

# U.S. Bureau of Land Management Nevada Groundwater Projects

## Southern Nevada Water Authority

## Right-of-Way Project Update

December 2010 – Newsletter No. 6

The Bureau of Land Management (BLM) Nevada Groundwater Projects Office has provided 5 newsletters (see box on page 8 for topics addressed) on the Southern Nevada Water Authority (SNWA) Clark, Lincoln, and White Pine Counties Groundwater Development (GWD) Project. Newsletter 6 offers scheduling updates, an update on the alternatives to be analyzed in the Draft Environmental Impact Statement (DEIS), and a discussion of how alternatives are selected for analysis.

## PROJECT UPDATES

### Hydrology Model

In November 2009, the SNWA submitted three hydrology model reports to the BLM for use in the DEIS analysis: 1) Conceptual Model of Groundwater Flow for the Central Carbonate-Rock Province; 2) Transient Numerical Model of Flow for the Central Carbonate-Rock Province; and 3) Simulation of Groundwater Development Scenarios Using the Transient Numerical Model of Groundwater Flow for the Central Carbonate-Rock Province. The three reports and associated model code were reviewed by the BLM hydrology team to determine their adequacy for use in the DEIS. The team identified several areas of the model requiring modification and the BLM coordinated with the SNWA to update the model accordingly. The SNWA completed the updates to the model and delivered the product to the BLM in August 2010. The model reports are considered preliminary until they are accepted by the BLM, and will be released to the public with the DEIS.

### The SNWA Plan of Development

The SNWA recently modified its proposed action to encompass all water rights applications submitted to the Nevada State Engineer (NSE) in the five pumping basins. The previous proposed action was based on the water right quantities originally granted by the NSE, which are now invalid. An updated water rights discussion is presented on page 7. The change in proposed action is limited to water quantities; no changes have been made that would affect the BLM's decision on granting the right-of-way (ROW). Future decisions by the NSE regarding quantities of water granted to the SNWA may result in small changes to the engineering design of the project. However, this is not expected to change the amount of land disturbance currently being analyzed in the DEIS.

In April 2010, prior to the changes in the SNWA's water rights status, the SNWA submitted an updated Plan of Development (POD). The changes summarized below still apply to the SNWA's current proposed action.

- **Project Map** - A current map of the GWD project alignment is included on page 4.
- **Appendix A - Applicant Environmental Protection Measures.** The SNWA updated its applicant measures in response to the BLM comments, and added a section with measures for future water-related effects. These measures are part of the SNWA's project proposal, and would be implemented as part of project construction and operation.

- The SNWA developed three categories of measures: 1) detailed measures associated with construction and operation of the main pipeline and associated facilities (National Environmental Policy Act [NEPA] Tier 1); 2) measures associated with future ROW grants related to this project, such as well field ROWs (NEPA Subsequent Tiers); and 3) measures associated with water related effects of groundwater development (NEPA Subsequent Tiers). The measures include design features, best management practices, monitoring, and standard operating procedures. In addition, the SNWA has agreed to protection measures through stipulations and agreements with the Department of Interior (DOI) agencies (which are included under the third category of the SNWA's applicant environmental protection measures).

**Tiering**  
The concept of NEPA Tiering was discussed in Newsletter #4.



- **Additional Project Design and Construction Descriptions.** The new POD provides additional descriptions for design and construction of the pipeline. Additions include detail on pipeline design criteria, power pole bird perch deterrents, radio communication facilities, assumptions on future well spacing, potential future hydroturbine electrical generation, additional detail on construction and operation, and updates to the anticipated construction schedule and associated workforce estimates. A map

of anticipated groundwater exploratory areas also was added to the POD.

The SNWA will prepare an updated POD by early 2011 to address the change in the Proposed Action to the water right application quantities. There would be no change to the requested ROW. Minor changes to descriptions, schedule, and applicant measures also will be incorporated into the POD update so that it will be consistent with BLM's analysis in the DEIS.

## ALTERNATIVES ANALYZED IN THE DRAFT EIS

In Newsletter #3 (December 2008), the BLM Groundwater Projects Office provided detailed information on alternatives to be analyzed in the DEIS. In response to input from stakeholders and additional or revised information, the pumping alternatives chosen for detailed analysis are presented in the table below. The relationship of the alignment alternatives to the pumping alternatives also is shown.

Summary of Project Groundwater Development Scenarios		
Pumping Alternative	ROW Description	SNWA Groundwater Development Scenarios <sup>1</sup>
Proposed Action - Distributed Pumping at Application Quantities	All requested ROWs for main and lateral pipelines, and associated ancillary facilities required to convey up to 217,655 acre feet per year (afy)	Facilities to pump up to 184,655 afy from 5 basins at distributed locations
A - Distributed Pumping at Reduced Quantities	All requested ROWs for main and lateral pipelines, and associated ancillary facilities required to convey up to 155,755 afy	Facilities to pump up to 122,755 afy from 5 basins at distributed locations
B - Point of Diversion Pumping at Application Quantities	All requested ROWs for main and lateral pipelines, and associated ancillary facilities required to convey up to 217,655 afy	Facilities to pump up to 184,655 afy from 5 basins at or near Points of Diversion
C - Intermittent Pumping at Reduced Quantities	All requested ROWs for main and lateral pipelines, and associated ancillary facilities required to convey 45,000 to 155,755 afy	Facilities for a range of volumes from 12,000 afy to 122,755 afy from 5 basins at distributed locations; groundwater pumping over intermittent periods, based upon considerations such as availability of surplus Colorado River water, and effects to environmental resources
D - Distributed Pumping at Reduced Quantities in Lincoln County Only	ROWs for main and lateral pipelines, and associated ancillary facilities required to convey up to 119,755 afy from within Clark and Lincoln counties only, as authorized under the Lincoln County Conservation, Recreation, and Development Act (LCCRDA)	Facilities to pump up to 86,755 afy from 4 basins at distributed locations within the Lincoln County portion of Spring Valley and Delamar, Dry Lake, and Cave (DDC) valleys
E - Distributed Pumping at Reduced Water Quantities in valleys Spring/DDC	ROWs for main and lateral pipelines, associated ancillary facilities required to convey up to 119,755 afy from within Spring and DDC valleys	Facilities to pump up to 86,755 afy from 4 basins at distributed locations within Spring, and DDC valleys

<sup>1</sup> Water quantities in this column are less than described in column 2. For each alternative, column 2 provides the full amount of groundwater that may be conveyed in the pipeline, which includes capacity for Lincoln County. Column 3 shows the amount of water that may be conveyed in the pipeline for SNWA only; the difference between the two numbers is the capacity reserved for Lincoln County. Lincoln County has not yet identified all of the sources of water for their capacity. When these additional sources are identified, they will be analyzed in future NEPA documents.

Definitions		
Alternative Pumping Locations	Alternative Pumping Locations Quantities/Scenarios:	Alternative ROW Locations:
<p><b>Points of Diversion.</b> Wells would be placed at or near specific geographic locations identified in the water rights applications submitted by SNWA.</p> <p><b>Distributed Pumping.</b> Wells would be sited to minimize potential reduction in flowing springs and drawdowns in nearby wells. Locations would be optimized based on groundwater modeling.</p>	<p><b>Application Quantity.</b> The DEIS analyzes impacts of all SNWA water right applications in the five pumping basins.</p> <p><b>Reduced Quantity.</b> The DEIS analyzes impacts of the amount of water granted in the 2006-2007 NSE rulings (now invalid) for Spring and DDC valleys, and the amount of water approximately identified as available in the UT-NV Draft Agreement for Snake Valley.</p> <p><b>Intermittent Pumping.</b> The amount of groundwater pumped could be a minimum operational amount or the full permitted quantity, depending on the availability and reliability of other water sources.</p>	<p><b>All Facilities (Proposed Action and Alternatives A through C).</b> ROW for main and lateral pipelines associated facilities, and power facilities would be granted in all five pumping basins.</p> <p><b>LCCRDA (Alternative D).</b> Only the ROW in the corridor defined in LCCRDA would be developed (i.e., only in Clark and Lincoln Counties). SNWA could access Spring Valley groundwater rights only by concentrating wells in the Lincoln County portion of Spring Valley.</p> <p><b>Spring/DDC (Alternative E).</b> Only the ROW in the LCCRDA corridor plus the Spring Valley lateral would be developed. SNWA could access their groundwater rights only from Spring and DDC valleys.</p>
Summary of Project Alignment Alternatives		
Alternative Pumping Locations	Alternative Pumping Locations Quantities/Scenarios	Alternative ROW Locations:
F - Humboldt-Toiyabe Electrical Power Line Alignment	Opportunity to locate the Gonder to Spring Valley power line within an existing transmission line corridor across Forest Service land.	Applies to the Proposed Action and Alternatives A, B, C, and E.
G - North Lake Valley Pipeline and Electrical Power Line Alignment	Opportunity to locate the main pipeline and power line within an existing transportation utility corridor (U.S. Highway 93).	Applies to the Proposed Action and Alternatives A, B, C, and E.
H - Muleshoe Substation and Power Line Alignment	Opportunity to utilize an alternative source of power from a new regional transmission line, and avoid construction of the Gonder to Spring Valley power line.	Applies to the Proposed Action and Alternatives A, B, C, and E.
I - North Delamar Valley Pipeline Alignmen	Opportunity to locate both the pipeline and powerline within the corridor.	Applies to Proposed Action and all pumping alternatives.

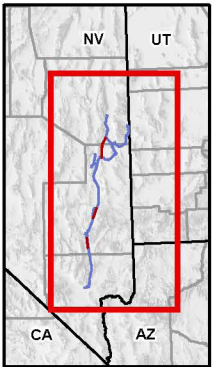
### Purpose

The purpose of the action for the BLM is to provide the applicant with legal access across federal land managed by the BLM for construction and operation of a groundwater development and conveyance system. The applicant has requested the proposed ROWs to develop and convey groundwater associated with applications submitted to the NSE in Spring, Snake, Cave, Dry Lake, and Delamar valleys to the Las Vegas Valley, and to fulfill its contractual obligation to provide system capacity in Lincoln County to the Lincoln County Water District.

# Southern Nevada Water Authority

## GWD Project Alignment

- ★ City or Town
- Interstate Highway
- US Highway
- State Route
- State Boundary
- County Boundary
- Proposed Power Line Centerline
- Alternate Power Line Centerline
- Proposed Alignment Centerline
- Alternate Alignment Centerline
- Alternate Electrical Substation Site



This map illustrates the proposed pipeline and associated facilities alignment.



The information depicted on this map represents data collected from various sources by the Southern Nevada Water Authority and is intended for planning purposes only.

MAP ID 17629-3220 09/20/2010 RHG

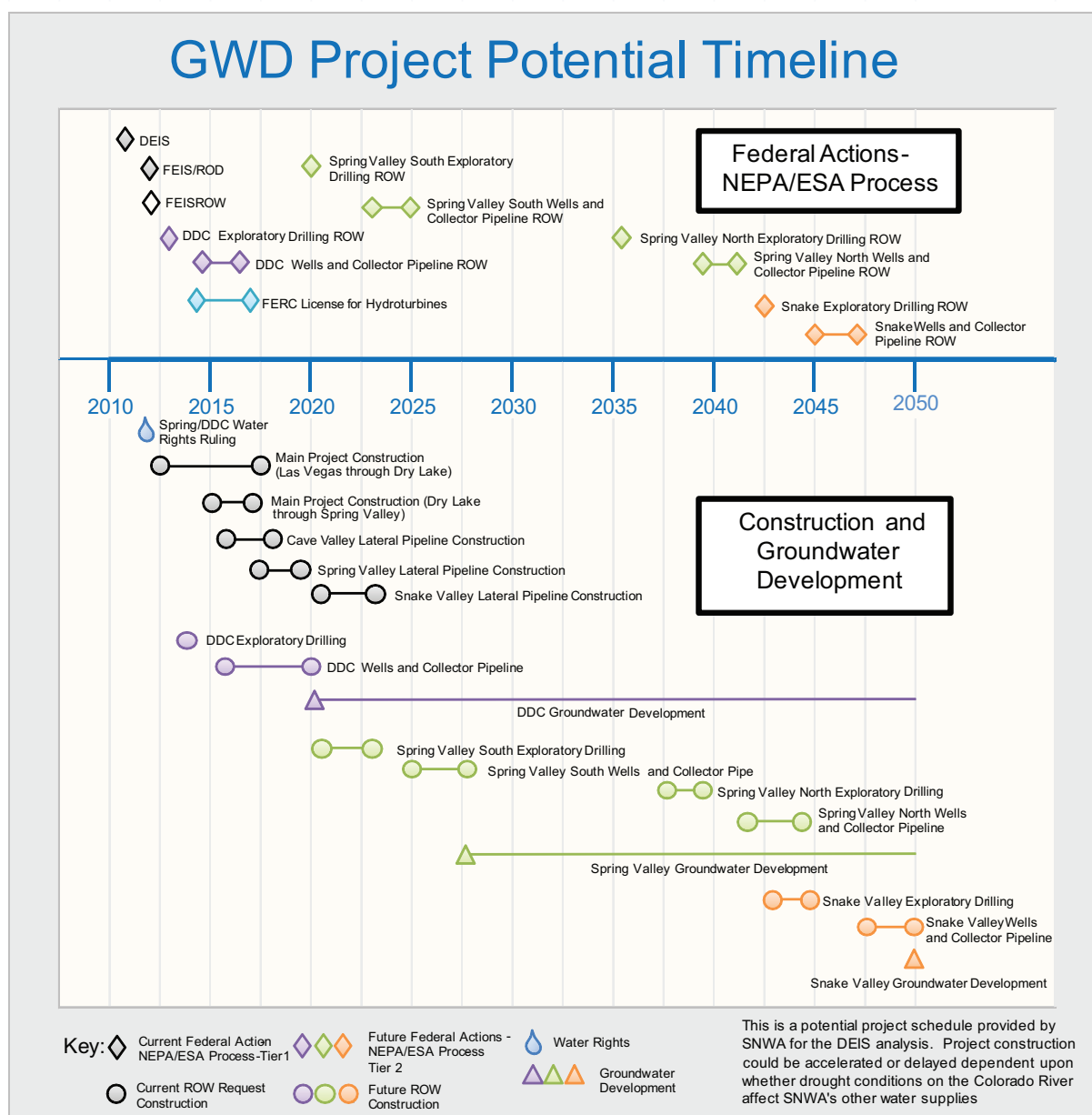
## Schedule

The most recent schedule posted by the BLM Groundwater Projects Office shows the release of the GWD DEIS in April 2010. However, this date has been postponed until Spring 2011 to allow for the following:

- Improving the analysis using the revised hydrology model described previously;
- Incorporating substantive comments and information provided by BLM's internal review team and the cooperating agencies; and
- Providing new and updated analyses for the revised Proposed Action and alternatives, and other additions and revisions.

A specific release date has not been determined. The groundwater projects offices will send out a newsletter at least one month in advance of the DEIS publication; the newsletter will provide specific dates for upcoming activities and information related to reviewing and commenting on the document.

Many of you have asked how all the phases of this project fit together. The following timeline graphic illustrates the different components with their approximate duration and the duration of the project as a whole.



## HOW ALTERNATIVES ARE CHOSEN FOR DETAILED ANALYSIS

NEPA requires the BLM to explore and evaluate reasonable alternatives to the Proposed Action.

The purpose and need of a project is instrumental in establishing the range of reasonable alternatives. Project alternatives are potential substitutes for the Proposed Action capable of accomplishing the general goal of the project in another manner or are other means of carrying out the Proposed Action.

Future groundwater development is proposed within hydrographic basins in Lincoln and White Pine counties, Nevada, contingent upon approval of water rights by the NSE. Groundwater would be conveyed for subsequent delivery to interconnections with municipal systems in Lincoln County, and the Las Vegas Valley. Possible alternatives were screened against this purpose and need criterion.

Given the underlying purpose to provide for conveyance of groundwater developed by the SNWA within the stated hydrographic basins, the BLM examined:

1. Transporting groundwater from groundwater development areas to Lincoln County and the Las Vegas Valley via trains, trucks, and aqueducts;
2. Developing different means to supply water to Las Vegas; and
3. Implementing different configurations of the proposed water development and conveyance system.

Following analysis, it was determined that none of the alternatives in the first category would result in lesser environmental impacts, or be more economical to develop than the Proposed Action. The proposed alternatives in the second category did not meet the project's purpose and need. Therefore, only alternatives developed under item three above were carried forward for detailed analysis.

### EXAMPLES OF ALTERNATIVES NOT CARRIED FORWARD FOR DETAILED ANALYSIS

The BLM's role is to evaluate the ROW application submitted by the SNWA to access, develop and convey its potential water rights in Clark, Lincoln, and White Pine counties. To be considered for further evaluation in the EIS, the proposed alternatives must satisfy the BLM's purpose and need. Described below are examples of alternatives suggested during the public scoping process. They potentially are reasonable alternative water sources, and the SNWA has identified some of them as part of its Resource Plan (SNWA 2009 Water Resource Plan available at [www.snwa.com](http://www.snwa.com)). However, they do not satisfy the purpose and need criteria, and therefore, were not carried forward.

#### **Water Management**

The BLM received numerous ideas for water management in the Las Vegas Valley, including requirements and incentives to reduce the average per capita use (conservation) and converting agricultural water to municipal and industrial uses.

#### **Optional Water Sources (Desalination)**

Several optional water supply alternatives were suggested, including desalination. The two most common desalination methods are reverse osmosis and distillation. Both processes remove salt and other impurities from ocean water or other water sources with a high percentage of salt and impurities. SNWA is exploring desalination as part of its long-term strategy, including participation in a bi-national study between the U.S. and Mexico to explore desalination opportunities. Any agreement between the two nations is likely many years out, with additional time required for implementation.

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#### **Conservation**

SNWA has adopted several conservation measures, including water use restrictions, incentives, and education. Details of their conservation activities are provided in the 2009 Water Resource Portfolio available at [www.snwa.com](http://www.snwa.com)

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#### **Agricultural Water Rights Transfer**

SNWA has, and may continue to, acquire properties with irrigation rights, and may improve or modify agricultural operations to reduce water use. Any resulting unused water credits could be transferred to the SNWA.

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#### **Desalination**

A 1-year test run of the Yuma desalting plant is occurring and the desalted water is being sent to Mexico in exchange for Lake Mead water credits to NV, CA, and AZ. Substantial information on desalination processes currently in use is available on the internet. The following websites are good examples of information on desalination: <http://ga.water.usgs.gov/edu/drinkseawater.html> and [http://www.pacinst.org/reports/desalination/desalination\\_report.pdf](http://www.pacinst.org/reports/desalination/desalination_report.pdf).

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## WATER RIGHTS NEWS

In 1989, the Las Vegas Valley Water District applied for water rights in Spring, Cave, Dry Lake, and Delamar valleys. SNWA, established in 1991, now holds those applications. In September 2006, the NSE held a public hearing on the Spring Valley water rights applications, and on April 16, 2007, SNWA was granted a total combined duty of 60,000 afy. In February 2008, the NSE held a public hearing on the Delamar, Dry Lake, and Cave valleys (known as “DDC”) water rights applications, and on July 9, 2008 issued a ruling that granted SNWA a total combined duty of 18,755 afy. The NSE has not yet held a hearing for the Snake Valley water rights applications. A hearing was scheduled for Fall 2011, but that has since been postponed indefinitely by the NSE. On January 28, 2010, the Nevada Supreme Court ruled that the NSE violated his duty by failing to act on the applications within 1 year of the protest period, which occurred at the same time the applications were initially filed in 1989. On June 17, 2010 the Court further ruled that the applications must be republished and the protest period reopened. On October 18, 2010, the NSE issued a second informational statement announcing that the republication of applications would occur in February 2011. The 30 day protest period is projected to end in March 2011 and hearings will likely take place in September, October, and November 2011.

Since the NSE has determined that all previous water right permits are no longer valid, SNWA has chosen to alter the Proposed Action to reflect the full quantity of the pending water rights applications. This alternative will analyze the impacts of pumping the full water rights application quantities in all five pumping basins. Alternative A, Reduced Pumping, will analyze the impacts of pumping the amounts granted in the previous but no longer valid rulings for Spring and DDC Valleys, and the amount identified in the Draft UT/NV Agreement for Snake Valley. The DEIS is analyzing the maximum impacts from groundwater pumping, as well as the maximum construction footprint.

Any amount of water granted by the NSE would result in impacts equal to or less than described in the Proposed Action analysis. The range of alternatives provides the public some idea of what the impacts would be if the NSE grants water rights similar to past rulings for Spring and DDC Valleys and those identified in the Draft UT/NV Agreement for Snake Valley. In addition, the Final EIS and subsequent tiered NEPA documents will provide analyses that use any NSE rulings available at the time of publication.



## Newsletter #6

*If you have topics you would like to see addressed in future newsletters, please send your ideas to [nvgwprojects@blm.gov](mailto:nvgwprojects@blm.gov)*

Previous Newsletters	Topics Covered
#1, January 2007 <b>PROJECT OVERVIEW</b>	<ul style="list-style-type: none"> <li>• The SNWA's Proposed Project</li> <li>• Public Participation</li> <li>• Project Schedule</li> <li>• Cooperating Agencies</li> </ul>
#2, November 2007 <b>EIS UPDATES</b>	<ul style="list-style-type: none"> <li>• The SNWA's Updated Plan of Development</li> <li>• EIS Alternative Categories</li> <li>• EIS Activities: Tribal Consultation; Hydrology; Natural Resources; Socioeconomics</li> <li>• Water Rights News: DDC hearing schedule; Spring Valley Ruling and Stipulated Agreement; SNWA Data Collection</li> <li>• Project Schedule</li> </ul>
#3, December 2008 <b>EIS UPDATES and ALTERNATIVES</b>	<ul style="list-style-type: none"> <li>• The SNWA's Proposed Project (updated from the January 2007 newsletter)</li> <li>• Project Schedule</li> <li>• The SNWA's Updated Plan of Development</li> <li>• Baseline Summary Reports Availability</li> <li>• Hydrology Model Progress</li> <li>• EIS Alternatives (specifics of each alternative)</li> <li>• Ancillary Activities</li> <li>• Water Rights News: DDC Ruling; Snake Valley hearing schedule</li> <li>• Insert: Project Maps</li> </ul>
#4, March 2009 <b>NEPA</b>	<ul style="list-style-type: none"> <li>• The NEPA Process</li> <li>• Supplemental NEPA (Tiering Process being used for this project)</li> <li>• Cooperating Agency Involvement</li> <li>• Insert: Acronyms and Terms</li> </ul>
#5, November 2009 <b>WATER RIGHTS</b>	<ul style="list-style-type: none"> <li>• Utah/Nevada Draft Agreement on Snake Valley Groundwater Management</li> <li>• Nevada Water Rights Process</li> <li>• Water Rights Stipulated Agreements</li> <li>• Incorporation of Agreements in the EIS</li> <li>• Water Rights News: Judicial Review of DDC Ruling</li> <li>• Project Schedule</li> <li>• EIS Updates: Hydrology Model Progress; New Cooperating Agency</li> <li>• Insert: Using the Groundwater Projects Web Page</li> </ul>
Note: As with any long-term project, the information provided in earlier newsletters often becomes outdated. Our goal for subsequent newsletters is to provide project updates and additional information on project progress.	

### BLM Groundwater Projects Office

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 Website: [http://www.blm.gov/nv/st/en/prog/planning/groundwater\\_projects/eis\\_home\\_page/snwa\\_groundwater\\_project.html](http://www.blm.gov/nv/st/en/prog/planning/groundwater_projects/eis_home_page/snwa_groundwater_project.html)

### Cooperating Agencies

Central Nevada Regional Water Authority  
 National Park Service  
 Nellis Air Force Base  
 Nevada Counties: Clark, Lincoln, White Pine  
 Nevada Department of Wildlife  
 State of Utah

U.S. Army Corps of Engineers  
 U.S. Bureau of Indian Affairs  
 U.S. Bureau of Reclamation  
 U.S. Fish and Wildlife Service  
 U.S. Forest Service  
 Utah Counties: Juab, Millard, Tooele