

OVERVIEW OF CARSON RIVER WATERSHED ACTIVITIES

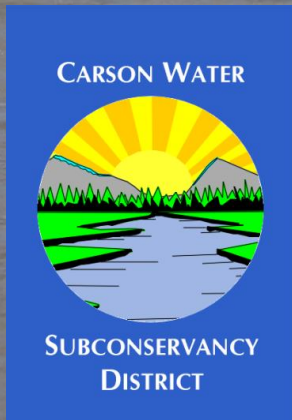
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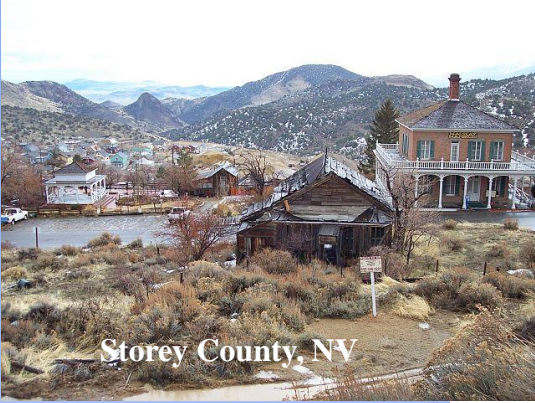
Edwin James

CWSD General Manager

August 28, 2014

05/09/2009 15:27





Storey County, NV

Carson Canyon-
Carson City/Lyon County



Lyon County



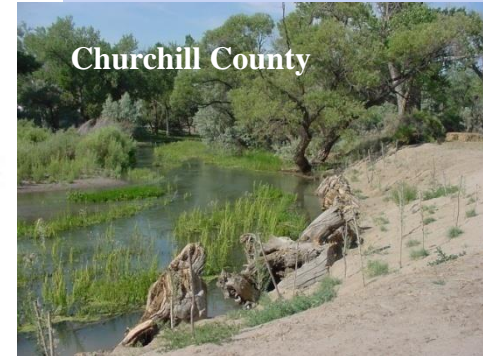
Douglas County, NV



Alpine County, CA



Carson City



Churchill County

Carson River Watershed

Carson River Watershed

- ~ 3,966 square miles
- Carson River - 184 miles
- Population:
Current: 156,000
Predicted: > 300,000 by 2050
- Limited Upstream Storage

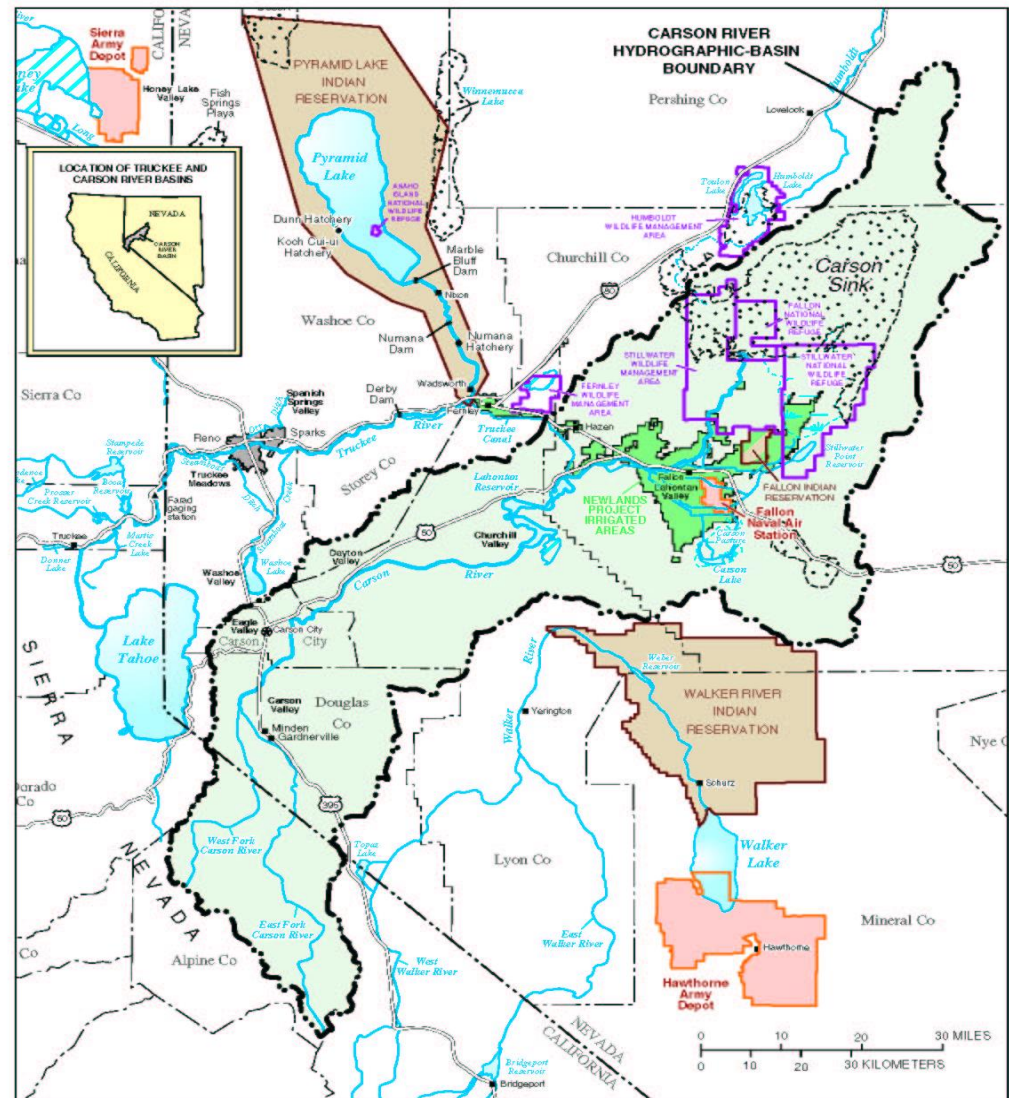
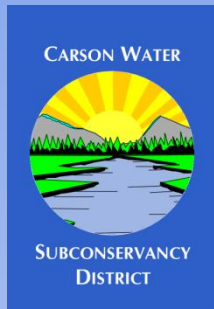
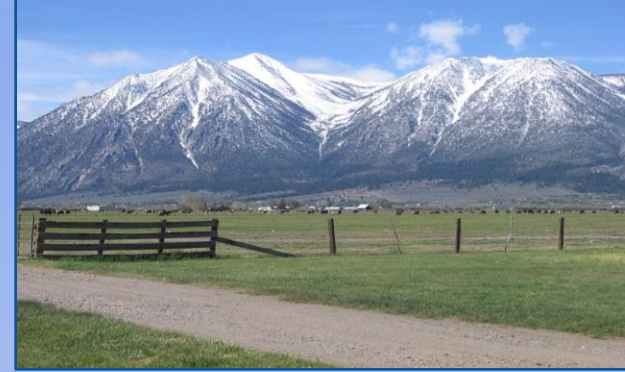


Figure1. USGS hydrologic features map of the Carson River watershed and surroundings.



CWSD History



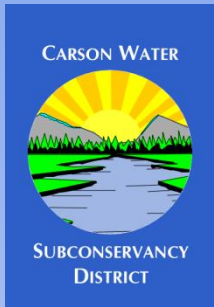
1950s through 1970s:

- **1956: Washoe Project - Watasheamu Dam**
- **1959: CWSD was Established**
 - **Douglas & Lyon Counties**

1980's: Dam project abandoned by Federal government

1989: Nevada Legislature changed the role of CWSD

- **Management and Development Water Resources in the Upper Carson River**
- **Carson City joined CWSD**



CWSD History



1997: Flood Event

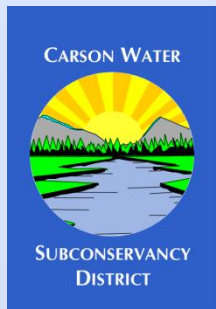
1998: Carson River Conference

- **Integrated Watershed Planning**
- **Forming the Carson River Coalition (CRC)**
- **CWSD was asked to coordinate this effort**

1999: Churchill County joined CWSD

- **AB380 (water buy-out program in Churchill Co.)**

2001: Alpine County, CA became a member



CWSD History

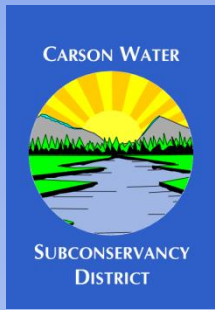
2003: Designated 208 planning agency for Carson River (Clean Water Act)

2007: Stewardship Plan – EPA 319 compliant

2008: Regional Floodplain Management Plan

2009: Storey County became a non-voting member.

Today: CWSD works in entire Watershed



Structure of CWSD

14 Board Members

- 6 counties / 2 states

Funding

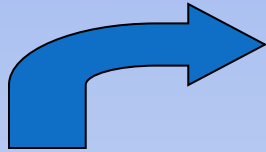
- Property Tax
- Grants (State, Fed., & others)

Staffing

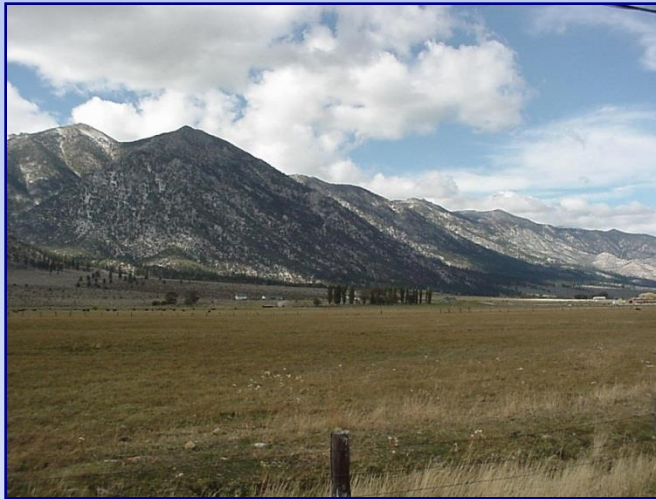
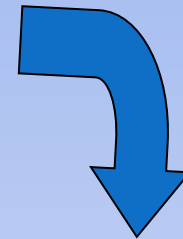
- 2 Full-Time
- 3 Part-Time



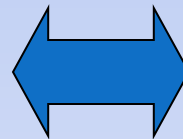
SHARING WATER SUPPLIES



Environmental



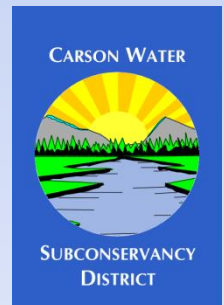
Agricultural



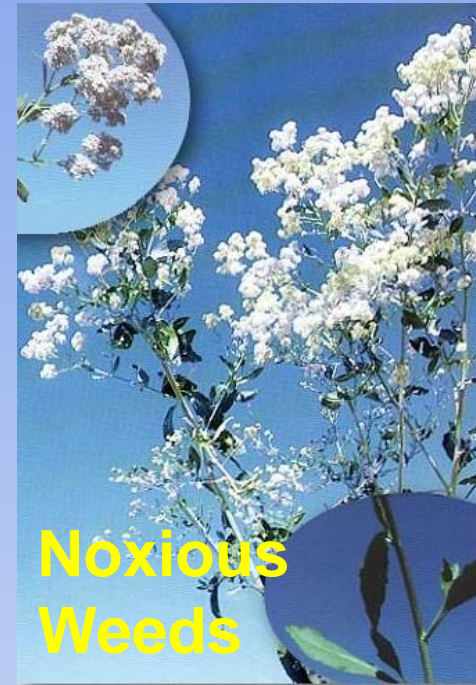
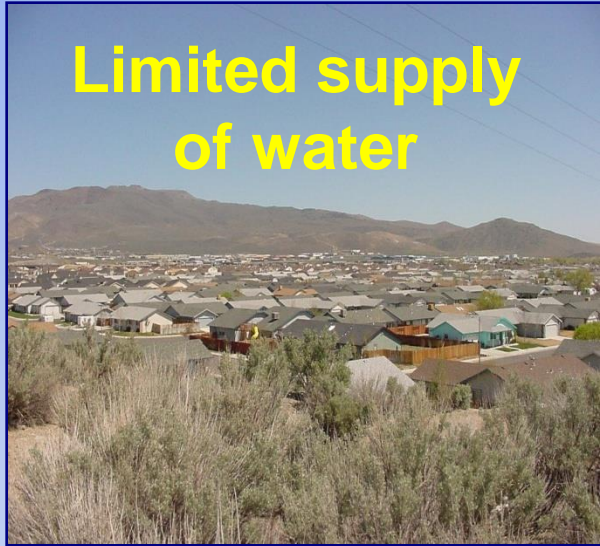
Domestic

Watershed's Current Water Supply Situation

- **Carson River fully appropriated**
- **95 %+ Carson River used for agricultural purposes**
- **Groundwater basins - over appropriated**
- **Actual GW pumping < Appropriated**
- **Limited upstream storage**
- **Water quality problems**
- **Runoff Pattern Changes**



Watershed Challenges!



Historical Human Impacts on WQ

- Historic mining impacts
- Superfund Sites
 - Leviathan Mine
 - 22 million tons overburden with sulfide to region
 - Carson River Mercury Site
 - Comstock Mining Era
 - 186 mills, 16 on river
 - 14 million lbs mercury
 - 40 yrs wood drives
- Channelization & levees
 - 70 miles of river channelized in 1960's



Wood drive on the East Fork of the Carson. Holding the wood at Young's Crossing, waiting for a head of water that would permit floating it through Carson Valley. (Courtesy of Nevada State Museum)



Leviathan Mine Superfund Site

CUT BANKS



Water Quality Impacts

River Restoration/Stabilization Projects



Work done by the local Conservation Districts

Carson River Coalition (CRC)

Carson River Coalition (CRC) Coordination

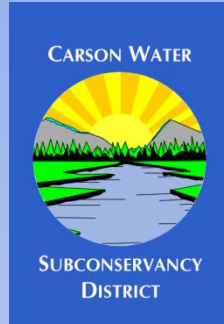


- **Facilitates Communication**
- **Coordinates & maintains CRC activities**
- **Community Outreach and Education**





Carson River Coalition



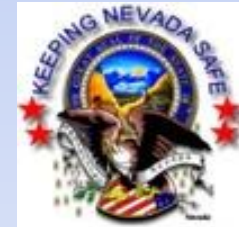
Private Citizens



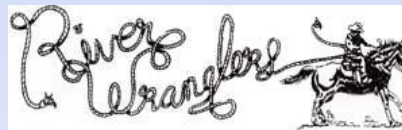
Conservation Districts:
Carson Valley
Dayton Valley
Lahontan
Alpine



State of Nevada
Department of Conservation & Natural Resources
Division of Water Resources
Tracy Taylor, P. E. State Engineer



HDR



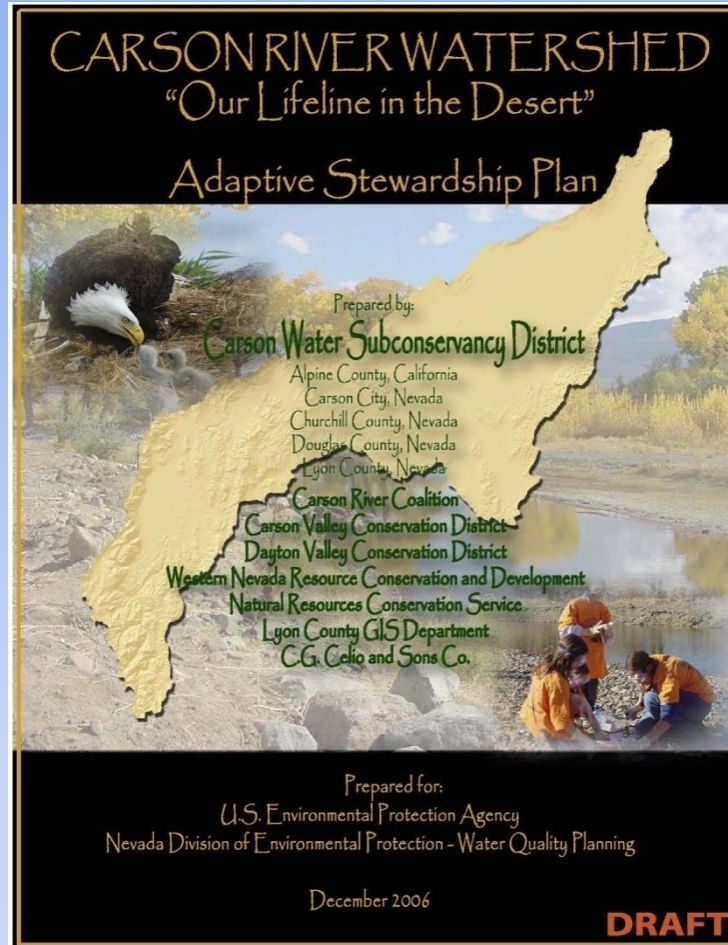
CRC – Some Successes to Date



- Robust participation in the CRC Events/Groups
- Active Working Groups:
 - Education
 - Water Quality
 - River Corridor



Integrated Watershed Management

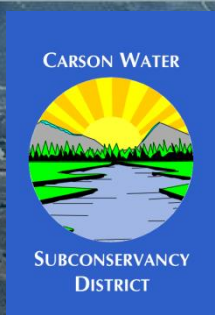


***Meets EPA 319 criteria for
watershed plans***

To view the document go to:

<http://www.cwsd.org/newcms/userpages/StewardshipPlan.aspx>

Regional Floodplain Management



Regional Floodplain Management Plan

- Living River Concept
- 2004 Conference
- Developed through cooperative process
Carson River Coalition River Corridor Working Group
- Public Workshops
- Goal - Reduce Flooding Hazards by Protecting Floodplains
- Adopted by all 5 Counties in 2008!

Regional Floodplain Planning

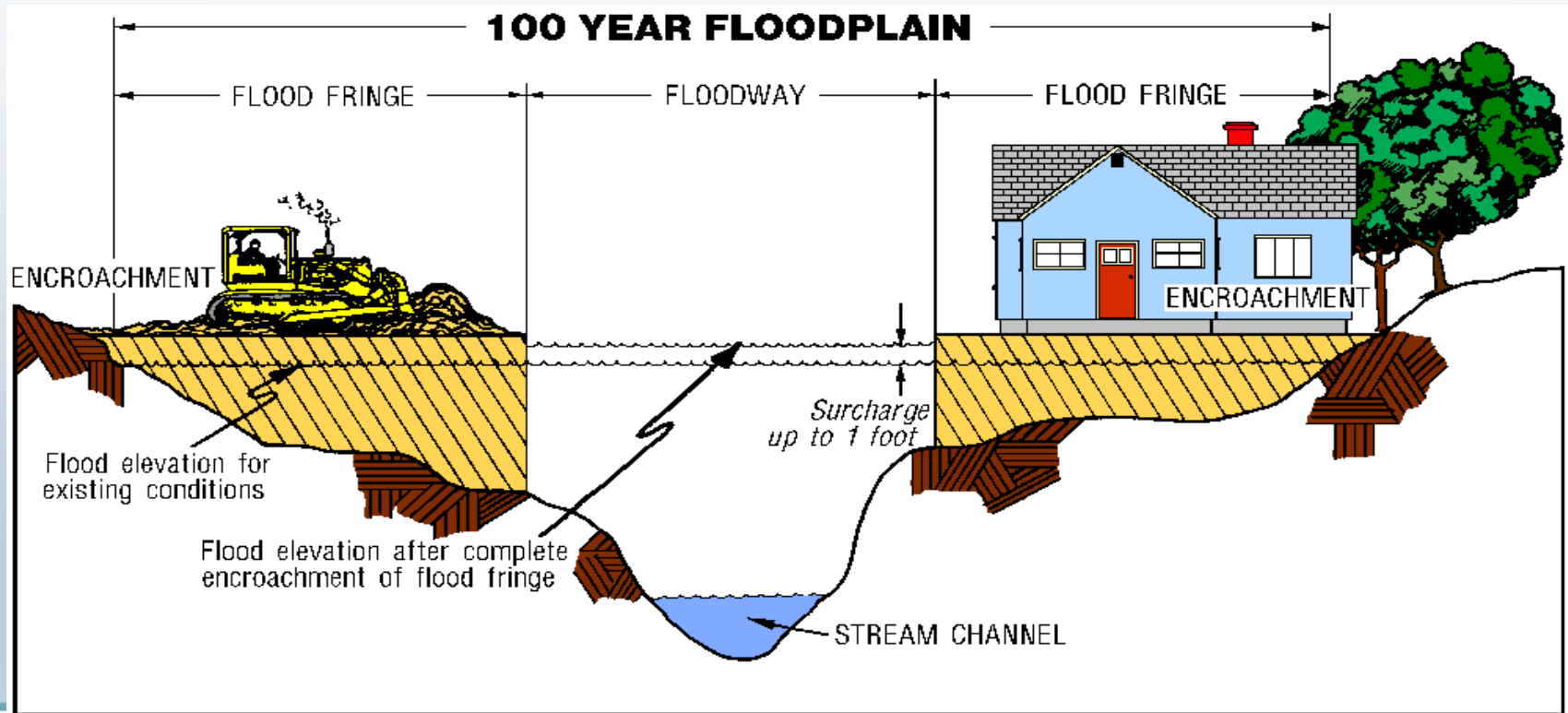
- **CWSD is a Technical Cooperative Partner (TCP) with FEMA**
- **CWSD is working with FEMA to remap the Carson River floodplain from Alpine County to Lahontan Reservoir.**
- **Unsteady Flow Model**
 - **Hydrograph Modeling Input (time vs. flow)**
- **Recently entered into a Risk MAP Charter with FEMA. First one in Region 9.**

Remapping Carson River Floodplains

- **2010 CWSD** as CTP Secures FEMA Grant Money to begin Remapping Carson River Floodplain Upstream of Lahontan Reservoir.
- **Phase 1:** 2010 Modeling & Mapping Lyon County Reach
- **Phase 2:** 2011 Modeling & Mapping Carson City Reach
- **Phase 3:** 2013 Modeling Douglas County and Alpine County Reach
- **Phase 4:** 2014 Mapping Douglas County and Alpine County Reach

FEMA Floodway

- Limits encroachment on the 100-yr floodplain.



FEMA Floodway and Floodplain



Other

Suggested Actions in Progress

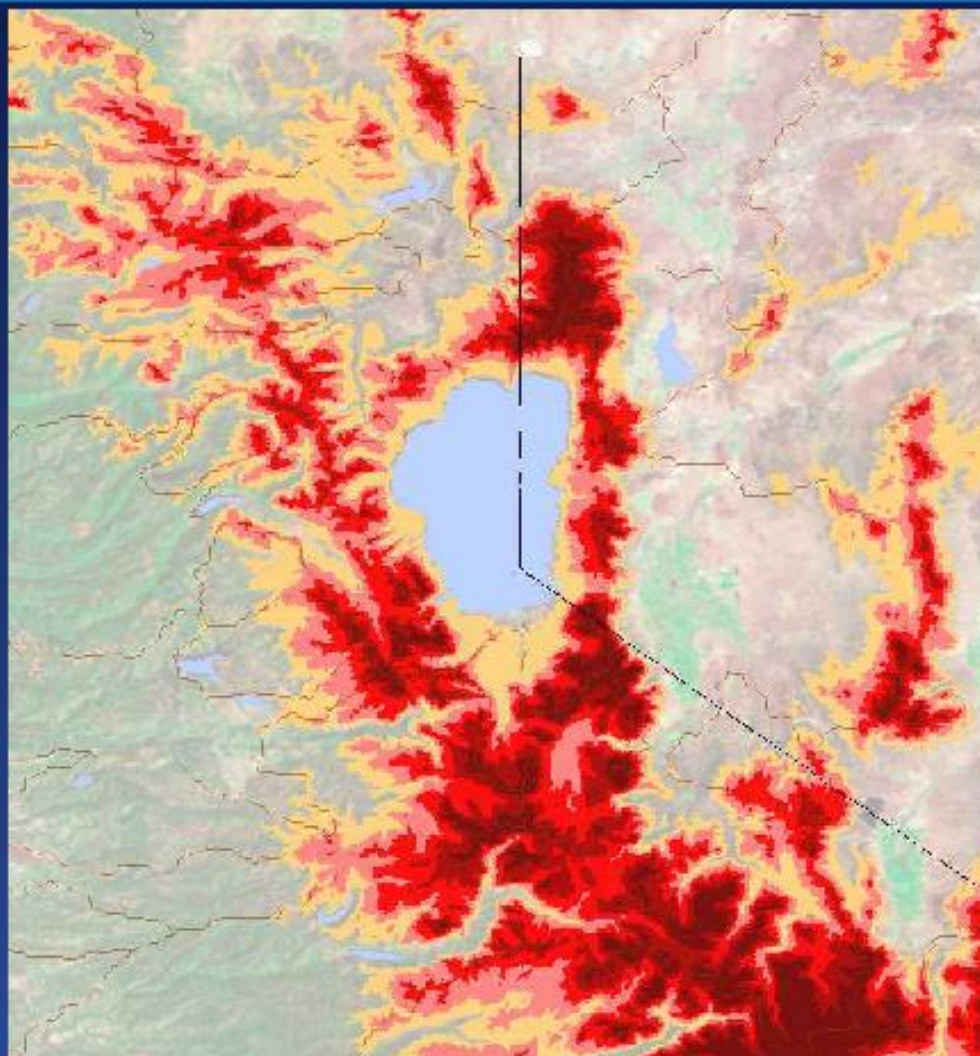
- **Flood and Floodplain Awareness Outreach**
 - Flood Awareness Week – November 10 - 15th
- **Stormwater Management**
 - Promote of Low Impact Development (LID)
- **Protect Carson River Floodplains**
 - Conservation Easements

Regional Water Supply

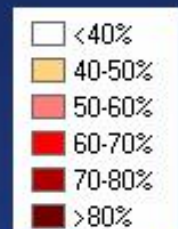
Comprehensive Regional Management Plan

- **Develop 30- year Comprehensive Regional Water Management Plan Report**
- **Evaluate potential climate and runoff changes**
- **Develop a Regional Water Conservation Plan**
- **Evaluate current and future water demands/supplies for all the major water purveyor located in the Carson River Watershed**
- **Project future regional infrastructure needs.**
- **Working w/ BOR on Basin Plan & NSF Water Sustainability Study**

United States Department of Agriculture
Natural Resources Conservation Service



Percent of annual precipitation falling as snow



Rainy

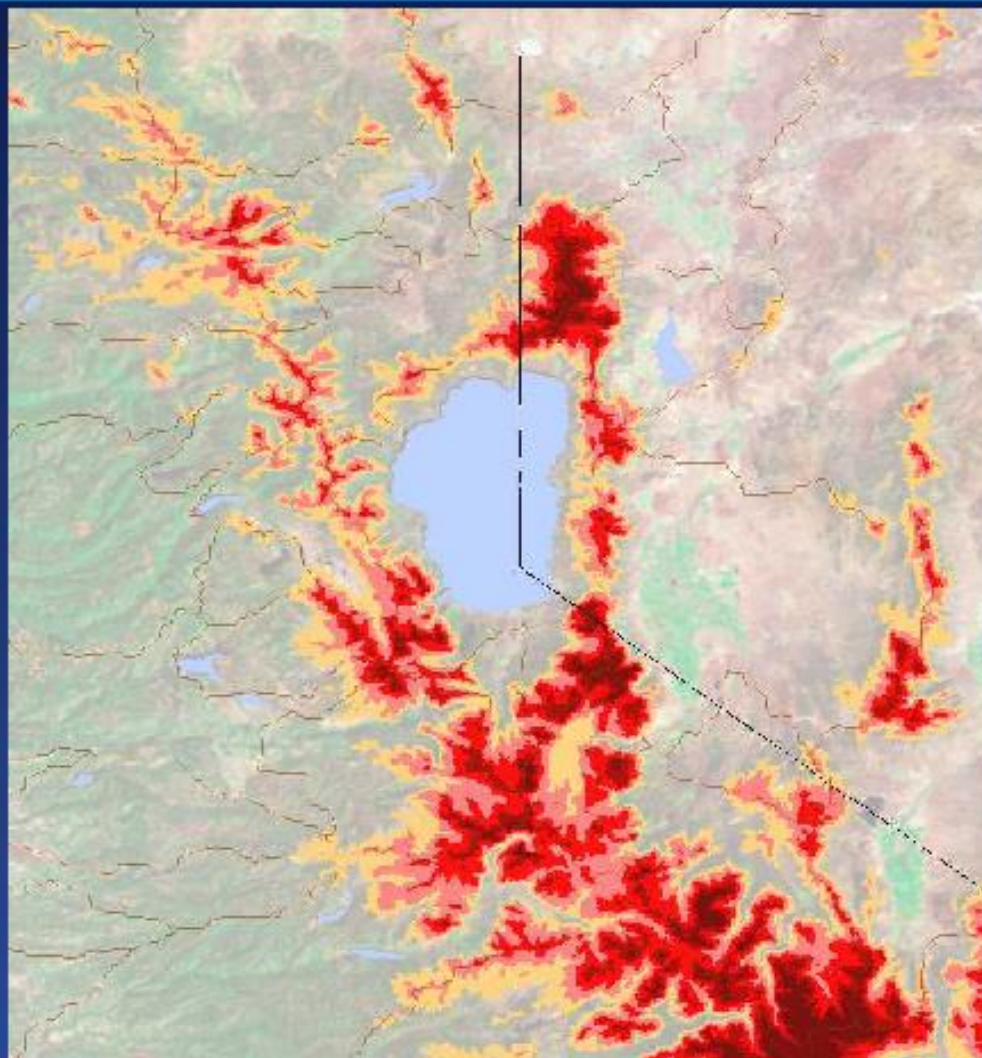
Snowy

Current climate (1990-2007)

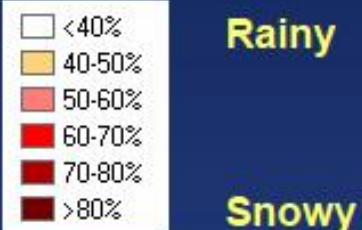
How this was made:

For historical SNOTEL station data, sum of precipitation on days that average temperature >0C, >-1C, >-2C etc, divided by total annual precipitation on days that temperature was available. Regress resulting ratio versus elevation. Transform high spatial resolution elevation dataset by regression relationship.

United States Department of Agriculture
Natural Resources Conservation Service



Percent of annual precipitation falling as snow

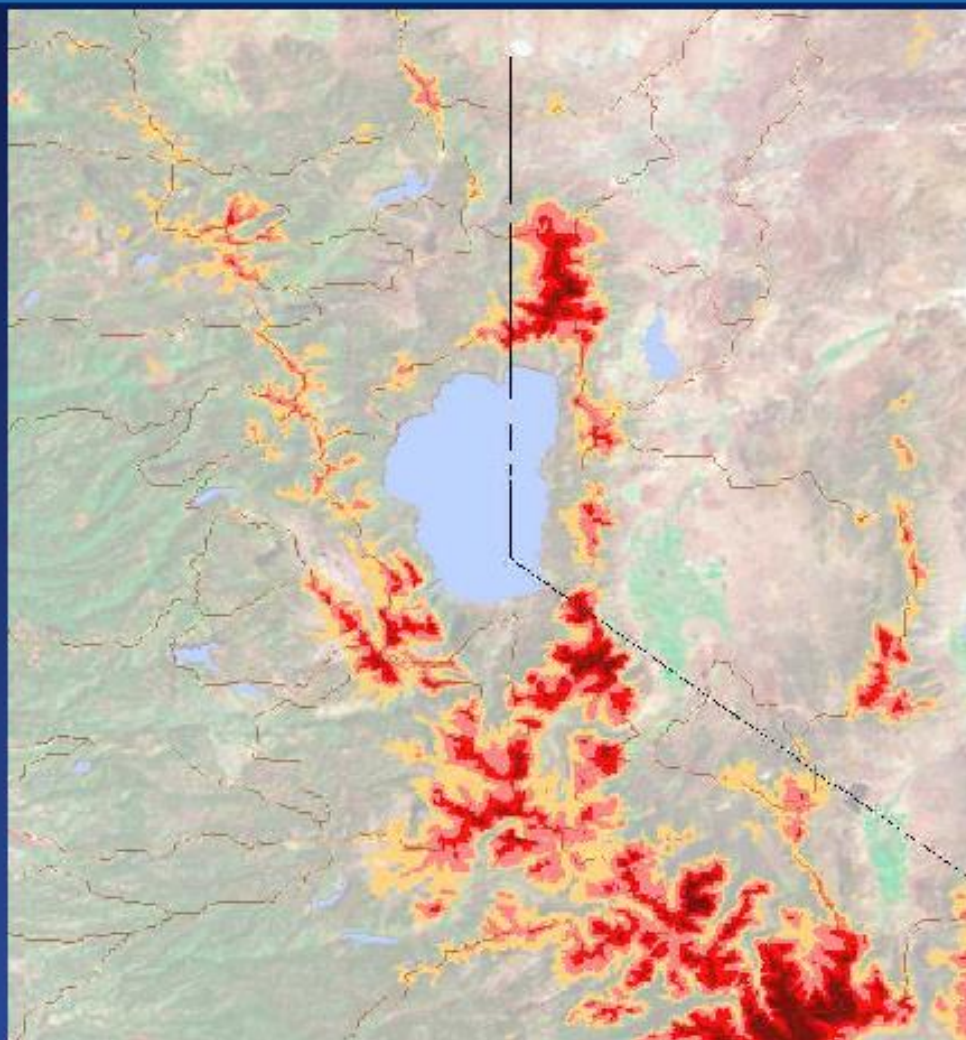


Climate +1 deg C warmer

How this was made:

For historical SNOTEL station data, sum of precipitation on days that average temperature >0C, >-1C, >-2C etc, divided by total annual precipitation on days that temperature was available. Regress resulting ratio versus elevation. Transform high spatial resolution elevation dataset by regression relationship.

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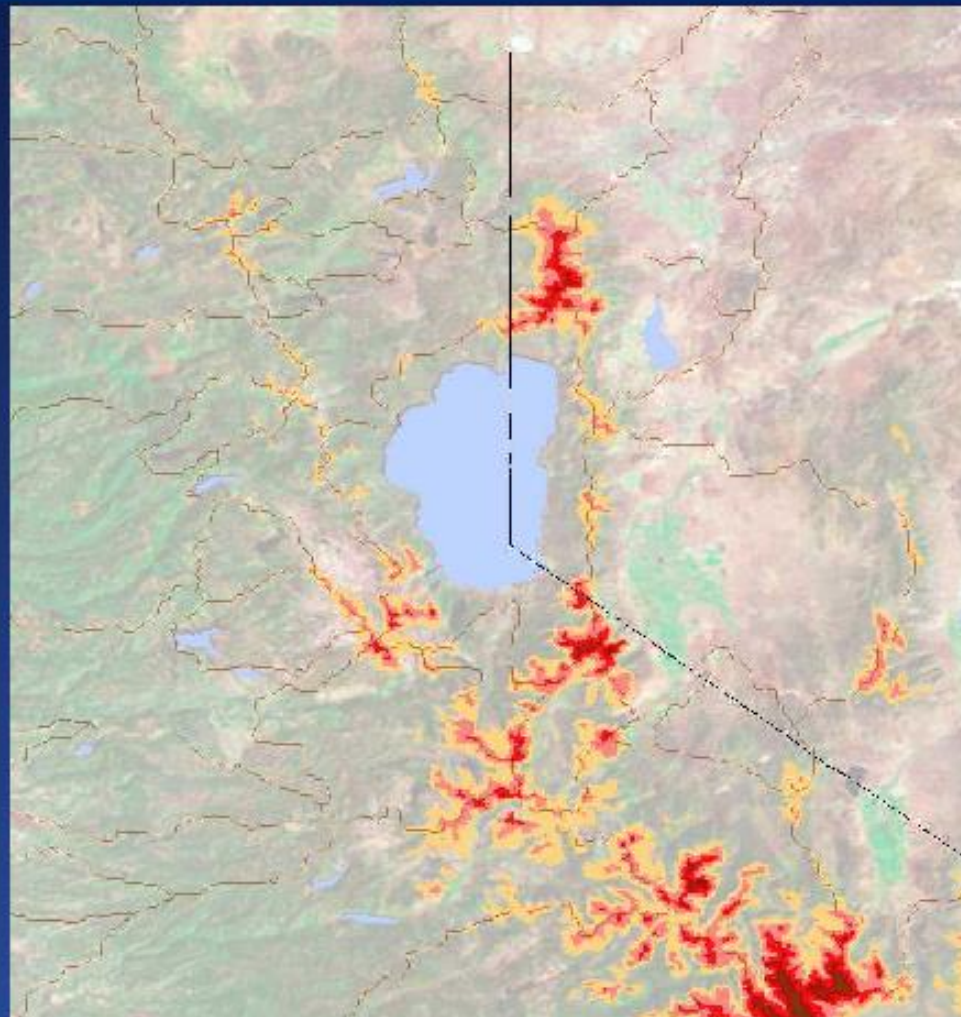
Percent of annual precipitation falling as snow



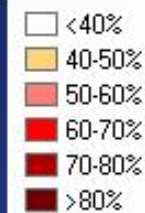
Climate +2 deg C warmer

How this was made:
For historical SNOTEL station data, sum of precipitation on days that average temperature >0C, >-1C, >-2C etc, divided by total annual precipitation on days that temperature was available. Regress resulting ratio versus elevation. Transform high spatial resolution elevation dataset by regression relationship.

United States Department of Agriculture
Natural Resources Conservation Service



Percent of annual precipitation falling as snow



Rainy

Snowy

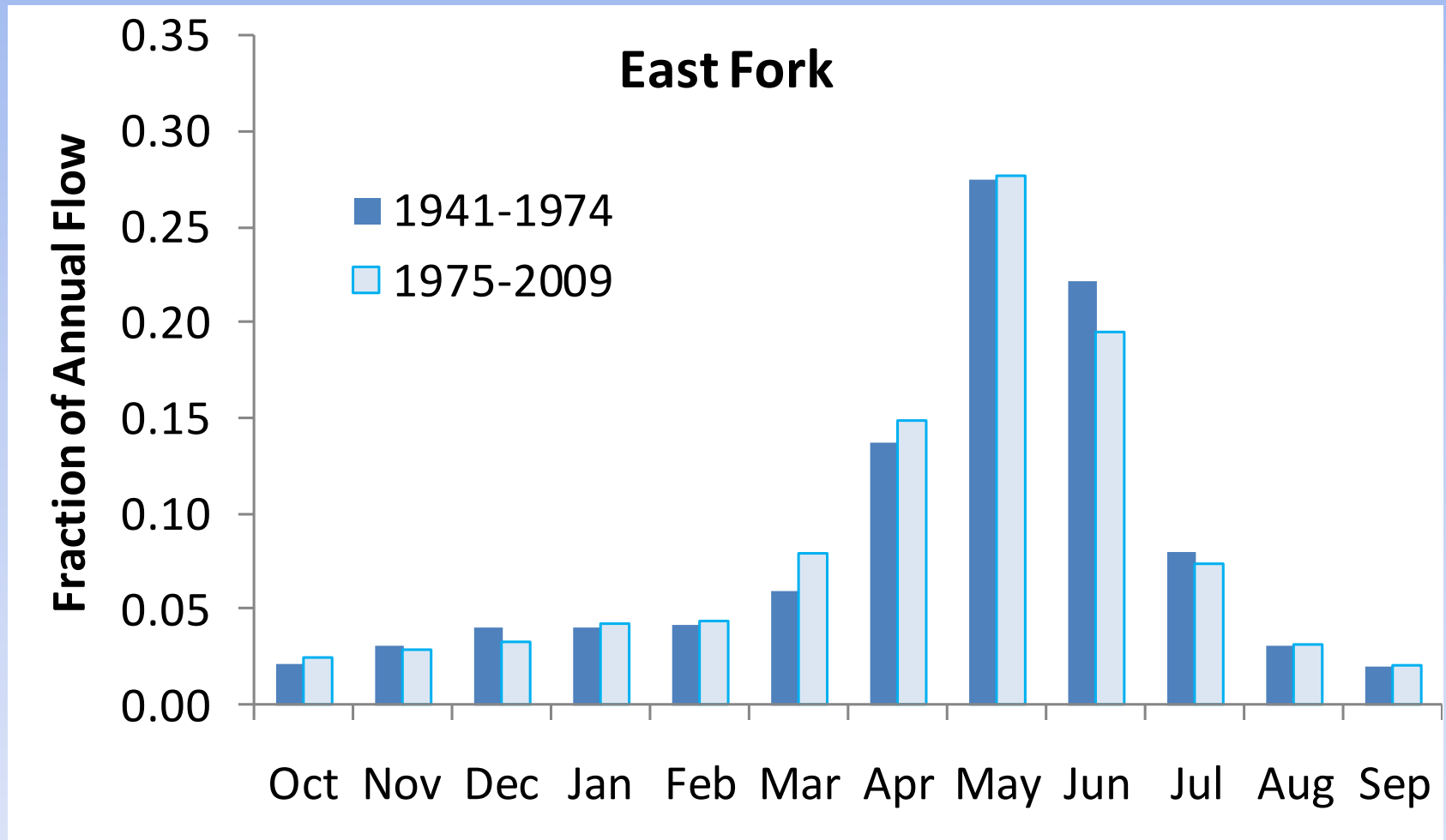
Climate +3 deg C warmer

How this was made:

For historical SNOTEL station data, sum of precipitation on days that average temperature >0C, >-1C, >-2C etc, divided by total annual precipitation on days that temperature was available. Regress resulting ratio versus elevation. Transform high spatial resolution elevation dataset by regression relationship.

Runoff Changes

Monthly Streamflow – East Fork



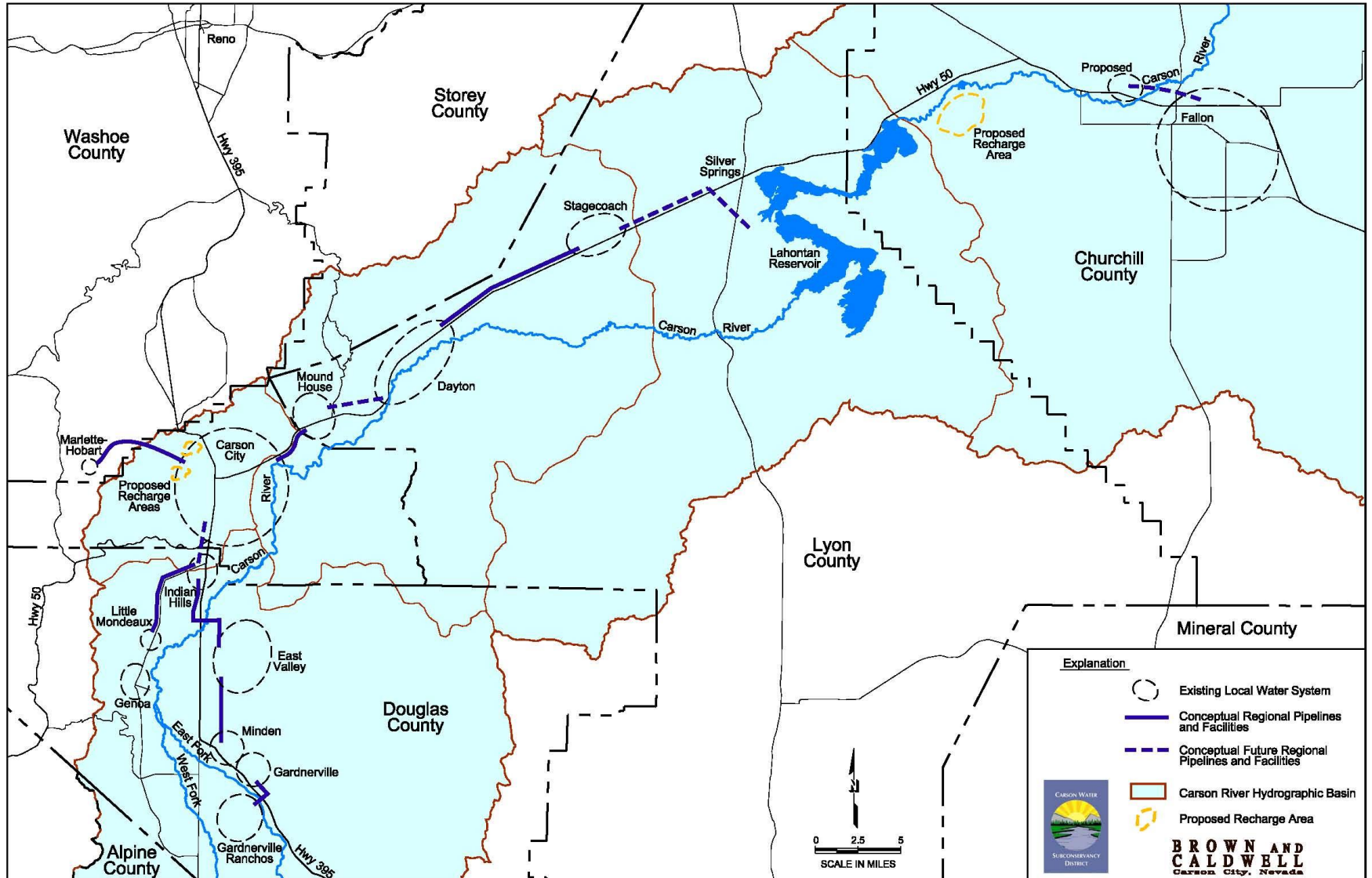
Regional Infrastructure



- Douglas/Carson City Regional Pipeline
 - Town of Minden, North Douglas Co, Indian Hills GID, Carson City
- Carson City/Lyon County Intertie
- Stagecoach Pipeline Upsize

Ultimate Goal: Intertie all Water Purveyors

Regional Infrastructure



Our New Website: WWW.CWSD.org

The screenshot shows a web browser window displaying the homepage of the Carson Water Subconservancy District. The browser's address bar shows the URL www.cwsd.org. The website features a blue header with a navigation menu and a main content area with a large image of the Carson River.

Sign Up For Newsletter **Contact Us**

CARSON WATER
SUBCONSERVANCY DISTRICT

[Our Home](#) [Who We Are](#) [What We Do](#) [What You Can Do](#) [What's Happening](#) [Resources](#) [Search](#)

*Promoting Cooperative Action
for the Carson River Watershed*

Carson River, Our Lifeline in the Desert

Courtesy Brenda Hunt

Carson River Watershed

The Carson River is our lifeline in the desert. Its' precious water supports our [Watershed's](#) environment, economy, and quality of life. The Carson River meanders 184 miles from the snow pack in California's high Sierra through green alpine meadows, wide valleys, rock-lined canyons, cottonwood galleries, and high desert sage brush plateaus to the intermittent lake beds and wetlands in Nevada's Carson Sink. The river basin's natural resources have always attracted [human settlement](#). This is evidenced by the several rural and urban communities, tribal lands, irrigated agricultural areas, historic sites, parks, open space and recreation areas the river travels through and near.

There is approximately 3,965 square miles of land from which water drains into the river creating the Carson River Watershed. The river itself is terminal or endorheic, meaning it is one of a few rivers in the world that do not flow to an ocean.

QUICK ACCESS:

- Join the CRC
- Interactive Watershed Map
- CWSD Board Meetings

EVENTS:

August

1:22 PM
8/19/2014

Questions?

www.cwsd.org

Photo by: Juan Guzman