

PROTECTING THE ENVIRONMENT

THE SNWA'S ENVIRONMENTAL STEWARDSHIP EFFORTS HELP CONSERVE AND PRESERVE NATURAL RESOURCES FOR FUTURE GENERATIONS WHILE MINIMIZING CONFLICTS WITH WATER RESOURCE MANAGEMENT.

The SNWA works cooperatively with federal, state and local agencies as part of its long-term water resource management and planning efforts. This work helps to ensure avoidance, mitigation or minimization of impacts during development and delivery of water resources, including the construction, operation and maintenance of regional water facilities. In addition to the organization's proactive efforts, SNWA adheres to strict environmental laws and regulations that govern its use and development of resources and facilities. These include the Endangered Species Act (ESA), National Environmental Policy Act (NEPA) and Clean Water Act.

By complying with environmental laws and regulations, working cooperatively with others, and by implementing the latest best management practices, SNWA minimizes its footprint and protects valuable environmental resources for generations to come.

The SNWA participates in several environmental programs that contribute to species recovery and habitat conservation and protection in areas where its facilities or resources are located. The following section details specific activities that are currently planned or underway:

COLORADO RIVER

Human alterations on the Colorado River, including changes to riparian wetland and aquatic habitats, have affected the river's ecosystem, both in the United States and in Mexico. Today, there are several native fish, birds and other wildlife species listed as threatened or endangered under the ESA.

These environmental issues are being addressed cooperatively by Colorado River water users, primarily through the Lower Colorado River Multi-Species Conservation Program. The SNWA has a key interest in the success of this program, and other similar initiatives, because it provides regulatory certainty for flexible and adaptive resource management solutions like the Arizona and California water banks.

Lower Colorado River Multi-Species Conservation Program

The Lower Colorado River Multi-Species Conservation Program (LCRMSCP) is a coordinated, multi-agency effort to protect the species and habitat of the Lower Colorado River region. The LCRMSCP, finalized in 2005, provides ESA coverage for federal and non-federal operations in the Lower Colorado River under a Biological Opinion and a Habitat Conservation Plan (HCP).¹

The SNWA is a non-federal partner in the LCRMSCP, which is being implemented by the Bureau of Reclamation over a 50-year period. The program area extends more than 400 miles along the lower Colorado River, from Lake Mead to the southernmost point of the U.S./Mexico border. Lakes Mead, Mohave and Havasu, as well as the historical 100-year floodplain along the main stem of the lower Colorado River, are all included. The program area also supports implementation of conservation activities in the lower Muddy, Virgin, Bill Williams and Gila rivers.

The HCP and Biological Opinion call for the creation of 8,132 acres of habitat for fish and wildlife species, and the production of 1.28 million native fish to augment existing populations. The plan will benefit at least 26 species, most of which are state or federally listed endangered, threatened or sensitive species.

The overall goal of the LCRMSCP is to develop and implement a plan that will:

- Conserve habitat and work toward the recovery of threatened and endangered species, as well as reducing the likelihood of additional species being listed;
- Accommodate present water diversions and power production, and optimize opportunities for future water and power development, to the extent consistent with the law; and
- Provide the basis for incidental take authorization.



Some of the LCRMSCP projects being conducted in Nevada include razorback sucker studies on Lake Mead, southwestern willow flycatcher surveys and habitat protection at the Big Bend Conservation Area.

In 2005, SNWA purchased the 15-acre Big Bend Conservation Area site along the Colorado River to support backwater habitat for native fish. In 2008, the LCRMSCP and the U.S. Fish and Wildlife Service (USFWS) funded wildlife habitat improvements on the property, which provides mitigation credit under the program. The SNWA continues to maintain the property and habitat, and conducts annual vegetation monitoring.

By taking a proactive role in the health of the river and its native species, SNWA and other Colorado River users are working to help ensure the long-term sustainability of this critical resource.

Colorado River Basin Water Supply and Demand Study

An Environmental and Recreational Flows Workgroup was one of three workgroups established following completion of the Colorado River Basin Water Supply and Demand Study.² The study recognized that additional efforts were needed to better understand and quantify the needs of flow-dependent ecological systems and recreation on the river. The SNWA is a member of this workgroup, which was tasked with identifying opportunities that would provide multiple benefits to improve flow and water-dependent ecological systems, power generation and recreation. In their Phase I report, the workgroup identified future opportunities and potential actions to advance those opportunities.

Colorado River Delta

Through interpretive minutes to the 1944 Treaty for the Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande, the United States and Mexico have established a framework for cooperation on environmental issues in Mexico. This includes studies related to the riparian and estuarine ecology of the Colorado River limitrophe and delta.

The SNWA is a member of the Environmental Work Group that was established by Minute 317 in 2010. The work group provides a forum where the two

countries can explore and evaluate potential areas of cooperation. Subsequently, and as part of the later Minute 319, the Environmental Work Group began gathering scientific information on the effectiveness of environmental flows delivered to the Delta as part of the 2014 pulse flow.

Adaptive Management Work Group The SNWA participates in the Adaptive Management Work Group (AMWG) for the operations of Glen Canyon Dam. This multi-agency work group helps to balance the needs and interests of various stakeholders. These interests include the endangered humpback chub, recreational interests, Native American perspectives, hydropower generation, water deliveries and downstream water quality. Nevada and other Colorado River Basin states are active participants on the AMWG and Technical Work Group, a subcommittee responsible for translating AMWG policy and goals into resource management objectives, and establishing criteria and standards for long-term monitoring and research. Active participation in the AMWG and its subcommittees helps to ensure SNWA's interests in protecting water deliveries, downstream water quality and the endangered humpback chub are adequately addressed.

MUDDY RIVER

The Muddy River and its tributaries and springs provide habitat for a unique array of rare species, including the federally endangered Moapa dace (*Moapa coriacea*), southwestern willow flycatcher (*Empidonax traillii extimus*), and Yuma Ridgway's rail (*Rallus obsoletus yumanensis*) (formerly Yuma clapper rail), and the federally threatened western yellow-billed cuckoo (*Coccyzus americanus occidentalis*). It is also habitat for the Virgin River chub (*Gila seminuda*), which although not listed on the Muddy River is listed as endangered on the Virgin River. The SNWA has conducted and supported environmental studies on the Muddy River since 2004, including population and habitat surveys for these and other native, sensitive species. The SNWA is also working with federal and state agencies, environmental organizations and local stakeholders to implement conservation and recovery actions.

As noted in Chapter 3, SNWA has surface water rights on the Muddy River and groundwater

rights in adjacent Coyote Spring Valley. In accordance with the Interim Guidelines, SNWA can convey these rights through the natural channel of the Muddy River to Lake Mead and receive ICS credit. To support its water planning efforts, SNWA participates in the Muddy River Recovery Implementation Program. The program is a coordinated, multi-agency effort to protect the species and habitat of the Muddy River, while ensuring the responsible management of water resources. In accordance with a 2006 Memorandum of Agreement with the USFWS, the SNWA provided \$300,000 in funding for preparation of the program, which is currently in draft form.³ The SNWA continues to coordinate with other agencies, as part of a Biological Advisory Committee, to implement monitoring and conservation actions on the Muddy River.

In addition to activities conducted on the Warm Springs Natural Area, described below, ongoing environmental activities on the Muddy River include:

- Native fish surveys
- Non-native fish surveys and invasive fish removal
- Non-native fish barrier installation
- Habitat creation and restoration

Warm Springs Natural Area

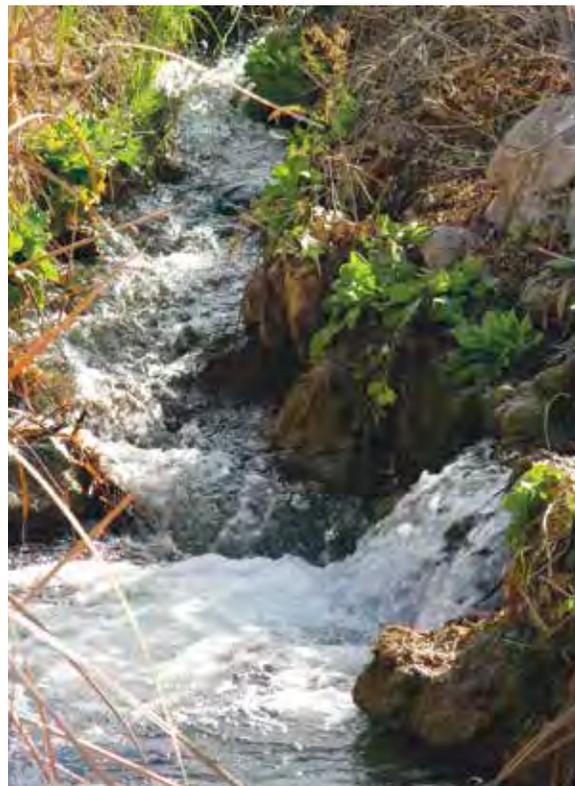
Located approximately 7 miles northwest of the town of Moapa, the Warm Springs Natural Area contains more than two dozen warm water springs that form the headwaters of the Muddy River. The springs and river provide habitat for the federally endangered Moapa dace, a small fish that is endemic to the area. The river and surrounding riparian areas also provide habitat for 27 other listed and sensitive species, including fish, birds, bats, invertebrates and amphibians. The upper Muddy River area, also home to the Moapa Valley National Wildlife Refuge, has long been recognized for its environmental value and as an important site for conservation and protection.

In 2007, SNWA purchased the former 1,220-acre “Warm Springs Ranch,” using funding secured under the Southern Nevada Public Lands Management Act. As part of the acquisition, SNWA committed to protecting and preserving the property as a natural area and to use this resource to:

- Support management of SNWA’s water resources in the Muddy River and Coyote Spring Valley
- Protect the habitat of the endangered Moapa dace
- Protect the headwaters of the Muddy River where SNWA owns and leases water rights
- Advance SNWA’s goal of fostering responsible environmental stewardship

Working with federal, state and local stakeholders, SNWA completed a Stewardship Plan for the Warm Springs Natural Area in 2011.⁴ The Stewardship Plan provides a framework for use and management of the property that preserves the integrity of natural resources and allows for management of water resources.

Since acquisition of the property, SNWA has focused on restoration of aquatic fish habitat, control and eradication of invasive species, fire prevention and general property maintenance. A public use trail system is also being constructed, to enable low-impact public use of the property. These conservation actions help to provide mitigation benefits for water development.



Warm Springs Natural Area

Dace on the Rise



The Moapa dace is endemic to the Muddy River.

The Moapa dace only occurs in the warm springs, tributaries and upper main stem of the Muddy River, and was listed as an endangered species in 1967. The USFWS recovery plan for the Moapa dace set a goal to delist the fish when the adult population reaches 6,000 in five spring systems for five consecutive years.⁵

The SNWA has worked with its partners to implement a number of activities to benefit the Moapa dace, including installation of non-native fish barriers, eradication of invasive fish species, restoring natural stream flow dynamics and riparian vegetation, and improving connectivity between springs and streams. These actions have helped the overall Moapa dace population to increase substantially, going from a low of 459 individuals in 2008 to over 1,900 in 2015.

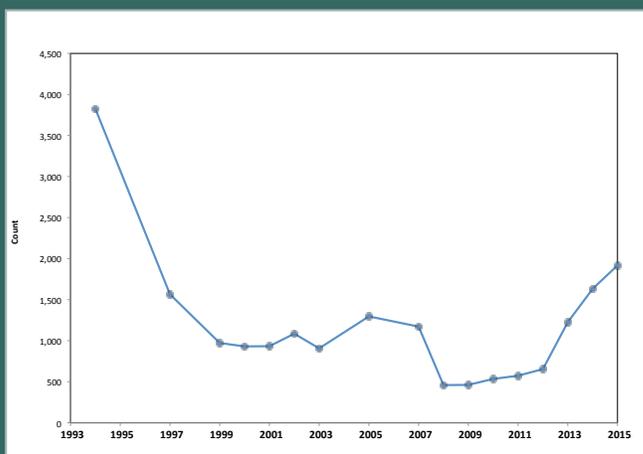


FIGURE 5.1 Moapa Dace Count Through 2015

VIRGIN RIVER

The Virgin River is one of the largest riparian corridors in the desert southwest; within Nevada, the lower Virgin River is home to the federally endangered woundfin (*Plagopterus argetissimus*), Virgin River chub, southwestern willow flycatcher, and Ridgway's rail and the federally threatened western yellow-billed cuckoo. Since 1993, SNWA has conducted and supported environmental studies on the Virgin River, including population and habitat surveys for these species.

To support its water planning efforts associated with Virgin River rights and leases, SNWA also participates in environmental stakeholder forums on the lower Virgin River, including the Virgin River Habitat Conservation Plan, which is being prepared by the City of Mesquite. In addition, the SNWA participates on the Lower Virgin River Recovery Implementation Team, which is working to develop a conservation action plan for the woundfin and Virgin River chub.

CLARK COUNTY

The SNWA participates in a number of environmental initiatives in Clark County to help protect and restore the environment, including the Clark County Multiple Species Habitat Conservation Plan and Las Vegas Wash Comprehensive Adaptive Management Plan. These efforts directly affect the SNWA's ability to operate facilities in Clark County and deliver high quality water to the community.

Clark County Multiple Species Habitat Conservation Plan

After the ESA listing of the desert tortoise (*Gopherus agassizii*) in 1989, local agencies in Clark County recognized the need to address concerns about listed or sensitive species that could affect development in the county. While projects on federal lands continue to receive project-specific ESA coverage from the USFWS, projects on private lands within the County receive ESA coverage under habitat conservation plans. Initially, the Clark County Desert Conservation Plan was approved in 1995. However, this plan only covered the desert tortoise. The county and local governments began discussing preparation of another habitat conservation plan that would also proactively conserve other sensitive species through an ecosystem approach.

The Clark County Multiple Species Habitat Conservation Plan (MSHCP)⁶ was approved in 2001, and provides ESA coverage for 78 species, including the desert tortoise. The MSHCP serves as an insurance policy to cover future

federal listings of species in areas where urban development is taking place. The key purpose of the MSHCP is to achieve a balance between the conservation and recovery of listed and sensitive species in Clark County and the orderly beneficial use of land to meet the needs of the growing population in Clark County. The SNWA actively participates in the MSHCP, which provides ESA coverage for its projects and facilities located on non-federal lands within the county.

Las Vegas Wash

The Las Vegas Wash is the primary channel through which the SNWA member agencies return water to Lake Mead for return-flow credits. These flows account for less than two percent of the water in Lake Mead and consist of urban runoff, shallow groundwater, storm-water and highly treated wastewater from the valley's four water reclamation facilities. Decades ago, the flows of the Wash created more than 2,000 acres of wetlands, but by the 1990s, only about 200 acres of wetlands remained. The dramatic loss of vegetation reduced both the Wash's ability to support wildlife and serve as a natural water filter.



Mature Vegetation Along the Wash

In 1998 at the request of its citizen's advisory committee, SNWA reached out to the community in an effort to develop solutions to the problems affecting the Wash. This led to the formation of the Las Vegas Wash Coordination Committee (LVWCC), a panel representing more than two dozen local, state and federal agencies, businesses, an environmental group, the University of Nevada Las Vegas and private citizens. The committee quickly developed a Comprehensive Adaptive Management Plan for the Wash,⁷ which identified 44 action items to help meet the goals of stabilization and enhancement of the Wash.

Over more than 15 years of working together, the LVWCC and its member agencies have taken significant strides toward improving the Las Vegas Wash. Early efforts focused on reducing the channelization of the Wash, reducing erosion and increasing the number of wetlands. Accomplishments to date include:

- Constructed 18 of 21 identified erosion control structures or weirs
- Stabilized more than 12 miles of the Wash's banks
- Removed more than 500 acres of non-native tamarisk
- Revegetated more than 400 acres with native plants
- Removed more than 500,000 pounds of trash from adjacent areas
- Organized more than 10,000 volunteers
- Completed extensive wildlife and water quality monitoring programs
- Built or improved more than two miles of trails
- Implemented an invasive species management program

Today, the Wash carries about 200 million gallons of water a day to Lake Mead. The efforts to stabilize the Wash have resulted in a greater than 60 percent reduction in the amount of total suspended solids in the water, and the removal of the Wash from Nevada Division of Environmental Protection's list of impaired waters.



NORTHERN NEVADA GROUNDWATER RESOURCES

As described in Chapter 3, SNWA holds groundwater rights in Spring, Delamar, Dry Lake and Cave valleys, in central Nevada. The SNWA is working to complete the environmental compliance and permitting that will allow these rights to be developed and conveyed to Southern Nevada when they are needed.

In 2006 and 2008, SNWA and U.S. Department of the Interior agencies, including the Bureau of Indian Affairs, Bureau of Land Management (BLM), USFWS and the National Park Service, entered into stipulations for withdrawal of protests for water right applications in Spring, Delamar, Dry Lake and Cave valleys.

Technical teams representing the agencies developed biological and hydrological monitoring plans pursuant to the obligations of the stipulated agreements. These monitoring plans were approved by the Nevada State Engineer under the 2012 water rights rulings and include the requirement for monitoring baseline conditions prior to groundwater withdrawals. Hydrologic monitoring is ongoing, in accordance with the Hydrologic Monitoring and Mitigation Plan for Spring Valley⁸ and the Hydrologic Monitoring and Mitigation Plan for Delamar, Dry Lake and Cave valleys.⁹ These efforts meet permit conditions of the water right rulings and conditions of the stipulated agreements.

In accordance with the Biological Monitoring Plan for Spring Valley, SNWA conducted two years of baseline biologic monitoring in 2009 and 2010.¹⁰ The biological technical team has been evaluating those monitoring efforts and is preparing recommendations for revision to the Spring Valley plan, which would be implemented during the remaining baseline monitoring. These recommendations may also be implemented in the Biological Monitoring Plan for Delamar, Dry Lake and Cave valleys.¹¹ In the interim, biological activities are focused on specific species monitoring efforts and small studies to further understand the ecosystems and biota.

Groundwater Development Project

In 2012 after more than eight years of research, analysis, review and public comment, the BLM completed an Environmental Impact Statement¹² and Record of Decision¹³ in accordance with NEPA for the primary water and power conveyance facilities associated with SNWA's Clark, Lincoln and White Pine Counties Groundwater Development Project. The BLM also consulted with the USFWS, as required under ESA, to assess potential effects on federally listed species. The right-of-way across federal land was issued to SNWA in 2013, and contains over 600 measures for environmental protection and mitigation.

The right-of-way and associated environmental compliance measures are for the first phase of the Groundwater Development Project; additional tiered compliance will be necessary when specific well sites and collector pipeline routes are identified. The SNWA continues working on some of the over 40 individual environmental plans that will be required for the project, so that it will be ready for design and construction when the water resource is needed.

The SNWA also holds groundwater applications in Snake Valley that would ultimately be part of the Groundwater Development Project. As discussed in Chapter 3, Utah has not yet signed an agreement regarding the division of groundwater supplies in Snake Valley. When an agreement is signed and the water is incorporated into the Groundwater Development Project, additional environmental compliance will be needed prior to receiving a right-of-way from federal land managing agencies.

Great Basin Ranch

Beginning in 2006, SNWA began acquiring ranch properties in Spring Valley from landowners who approached SNWA desiring to sell their properties. Since then, the SNWA has continued to operate the properties, collectively named the Great Basin Ranch, to ensure water rights associated with the properties are maintained in good standing through beneficial use and to ensure land resources remain productive. The land and water rights associated with Great Basin Ranch provide SNWA with an opportunity to integrate adaptive management with environmental mitigation during future development activities.

The seven properties acquired by the SNWA include the El Tejon, Robison, Huntsman, Harbecke, Wahoo, Phillips and Bransford ranches. As part of its ranch purchases, the SNWA has:

- More than 23,500 acres of private land
- More than 34,000 acre-feet of surface water rights
- More than 8,000 acre-feet of groundwater rights
- More than 23,000 acre-feet of supplemental water rights
- On average, 3,700 head of livestock (depending upon time of year and season)

The SNWA also holds roughly 933,500 acres in grazing allotment permits from the BLM and the U.S. Forest Service. There are a total of 15 grazing allotments that span Spring, Dry Lake, Cave, Lake, Tippet, Hamlin, Pahroc, Steptoe and Patterson valleys. SNWA-owned cattle and sheep graze these allotments under a program designed to maintain rangeland health standards.

The Great Basin Ranch provides opportunities for SNWA to better understand and manage hydrologic and biological resources of Spring Valley while continuing the historic agricultural and livestock operations. The SNWA accomplishes this by employing best management practices, such as adaptive grazing, water- and energy-efficient agricultural technologies, GPS tracking of livestock

and invasive weed-control treatments. Technical staff and contractors perform range monitoring and rangeland-condition analyses, among a variety of monitoring and reporting programs. The SNWA is also investigating use of surface-water rights acquired with the land holdings to support aquifer recharge. Through these management efforts, the SNWA is making significant progress toward creating a sustainable ranch operation.

SUSTAINABILITY

Sustainability transcends resource boundaries, but it is inseparably linked to the conservation of vital resources such as water and energy. This concept forms the framework for SNWA's sustainability initiatives, which focus on four main areas:

- Water
- Energy
- Environment
- Personal responsibility

As a water provider and educator in one of the region's driest communities, living a conservation ethic is an essential part the organization's work practices. The SNWA strives to provide sufficient water to the community while promoting conservation, utilizing reliable, renewable water resources and maintaining water quality with minimal impact on the environment.



Great Basin Ranch



The SNWA has undertaken a broad range of initiatives to help ensure conservation and preservation of water resources. For example, SNWA's chemical reduction program has increased non-chemical water treatment methods and reduced our carbon footprint by 309 metric tons of carbon equivalent.

As the state's largest energy user, the SNWA strives to reduce energy consumption and reduce environmental pollution through efficient energy use and incorporating use of renewable resources such as solar, wind, hydro, biomass and geothermal energy. The SNWA has voluntarily committed to meeting 25 percent of its energy needs through renewable resources by 2025, which parallels Nevada's Renewable Energy Portfolio Standards. The SNWA's current energy portfolio consists of approximately 13 percent derived from renewable resources, with that amount increasing to approximately 18 percent by 2016.

The SNWA's solar facilities generate more than 920,000 kilowatt hours of clean energy, enough to power nearly 60 average Southern Nevada homes annually. The SNWA's fleet is nearing its goal of becoming 100 percent alternative fueled, replacing standard-fueled vehicles with alternative-fueled models when appropriate.

The SNWA continues to identify ways to minimize the environmental impacts of operations and create a greener way of working. Reducing, reusing and recycling are key components of waste

reduction efforts. SNWA facilities are designed to be environmentally conscious, including certification under Leadership in Energy and Environmental Design green building program.

CONCLUSION:

The SNWA adheres to strict environmental laws and regulations that govern its use and development of resources and facilities. In addition, the SNWA proactively integrates environmental stewardship into facility operations and resource management. To support its long-term water resource planning and development efforts, the SNWA will:

- Continue its environmental planning, monitoring and mitigation efforts to minimize its footprint and protect community water supplies;
- Participate in environmental programs to enhance regulatory certainty for the flexible and adaptive use of resources;
- Work with partners to conserve habitat and work towards the recovery of threatened and endangered species, as well as reducing the likelihood of additional species listings; and
- Meet the community's current and long-term water resource needs while promoting conservation, utilizing reliable, renewable water resources and maintaining water quality with minimal impact on the environment.

ENDNOTES

- 1 Lower Colorado River Multi-Species Conservation Program, 2004. Lower Colorado River Multi-Species Conservation Program, Volume II: Habitat Conservation Plan. December 17, 2004.
- 2 "Colorado River Basin Water Supply and Demand Study," December 2012, U.S. Bureau of Reclamation.
- 3 "Memorandum of Agreement," April 20, 2006, SNWA.
- 4 SNWA, 2011. "Warm Springs Natural Area Stewardship Plan," June 2011, SNWA.
- 5 "Recovery Plan for the Rare Aquatic Species of the Muddy River Ecosystem," May 16, 1996, U.S. Fish and Wildlife Service Region 1, Portland, Oregon.
- 6 Clark County Multiple Species Habitat Conservation Plan and Environmental Impact Statement for Issuance of a Permit to Allow Incidental Take of 79 Species in Clark County, Nevada, September, 2000, Clark County Department of Comprehensive Planning and U.S. Fish and Wildlife Service.
- 7 "Las Vegas Wash Comprehensive Adaptive Management Plan," December 1999, Las Vegas Wash Coordination Committee.
- 8 "Hydrologic Monitoring and Mitigation Plan for Spring Valley (Hydrographic Area 184)," 2011 SNWA (Doc. No. WRD-ED-0012).
- 9 "Hydrologic Monitoring and Mitigation Plan for Delamar, Dry Lake, and Cave Valleys," 2011, SNWA (Doc. No. WRD-ED-0011).
- 10 Biological Monitoring Plan for the Spring Valley Stipulation, 2011 Biological Working Group.
- 11 Biological Monitoring Plan for Delamar, Dry Lake, and Cave Valley Stipulation, January, 2011, Biological Resource Team.
- 12 "Clark, Lincoln, and White Pine Counties Groundwater Development Project Final Environmental Impact Statement," August 2012, U.S. Bureau of Land Management.
- 13 "Clark, Lincoln, and White Pine Counties Groundwater Development Project Record of Decision," 2012, U.S. Bureau of Land Management.