

The cumulative effect of all the river alterations of the past 160 years is complex, but in many places river channels have downcut or incised several feet into valley floors. This has lowered the surrounding water table and drained the former wetlands near the channel. As wetlands and streamside forests have declined, the banks have become unstable. Plant roots no longer hold the soil in place.

In many places, the incised channel through our river valleys is a deep steep walled gully. During floods, water flows swiftly and creates enormous erosive forces on the weakened riverbanks. Much of the land near the channel is destined to be eroded away during floods. If left undeveloped and undisturbed, the river could restore itself over time.



*The steep, eroding banks of the incised Carson River have in some places cut off the river from its former floodplain. (J. Cobourn)*

## Now is the time to act

A **Regional Floodplain Management Plan** was developed by the Carson River Coalition's River Corridor Working Group, based on input from community members who attended public meetings. The Plan's first recommendation for the safety of our communities is to protect the natural floodplain's functions and values. That means that Nevada's river communities must find ways to recognize the economic values that the floodplain provides to the watershed

and to keep these lands in agriculture or other open space land uses. Nevada's communities must promote incentives to help floodplain property owners maintain their lands in uses such as agriculture that enable floodplain function.

A report funded by the Carson Water Subconservancy District in 2010 determined that it is more cost effective to keep the floodplain undeveloped than to build flood control projects to protect infrastructure.

Preventing more development in Nevada's floodplains will take political will and public and private funding. If we act now, we can prevent the loss of our precious floodplains and avoid the immense costs (recently estimated at hundreds of millions of dollars) that Reno and Sparks may need to pay to fix the problems caused by the failure to protect their floodplains (Truckee River Flood project, 2011).

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# The Importance of Floodplain Lands to our Communities



*Healthy Carson Valley Floodplain, (Photo: J. Cobourn)*

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## Introduction

Much of the green, historic charm of the Carson Valley is due to the broad floodplain of the Carson River. This is the flat, low-lying land on each side of the river channel.



*Carson Valley floodplains are home to some of Nevada's most historic ranches. (top photo: C. Gourley; bottom photo: J. Cobourn)*



**Floodplains** are constructed by rivers that meander through the landscape and over time deposit sand, silt, and other soil-forming material during floods. Floodplains are environmentally sensitive, ecologically diverse and economically important areas.

## Floodplains perform certain natural and beneficial functions

The Federal Emergency Management Administration (FEMA) has described three types of “natural and beneficial functions” of floodplains that warrant protection (Carson River Coalition, 2008).

1. Floodplains in their natural state have an important positive impact on flooding. Flood waters can spread over a large area of flat, open land and reduce flood depths downstream. This reduces flood velocities and provides water storage outside of the channel. Wide, undeveloped floodplains reduce the energy of a flood and therefore **reduce damage** to adjacent properties and downstream communities.



*The broad floodplain of the Carson River stores flood water during major floods, greatly reducing the destructive power to downstream communities. (Marilyn Newton, Reno Gazette Journal, 1-1-1997)*

2. Floodplains in their natural state provide important benefits beyond flood damage reduction. **Water quality** is improved in areas where natural vegetative cover prevents soil erosion. This vegetation also filters water running off the land into the river and the water flooding over the river banks. Natural floodplains moderate water temperature, reducing the possibility of damaging impacts to fish and other aquatic animals.

3. Floodplains **recharge groundwater** and also discharge water back into the channel during low flow periods. They provide **habitat** for many species of birds, plants and other wildlife, some of which can live nowhere else. Floodplains are particularly important as breeding and feeding areas.

## Floodplain economic value is often overlooked

These **beneficial functions** of floodplains, are economic goods even if they are not bought and sold on the market like other commodities (Lichtenberg, 1994). Floodplain management that is economically efficient takes into account the costs and benefits of these natural goods and services, often referred to as **ecosystem services**. Property owners who use floodplain lands for ranching and farming are providing these services to the community free of charge. If land owners were compensated for these societal values, some may be less likely to sell their ranch for development in the future.

## How the river channel and floodplain have changed over time

Since the first European-American settlers arrived in 1851, human activities in our watersheds have included logging, mining, ranching, road and bridge construction, straightening of the natural channel, building levees of various kinds, and urbanization.



*In some parts of the Carson Valley, the river's floodplain still provides the beneficial functions of flood storage, water quality and wildlife habitat. (Washoe Environmental Protection Department)*