

**ANNUAL REPORT
(Period of July 1, 2012 to June 30, 2013)**

On Activities Associated With the
**Carson River Watershed
REGIONAL FLOODPLAIN MANAGEMENT PLAN**

Submitted for:

**DOUGLAS COUNTY
and
CARSON CITY
and
STOREY COUNTY**

Prepared by:

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1.0 Background

In 2008, five counties along the Carson River adopted a Regional Floodplain Management Plan (Regional Plan) that would provide consistency in planning efforts, programs and projects, help protect community members from flooding hazards, and conserve floodplain lands. This plan was formally adopted by Douglas, Carson City, Lyon, and Churchill Counties in Nevada, and Alpine County in California. Although a small portion of Storey County is within the Carson River Watershed, they have not formally adopted the Regional Floodplain Management Plan.

Of these counties, Carson City, Douglas and Storey County participate in the Community Rating System (CRS) program.

The purpose of the plan is to create long-term vision and strategies for floodplain management to reduce flood damage impacts. The plan objectives include the following:

- Manage economic development without sacrificing floodplain and river form and function;
- Ensure public safety upstream and downstream;
- Protect property rights while conserving natural resources;
- Protect and improve wildlife habitat and water quality;
- Provide and maintain river continuity and connection of the river to its floodplain;
- Promote conservation of lands within the river corridor.

Responsible parties have been identified for implementation of the plan, and existing or potential funding sources have also been identified.

2.0 Activities Conducted for this Reporting Period

This report details work initiated and/or completed through the Carson Water Subconservancy District (CWSD) and/or the programs administered through CWSD in relation to the Regional Plan.

2.1 Stakeholder Involvement

Several stakeholder groups provide watershed level input and assistance in the implementation of the Regional Plan.

2.1.a Carson River Coalition Meetings

The Carson River Coalition (CRC) is a bi-state, multi-county stakeholder group, hosted by the Carson Water Subconservancy District (CWSD) and funded by CWSD and the Nevada Division of Environmental Protection (NDEP). All counties within the watershed, as well as many other local, state and federal entities, private citizens and non-governmental agencies participate in the CRC and working groups. The meetings are open to the public and information about meetings is available at www.cwsd.org.

The main CRC met on May 13, 2013. Stakeholders provided updates on floodplain management issues. Meeting notes are available on CWSD's website at www.cwsd.org.

2.1.b River Corridor/Floodplain Management Working Group –The River Corridor/Floodplain Management Working Group is a sub-committee of the CRC with a focus on regional floodplain management issues. Meeting dates during this reporting period include:

8/22/12	11/15/12	1/09/13	4/30/13
5/28/13			

For this reporting period, the group has mainly focused on completion of several of the suggested actions within the Regional Plan and the 2013 Plan Update. The group continued review of the FEMA-funded Lyon, Carson City and Douglas Counties Floodplain Modeling and Mapping Project. See Section 3.3 for additional discussion.

2.1.c Federal Emergency Management Agency (FEMA) Risk MAP Charter 2011/2012 (Charter)

The Charter, the first to be signed in FEMA Region IX, formalizes the collaborative efforts regarding flood management between 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 National Fund Insurance Program (NFIP) Coordinator, State Hazard Mitigation Office, and other partners. The Charter outlines the process to 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. Storey County did not sign the Charter; however, they are participating in the meetings. The flood risk information provided will 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.

The 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.

The Charter signatories met on September 13 and October 31, 2012 during this reporting period.

2.1.e Risk MAP Discovery

The Risk MAP Discovery process entails working closely with communities within the Carson River Watershed to better understand the local flood risk, mitigation efforts, etc., and to spur watershed-wide discussions about increasing the area's resilience after flooding. The Discovery process identifies areas at risk for flooding and solutions for reducing that risk on a watershed-wide basis. In relation to the above Charter, CWSD has hired R. O. Anderson to shepherd the Risk MAP Discovery process for CWSD and its partners. Meetings were held on September 13 and October 31, 2012 with the Charter partners to review the information gathered to date on flooding history, risks, stormwater and floodplain management activities, and any gaps in the data. The information is summarized in the Discovery Report, December 14, 2012 including the identification of priority restudy needs and mitigation projects throughout the watershed.

2.2 Low-Level Flooding/Stormwater Management

2.2.a Investigating Feasibility of Carson River Watershed Wide Small Residential BMP Program

CWSD has a small grant with NDEP to conduct a feasibility analysis for the watershed-wide expansion of the Small Residential BMP Program. During the course of the pilot program two residential properties in Carson City's upper watershed won a contest and were provided cash and other project incentives to implement BMPs on their properties. Although these residences successfully implemented residential BMPs, the project's extensive outreach efforts, which included targeted residential workshops, newspaper articles, and even knocking on neighborhood doors to explain the project, did not produce many contest applications, nor an informed citizenry. An additional issue with the project was that the BMP's that were implemented were not low cost enough to be readily used by average homeowners. The project goals and objectives are as follows:

1. Determine an effective education and outreach method that can be modeled and adapted to the Carson River Watershed.
2. Determine a suite of low cost, effective, easily implemented BMPs that suit small scale residential lots.
3. Apply the knowledge gained through this project on a watershed-wide basis in the future when additional funding becomes available.
4. Provide the information gained to other entities or communities within Nevada that are trying to implement similar BMP programs.

During the reporting period CWSD has nearly completed the tasks in this grant and will be providing a final report to NDEP by December 2013.

2.2.b Combined Municipal Separate Storm Sewer System (MS4) Plan for Indian Hills General Improvement District (GID) area, portions of Douglas County in the Clear Creek and Johnson Lane areas, Carson City, and NDOT in the Clear Creek Watershed.

In March of 2013, CWSD received a funding request from Indian Hills GID to pursue a regional MS4 Plan for fiscal year 2013-14. CWSD has set aside \$20,000 to fund this project.

2.2.c Carson River Watershed Regional Municipal Separate Storm Sewer System Plan for all portions of the watershed that met the Environmental Protection Agency's guidelines (administered through the Nevada Division of Environmental Protection (NDEP)) for MS4s based on 2010 census.

Based on the 2010 census, several new areas within the Carson River Watershed met the EPA's population requirements regarding stormwater discharge included Fallon, Dayton, Minden, Gardnerville, the Ranchos, and portions of Churchill County beyond those listed in Section 2.2.b. Indian Hills General Improvement District (GID) area, portions of Douglas County in the Clear Creek and Johnson Lane areas, Carson City, and NDOT in the Clear Creek Watershed are already required to do an NPDES permit and associated MS4 Plan for stormwater discharge. These areas would be incorporated into a regional watershed MS4 Plan.

CWSD, NDEP, and several counties met and discussed the possibility of CWSD developing a regional level MS4 Plan that incorporated all of the above communities under one NPDES permit and one plan. Several meetings were held with NDEP and other entities to discuss this idea. During CWSD's July 2012 Board Meeting, NDEP indicated that the EPA had decided to make the program voluntary rather than mandatory for new areas; therefore the Carson River Watershed Regional MS4 Plan was not pursued during this reporting period.

3.0 Implementation of Suggested Actions

The Regional Floodplain Management Plan divides implementation strategies into six categories and provides suggested actions for each category. The following sections provide an overview of the work that was conducted for each category during this reporting period.

3.1 Protect Floodplain Natural Functions and Values and Responsible Entities

Suggested actions include:

- a. Adopt a Living River approach which will involve all entities.
- b. Floodplain and flood hazards should be considered with open space program objectives when selecting acquisition targets and establishing management strategies for open space, local governments and other entities.
- c. Plan for and mitigate cumulative effects of watershed urbanization.

Progress made during this period:

- Dayton Valley Conservation District and Lyon County continue to enhance floodplain value and function on the 300 acre “Rolling A Ranch” property just outside of Dayton. Weed management and streambank stabilization projects have continued throughout the Dayton Valley reach of the Carson River.
- CWSD helps fund the Alpine Watershed Group to continue their work in the Upper Carson River Watershed. The Hope Valley Floodplain Restoration project and the Markleeville Creek Floodplain Restoration Projects made significant design phase progress during this reporting period.
- CWSD has obtained funding for the FEMA Mapping Activity Statement Projects (MAS) 1, 2, 3, and 4. This flood modeling and mapping project will ultimately assist in the planning and mitigation of the cumulative impacts of urban development in our riverine flood zones.

3.2 Higher Regulatory Standards

Suggested actions include:

- a. Implement or enhance county ordinances that require 1:1 or greater mitigation ratio for floodplain storage volume. - local governments.
- b. Include the suggested ordinance language in county ordinances to provide watershed wide consistency. - local governments.

CWSD was not involved in any ordinance enhancements during this reporting period.

3.3 Flood Data Information and Maintenance

Suggested actions include:

- a. Support FEMA'S Map Modernization Program and encourage FEMA to update FIRM'S with current and future conditions. - FEMA, CWSD and local governments.
- b. Develop and conduct unsteady state modeling to identify storage requirements - local and state governments, and CWSD. Potential funding thru NDEP, CWSD and other local and state entities.
- c. CWSD continue to participate in FEMA'S Cooperating Technical Partner Program. - CWSD and FEMA
- d. Flood studies should be conducted for the main channel and be used to update FEMA maps and fill data gaps. - CWSD and FEMA. Potential funding by Federal, state and local grant sources.
- e. Elevation Reference Marks (ERM) should be permanent monuments and updated on regular basis. -local governments
- f. ERMs should be in the same datum as base flood elevations on FIRMs or a datum that is readily convertible to FIRM datum. - local governments
- g. A master list of ERMs should be developed, maintained, and made available to interested parties. - local governments and CWSD

- h. Photo-Monitoring program should be developed to document flooding and flood hazards in consistent matter. - CWSD, CRC, and local governments

Progress during this period:

- FEMA has provided \$375k in funding to the CWSD for the Douglas County portion of the FEMA MAS Project (MAS 3). This funding is for the surveying of structures and the modeling of the area. Actually mapping will be completed during the fourth phase (MAS 4), next reporting period.
- The FEMA funded Lyon County and Carson City MAS 1 and 2 projects maps are being finalized and will be submitted to FEMA to update the FIRM in the next reporting period.
- LiDAR imaging was completed for the Carson Valley in September 2012. This data will inform the model and mapping for MAS 3 and 4.

3.4 Channel Migration and Bank Erosion Monitoring

Suggested actions include:

- a. Known and projected hazard areas, including channel migration hazards, should continue to be documented, and updated information should be incorporated in the planning processes.
- b. LiDAR and/or aerial photography (on a watershed level) should be conducted on a 5-year basis to provide updated information on channel movement and floodplain condition.
- c. Establish building set-backs or buffers in flood hazard areas, where appropriate, to reduce severe hazards from channel migration.
- d. Channel cross-sectional surveys should be conducted and well documented to track long term changes in river channel.
- e. Identify unstable areas and areas with high potential for erosion, including areas prone to channel meandering and avulsion.
- f. Promote the use of bio-engineering techniques in river restoration projects in combination with other proven methods.

Progress during this period:

- See 3.3 regarding LiDAR.
- Bio-engineering techniques were used by the Carson Valley Conservation District and The Nature Conservancy at River Fork Ranch along Brockliss Slough. CWSD assisted with funding for this project.

3.5 Floodplain and Flood Hazard Outreach and Education

Suggested actions for this category include:

- a. Develop a watershed-wide outreach and education program about floodplain importance and flooding hazards.
- b. Brochures should be developed for distribution on a watershed level with consistent messages and information for the general public.
- c. CWSD website will provide information on the Regional Floodplain Management Plan and provide emergency contact information. Local

governments and other entities can link to this website to increase distribution.

- d. Annual Flood Awareness Week will be established with the objective of providing information about flooding and flood hazards to the general public.
- e. Special events, River Work Days, and other outreach opportunities should be utilized to help raise awareness of flooding hazards and importance of floodplains.

Progress during this period:

- CWSD and several CRC stakeholders submitted a symposium abstract to the Soil and Water Conservation Society's Annual International Conference in July 2013. The conference theme was Resilient Landscapes: Planning for Flood, Drought and Fire. The abstract entitled "A Living River Approach to Floodplain Management in the Carson River Watershed" was accepted. Although the symposium was held in the next reporting period (July 2013), planning for the event took place during this reporting period.
- CWSD developed a flooding/floodplain protection display that was placed at Carson City and Douglas County libraries in December 2012 and March 2012 respectfully.
- Watershed website provides link to plan at www.cwsd.org.
- Numerous articles about floodplain protection and flooding were included in the watershed newsletter that is distributed to over 600 individuals throughout the six county area.
- Several Conserve Carson River Work Days were held and included a station about flooding and the importance of floodplain protection.

3.6 Reduction of Infrastructure Impacts

There are opportunities throughout the watershed for the enhancement and/or design and maintenance of roads, culverts, grade controls, and bridges to accommodate floodwaters better, protect floodplains, and decrease harmful erosion.

Progress made during this period:

- CWSD helped fund bank stabilization in the Dayton area along the Carson River to protect River Road from being undermined.
- CWSD helped fund the Bafford Lane bridge channel clearance and dredging project in Churchill County.