beyond minimum FEMA requirements, such as improving community rating system.	Topic has been discussed at length in CRC meetings and Lyon County has 1ft. above BFE requirement. As part of Discovery, Lyon County identified multiple projects which are beyond FEMA requirements.
	11	430 Development and adoption of consistent floodplain management ordinance language and consistent use of hydraulic model of Carson River system.	Lyon County updated its floodplain ordinances to reduce flood risk in 2019. The county also includes Area Drainage Master Plans in its Hazard Mitigation Plans.
FLOOD DATA INFORMATION AND MAINTENANCE (12-21)			
FLOOD DATA INFORMATION AND MAINTENANCE (12-21)	12	410 440 Establish and adopt funding source, and protocol / procedures to consistently update watershed-wide unsteady state modeling to identify flood water storage requirements and to look at the cumulative effects of watershed development.	Using FEMA grant funds through CWSD, Lyon County completed unsteady state model and created draft protocol for updating said model when the Physical Map Revision of the Carson River was completed in 2016.
	13	440 Support FEMA's Map Modernization Program and encourage FEMA to update FIRMs with current and future conditions. Significant verification of topography and other variables should be conducted prior to release of draft FIRMs.	Physical Map Revision became effective 10-2016.
	14	Participate in FEMA's Cooperating Technical Partner Program.	CWSD continues to be a CTP and works with Lyon County to identify projects in the Carson River Watershed which may be of assistance to the county.
	15	410 440 Collect and Maintain up-to-date and consistent data collection which includes updating flood studies as needed and conducting new studies for significant water courses and alluvial fan areas. This data should be used to update FEMA maps and/or fill local data gaps. Complete delineation of the floodway throughout river system and incorporate into FIRMs.	Physical Map Revision became effective 10-2016. Through CRC process, county is working to identify alluvial fans. County received funding to conduct Area Drainage Master Plan in the Dayton Valley area to mitigate flood hazards and implement a plan to avoid flood hazards.
	16	410 440 Update flood studies and maps after significant flooding events.	In January and February 2017, Lyon County experienced flooding which were federally declared disasters. Flood damage affected the Carson River and alluvial fan drainages in Lyon County.
	17	410 440 Update and Maintain Elevation Reference Marks (ERM) should be as permanent monuments using NAVD88 Datum which matches base flood elevations on FEMA FIRMs.	The need for more ERMs was affirmed in the Discovery process. Lyon County ERM are in NAVD 88 datum.
	18	410 440 Develop and maintain master list of ERMs provide-to interested parties.	The need for more ERMs was affirmed in the Discovery process.
	FLOOD DATA INFORMATION AND MAINTENANCE (12-21)		
FLOOD DATA INFORMATION AND MAINTENANCE (19-21)	19	350 410 440 Develop and coordinate photo-monitoring program (on-the-ground and aerial) on a watershed level to consistently document flooding and flood hazards.	The need for consistent photo-monitoring discussed in CRC River & Floodplain Working group meetings. A systematic plan to track flood events at specific sites needs to be created and implemented.
	20	350 410 440 Establish and maintain rain gage data network in each local jurisdiction.	Not acted upon to date
	21	Evaluate potential impacts due to climate variability which could include changing storm patterns, rainfall amounts, and snow levels, adding uncertainty to future conditions.	Not acted upon to date
CHANNEL MIGRATION AND BANK EROSION MONITORING (22-29)			
CHANNEL MIGRATION AND BANK EROSION MONITORING (22-29)	22	410 Document/map and update known and projected hazard areas including channel migration hazards and incorporated into planning processes.	Topic discussed in CRC meetings. Through Lyon County's 2018 update to their Multi-jurisdictional Hazard Mitigation Plan, new mitigation actions were added to the plan specifically for addressing low points along river banks at critical areas along the Carson River.
	23	440 Conduct LIDAR and/or aerial photography (on a watershed level) on a 5-year basis, or as needed, to provide updated information on channel movement and floodplain condition.	The latest survey of alluvial fan areas was conducted by USGS in Carson City, Lyon County, and Storey County in 2017.
	24	430 Conduct research and establish appropriate building set-backs in flood hazard areas to reduce severe hazards from channel migration.	Topic discussed in CRC meetings; also identified areas during 2018 Rapid Evaluation of Carson River (Plan Appendix C).
	25	410 440 Conduct and document channel cross-sectional surveys to track long term changes in river channel.	Surveys were done as part of PMR under contracts FEMA MAS-1, 2 and 3.
	26	410 440 Identify unstable stream banks and areas with high potential for erosion.	Topic discussed in CRC meetings; also identified areas during 2018 Rapid Evaluation of Carson River (Plan Appendix C).
	27	510 Promote the use of non-structural, bio-engineering (soft-engineering utilizing natural materials) techniques in river restoration projects in combination with other proven methods.	Bio-engineering techniques are being used on river restoration projects being accomplished by the Conservation District and their partners.
	28	440 510 Update the 1996 Fluvial Geomorphic Assessment and create a sediment transport model of the Carson River.	CWSD has identified FEMA Pre-Disaster Mitigation funding; USACE, and USBR Watershed grants as a possible source to update the 1996 Fluvial Geomorphic Assessment of the Carson River System. County would participate through CRC process to review and ground-truth its section of the river.
	29	440 510 Create a baseline study that informs management and project decisions regarding flood risks, damages, and ecosystem impacts.	Not acted upon to date
	FLOODPLAIN AND FLOOD HAZARD OUTREACH AND EDUCATION (30-34)		

2023 Lyon County Suggested Action Progress

FLOODPLAIN AND FLOOD HAZARD OUTREACH AND EDUCATION (30-34)	30	330	Continued implementation of watershed-wide outreach and education program about floodplain importance and flooding hazards.	This program was developed in 2014 and continues throughout the watershed. (See SA #31). Significant outreach and education has occurred. The County participates in Flood Awareness outreach efforts throughout the year.
	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.	NV Department of Water Resources leads FAW Working group which includes CWSD, Federal, State and Local Jurisdictions. Significant outreach and education has occurred. Flood Awareness planning and outreach efforts are ongoing.
	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.	Information posted on CWSD.org, Nevada Floods.org, National Weather Service - Reno; and County Websites and social media sites.
	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. Information is also posted on County Websites and social media sites.
	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 Events occur throughout the year at such events as Oodles of Noodles, CWSD school outreach program, and during outreach presentations about new flood studies. Also provide flood information at county offices, local businesses, community center.
REDUCE INFRASTRUCTURE IMPACTS (35-39)				
REDUCE INFRASTRUCTURE IMPACTS (35-39)	35	510 540	Investigate opportunities and implement actions when feasible to remove existing restrictions, such as berms or uncertified levees, to allow flood waters to access floodplain.	Topic discussed in CRC meetings but not acted on to date.
	36	510	Limit the use of future management measures such as dams, levees, and floodwalls.	Topic discussed in CRC meetings but not acted on to date.
	37	540	Design future bridges and roads to protect floodplain and accommodate rather than restrict river course changes, and minimize back up of flood water.	Topic discussed in CRC meetings but not acted on to date.
	38		Investigate opportunities to enhance grade control structures.	Topic discussed in CRC meetings but not acted on to date.
	39		Inventory, categorize, and house data regarding public and private drainage and flood control infrastructure in the Carson River Watershed.	Not acted upon to date
ALLUVIAL FAN HAZARD REDUCTION (40-43)				
ALLUVIAL FAN HAZARD REDUCTION (40-43)	40	440	Investigate extent of potential alluvial fan flood damage and include on maps.	Since 2018, several Area Drainage Master Plans (ADMPs) have identified and mapped existing flood damage on alluvial fan along the Highway 50 corridor in North Dayton, South Dayton, Stagecoach and North Silver Springs.
	41	440	Conduct Area Drainage Master Plans for alluvial fans which examines infrastructure, land use, sediment transport to identify & identify alternative to mitigate and/or reduce risk.	Since 2018, several Area Drainage Master Plans have provided base level engineering data along the Highway 50 corridor in North Dayton, South Dayton, Stagecoach and North Silver Springs. In Lyon County, these plans are adopted into the county's hazard mitigation plan. Several have been added to a flood hazard web viewer.
	42	440 530	Implement studies to inform and motivate land use planning & development which protects high risk areas, and/or allows flood waters and debris flows to safely move through fan flood zones;	The county considers data from ADMPs to inform and motivate land use planning in the Carson River Watershed.
	43		Define and implement means to protect existing open alluvial fans from development and where development exists, implement recommendations associated with SA#s 38-40 to limit further development and/or alleviate hazards in high risk areas.	Lyon County updated drainage guideline to further encompass ADMPs.
MINIMIZE STORMWATER IMPACTS (44-49)				
MINIMIZE STORMWATER IMPACTS (44-49)	44	450	Retain and infiltrate stormwater to reduce flood risk, capture groundwater and improve water quality.	New Suggested Action
	45	450	Plan for and mitigate cumulative effects of existing watershed urbanization, including stormwater runoff, to reduce flood	Topic is discussed in CRC meetings; and potential projects throughout the county have been discussed in the process of updating Discovery report. Dayton Valley ADMP will identify alluvial fan flooding as it relates to urbanization.
	46	450	Incorporate GI/LID methods to reduce stormwater flooding on site in all development and redevelopment proposals.	No requirements for LID in Lyon County; however, Lyon County will be considering adding LID language to their floodplain ordinance. Through CRC process, county worked with CWSD to create Low Impact Development in the Carson River Watershed. http://www.cwsd.org/wp-content/uploads/2015/07/2015-04-07-LID-Carson-Watershed.pdf
	47	450	Adopt model LID ordinances created for Watershed.	LID Ordinance being conducted through CWSD with 208 Funding.
	48	320 450	Utilize best management practices to reduce stormwater/ urban runoff and mitigate stormwater flooding.	Not acted upon to date
	49	320 450	Protect and buffer natural drainage ways (existing green infrastructure) from development to ensure historic and natural flows are maintained.	No update, new suggested action

2023 Storey County Suggested Action Progress

SA #	CRS	SUGGESTED ACTION	Storey County 2023 Update
PROTECT FLOODPLAIN NATURAL FUNCTION AND VALUE (1-8) - Refer also to Stewardship Plan Table 8.8			
PROTECT FLOODPLAIN NATURAL FUNCTION AND VALUE (1-8)	1	320 420 510 Maintain Living River approach to retain river system in a more natural state that allows the river to access its floodplain. Recognize that not all areas of the river system can be allowed to migrate freely due to special designation (i.e., Superfund area) and/or existing infrastructure.	The Regional Floodplain Management Plan was adopted by Storey County in 2018. The Living River approach is one of the main goals of the plan. The county continues to participate in the Carson River Coalition (CRC) stakeholder process.
	2	350 410 Develop, support and implement a good neighbor floodplain management policy that recognizes cumulative impacts and actions by one property owner can impact upstream, adjacent and downstream property owners.	The Regional Floodplain Management Plan was adopted by Storey County in 2018 which states a good neighbor floodplain management as one of its policies. .
	3	420 Investigate, identify, and implement areas where stream zone buffers would provide multi-objective benefits for river system and downstream communities.	Storey County has identified open space areas that meet multi-objective goals; refer to Suggested Action (SA) #6. The Carson River Mercury Superfund Site also constrains development in Storey County.
	4	310 410 530 Manage development in special flood hazard areas and other flood hazard areas (those known flood hazard areas not included on most current FIRMs) to provide public safety and protect the natural functions and benefits of floodplain lands.	Not applicable as Storey County does not have any mapped special flood hazard areas along the Carson River or Six-Mile Canyon creek..
	5	320 450 Promote and utilize best management practices as a means of protecting riparian habitat.	While Storey County lands are not adjacent to the Carson River, Storey County has worked with The Nature Conservancy to restore and maintain McCarren Ranch Preserve. This preserve encompasses 11 miles and over 800 acres along the Truckee River. This project demonstrates the County's work to utilize BMPs as a means of protecting riparian habitat.
	ECOSYSTEM SERVICES IMPORTANT to MAINTAINING LIVING RIVER APPROACH		
	6	350 420 Consider Floodplain and flood hazards ecosystem service objectives which preserve open floodplain lands when selecting acquisition targets and establishing management strategies for open spaces.	See response to SA #5 above.
	7	520 Identify and promote options for landowner incentive programs, such as floodplain leasing program and conservation easements that provide compensation to landowners providing ecosystem services and seek funding mechanisms.	N/A in Storey County
	8	420 520 Retain lands that preserve floodplain storage which maintain and/or restore connection of river with floodplain through land acquisition, conservation easements, local open space programs, TDR and PDR Programs, and other protection methods. Pursue protection of additional acreage in flood prone areas (See UNCE 2015, Floodplain Protection Inventory for the Carson River)	See response to SA #5 above.

2023 Storey County Suggested Action Progress

SA #	CRS	SUGGESTED ACTION	Storey County 2023 Update
HIGHER REGULATORY STANDARDS (9-11)			
HIGHER REGULATORY STANDARDS (9-11)	9	430 Periodically review county ordinances that include floodplain protection as a purpose, account for the loss of floodplain storage volume, and mitigate losses through a variety of methods.	Storey County did not opt to change ordinances. The floodplains are already developed. Storey included the community to weigh-in on the decision.
	10	430 Investigate, promote, and implement of additional flood protection measures that go beyond minimum FEMA requirements, such as improving community rating system.	Storey County did not opt to change ordinances. The floodplains are already developed. Storey included the community to weigh-in on the decision.
	11	430 Development and adoption of consistent floodplain management ordinance language and consistent use of hydraulic model of Carson River system.	Storey County did not opt to change ordinances. The floodplains are already developed. Storey included the community to weigh-in on the decision.
FLOOD DATA INFORMATION AND MAINTENANCE (12-21)			
FLOOD DATA INFORMATION AND MAINTENANCE (12-21)	12	410 Establish and adopt funding source, and protocol / procedures to consistently update watershed-wide unsteady state modeling to identify flood water storage requirements and to look at the cumulative effects of watershed development.	N/A; the Carson River does not flow through Storey County.
	13	440 Support FEMA's Map Modernization Program and encourage FEMA to update FIRMs with current and future conditions. Significant verification of topography and other variables should be conducted prior to release of draft FIRMs.	This element is ongoing with FEMA.
	14	Participate in FEMA's Cooperating Technical Partner Program.	CWSD continues to be a Cooperating Technical Partner & Counties provide input through CRC stakeholder process.
	15	410 Collect and Maintain up-to-date and consistent data collection which includes updating flood studies as needed and conducting new studies for significant water courses and alluvial fan areas. This data should be used to update FEMA maps and/or fill local data gaps. Complete delineation of the floodway throughout river system and incorporate into FIRMs.	Even though the Carson River does not flow through Storey County, up to date and consistent data collection provides accurate information for planning and hazard mitigation.
	16	410 Update flood studies and maps after significant flooding events.	Though not in the Carson River corridor, it is important to update ADMPs after flash floods. In 2017 Mark Twain Community in North Dayton Valley experienced flash flooding. In winter 2022-2023, there was exceptional low elevation snow. A rain on snow storm in March created unforeseen winter flooding which closed Six Mile Canyon for 2 days because debris flowed over the road.
	17	410 Update and Maintain Elevation Reference Marks (ERM) should be as permanent monuments using NAVD88 Datum which matches base flood elevations on FEMA FIRMs.	There is a need for updated ERM's. There is a chance that they are incorrect and need to be reaffirmed.
	18	410 Develop and maintain master list of ERMs provide-to interested parties.	The need for master list of ERMs was affirmed in the CRC process.

2023 Storey County Suggested Action Progress

SA #	CRS	SUGGESTED ACTION		Storey County 2023 Update
FLOOD DATA INFORMATION AND MAINTENANCE (12-21)				
FLOOD DATA INFORMATION AND MAINTENANCE (19-21)	19	350 410 440	Develop and coordinate photo-monitoring program (on-the-ground and aerial) on a watershed level to consistently document flooding and flood hazards.	Storey County does not currently have a photo-monitoring program or process for documenting floodning and flood hazards. However, crews that respond to such events are required to take pictures on the scene.
	20	350 410 440	Establish and maintain rain gage data network in each local jurisdiction.	N/A. Storey County does not curretnly maintain any rain gages. However, they would be helpful prediction tool in the steep topography of the Virginia City, Gold Hill and Six Mile Canyon. did express high intrest. Desired locations for rain gages include Mt. Davidsion, Six-mile, Mark Twain, Long Valley Creek, and Summit Street.
	21		Evaluate potential impacts due to climate variability which could include changing storm patterns, rainfall amounts, and snow levels, adding uncertainty to future conditions.	Storey County needs baseline data before it can determine if climate variability is impacting the county.
CHANNEL MIGRATION AND BANK EROSION MONITORING (22-29)				
CHANNEL MIGRATION AND BANK EROSION MONITORING (22-29)	22	410	Document/map and update known and projected hazard areas including channel migration hazards and incorporated into planning processes.	Even though the Carson River does not flow through Storey County, it is important to document channel migration and other flood hazards withn the county.
	23	440	Conduct LiDAR and/or aerial photography (on a watershed level) on a 5-year basis, or as needed, to provide updated information on channel movement and floodplain condition.	The USGS / FEMA LiDAR update provided up to date topography for its recent Area Drainage Master Plans.
	24	430	Conduct research and establish appropriate building set-backs in flood hazard areas to reduce severe hazards from channel migration.	Even though the Carson River does not flow through Storey County, set backs in flash flood channels could reduce flood hazards within the county.
	25	410 440	Conduct and document channel cross-sectional surveys to track long term changes in river channel.	Even though the Carson River does not flow through Storey County, it is important to conduct cross-sectional surveys to track lo9ng terms changes in flash flood channels.
	26	410 440	Identify unstable stream banks and areas with high potential for erosion.	Even though the Carson River does not flow through Storey County, it is important to identify unsteady stream banks and areas with high potential for erossion along ephemeral streams.
	27	510	Promote the use of non-structural, bio-engineering (soft-engineering utilizing natural materials) techniques in river restoration projects in combination with other proven methods.	The creek in Six - Mile canyon shares its space with the Highway from Virginia City to Dayton. The need to keep the highway open limits the use of non-structural and other soft engineering techniques for channel restoration in this area.
	28	440 510	Update the 1996 Fluvial Geomorphic Assessment and create a sediment transport model of the Carson River.	N/A in Storey County portion of the Carson River Watershed, as the Carson River does not flow through Storey County.
	29	440 510	Create a baseline study that informs management and project decisions regarding flood risks, damages, and ecosystem impacts.	N/A in Storey County portion of the Carson River Watershed, as the Carson River does not flow through Storey County.

2023 Storey County Suggested Action Progress

SA #	CRS	SUGGESTED ACTION	Storey County 2023 Update
FLOODPLAIN AND FLOOD HAZARD OUTREACH AND EDUCATION (30-34)			
FLOODPLAIN AND FLOOD HAZARD OUTREACH AND EDUCATION (30-34)	30	330	Continued implementastion of watershed-wide outreach and education program about floodplain importance and flooding hazards.
	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.
	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.
	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.
	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.
REDUCE INFRASTRUCTURE IMPACTS (35-39)			
REDUCE INFRASTRUCTURE IMPACTS (35-39)	35	510 540	Investigate opportunities and implement actions when feasible to remove existing restrictions, such as berms or uncertified levees, to allow flood waters to access floodplain.
	36	510	Limit the use of future management measures such as dams, levees, and floodwalls.
	37	540	Design future bridges and roads to protect floodplain and accommodate rather than restrict river course changes, and minimize back up of flood water.
	38		Investigate opportunities to enhance grade control structures.
	39		Inventory, categorize, and house data regarding public and private drainage and flood control infrastructure in the Carson River Watershed.

2023 Storey County Suggested Action Progress

SA #	CRS	SUGGESTED ACTION	Storey County 2023 Update
ALLUVIAL FAN HAZARD REDUCTION (40-43)			
ALLUVIAL FAN HAZARD REDUCTION (40-43)	40	440	Investigate extent of potential alluvial fan flood damage and include on maps.
	41	440	Conduct Area Drainage Master Plans for alluvial fans which examines infrastructure, land use, sediment transport to identify & identify alternative to mitigate and/or reduce risk.
	42	440 530	Implement studies to inform and motivate land use planning & development which protects high risk areas, and/or allows flood waters and debris flows to safely move through fan flood zones;
	43		Define and implement means to protect existing open alluvial fans from development and where development exists, implement recommendations associated with SA#'s 38-40 to limit further development and/or alleviate hazards in high risk areas.
MINIMIZE STORMWATER IMPACTS (44-49)			
MINIMIZE STORMWATER IMPACTS (44-49)	44	450	Retain and infiltrate stormwater to reduce flood risk, capture groundwater and improve water quality.
	45	450	Plan for and mitigate cumulative effects of existing watershed urbanization, including stormwater runoff, to reduce flood
	46	450	Incorporate GI/LID methods to reduce stormwater flooding on site in all development and redevelopment proposals.
	47	450	Adopt model LID ordinances created for Watershed.
	48	320 450	Utilize best management practices to reduce stormwater/ urban runoff and mitigate stormwater flooding.
	49	320 450	Protect and buffer natural drainage ways (existing green infrastructure) from development to ensure historic and natural flows are maintained.
			No update, new suggested action

APPENDIX F: CHARTER AND FEMA CTP AGREEMENT

Risk MAP Charter for the Carson River Watershed

Purpose:

Working in a close collaborative effort, Carson Water Subconservancy District (CWSD), FEMA Region IX (FEMA), U.S. Army Corps of Engineers (USACE), U.S. Geological Survey (USGS), U.S. Department of the Interior Bureau of Reclamation (USBR), State NFIP Coordinator, State Hazard Mitigation Office, and other partners (as listed on page 5) will identify, assess, communicate, and plan for flood risk within the Carson River Watershed (watershed), which includes portions of Alpine County in California and Douglas, Carson City, Storey, Lyon, and Churchill Counties in Nevada. The flood risk information provided can be used to enhance hazard mitigation plans, make informed decisions to improve resilience after flooding, protect the beneficial functions of floodplains, and raise awareness about local flood risks.

This charter:

- Details the long-term flood hazard mapping vision for the watershed;
- Describes the desired mapping, assessment, planning information, and planning products;
- Describes the assistance that CWSD and FEMA will provide;
- Summarizes local flooding concerns and indicates areas where floodplain changes are expected; and
- Describes the roles and responsibilities of the CWSD, FEMA, and other signatory partners.

Watershed Vision:

In 2008, all counties along the Carson River adopted the “Carson River Watershed Floodplain Management Plan” (FPM Plan) that describes the long-term goals and objectives for floodplain management. These goals are based on identification and mapping of floodplains to create a broad-based awareness of flood hazards and provide the data necessary to support community floodplain management programs. The mapping program will provide many benefits to watershed communities, property owners, and citizens. These include:

- Increased public awareness and action to reduce risk to life and property;
- Ability to build upon flood hazard data and maps produced during the Flood Map Modernization (Map Mod) program;
- Assess present and future risk;
- Address gaps in flood hazard data to form a solid foundation for risk assessment and floodplain management and provide entities with information needed to mitigate flood-related risk;
- Protection of the natural and beneficial function of drainage-ways and floodplains, including trail corridors, parks, recreational areas, wildlife habitat, flood storage, and groundwater recharge; and,
- Encouraging “Good Neighbor Policies” throughout all communities within the watershed.

Mapping and Assessment:

The watershed experiences flooding incidents on an average of every five years. Types of flood hazards include riverine and alluvial fan flooding and debris flows. Major flood events are typically the result of rain-on-snow events. Flood storage in the upper watershed is limited and available storage is not regulated. Therefore, flood flows are not actively managed and large flows can occur downstream. The watershed contains areas of open floodplains that are continually under threat of change and development. The FPM Plan calls for the protection of the natural function of these floodplains, especially lands within Carson Valley, which provide the bulk of the flood storage for the entire watershed.

Based on previous studies, information obtained during community public meetings for the development of the FPM Plan, and discovery meetings for mapping activity statements, a Five-Year Master Mapping Plan was developed for the watershed. The plan identifies the sequence of work to be performed in order to meet the goals and objectives for floodplain mapping and associated assessments and is consistent with the community goals described in the FPM Plan.

Regulatory Products:

FEMA will provide Alpine, Douglas, Carson City, Lyon, and Churchill Counties with the following updated regulatory products to support floodplain management and flood insurance administration.

- **Flood Insurance Study (FIS) Report:** The FIS describes the county's flood history and provides technical information on the study.
- **Flood Insurance Rate Map (FIRM):** The FIRM identifies the county's flood hazard zones, base flood elevations, and floodway boundaries. This map is also used to determine where flood insurance may be required.

Flood Risk Products:

CWSD and partners will work closely with FEMA to produce the products listed below which identify locations and causes of flood hazard changes and quantify the risks associated with those changes. This will allow Alpine, Douglas, Carson City, Lyon, and Churchill Counties to use these updated data and products to make informed hazard mitigation, land use and development, and emergency management decisions.

- **Changes Since Last Flood Insurance Rate Map (FIRM):** Changes since the last FIRM identify areas where the floodplain, floodway, and/or flood zone designations have changed since the previous flood study. Engineering factors that may have contributed to any changes will also be identified.
- **Areas of Mitigation Interest:** Areas of mitigation interest identifies areas where conditions may contribute to the severity of the flood hazard and associated losses. These include areas with a history of flood claims, hydraulic or other structures that contribute to backwater impacts, and areas experiencing land use change or development.

FEMA Resources to Support Flood Mitigation Actions:

FEMA encourages floodplain management activities that exceed minimum requirements through programs such as the Community Rating System (CRS). The watershed currently has two CRS communities, Douglas County and Carson City. FEMA also offers Hazard Mitigation Assistance grant programs that fund eligible mitigation activities which reduce disaster losses and protect life and property from future disaster damage. Information on these programs will be provided, along with other related State, Federal, and association resources throughout the project.

Communication and Coordination:

FEMA, CWSD, and partners will work together to establish a consistent flow of information about project status, timelines, and next steps. In addition to regular status reports, CWSD will coordinate with the counties, cities, and other entities in the watershed. CWSD will establish a Flood Mapping Project Management Team (PMT) that will meet on a regular basis to ensure that the goals of this charter are implemented in a coordinated manner. The PMT includes representatives from all counties, cities, Federal, State, and other governmental entities throughout the watershed. CWSD is also the coordinating entity for the Carson River Coalition (CRC), a large watershed-wide stakeholder group. The CRC will be provided opportunities to review and comment on mapping programs and the implementation of the living river concept as described in the adopted Carson River Watershed Regional Floodplain Management Plan.

FEMA will work with Alpine, Douglas, Carson City, Lyon, and Churchill Counties to enhance their ability to communicate flood hazards and associated risk to people who live and work within the watershed.

Specific meetings for each phase of mapping include:

- **PMT Meetings:** These meetings will focus on setting project expectations, roles and responsibilities of the PMT, and on validating and gathering data.
- **Community Coordination Officer (CCO) Meeting/Open House:** Local officials will be provided with FIS and FIRM information and requirements for map adoption. Meetings will be closely followed by open house meetings where FEMA, CWSD, and local community officials will present project results to local citizens and explain the impact that the results will have on development, planning, and flood insurance.
- **Flood Study Review Meeting:** Local officials, State, Federal, Tribal, and non-governmental entities will be provided the opportunity to view and comment on drafts of the engineering analyses and flood risk data. This meeting may also include highlights of hazard mitigation planning and implementation of best management practices to reduce flood hazards in the watershed.

Roles and Responsibilities:

This Risk MAP Charter represents a good-faith effort by all parties to share data, communicate findings, and plan mitigation activities to protect the communities within the watershed from flood risk. It is not legally binding nor does it preclude a community from participating in the FIRM appeal process. The parties listed in the signature block

Risk MAP Charter for the Carson River Watershed

below agree to collaborate on flood hazard identification activities, risk analysis products, and will consult with each other to integrate contributions into flood hazard identification efforts. It is intended to provide a common “Good Neighbor” strategy to address flood hazards and increase resilience within the watershed.

FEMA and CWSD will provide local officials with regular updates on project status, the data and products described above, and outreach guidance to include local awareness of flood risk. These efforts will better enable local communities to take action to reduce risk, through the adoption of the maps, development or enhancement of mitigation plans, and increased communication with citizens to inform them of their risk and the steps that they can take to mitigate that risk.

Alpine, Douglas, Carson City, Lyon, and Churchill Counties, and other entities will provide input and updates throughout the study process to verify data and ensure that the information accurately represents their communities.

CWSD, FEMA, and local officials agree to communicate as needed over the course of each project outlined in the mapping program to review project milestones, outcomes, and impacts. CWSD and the PMT will meet at least twice a year to discuss, plan, and coordinate all mapping program projects.

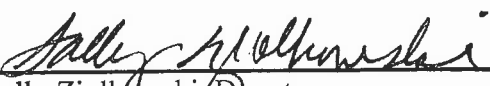
If for any reason an entity who is a signatory to this document wishes to withdraw their participation from the Risk MAP Charter, they may do so at any time by submitting a written request to CWSD.

Risk MAP Charter for the Carson River Watershed

We, the undersigned, agree to work together to implement this Risk MAP Charter for the Carson River Watershed to the best of our abilities and within our legal authorities and delegations.



Chuck Roberts, Chairman
Carson Water Subconservancy District
Date Signed: 2/23/12



Sally Ziolkowski, Director
FEMA Region IX Mitigation Division
Date Signed: 2/13/2012



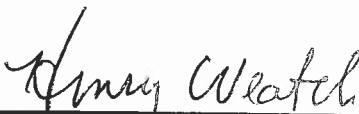
Alicia Kirchner, Chief
USACE Sacramento District,
Planning Division
Date Signed: 3-15-12



~~Kim Davis, NRE Coordinator~~ Jason King, State
Nevada Division of Water Resources Engineer
Date Signed: 12/23/12



Elizabeth Ashby
Nevada Department of Public Safety
State Hazard Mitigation Office
Date Signed: 23 Feb 2012



Henry Skip Veatch, Chairman
Board of Supervisors
Alpine County, California
Date Signed: 2/21/2012



Lee Bonner, Chairman
Board of Commissioners
Douglas County, Nevada
Date Signed: 3/9/12



Bob Crowell, Mayor
Carson City, Nevada
Date Signed: 2/14/2012



Chuck Roberts, Chairman
Board of Commissioners
Lyon County, Nevada
Date Signed: 2/23/12



Norman Frey, Chairman
Board of Commissioners
Churchill County, Nevada
Date Signed: February 15, 2012

Risk MAP Charter for the Carson River Watershed



Kenneth Parr, Area Manager

U.S. Bureau of Reclamation

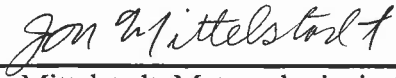
Lahontan Regional Office

Date Signed: 04/16/12



Ernest Schank, President of the Board of
Directors, Truckee-Carson Irrigation
District

Date Signed: 4/11/2012



Jon Mittelstadt, Meteorologist in Charge

National Oceanic & Atmospheric

Administration

National Weather Service - Reno, NV

Date Signed: 4-26-2012

Alpine, Douglas, Carson City, Lyon, Storey, and Churchill Counties, and other entities will provide input and updates throughout the study process to verify data and ensure that the information accurately represents their communities.

CWSD, FEMA, and local officials agree to communicate as needed over the course of each project outlined in the mapping program to review project milestones, outcomes, and impacts. CWSD and the PMT will meet at least twice a year to discuss, plan, and coordinate all mapping program projects.

If for any reason an entity who is signatory to this document wishes to withdraw their participation from the Risk MAP Charter, they may do so at any time by submitting a written request to CWSD.

We, the undersigned, agree to work together to implement this Risk MAP Charter for the Carson River Watershed to the best of our abilities and within our legal authorities and delegations.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be signed and intend to be legally bound thereby.

STOREY COUNTY



Marshall McBride, Chairman
Storey County Board of County Commissioners

10-4-16

Date

ATTEST:



Vanessa Stephens, Clerk-Treasurer

**Cooperating Technical Partners
Memorandum of Agreement**



**FEDERAL EMERGENCY MANAGEMENT AGENCY
and the
CARSON WATER SUBCONSERVANCY DISTRICT, NEVADA**

AGREEMENT is made on (date) June 6, 2005, by these parties: Carson Water Subconservancy District and the Federal Emergency Management Agency (FEMA).

BECAUSE the National Flood Insurance Program (NFIP) established by the National Flood Insurance Act of 1968 has several purposes, the most significant being

- To better indemnify individuals from losses through the availability of flood insurance;
- To reduce future flood damages through community floodplain management regulations; and
- To reduce costs for disaster assistance and flood control.

BECAUSE a critical component of this program is the identification and mapping of the nation's floodplains to create a broad-based awareness of the flood hazard and to provide the data necessary for community floodplain management programs and to actuarially rate flood insurance;

BECAUSE the Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program (NFIP) and is authorized by §1360 of the National Flood Insurance Act of 1968, as amended (42 U.S.C. 4101), to establish and update flood-risk zone data in floodplain areas. Further, in the identification of flood-prone areas, FEMA is authorized to consult with, receive information from, and enter into agreements or other arrangements with the head of any State, regional, or local agency;

BECAUSE FEMA encourages strong Federal, State, regional, and local partnerships for the purposes of reducing flood losses and disaster assistance; and FEMA and its State, regional, and local partners have determined that it is advantageous to encourage and formalize greater cooperation in the flood hazard identification and mapping processes; and many communities and the agencies that serve them have developed considerable technical capabilities and resources that provide the opportunity to improve and expand the collection, development, and evaluation of flood hazard data; and

BECAUSE the Carson Water Subconservancy District has expressed a desire to perform certain functions in the flood hazard identification process and has provided evidence that it has sufficient technical capability and will dedicate the resources necessary to perform those functions.

NOW THEREFORE, it is mutually agreed that the parties enter into this agreement to work together to create and maintain accurate, up-to-date flood hazard data for the counties of Douglas, Carson City, Churchill and Lyon, Nevada and Alpine, California, subject to the terms and conditions recited below.

1. CONSULTATIONS

The parties shall collaborate on flood hazard identification activities and shall consult with each other to fully integrate each other's contributions into flood hazard identification efforts.

2. EVALUATION AND REPORTING

The parties shall annually review the partnership created by the agreement to determine and document the activities undertaken to maintain accurate flood hazard data.

3. RESOURCE COMMITMENT

The parties agree to commit the appropriate human, technical, and available financial resources sufficient to coordinate effectively with all entities impacted by flood hazard identification efforts to implement this agreement.

4. STANDARDS

Unless otherwise agreed to by the parties, all flood hazard identification activities will be accomplished in accordance with the standards documented in *Guidelines and Specifications for Flood Hazard Mapping Partners*, dated April 2003, and all subsequent revisions.

5. SPECIFIC INITIATIVES

When specific initiatives, projects, or activities are to be performed, they will be forward through and negotiated by the Carson Water Subconservancy District and shall be attached as negotiated Mapping Activity Statement (MAS) items. For this Memorandum of Agreement to go into effect, no MAS items are required.

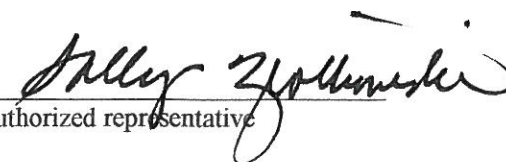
6. TERM

The respective duties, responsibilities and commitments of the parties in this agreement shall begin on the date this Agreement is signed by the parties and may be periodically renewed, revised, or terminated at the option of any of the parties. The parties agree that a 60-day notice shall be given prior to the termination of this agreement.

THEREFORE, each party has caused this Agreement to be executed by its duly authorized representatives on the date mentioned above.


Carson Water Subconservancy, Authorized Representative*

4/21/2005
Date


FEMA authorized representative

06/06/05
Date

* The Carson Water Subconservancy District is composed of the following entities:

Carson City, Nevada
Churchill County, Nevada
Douglas County, Nevada
Lyon County, Nevada
Alpine County, California

APPENDIX G: CARSON RIVER FLOODPLAIN MANAGEMENT PLAN ADOPTION DOCUMENTS



**COUNTY OF ALPINE
Board of Supervisors**

MINUTE ORDER 2025-11

**BOARD OF SUPERVISORS
COUNTY OF ALPINE**

TO: Deborah Neddenriep, Carson Water Subconservancy District
FROM: Alpine County Board of Supervisors
RE: Action on July 15, 2025; Action Item 10.1

- 10.1. Presentation by Carson Water Sub Conservancy District regarding the 2025 Carson River Floodplain Management Plan (CRFMP) and request to adopt the 2025 update to the Carson River Floodplain Management Plan-Community Development Director**

At the regular meeting of the **ALPINE COUNTY BOARD OF SUPERVISORS** held on July 15, 2025, it was:

MOTION Evan Mecak / SECONDED David Griffith adopting the 2025 to the Carson River Floodplain Management Plan.

**AYES: Charles Dobson, Irvin Jim, Terry Woodrow, David Griffith, Evan Mecak;
MOTION PASSED.**

DATED: Aug. 8, 2025



TEOLA L. TREMAYNE
Alpine County Clerk and ex officio Clerk of
the Board of Supervisors



Churchill County Agenda Report

Date Submitted: May 29, 2025

Agenda Item #: Appointments - C

Meeting Date Requested: July 16, 2025

To: Board of County Commissioners
From: Debbie Neddenriep, Water Resource Specialist 2
Subject Title: Consideration and possible action re: Adoption of the 2025 update to the Carson River Floodplain Management Plan.

Type of Action Requested: Adopt

Does this action require a Business Impact Statement? No

Findings of Fact Motion: N/A

Recommend Board Action: motion to re-adopt the Carson River Floodplain Management Plan with 2025 update.

Discussion: Ed James, General Manager for CWSD, will present the 2025 Carson River Floodplain Management Plan (CRFMP) for county adoption. Previous iterations were adopted by Churchill County in 2008, 2013, and 2018. The presentation will describe the plan goals, objectives, and strategic actions. The update was multi-year process that included several meetings with various floodplain administrators in the watershed and other interested stakeholders, interviews of county staff and other stakeholders like Nevada Division of Water Resources (NDWR). Comments were solicited and incorporated into the final plan.. Below is a link to the full draft report:

[2025 Carson River Floodplain Management Plan](#)

Due to the size of appendices, it is provided on a separate link:

[2025 Carson River Floodplain Management Plan Appendices](#)

For your convenience a summary of the main report should be included with the Board package. At the Board meeting, staff will go over the plan. Below is a summary of some of the changes to the plan.

- a. Significantly updated document formatting. Edited plan for accuracy and reading ease.
- b. Updated and added to Table of Contents, tables, figures, and abbreviations.
- c. Sections 3.1.2. and 4.8 - Expanded Stormwater section to include LID solutions.
- d. Added NEW Section (Section 5 – Pathways to Overcome Barriers to Mitigation)
- e. County Suggested Actions (SA's) were cleaned up and stormwater SA's were re-worded.

The submission of this agenda report by county officials is not intended, necessarily, to reflect agreement as to a particular course of action to be taken by the board; rather, the submission hereof is intended, merely, to signify completion of all appropriate review processes in readiness of the matter for consideration and action by the board.

CARSON CITY BOARD OF SUPERVISORS

Minutes of the July 17, 2025 Meeting

Page 7

17. SHERIFF

17.a FOR DISCUSSION ONLY: PRESENTATION OF A BIENNIAL REPORT ON CARSON CITY JAIL CONDITIONS AND INFORMATION CONCERNING DEATHS OF PRISONERS WITHIN THE JAIL.

(9:37:01) – Mayor Bagwell introduced the item. Undersheriff Jarome Tushbant and Lieutenant Matthew Smith gave background, and Lieutenant Smith reviewed the Staff Report and the accompanying State of the Jail presentation, noting that no deaths had occurred at the jail in the past six months. Both also responded to clarifying questions. Supervisor White inquired about detox situations, and Lieutenant Smith explained that detoxification from Fentanyl had been one of their most frequent issues, adding that those inmates are immediately referred to the medical staff or the hospital. Supervisor Schuette specifically highlighted and praised the efforts of the Family Services Unit. This item was not agendaized for action.

18. PUBLIC WORKS

18.a FOR POSSIBLE ACTION: DISCUSSION AND POSSIBLE ACTION REGARDING A PROPOSED RESOLUTION ADOPTING THE CARSON RIVER WATERSHED REGIONAL FLOODPLAIN MANAGEMENT PLAN 2025 UPDATE (“PLAN”).

(9:54:04) – Mayor Bagwell introduced the item. Ed James, General Manager of the Carson Water Subconservancy District (CWSD), reviewed the Carson River Watershed Regional Floodplain Management Plan’s 2025 update, which is incorporated into the record, including the Plan goals, objectives, and strategic actions. The Supervisors thanked Mr. James, and Mayor Bagwell entertained public comments; however, none were forthcoming. She then entertained a motion.

(10:07:29) – Supervisor Schuette moved to adopt Resolution No. 2025-R-20. Supervisor Giomi seconded the motion.

RESULT:	APPROVED (5-0-0)
MOVER:	Supervisor Schuette
SECONDER:	Supervisor Giomi
AYES:	Supervisors Giomi, Horton, Schuette, White, and Mayor Bagwell
NAYS:	None
ABSTENTIONS:	None
ABSENT:	None

(10:08:38) – Mayor Bagwell recessed the meeting.

(10:14:58) – Mayor Bagwell reconvened the meeting. A quorum was still present.

19. COMMUNITY DEVELOPMENT



Churchill County Agenda Report

- i. Added an additional SA (#49): “Protect and buffer natural drainage ways (existing green infrastructure) from development to ensure historic and natural flows are maintained.”

Appendices substantially modified include:

Appendix A Floodplain Management Plan Update/Revision Process and Meeting Notes

Appendix C ONLY Appendix E of 2018 Risk MAP Discovery was updated. This section updates future data needs.

Appendix D Updated and added CWSD Project Report Links, FEMA County Flood Insurance Rate Maps (FIRMs) Links

Appendix E Updated County Progress on Suggested Actions (2023)

Appendix G Adoption of CRFMP – these documents will be added after county adoption.

Appendices that received no modification:

Appendix B Rapid Evaluation

Community Rating System (CRS) Addendum: A CRS crosswalk will be created for this plan and incorporated as an addendum to this document. CWSD is currently waiting to make this CRS crosswalk as there have been significant changes proposed to the rating system. This document is intended to assist CRS communities document floodplain management plan credits.

The revised CRFMP was adopted by the CWSD Board, so Staff is taking this plan to watershed counties for their possible adoption of 2025 Regional Floodplain Management Plan.

Recommended Conditions: Explanation of Impact: This plan is intended to be a guideline to managing the Carson River Floodplain. Suggested actions have been provided and shaped by all stakeholders in the Carson River watershed. Previously all counties located in the Carson River watershed had adopted the CRFMP 2018 version.

Alternatives: No action.

Prepared By: Diane Moyle, Administrative Assistant

Reviewed By:

Christian Spross, County Manager

Date: July 08, 2025

The submission of this agenda report by county officials is not intended, necessarily, to reflect agreement as to a particular course of action to be taken by the board; rather, the submission hereof is intended, merely, to signify completion of all appropriate review processes in readiness of the matter for consideration and action by the board.



Churchill County Agenda Report



Joseph Sanford, Deputy District Attorney

Date: July 10, 2025



Sherry Wideman, Comptroller

Date: July 10, 2025

Board Action Taken:

Motion: Approve _____

1)	<u>Eric Blakey</u>	<u>Aye: 2</u>
2)	<u>Myles Getto</u>	<u>Nay: 0</u>



(Vote Recorded By)

The submission of this agenda report by county officials is not intended, necessarily, to reflect agreement as to a particular course of action to be taken by the board; rather, the submission hereof is intended, merely, to signify completion of all appropriate review processes in readiness of the matter for consideration and action by the board.

RESOLUTION NO. 2025R-076

A RESOLUTION TO ADOPT THE CARSON RIVER WATERSHED REGIONAL
FLOODPLAIN MANAGEMENT PLAN SUPPLEMENTAL UPDATE

WHEREAS, the Carson River flows through Douglas County and is a valuable natural resource;
and

WHEREAS, Douglas County recognizes that flooding has and will continue to cause economic
losses and threats to human life and health throughout the entire Carson River Watershed; and

WHEREAS, allowing the Carson River to access its floodplain provides public safety, slows
flood waters, reduces peak flows, provides recharge to groundwater basins, and protects wildlife
habitat; and

WHEREAS, a regional approach to floodplain management benefits Douglas County and all
other communities in the Carson River Watershed; and

WHEREAS, the Carson River Watershed Regional Floodplain Management Plan Supplemental
Update provides a variety of strategies for floodplain management and protection of floodplain
function.

NOW, THEREFORE, the Board of County Commissioners hereby resolves to adopt the 2025
Carson River Watershed Regional Floodplain Management Plan Supplemental Update and will
strive to work cooperatively with the Carson Water Subconservancy District and other
organizations and communities to continue to implement the suggested actions presented in the
Plan.

ADOPTED this 21st day of August, 2025 by the following vote:

VOTE:

Ayes Commissioners:

Gardner

Tolbert

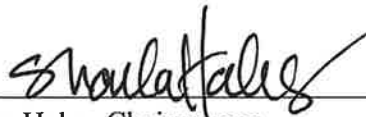
Hales

Rice

Tarkanian

Nays Commissioners:

Absent Commissioners:



Sharla Hales, Chairwoman

Douglas County Board of Commissioners

ATTEST:



Amy Burgans

Douglas County Clerk-Treasurer

Mechanical Code, 2024 Uniform Plumbing Code, 2024 Northern Nevada ICC Amendments and 2024 Lyon County Amendments effective January 1, 2026; and other matters properly related thereto.

Community Development Director Gavin Henderson and the Commissioners reviewed the changes proposed in the ordinance that were discussed previously. The changes are as follows;

15.239.02: AMENDMENTS; ADMINISTRATIVE AND TECHNICAL:

G. Table R301.2 shall be amended to set the minimum frost line depth at 18 inches for elevations less than 5,000 feet and 24 inches for elevations greater than or equal to 5,000 feet.

15.239.02: AMENDMENTS; ADMINISTRATIVE AND TECHNICAL:

A. Section E3901.4.2 of the Residential Code and section 210.52 (2) of the 2023 National Electric Code shall be amended to require the installation of receptacle outlets at all island ~~and peninsular~~ countertops in accordance with adopted electrical safety standards. The use of future wiring provisions as a substitute for required receptacles shall be prohibited.

XXX. E3901.4.2 shall be amended so receptacle outlets shall not be required within peninsular countertops measuring less than six (6) feet in length, as measured from the connecting wall to the outer edge of the countertop. Where this exception applies, future wiring provisions, such as capped conductors, conduit stubs, or unused outlet boxes intended for future receptacles in the peninsular section, are expressly prohibited.

Chairman Keller asked for public comment and there was none.

Comm. Hockaday moved to approve an ordinance amending Lyon County Code Title 15, Chapter 239, Section 1, Section 2, and Section 5, thereby adopting the 2024 ICC Building codes, 2023 National Electric Code, 2024 Uniform Mechanical Code, 2024 Uniform Plumbing Code, 2024 Northern Nevada ICC Amendments and 2024 Lyon County Amendments effective January 1, 2026; and other matters properly related thereto as presented and recommended today, Comm. Hendrix seconded and the motion passed 5-0.

7.d. Time Certain for 9:45 AM: For Possible Action: To adopt the 2025 Carson River Floodplain Management Plan as a planning-level document to guide floodplain management, watershed coordination, and regional implementation efforts within the Carson River Watershed.

Lindsey Marsh from the Carson Water Subconservancy District gave a presentation discussing the Carson River Floodplain Management with details including the purpose of the plan, the history of the plan, the counties who have adopted the plan, what the plan provides, the Carson River Coalition main message and the flood hazard mitigation strategies.

Chairman Keller asked for public comment and there was none.

Comm. Hendrix moved to adopt the 2025 Carson River Floodplain Management Plan as a planning-level document to guide floodplain management, watershed coordination, and regional implementation efforts within the Carson River Watershed, Comm. Cassinelli seconded and the motion passed 5-0.

8. Commissioners/County Manager Reports



STOREY COUNTY BOARD OF COUNTY COMMISSIONERS MEETING

7 /1/2025 10:00 AM

26 SOUTH B STREET, VIRGINIA CITY, NV

MEETING MINUTES

JAY CARMONA
CHAIRMAN

CLAY MITCHELL
VICE-CHAIRMAN

DONALD GILMAN
COMMISSIONER

ANNE LANGER
DISTRICT ATTORNEY

JIM HINDLE
CLERK & TREASURER

Roll Call

Commissioners Carmona, Gilman, and Mitchel present – quorum established.

Total Attendance: 39

1. CALL TO ORDER CLOSED SESSION MEETING COMMENCING AT 9:15 A.M.

Call to Order Closed Session meeting pursuant to NRS 288.220 for the purpose of conferring with county management and legal counsel regarding labor negotiations with the Storey County Employees' Association Comstock Chapter, AFSCME Local 4041. This meeting will begin at 9:15 a.m. immediately before the general meeting of the Board of Storey County Commissioners.

3. CALL TO ORDER REGULAR MEETING AT 10:00 A.M.

Commission Chairman Carmona called the meeting to order at 10:00 a.m.

4. CONVENE AS THE STOREY COUNTY BOARD OF COUNTY COMMISSIONERS

5. PLEDGE OF ALLEGIANCE

6. PUBLIC COMMENT (No Action): None

7. DISCUSSION/FOR POSSIBLE ACTION: Consideration and possible approval of the agenda for the July 1, 2025, meeting.

9. BOARD COMMENT (No Action - No Public Comment)

- Commissioner Carmona said county resident Patricia Favre passed away.

10. DISCUSSION ONLY: Presentation by Milt Stewart, Chief Executive Officer, NevadaWorks, on workforce development programs and regional impact.

Business Development Director Lara Mather introduced Milt Stewart, CEO of NevadaWorks.

Mr. Stewart said NevadaWorks is the designated Workforce Development Board for Northern Nevada and oversees funding and coordination of job training initiatives to support both job seekers and employers. It has a board, and a council and staff implement decisions of the board.

He said they are involved in skills training designed to meet the needs of employers. They serve both employees and employers and have hubs where employees can find resources, work with other agencies and search for jobs. They can train and upscale for jobs and assist employers in matching applicants with jobs.

He described how they use data, how they work with residents and employers, and listed the number of people who have been helped.

He said there is a tech hub to bring employees up to speed on the necessary technology, specifically to aid young workers, and they are partnering with UNR on technology aptitude development.

He said there are about 25,000 jobs and the same number of applicants, but they don't match in training and skills. They have worked with TMCC and WNC to provide training.

Public Comment: None

11. DISCUSSION/FOR POSSIBLE ACTION: Ed James, General Manager for CWSD, will present the 2025 Carson River Floodplain Management Plan (CRFMP) for county adoption. Previous iterations were adopted by Churchill County in 2008, 2013, and 2018. The presentation will describe the plan goals, objectives, and strategic actions. The update was a multi-year process that included several meetings with various floodplain administrators in the watershed and other interested stakeholders, interviews of county staff and other stakeholders like Nevada Division of Water Resources (NDWR). Comments were solicited and incorporated into the final plan. See link to Plan and Appendices. See <https://www.cwsd.org/floodplainmanagement/> to view plan.

Carson Water Subconservancy District Director Ed James said the flood plain management plan is to reduce flood risks. In 1997 there was a major flood on the Carson River, so they

formed a coalition to deal with water issues. They worked with government, agencies, business and residents.

He said in 2008 the organization primarily focused on the river, but now they are focusing on the flood plain as well. It is a bigger issue because of development. Had we planned 40-50 years ago, we would not have the flooding we have today. When you build in an alluvial fan and we block the natural flow patterns with development, we see more flooding with more damage.

This plan developed with Storey County is a guideline and it gives a broad view of how flooding impacts the watershed.

Mr. James reviewed the plans 8 strategies and recommended 49 actions. He showed photos of storm damage. Flash floods and river flooding are both problems for the area.

Public Comment: None

Motion: I, Commissioner Mitchell, move to re-adopt the Carson River Floodplain Management Plan with 2025 update. **Seconded by:** Donald Gilman. **Vote:** Motion passed unanimously.

12. DISCUSSION/FOR POSSIBLE ACTION: Consideration and possible approval of modification and extension of Collective Bargaining Agreement Between Storey County (Employer) and the Storey County Employees Association AFSCME Local 4041 Comstock Chapter (Union).

Human Resources Director Brandie Lopez said recent negotiations went smoothly, and updates involve COLA increases of 1.625 percent in the first year, 2 percent in the second year and 3 percent in the third year.

Public Comment: None

Motion: In accordance with the recommendation by staff and the tentative agreement between Storey County (Employer) and the Storey County Employees Association AFSCME Local 4041 Comstock Chapter (Union), I, Commissioner Mitchell, hereby move to approve the 2025-2028 Collective Bargaining Agreement between the parties. **Seconded by:** Donald Gilman. **Vote:** Motion passed unanimously.

13. DISCUSSION/FOR POSSIBLE ACTION: Consideration and Possible Approval of a Memorandum of Understanding (MOU) Amending Article 7 (Compensation Practices) of the Collective Bargaining Agreement Between Storey County and the Storey County Sheriff's