U.S. Department of the Interior
Bureau of Land Management

Finding of No Significant Impact and Decision Record
DOI-BLM-NV-0200-2008-026-EA
September 18, 2009

INTERBASIN ZONE GROUNDWATER MONITORING WELLS

Spring and Hamlin Valleys, Lincoln and White Pine Counties, Nevada

Southern Nevada Water Authority
Groundwater Resources Department
P.O. Box 99956
Las Vegas, NV 89193-9956

Schell Field Office
Ely, Nevada
Phone # (775) 289-1800
Fax: (775) 289-1910

BLM

NATIONAL SYSTEM OF PUBLIC LANDS

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
ELY DISTRICT OFFICE

INTRODUCTION

I have reviewed Environmental Assessment (EA) DOI-BLM-NV-L0200-2008-026- EA, for the *Interbasin Zone Groundwater Monitoring Wells*, dated September 18, 2009 taking into consideration the project design specifications, including monitoring measures identified in the EA:

Monitoring: Periodic monitoring will consist of the following:

- BLM and SNWA will monitor the Proposed Action sites for the continued operation of groundwater monitoring equipment until the wells have been plugged, abandoned and reclaimed. Noxious and invasive weed populations will be monitored at the well sites. Seedling establishment, which would stabilize soils and minimize the introduction and spread of weeds, would also be monitored at the well sites prior to termination of the ROW grant.

I have also considered the Council on Environmental Quality's (CEQ) criteria for significance (40 CFR 1508.27), both with regard to the context and the intensity of impacts described in the EA:

Context:

The proposed action well sites are located in an uninhabited area of no local, regional or national importance.

Intensity:

1) *Impacts that may be both beneficial and adverse:* The Environmental Assessment has analyzed and disclosed both beneficial and adverse impacts of the Proposed Action. These impacts combined do not amount to any significant impacts.

2) *The degree to which the Proposed Action affects public health or safety:* The Proposed Action does not affect public health or safety either adversely or in a significantly beneficial manner. The subsequent land use would be regulated by local, state, and federal regulations as applicable; therefore, no adverse affects to public health or safety are anticipated.

3) *Unique characteristics of the geographic area such as proximity to historical or cultural resources, parks lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas:* There are no parks lands, prime farmlands, wild and

scenic rivers, known wetland/riparian areas, or ecologically critical areas on the Proposed Action sites. Cultural inventories have been performed and no sites eligible for nomination to the National Register of Historic Places are located at the Proposed Action sites.

4) *The degree to which the effects on the quality of the human environment are likely to be highly controversial:* The effects of drilling and testing groundwater wells are well established and there is little to no controversy as to what they are.

5) *The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks:* The effects of drilling and testing groundwater wells are well established. Nevada State Code provides protection to prevent adverse impacts. No known risks exist on the proposed well sites. It is highly unlikely that any unknown, unique, or uncertain risks exist.

6) *The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration:* Use of the sites would occur for a 30 year period. Drilling and testing groundwater wells is a common occurrence on public and private lands throughout the United States. No precedent for future actions with significant effects would be established.

7) *Whether the action is related to other actions with individually insignificant, but cumulatively significant impacts:* Based on the conditions set forth in this Finding of No Significant Impact and Decision Record, no significant impacts will occur due to the Proposed Action. The subsequent land use would be regulated by local, state, and federal regulations as applicable; therefore, no significantly cumulative impacts are anticipated.

8) *The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing on the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historic resources:* No sites eligible for nomination to the National Register of Historic Places are located at the proposed well sites. Because the needs assessment identified no sites would be damaged, no significant impacts are suspected.

9) *The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973:* The Proposed Action would not adversely affect endangered or threatened species or their habitat. No endangered or threatened species were identified, so no significant impacts are expected.

10) *Whether the action threatens a violation of Federal, State, local or tribal law or requirements imposed for the protection of the environment:* This action is consistent with federal, state, local, and tribal laws and other requirements for the protection of the environment. All agencies were properly notified of the Proposed Action and given appropriate comment time to respond.

FINDING OF NO SIGNIFICANT IMPACT

I have determined that, with incorporation of the monitoring measures listed above, the proposed action will not significantly affect the quality of the human environment and that preparation of an Environmental Impact Statement (EIS) is not required.

/s/ Mary D'Aversa 9/22/09

Mary D'Aversa Date
Field Manager
Schell Field Office

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Schell Field Office
HC33 Box 33500 (702 N. Industrial Way)
Ely, Nevada 89301-9408
http://www.blm.gov/nv/st/en/fo/ely_field_office.html

In Reply Refer To: NVL0200
NVN-84333

D E C I S I O N

Southern Nevada Water Authority Groundwater Resources Dept. P.O. Box 99956 Las Vegas, NV 89193-9956	: : : :	Decision Record ROW Grant DOI-BLM-NV-L0200-2008-026-EA

I have reviewed the application, the Environmental Assessment (EA), and have made a Finding of No Significant Impact (FONSI) for Southern Nevada Water Authority proposal for the Interbasin Zone Groundwater Monitoring Wells. Based on that review and the record as a whole, I approve granting the proposed Right-of-Way NVN-84333.

RATIONALE:

1) The Proposed Action is in conformance with the Ely District Record of Decision and Approved Resource Management Plan signed in August of 2008. In the EA, Section C of the Introduction documents the conformance review.

2) The proposal for public land rights-of-way are made under the authority of Section 501 of the FLPMA (43 Code of Federal Regulations [CFR] 2801).

3) The Proposed Action is consistent with all other federal, state, local, and tribal policies and plans to the maximum extent possible.

PUBLIC INVOLVEMENT:

State, county, and local agencies, tribal agencies, adjacent landowners, and various organizations were informed about the proposed SNWA Interbasin Zone groundwater monitoring wells project in Lincoln and White Pine Counties, Nevada. The EA was posted on the Ely BLM website for a 30 day period for public information and comments.

Three comment letters were received on the EA from the following Parties:

- Tsosie & Hatch, Attorneys at Law, on behalf of the Confederated Tribes of the Goshute Reservation (the Goshute)
- Great Basin Water Network
- Water Keepers

The Goshute expressed concern that archaeological and/or cultural sites would be impacted by the proposed action. BLM specialists determined that language in the EA was confusing. Reviews of the surveys that had been completed for the project revealed that no sites eligible for the National Registry of Historic Places would be affected by the proposed action and there was no need for detailed analysis. The cultural impact analysis section was removed due to no eligible sites being affected.

The Great Basin Water Network and Water Keepers both had several comments. Chapter 1 of the EA was revised to clarify the need for the proposed action and why it was considered a separate action from the Clark, Lincoln and White Pine Counties Groundwater Development Project EIS. Chapters 3 and 4 were revised to provide additional information on access roads and oil and gas deposits and to remove extraneous and confusing information on water resources. In addition, the title of the EA was changed to reflect the primary purpose of the proposed wells as monitoring wells. Both parties also expressed concerns on several issues that were outside the scope of the analysis.

The EA, with the previously identified minor revisions, will be posted on the Ely website at http://www.blm.gov/nv/. Persons interested may access the document at the website by first clicking on the "Ely" District and then selecting the document to download.

This document is available upon request to the Schell Field Office, U.S. Highway 93, 702 North Industrial Way (HC 33 Box 33500), Ely, NV 89301-9408.

APPEALS:

This decision may be appealed to the Interior Board of Land Appeals, Office of the Secretary, in accordance with the regulations contained in 43 CFR, Part 4. The appellant has the burden of showing that the decision appealed from is in error. If an appeal is taken, a notice of appeal must be filed at the Bureau of Land Management, Schell Field Office, 702 North Industrial Way, Ely, NV within 30 days of either of receipt of the decision if served a copy of the document, or otherwise within 30 days of the date of the decision. If sent by United States Postal Service, the notice of appeal must be sent to the following address:

Bureau of Land Management
Schell Field Office
HC 33 Box 33500
Ely, NV 89301-9408.

The appeal may include a statement of reasons at the time the notice of appeal is filed, or the statement of reasons may be filed within 30 days of filing this appeal. At the same time the

original documents are filed with this office, copies of the notice of appeal, statement of reasons, and all supporting documentation also must be submitted to each party named in this decision and to the Department of Interior Solicitor at the following address:

Regional Solicitor, Pacific Southwest Region
U.S. Department of the Interior
2800 Cottage Way, Room E-2753
Sacramento, CA 95825-1890

If a statement of reasons is filed separately from the notice of appeal, it also must be sent to the following location within 30 days after the notice of appeal was filed:

Board of Land Appeals
Office of Hearings and Appeals
4015 Wilson Boulevard
Arlington, VA 22203

In accordance with 43 CFR 2801.10, this Decision will remain in full force and effect during the appeal unless a written request for a Stay is granted. If the appellant wishes to file a petition pursuant to regulations at 43 CFR 4.21 for a stay of the effectiveness of this decision during the time that the appeal is being reviewed by the Board, the petition for a stay must accompany the notice of appeal. A petition for a stay is required to show sufficient justification based on the standards listed below. If the appellant requests a stay, the appellant has the burden of proof to demonstrate that a stay should be granted.

Standards for Obtaining a Stay
Except as otherwise provided by law or by other pertinent regulation, a Petition for a Stay of a Decision pending appeal shall show sufficient justification based on the following standards:

(1) The relative harm to the parties if the stay is granted or denied,
(2) The likelihood of the appellant's success on the merits,
(3) The likelihood of immediate and irreparable harm if the stay is not granted, and
(4) Whether the public interest favors granting the stay.

Approved by:

/s/ Mary D'Aversa
Mary D'Aversa
Field Manager
Schell Field Office

9/22/09
Date

U.S. Department of the Interior
Bureau of Land Management

Environmental Assessment
DOI-BLM-NV-L0200-2008-026-EA
September 18, 2009

INTERBASIN ZONE GROUNDWATER MONITORING WELLS

Location:
Spring and Hamlin Valleys, Lincoln and White Pine Counties, Nevada

Applicant: Southern Nevada Water Authority

Schell Field Office
Ely Nevada
Phone: (775) 289-1800
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BLM

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PROJECT NAME: Interbasin Zone Groundwater Testing Wells
CASE FILE #: N-84333
DESCRIPTION: Mt. Diablo Meridian, Nevada

Permanent Right-of-Way

Site SPR7009M (formerly Site 184W525M): SE¼ of the SW¼ of the NE¼ of Section 36, Township 10 North, Range 68 East. The well site would be approximately 209 feet wide by 209 feet long.

Site SPR7010M (formerly Site 184W526M): NE¼ of the NE¼ of the SE¼ of Section 30, Township 8 North, Range 69 East. The well site would be approximately 209 feet wide by 209 feet long.

Site HAM1005M (formerly Site 196W501M): NE¼ of the NW¼ of the NW¼ and NW¼ of the NE¼ of the NW¼ of Section 2, Township 9 North, Range 69 East. The well site would be approximately 209 feet wide by 209 feet long.

Site HAM1006M (formerly Site 196W502M): N½ of the SE¼ of the NE¼ of Section 32, Township 9 ½ North, Range 70 East. The well site would be approximately 209 feet wide by 209 feet long.

Site HAM1007M (formerly Site 196W503M): SE¼ of the SW¼ of the SW¼ and SW¼ of the SE¼ of the SW¼ of Section 20, Township 9 North, Range 69 East. The well site would be approximately 209 feet wide by 209 feet long.

Total permanent right-of-way approximately 5.0 acres.

Short-Term Right-of-Way

Site SPR7009M (formerly Site 184W525M): SE¼ of the SW¼ of the NE¼ of Section 36, Township 10 North, Range 68 East. The well site would be approximately 318 feet wide by 274 feet long.

Site SPR7010M (formerly Site 184W526M): NE¼ of the NE¼ of the SE¼ of Section 30 and NW¼ of the NW¼ of the SW¼ of Section 29, Township 8 North, Range 69 East. The well site would be approximately 318 feet wide by 274 feet long.

Site HAM1005M (formerly Site 196W501M): NE¼ of the NW¼ of the NW¼ and W½ of the NE¼ of the NW¼ of Section 2, Township 9 North, Range 69 East. The well site would be approximately 318 feet wide by 274 feet long.

Site HAM1006M (formerly Site 196W502M): N½ of the SE¼ of the NE¼ of Section 32, Township 9 ½ North, Range 70 East. The well site would be approximately 318 feet wide by 274 feet long.

Site HAM1007M (formerly Site 196W503M): SE¼ of the SW¼ of the SW¼ and SW¼ of the SE¼ of the SW¼ of Section 20, Township 9 North, Range 69 East. The well site would be approximately 318 feet wide by 274 feet long.

Total short-term right-of-way approximately 5.0 acres.

CASE TYPE: Federal Land Policy and Management Act Title V Section 501, Right-of-way
APPLICANT: Southern Nevada Water Authority

I. INTRODUCTION

This Environmental Assessment (EA) has been prepared to analyze the Southern Nevada Water Authority's Rights-of-Way (ROW) application relative to the Interbasin Zone Groundwater Monitoring Wells. The EA is a site-specific analysis of potential impacts that could result with the implementation of a proposed action or alternatives to the proposed action. The EA assists the Bureau of Land Management (BLM) in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any "significant" impacts could result from the analyzed actions. "Significance" is determined by the consideration of context and intensity of the impacts. If there is a Finding of No Significant Impact (FONSI), the context and intensity criteria are listed with rationale for the determination in the FONSI document.

This document is tiered to the *Ely Proposed Resource Management Plan/Final Environmental Impact Statement* (RMP/EIS) released in November 2007. Should a determination be made that implementation of the proposed action would not result in "significant environmental impacts" or "significant environmental impacts beyond those already disclosed in the RMP EIS", a FONSI will be prepared to document that determination, and a Decision Record issued providing the rationale for approving the chosen alternative.

A. Background Information

On November 21, 2007, the Southern Nevada Water Authority (SNWA) applied for ROW to install and maintain five groundwater monitoring wells located in Spring and Hamlin valleys, within Lincoln and White Pine counties, Nevada. On March 21, 2008, the SNWA amended the ROW application to move one proposed well site due to historic artifacts that were identified near proposed well site HAM1007M (formerly site 196W503M).

The five groundwater monitoring wells would be installed and used to collect groundwater level data in Spring and Hamlin valleys (Proposed Action). A permanent ROW grant with a term of 30 years and a short-term ROW grant with a term of 1 year are requested. Each well site would consist of 1 acre of permanent ROW and 1 acre of short-term ROW. At four of the five sites, the short-term ROW area is located on three sides of the permanent site, with the fourth side being a road. At the fifth site, the short-term ROW area completely surrounds the site and two roads cross through the short-term ROW area (access to the roads would not be blocked). The sites would be located entirely on public land managed by the BLM. Access to the sites would be from existing roads. No new access roads would be required. The total permanent ROW for the Proposed Action is approximately 5.0 acres and the total short-term ROW is approximately 5.0 acres. Maps and site photographs are provided in Attachment 1.

B. Purpose and Need

1. Purpose of the Proposed Action

The BLM's purpose in considering approval of the application for the ROW is to provide legitimate use of the public lands to the proponent. Legitimate uses are those that are authorized under the Federal Land Policy and Management Act (FLPMA) of 1976 (or other Public Land Acts) and meet the proponent's objective while preventing undue and unnecessary degradation.

The proponent's objective is to collect data to better understand groundwater flow patterns and the hydraulic gradient between Spring and Hamlin valleys. SNWA would also collect and analyze water quality samples to evaluate hydrogeochemistry of the carbonate and basin-fill aquifers, and collect geologic, geophysical, and hydraulic data from the well sites. The data obtained would also be available to assist federal, state, and local agencies in their current and future decision making in groundwater modeling analyses and impact assessments.

The justification for the project is to comply with the 2006 Spring Valley Stipulated Agreement (Stipulated Agreement) between SNWA and the U.S. Department of Interior (DOI) agencies, which includes the BLM. Exhibit A of the Stipulated Agreement (Exhibit A is Attachment 2 to this EA; the entire stipulated agreement can be found at http://water.nv.gov/hearings/spring%20valley%20hearings/stipulation%20for%20withdrawal%20of%20protests.pdf), called for the creation of a Technical Review Panel (TRP) (Section 3C, page 9). The TRP is a group of scientific representatives of the parties to the Stipulated Agreement. Exhibit A also states that the "common goals of the parties are 1) manage the development of groundwater in the Spring Valley hydrographic basin (HB) without causing injury to Federal Water Rights and/or unreasonable adverse effects to Federal Resources in the Area of Interest…2) accurately characterize the groundwater gradient from Spring Valley HB to Snake Valley HB via Hamlin Valley, and 3) to avoid any effect on Federal Resources located within the boundaries of Great Basin Nation Park from groundwater withdrawal by SNWA in the Spring Valley HB" (Section 1A, pages 1-2). In order to achieve the second goal, it was agreed in Exhibit A that, "SNWA, in consultation with the TRP, shall construct and equip four monitoring wells in the carbonate-rock aquifer and two monitoring wells in the basin-fill aquifer within the Zone." (Section 2, D., I, page 3) The "Zone" refers to the Interbasin Groundwater Monitoring Zone designated on Figure A1 at the back of Exhibit A. The TRP selected the locations for the Zone groundwater monitoring wells based on the most likely sites to observe the groundwater gradient between the two HBs As allowed for in the Stipulated Agreement, an existing well (184W502M) will be used as the fourth carbonate well. Information collected from these wells will provide baseline data prior to groundwater withdrawal from the production wells proposed in the Clark, Lincoln, and White Pine Counties Groundwater Development Project EIS. Since groundwater levels naturally fluctuate over time, data collection should begin as far in advance as possible to withdrawal from the production wells to establish the range of variation. The cause of any fluctuations after withdrawal commences can then be analyzed to determine if it is within the natural range, or was precipitated by the withdrawal.

2. Need for the Proposed Action

The BLM needs to consider approval of the application for the ROW to respond to its mandate under the FLPMA to manage the public lands for multiple use in a manner which recognizes the Nation's need for utility infrastructure. Title V of the FLPMA states:

> *The Secretary, with respect to public lands and, the Secretary of Agriculture, with respect to lands within the National Forest System, are authorized to grant, issue, or renew right-of-way over, upon, under, or through such lands for – (7) such other necessary transportation of other systems or facilities which are in the public interest and which require rights-or-way over, upon, under, or through such lands.*

In addition, the BLM agreed in Section "D" (page 3) of the Stipulated Agreement "to expedite NEPA…to help meet the monitoring requirement of this Plan."

C. Relationship to Planning

The issuance of a ROW for the Proposed Action is in conformance with the following plan:

- Ely District Record of Decision and Approved Resource Management Plan (RMP) (August 2008), states the following:

  > *Land use authorizations (rights-of-way, permits, leases, easements, and unauthorized use) would be issued on a case-by-case basis.*

The issuance of a ROW for the Proposed Action is consistent with the terms, conditions, and decisions of the following documents:

- White Pine County Public Land Use Plan (May 1998), identifies the following water policy:

  > *White Pine recognizes that the protection and development of its water resources are essential to its short and long term economic and cultural viability.*
  >
  > *White Pine County shall develop its water use policy to ensure both water quantity and water quality.*

- White Pine County Water Resources Plan (August, 2006), states:

  > *All water resource development and use in White Pine County should be conducted in a manner that is technically, environmentally, and economically sound, and consistent with state and federal laws.*

- Master Plan for Lincoln County, Nevada (Adopted 2007). identifies the following policy standard:

  > *CNR-1G: Proposed development should be designed to be compatible with riparian areas and playas to protect wildlife habitat, floodways, water quality and quantity, and scenic values. New developments should be consistent with adopted guidelines.*

D. Issues

The BLM Ely Field Office National Environmental Policy Act (NEPA) Review Interdisciplinary Team reviewed the Proposed Action. Other than the potentially affected resources analyzed below, no additional specific issues were identified.

II. DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVE(S)

A. Proposed Action

The BLM proposes to issue SNWA a ROW grant for the purpose of constructing five monitoring wells within five 2.0-acre (1.0-acre permanent and 1.0-acre short-term) site locations in Spring and Hamlin valleys. One monitoring well would be located at each site. The sites were selected based upon proximity to hydrographic basin boundaries and geologic features, likely access to subsurface carbonate rocks and alluvial material, and the ability to use existing access roads. The wells would be drilled to between 600 and 1,100 feet in depth, with

the final depth dependent upon actual groundwater elevations. The monitoring wells would be up to 8 inches in diameter. For the five sites, SPR7009M, SPR7010M, HAM1005M, HAM1006M, and HAM1007M, the permanent ROW would be approximately 209 feet wide by 209 feet long. The dimensions for the short-term ROW for the five sites would be approximately 318 feet wide by 274 feet long.

The monitoring wells would be drilled for the purpose of collecting hydrogeologic and hydrogeochemical data information in Spring and Hamlin valleys. Single well aquifer evaluation testing would be performed at each location to obtain an estimate of aquifer properties including transmissivity and hydraulic conductivity. Testing would consist of step drawdown and constant rate tests with a maximum discharge of approximately 450 gallons per minute (gpm). The monitoring wells would be 8 inches in diameter, to accommodate a sufficiently sized pump collect aquifer hydraulic properties. These wells are specifically for monitoring purposes, and are not sized or authorized for groundwater production. Any use of these wells other than for monitoring would require separate authorization from the BLM.

New access roads to the well sites would not be required. Access to the sites would be from existing roads only. Improvements to the existing roads are not anticipated to be needed for the Proposed Action. However, if an existing road requires repairs or stabilization, any activities would be confined to the existing road boundaries. Stabilization, if needed, could include use of gravel, dirt, or straw fill of ruts or unstable surfaces. Any organic materials used would be certified weed-free. Grading of existing roads is not anticipated to be necessary, but if needed in localized areas would be confined to the existing road area.

The Proposed Action would comply with State of Nevada regulations. Well drilling permits would be obtained from the Nevada Division of Water Resources, Office of the State Engineer (State Engineer). A permit from the Nevada Division of Environmental Protection (NDEP), Bureau of Water Pollution Control would be obtained for temporary discharge of groundwater during the hydraulic testing. Well abandonment and plugging would be in accordance with the Nevada Division of Water Resources requirements, set forth in the Nevada Administrative Code (NAC), Sections 534.420 and 534.4365.

1. Well Construction

Prior to the initiation of construction, the boundaries of each site would be staked. No ground disturbance would occur outside of the designated sites. Existing vegetation, primarily sagebrush scrub, would be crushed rather than bladed wherever possible. Blading to level work areas would be kept to the minimum necessary, and topsoil and vegetation that are scraped would be stockpiled within the site and re-spread at the completion of construction. Water would be applied as needed for dust suppression during any earthmoving activities. In the event that bedrock is encountered during the construction of a drilling pad, blasting and fill may be required. If blasting is necessary, all required permits would be obtained and the BLM would be notified in advance of any blasting activity. If fill is required during construction of the pad or during restoration as a result of blasting, clean fill would be used from a site free of noxious or invasive weeds.

Construction of the wells is anticipated to begin in the second or third quarter of 2009. Each well would require approximately 30 days for drilling and initial well development. Drilling activities would occur on a 24 hour/7 day-a-week basis. Equipment used to construct the wells would include a self-contained drilling rig, front-end loader/backhoe, flat bed trailer for

bringing pipe and well casing material to the site, a water tanker, settling tank for containing drilling fluids, and pick-up trucks. A small construction trailer and portable restroom would also temporarily be located on-site during drilling and removed after construction.

Since construction would be occurring 24 hours a day, lighting needed to conduct drilling operations at night would be limited to the basic requirements to conduct the work. Lighting would be shielded, and directed down towards the site and not into surrounding areas or onto roads.

A minimal amount of water would be generated during well drilling. The volume would depend upon subsurface conditions, but is anticipated to be less than 250 gpm. Because of the limited duration and rate of discharge, temporary discharge permits from the NDEP, Bureau of Water Pollution Control are not anticipated to be required for the drilling operation (permits are not required if the discharge is less than 250 gpm and 48-hours in duration); however, temporary discharge permits would be required for the hydraulic testing, as described below. Any water generated during drilling would be contained in a small (approximately 50 square feet) settling pit on-site or a tank, to allow the drill cuttings and sediment to settle and drop out of suspension. The settling pits would be located adjacent to the drill rig (within the ROW) and dug with a front-end loader/backhoe. To prevent wildlife from falling or slipping into the pit, the settling pit would be unlined and fenced. After settling, the remaining water would be directed to flow into the natural drainage network around the site. Discharged water is not anticipated to extend more than 100 to 200 feet beyond the site, and would be directed to avoid existing roads. No hazardous or toxic substances would be released.

A SNWA monitor or SNWA contractor would be present daily during well construction to ensure compliance with ROW boundaries and other ROW grant conditions. Water needed for drilling operations during construction would be brought to each site by the contractor. Pursuant to Nevada Revised Statute 534.050(4) adopted under SB 275, water may be withdrawn from the developed wells and used for drilling operations at the remaining monitoring well sites.

At the completion of well construction, the settling pits would be re-filled with the on-site excavated materials. Drill cuttings and other sediments generated during drilling would be scattered around the well site, to blend into the surrounding area. Stockpiled brush and topsoil would be spread over the site, and the ground surface would be left rough-graded. At the surface the completed wells would consist of an 8-inch diameter capped steel casing approximately two to three feet high on a small concrete pad. A well housing, approximately five feet tall, would be installed over the well head and bolted to the concrete pad. The well housing would allow for the storage of the data logger. A solar panel would be attached to the top of the well housing. The completed well housing would be a BLM-approved color selected to blend in with the surrounding vegetation and overall environment color and form. In the future if desired, SNWA may implement a program to install equipment at monitoring well sites that would allow real time transmission capacity to stream data via telemetry from selected key monitoring sites. If this occurs, equipment would be installed in the existing well housing and a transmission antenna would be attached to the side of the well housing. The total height of the antenna would be eight to ten feet tall.

Seeding would be conducted to maintain native plant composition and provide cover to stabilized soils and the watershed. A seed mixture would be applied to the disturbed areas

within both the permanent and short-term ROW sites at the completion of construction, with the exception of a small area for access around each well. The seed mixture would be weed-free and consist of Indian ricegrass (*Oryzopsis hymenoides*) and annual rye grass (*Lolium multiflorum*) at 10 pounds per acre (ratio of 7:3 lbs/acre) based upon 2008 field surveys. The seed would be applied in late fall or winter to increase potential success of germination.

Well construction activities are anticipated to be completed by the third or fourth quarter of 2009.

2. Hydraulic Testing

After initial well development, each well would be equipped with a temporary submersible pump. The submersible pump would be lowered into the well, to approximately 150-250 feet below static water level and would have the capacity to pump between 100 and 450 gpm. Each well would have two separate pumping tests, a step-drawdown test and a constant rate aquifer test. The step-drawdown test involves monitoring water levels while pumping at different rates ranging from approximately 100 gpm to 450 gpm for up to 8 hours per well. For the constant rate aquifer test, groundwater would be continuously pumped for up to 120 hours (five days) at a maximum rate of 450 gpm. Recovery data would be collected between each element of the testing program. Water level measurements would be collected by using both an electronic measuring device and manually with a measuring tape before, during, and after completion of the tests. Field chemistry would be collected throughout the tests. Groundwater chemistry samples would be collected during the constant rate test for laboratory chemical analysis. The total volume of water discharged at each well during the hydraulic testing would range between approximately 0.8 million and 4 million gallons.

The pumping unit would be powered by a portable generator, either trailer-mounted or on the bed of a truck. In addition to the drilling crew, a hydrologist would be present on-site for the duration of the hydraulic testing. BLM would be notified two days in advance of the hydraulic testing.

A temporary discharge permit(s) for the hydraulic testing would be obtained from NDEP, Bureau of Water Pollution Control. Water generated during the pump tests would be discharged into the natural drainage network around the site. A certified weed-free energy dissipater or other erosion control measures would be used to reduce discharge rates to prevent scouring. The discharged water would rapidly evaporate or percolate into the alluvial sediments in the area. No long-term ponding of water would result from the tests.

The discharged water would be directed to avoid existing roads and would not impact existing travel routes. Anticipated drainage for discharge water from each well site has been identified as follows:

Site SPR7009M (formerly Site 184W525M): Water would be directed into natural washes on the southwest side of the site. Water in the washes run generally southwest, toward the Spring Valley floor, where it would dissipate.

Site SPR7010M (formerly Site 184W526M): Water would be directed into a natural wash on the west side of the site. Water in the wash runs generally northwest, toward the Spring Valley floor where it would dissipate. It is not anticipated that the runoff from the hydraulic testing would reach an existing dirt road that is approximately one mile away. In the event that runoff crosses this road, erosion control measures would be used to control and reduce the flow of

water and certified weed-free straw bales would be used to direct and diffuse water flow if needed. The existing dirt road would be restored to its pre-existing condition after the testing.

Site HAM1005M (formerly Site 196W501M): Water from the well would be pumped into a pipe that would cross the access road located east of the site within the short-term ROW. The pipe would either be buried or a culvert would be installed at this intersection. The pipe would extend beyond the access road and the water would be directed into Big Spring Wash that generally runs southeast toward the Hamlin Valley floor where it would dissipate. Once the pump tests are complete, the pipe would be removed and the road would be restored to its original condition. However, if the culvert is installed it would remain in place so the integrity of the road is not jeopardized.

Site HAM1006M (formerly Site 196W502M): Water would be directed into a natural wash on the southeast side of the site. Water in the wash runs generally northeast toward Big Springs. Big Springs is located approximately 1.5 miles northeast of the site. It is not anticipated that the runoff from the hydraulic testing would reach Big Springs due to the distance.

Site HAM1007M (formerly Site 196W503M): Water would be directed into natural washes on the southwest side of the site. Water in the washes runs generally southeast. Hyde Wash is located approximately 5.4 miles southeast of the site. It is not anticipated that the runoff from the hydraulic testing would reach Hyde Wash due to the distance.

Hydraulic testing activities are anticipated to be completed by the third or fourth quarter of 2009. No other testing is anticipated during the 30 years of monitoring; however if other testing is necessary, additional approvals would be obtained in advance from BLM and NDEP.

3. Monitoring

After completion of the hydraulic testing, the temporary pumps would be removed and the monitoring wells would be equipped with an electronic water level recording device. Groundwater level data would be recorded approximately hourly. SNWA would download this data, collect discrete physical water level measurements at the wells, and perform instrumentation maintenance approximately every six weeks.

4. Data Collection

Data and other information collected from the drilling, hydraulic testing, and monitoring would be compiled and submitted to the State Engineer. Copies would be provided to the BLM and other federal agencies as requested. Water level monitoring data would be submitted annually to the State Engineer and made available to the BLM, federal agencies, and the public.

5. Rights-of-Way Termination

ROWs at these five sites for drilling, testing, and monitoring are requested for a 30-year permanent and 1-year short-term period. Upon termination of the ROW grant, if the wells are desired for continued monitoring or testing, SNWA would request a ROW permit extension. If not desired for continued monitoring and testing by SNWA, the BLM, or other entities, SNWA would remove equipment and abandon the wells. Well abandonment and plugging would be in accordance with the Nevada Division of Water Resources requirements, set forth in the NAC Sections 534.420 and 534.43.

6. Environmental Protection Measures

Environmental protection measures would be implemented during the drilling and testing activities, as summarized below.

- Migratory Birds- If well construction activities occur during critical nesting periods, the area of disturbance would be flagged and a wildlife team would conduct breeding bird surveys no more than one week prior to the disturbance to identify if migratory bird breeding or nesting is occurring in the area. The BLM wildlife team would be notified and either the BLM wildlife team or the proponent would conduct the required survey. Authorization for construction during this breeding period would be contingent on the findings of the survey and guidance from the BLM.

- Non-native Invasive Species and Noxious Weeds- All drilling and earthmoving equipment would be washed prior to arrival on the site, prior to moving between sites, and prior to removal to prevent and minimize the introduction or spread of non-native vegetation. All washing would occur at the drilling sites, except for the initial washing which would occur off-site.

- Garbage- The Proposed Action sites would be kept free from any accumulation of litter including but not limited to trash, garbage refuse, ashes and equipment during construction and left in a clean and safe condition. Litter would be placed in storage containers on-site and properly disposed of at an authorized off-site disposal location.

- Wastes (Hazardous/Solids) - Hazardous and toxic materials such as fuels, solvents, and lubricants used during drilling would be controlled to prevent accidental spills. Spill cleanup kits would be available on-site, so that any accidental spills could be quickly cleaned up. Any soils or sediments affected by accidental spills would be dug up and properly disposed of at a permitted disposal facility. SNWA would be responsible for clean-up and assumes liability for any and all releases made by SNWA, its contractors, agents, or employees of hazardous substances associated with the Proposed Action. SNWA would immediately notify the BLM Authorized Officer and the National Response Center at 687-9485 or 888-331-6337 (NDEP) on all spills/releases in which the reportable quantity for the particular compound is exceeded (40 CFR Part 302). A Spill Prevention, Control, and Countermeasures Plan and a Spill Control Plan would be developed by the construction contractor and kept on site in their vehicles prior to commencing work. The plans would identify where hazardous materials and wastes are stored on site, spill prevention measures to be implemented, training requirements, appropriate spill response actions, the locations of spill response kits on site, and procedures for making timely notifications to authorities. The construction contractor would also develop and keep on site a Hazardous Materials Management Plan addressing storage, use, transportation, and disposal of hazardous materials anticipated to be used at the site. It would establish inspection procedures, storage requirements, storage quantity limits, inventory control, nonhazardous product substitutes, and disposition of excess material. The plan would also identify requirements for notices to federal and local emergency response authorities and include emergency response plans. The contractors would maintain Material Safety Data Sheets for all hazardous material that would be used, stored, or transported at the Proposed Action sites. All hazardous materials would be handled in accordance with manufacturer's written

recommendations and by methods and means that would prevent damage, deterioration, and loss. The contractor would maintain a sanitary site with no dumping of sewage or litter. SNWA contracted services would periodically pump port-a-potties and haul offsite for disposal.

- Fire- Fire suppression equipment, including extinguishers and shovels, would be available on-site during drilling activities.
- Erosion Control- During the discharge of water from drilling or hydraulic testing, certified weed-free straw barriers or flexible hose or impoundments within approved ROWs, would be used to contain water flow as needed. Discharged water would be directed to avoid existing roads and not affect existing travel routes. If necessary, a certified weed-free energy dissipater, rock rip-rap, or other erosion control measures would be used to reduce discharge rates to prevent scouring.
- Crucial Winter Range Habitat- If well construction occurs during November 1 to March 31, SNWA would consult with the BLM Ely Field Office wildlife team to prioritize the well drilling sequence to minimize potential impacts to mule deer utilizing the crucial winter range habitat.

B. No Action Alternative

Under the No Action Alternative, the ROW would not be issued, the Proposed Action would not occur, and the requirements of the Stipulated Agreement would not be met. Without this long-term hydrologic monitoring data there would be limited information to accurately characterize the groundwater gradient through the Zone. Furthermore, there would be no hydrologic monitoring data available to assist Federal, state and local agencies in their current and future decision making in groundwater modeling analyses and impact assessments.

C. Alternatives Considered But Eliminated From Detailed Analysis

An alternative HAM1007M well site location was initially selected for consideration. During preliminary consultation with the BLM Ely Field Office, SNWA was informed of the identification of historic artifacts at the location of proposed HAM1007M well site. To avoid disturbance of the historic artifacts, a new well site location was selected. The relocated well site has been selected and approved by the TRP; therefore, this alternative well site location has been eliminated from detailed analysis.

No additional site-specific alternatives are necessary for analysis as no unresolved conflicts concerning alternative uses of available resources have been identified.

III. AFFECTED ENVIRONMENT

The area affected by the Proposed Action is located in the southern portion of Spring Valley and northern portion of Hamlin Valley in Lincoln and White Pine counties, Nevada. It is bound by the Snake Range and Great Basin National Park to the north, the Fortification Range to the west, and the Nevada-Utah state border to the east. The topography in the area is typical of that found in the Basin and Range physiographic province of the western United States.

A. Mandatory Items for Consideration

The following items have been evaluated for the potential for significant impacts to occur, either directly, indirectly or cumulatively, due to implementation of the Proposed Action.

Consideration of some of these items is to ensure compliance with laws, statues or Executive Orders that impose certain requirements upon all Federal actions. Other items are relevant to the management of public lands in general, and to the Ely BLM in particular.

The mandatory items for consideration are listed in Table 1. A brief rationale for either considering or not considering the issue or resource further is also provided. The resources, uses, and issues considered in the EA are described in the Affected Environment section of this EA, and are analyzed in the Environmental Consequences section. Rationales for those issues that would be dismissed from analysis are also listed in Table 1. These items would not be considered further in this document.

Table 1. Mandatory Items for Consideration and Rationale for Detailed Analysis for the Proposed Action

Resource / Concern	Issue(s) Analyzed (Yes / No)	Rationale for Dismissal from Analysis or Issues(s) Requiring Detailed Analysis
Access	No	Some existing access routes would be used to access the sites, but the use would not interfere with current level of use of those routes.
Air Quality	Yes	Analyzed in Potentially Affected Resources and Environmental Consequences sections.
Areas of Critical Environmental Concern (ACEC)	No	There are no ACECs within the vicinity of the Proposed Action.
Cultural Resources	No	Cultural Surveys were conducted and it was determined that no eligible sites would be affected by the proposed action.
Environmental Justice	No	No minority or low-income groups would be affected by disproportionably high and adverse health or environmental effects.
Farmlands (Prime or Unique)	No	This resource is not present.
Floodplains	No	The Federal Emergency Management Agency's Flood Insurance Rate Maps for Lincoln and White Pine counties, Nevada (Unincorporated Areas) Panels 320022 2175A, 320022 2200A, 320022 2300A, and 320022 2325A were reviewed. The Proposed Action sites are within Zone D, or "Areas of undetermined, but possible, flood hazards". While flood hazards are possible, due to the small size and placement of the monitoring wells, the Proposed Action would have no effect on a large flood event if it should happen in the area.
Forest and Rangeland Health	No	The Proposed Action would have no impact on rangeland health based on an evaluation of the five Standards for Rangeland health namely: (1) watershed function –

Resource / Concern	Issue(s) Analyzed (Yes / No)	Rationale for Dismissal from Analysis or Issues(s) Requiring Detailed Analysis
		uplands, (2) watershed function – riparian/wetlands areas, (3) ecological process, (4) water quality, and (5) native, threatened and endangered, and locally important species.
Geology and Minerals	Yes	Analyzed in Potentially Affected Resources and Environmental Consequences sections.
Land Use	Yes	Analyzed in Potentially Affected Resources and Environmental Consequences sections.
Migratory Birds	Yes	Analyzed in Potentially Affected Resources and Environmental Consequences sections.
Native American Concerns	No	The Ely Shoshone and Duckwater Indian reservations are located within the Ely BLM District. Native American trust assets located on the reservations are managed and protected by the Bureau of Indian Affairs. Native American trust assets located off the reservations and on land administered by the BLM are managed and protected by the BLM; however, no Native American trust assets have been identified on BLM-administered lands within the Ely District. In May 2008, consultation letters were mailed to the Federally recognized tribes surrounding the Proposed Action area concerning the proposed land action by the District Manager of BLM Ely District Office and no issues or concerns were identified.
Non-native, Invasive Species and Noxious Weeds	Yes	Analyzed in Potentially Affected Resources and Environmental Consequences sections.
Paleontological Resources	Yes	Analyzed in Potentially Affected Resources and Environmental Consequences sections.
Public Services and Utilities	No	There are no public services or utilities in the Proposed Action area.
Range / Livestock Grazing	Yes	Analyzed in Potentially Affected Resources and Environmental Consequences sections.
Recreation	Yes	Analyzed in Potentially Affected Resources and Environmental Consequences sections.
Soils	Yes	Analyzed in Potentially Affected Resources and Environmental Consequences sections.
Special Status Species (Federally Listed, Proposed	Yes	Analyzed in Potentially Affected Resources and Environmental Consequences sections.

Resource / Concern	Issue(s) Analyzed (Yes / No)	Rationale for Dismissal from Analysis or Issues(s) Requiring Detailed Analysis
and Candidate Species; State Protected Species; and BLM Sensitive Species)		
Vegetation	Yes	Analyzed in Potentially Affected Resources and Environmental Consequences sections.
Vegetative Resources (Forest or Seed Products)	No	There are no forest or seed products in the Proposed Action area.
Visual Resource Management	Yes	Analyzed in Potentially Affected Resources and Environmental Consequences sections.
Wastes (Hazardous or Solid)	No	Visual inspections of the Proposed Action sites were conducted by SNWA personnel in the spring of 2008 and no hazardous or solid wastes were observed and no known hazardous or solid wastes are known to occur within the vicinity of the sites.
Water Resources (Water Rights)	No	Other than the beneficial effect of providing information on groundwater described in Section 1 of this document, there would be only inconsequential temporary impacts to water resources. The amount of groundwater pumped for the hydraulic testing would have no measurable impact on groundwater resources. During the short term of hydraulic testing (maximum of five days and eight hours) there may be localized groundwater drawdown, but these would be limited to within the immediate vicinity of the monitoring wells. These drawdowns would quickly recover at the termination of hydraulic testing.
Water Quality (Drinking and Ground)	Yes	Analyzed in Potentially Affected Resources and Environmental Consequences sections.
Wetlands / Riparian	Yes	Analyzed in Potentially Affected Resources and Environmental Consequences sections.
Wild Horses and Burros	Yes	Analyzed in Potentially Affected Resources and Environmental Consequences sections.
Wild and Scenic Rivers	No	There are no wild and scenic rivers in the project area.
Wilderness	No	The project area is not in a federally designated wilderness area.
Wildlife	Yes	Analyzed in Potentially Affected Resources and Environmental Consequences sections.

B. Potentially Affected Resources

From initial scoping with the BLM Interdisciplinary Team, and based on BLM review of existing baseline data or surveys conducted in preparation of this EA, the following resources may potentially be affected:

1. Air Quality

The Ely District is currently in attainment with local, state, and Federal air quality standards. The area is designated as in attainment for particulate matter with a diameter of 10 microns or less (PM_{10}) and as unclassified for other criteria air pollutants, indicating that existing air quality is within applicable National Ambient Air Quality Standards. The air is primarily affected by particulate air matter produced by wildfire, prescribed burning, road or wind-blown dust, construction, mining, and vehicle use. Of these, the largest is smoke emissions from wildfires, consisting mostly of PM_{10}.

2. Geology and Minerals

The Proposed Action sites are generally covered by 200 to 1,000 feet of surficial gravel derived primarily from the carbonate mountains to the west and north. The bedrock at the sites is primarily Paleozoic carbonate rock. Site SPR7009M has surficial deposits that are coarse grained alluvium with clasts of carbonate, quartzite and Tertiary volcanic rock. The basement at the site consists of Mississippian to Ordovician dolomitic rock. The entire site SPR7010M is underlain by carbonate rock, primarily Silurian and Upper Devonian dolomites of the Guilmette Formation, Simonson Dolomite and Sevy Dolomite. Site HAM1005M has surficial gravel derived from the carbonate mountains to the north, and this proposed monitoring well would be completed in unconsolidated to moderately consolidated alluvial material. Site HAM1006M is covered by unconsolidated to moderately consolidated coarse alluvial material, and this proposed monitoring well would be completed in unconsolidated to moderately consolidated alluvial material. Site HAM1007M is covered by approximately 150 feet of alluvium composed of carbonate derived from the adjacent dolomitic hills. Underlying the alluvium is bedrock consisting of Mississippian to Ordovician dolomites.

To determine if mining claims exist within the Proposed Action area a Mining Claim Geographic Report was conducted on March 25, 2008 through BLM's database LR 2000 (http://www.blm.gov/lr2000/). This type of report displays all claims by a specific geographic area. There are no granted or pending mining claims at or within the vicinity of the Proposed Action sites. There are nine closed mining claims within the vicinity of the Proposed Action sites.

The Nevada Bureau of Mines and Geology records show that independent petroleum companies conducted oil and gas exploration drilling in Spring Valley in the 1980s. The exploration wells ranged between 8,000 and 10,000 feet. The results of the exploration efforts were negative and indicated the lack of geologic formation and the lack of appropriate geologic structure for the presence of oil and gas in the Valley.

3. Land Use

To determine if any granted or pending ROWs utilize the federal land surrounding the Proposed Action area, a Case Recordation Geo report with Customer search was conducted on

March 25, 2008 through BLM's database LR 2000. Additionally, BLM's Master Title Plats were reviewed to determine if any encumbrances were depicted on the maps.

One pending ROW grant (N-78803) for the SNWA Clark, Lincoln, and White Pine Counties Groundwater Development (GWD) Project and one closed ROW grant (N-37284) for an oil and gas lease are located at or within the vicinity of the Proposed Action sites.

4. Migratory Birds

Under the Migratory Bird Treaty Act of 1918 and subsequent amendments (16 U.S.C. 703-711), it is unlawful to take, kill, or possess migratory birds. Executive Order 13186 issued January 11, 2001 further defines the responsibilities of Federal Agencies to protect migratory birds. The issuance of a ROW grant for the Proposed Action requires compliance with the Migratory Bird Treaty Act and avoidance of potential impacts to listed birds.

To prioritize migratory bird conservation actions, the BLM maintains the Bird Species of Conservation Concern List (USFWS Migratory Bird Program Strategic Plan 2004-2014), (per BLM guidance). The list is used by the BLM to prioritize migratory bird conservation actions. The species below are taken from the BLM's Bird Species of Conservation Concern List, and are expected to occur within Hamlin and Spring valleys. These species are generally associated with vegetation types identified at the five well sites, including Intermountain Basins Big Sagebrush Shrubland, and Great Basin Xeric Mixed Sagebrush Shrubland. These are primarily passerine birds or raptors.

Migratory Birds of Conservation Concern

Black-throated Gray Warbler (BTYW) (*Dendroica nigrescens)*
Brewer's Sparrow (BRSP) *Spizella beweri*
Burrowing Owl (BUOW) *Athene cunicularia*
Caspian Tern (CATE) *Sterna caspia*
Common Yellowthroat (COYE) *Geothlypis trichas*
Costa's Hummingbird (COHU) *Calypte costae*
Ferruginous Hawk (FEHA*) Buteo regalis*
Flammulated Owl (FLOW) *Otus flammeolus*
Golden Eagle (GOEA) *Aquila chrysaetos*
Gray Vireo (GRVI) *Vireo vicinior*
Greater Sage-Grouse (GRSG) *Centrocercus urophasianus*
Horned Lark (HOLA) *Eremophila alpestris*
Lewis's Woodpecker (LEWO) *Melanerpes lewis*
Loggerhead Shrike (LOSH) *Lanius ludovicianus*
Yellow-breasted Chat (YBCH) *Icteria virens*
Long-billed Curlew (LBCU) *Numenius americanus*
Long-eared Owl (LEOW) *Asio otus*
Northern Goshawk (NOGO) *Accipiter gentilis*
Northern Harrier (NOHA) *Circus cyaneus*
Peregrine Falcon (PEFA) *Falco peregrinus*
Pinyon Jay (PIJA) *Gymnorhinus cyanocephalus*
Prairie Falcon (PRFA) *Falco mexicanus*
Red-naped Sapsucker (RNSA) *Sphyrapicus nuchalis*
Sage Sparrow (SAGS) *Amphispiza belli*
Sandhill Crane (SACR) *Grus Canadensis*
Short-eared Owl (SEOW) *Asio flammeus*
Song Sparrow (SOSP) *Melospiza melodia*
Spotted Towhee (SPTO) *Pipilo maculatus*
Vesper Sparrow (VESP) *Pooecetes gramineus*
Virginia's Warbler (VIWA) *Vermivora virginiae*

Willet (WILL) *Catoptrophorus semipalmatus*
Yellow Warbler (YWAR) *Dendroica petechia*

Species that are on the BLM list were carried forward for analysis of probability of occurrence and to ensure that construction timing and mitigation measures sufficiently protect and preserve breeding of these species. A predictive model created by the Great Basin Bird Observatory (GBBO) was used to analyze probability of occurrence. The model predicts probability of occurrence based on latitude, vegetation type, and elevation. It should be noted that use of predictive models comes with a degree of uncertainty; because the model generalizes probability across the landscape, species that are generalists may be over-predicted, whereas species that have highly specific habitat requirements may be under-predicted.

Application of the predictive model was accomplished in ArcMap (version 9.3), by overlaying well site shapefiles with GBBO probability maps for each of the 32 species of conservation concern expected to occur. Effects analysis was carried out where the probability of sensitive bird occurrence was 50 percent or greater. Nine species met the 50 percent criterion: Black throated Gray Warbler (*Dendroica nigrescens*), brewer's sparrow (*Spizella breweri*), horned lark (*Eremophila alpestris*), loggerhead shrike (*Lanius ludovicianus*), northern harrier (*Circus cyaneus*), pinyon jay (*Gymnorhinus cyanocephalus*), sage sparrow (*Amphispiza belli*), spotted towhee (*Pipilo maculates*), and vesper sparrow (*Pooecetes gramineus*).

The probability occurrence of the Black-throated Gray Warbler is greater than 50 percent at four of the proposed well sites (HAM1005M, HAM1006M, SPR7009M, and SPR7010M). The Black-throated Gray Warbler breeds in more arid environments and primarily inhabits mid-elevation pinyon-juniper woodlands. In the Great Basin, the earliest breeding date for the warbler is May 11 with signs of nest building occurring. By late May, active nests are seen in the Mojave Desert. The breeding season ends in late July in the Great Basin, and in mid-August in the Mojave Desert.

The probability occurrence of the Brewer's Sparrow is greater than 50 percent at all five well sites (HAM1005M, HAM1006M, HAM1007M, SPR7009M, and SPR7010M). Brewer's Sparrow, a sagebrush specialist, is common and widespread in Nevada. It is however, one of the few species commonly found in salt desert scrub. Its earliest breeding date is documented April 20 and signs of breeding continue through August 2, with the last sign of fledged young.

The probability occurrence of the Horned Lark is 50 percent or greater at each of the five well sites (HAM1005M, HAM1006M, HAM1007M, SPR7009M, and SPR7010M). The Horned Lark is considered widespread and common in Nevada. They favor low or widely scattered vegetation with interstices of bare ground. The earliest breeding date for horned lark is documented as April 26, with signs of breeding continuing until August 2.

The probability occurrence of the Loggerhead Shrike is greater than 50 percent at all five proposed well sites (HAM1005M, HAM1006M, HAM1007M, SPR7009M, and SPR7010M). The Loggerhead Shrike prefers arid open country with just a few perches or lookouts in desert shrublands, juniper and pinyon-juniper woodlands. The breeding period ranges from mid-April through early August.

The probability occurrence of the Northern Harrier is greater than 50 percent at one site (SPR7010M). The Northern Harrier is found in treeless expanses, but they are especially fond of marshes and agricultural areas. Highest densities are reached in lowland marshes. The earliest breeding date for the northern harrier is documented as April 26 with signs of active nests. Breeding extends into August with the last sign of fledged young documented August 2.

The probability occurrence of the Pinyon Jay is greater than 50 percent at four sites (HAM1005M, HAM1007M, SPR7009M, and SPR7010M). The Pinyon Jay is most frequently reported in pinyon-juniper habitats at the foothills of mountain ranges. The species also forages in sagebrush shrublands. Pinyon Jays have been documented breeding as early as April 19 and as late as August 30.

The probability occurrence of the Sage Sparrow is greater than 50 percent at all five of the proposed well sites (HAM1005M, HAM1006M, HAM1007M, SPR7009M, and SPR7010M). The Sage Sparrow is usually associated with sagebrush and frequently occurs in salt desert scrub. The breeding period ranges from early May, although nest building has been noted as early as April, to early August.

The probability occurrence of the Spotted Towhee occurrence is 50 percent or greater at each of the five well sites (HAM1005M, HAM1006M, HAM1007M, SPR7009M, and SPR7010M). Spotted Towhee is a habitat generalist, and will utilize pinyon-juniper, riparian, or sagebrush shrub habitats for breeding purposes. Breeding ranges from mid-April through the end of July.

The probability occurrence of the Vesper Sparrow is more than 50 percent at each of the five well sites (HAM1005M, HAM1006M, HAM1007M, SPR7009M, and SPR7010M). Vesper Sparrow nests in various open shrub habitats where sagebrush is the dominant species. Nests are generally placed on the ground in areas with a minimum of 20 percent native, perennial grass/forb cover. The breeding period ranges from mid-May through mid-August.

5. Non-native, Invasive Species and Noxious Weeds

The BLM defines a weed as a non-native plant that disrupts or has the potential to disrupt or alter the natural ecosystem function, composition, and diversity of the site it occupies. The presence of a weed deteriorates the health of the site, makes efficient use of natural resources difficult, and may interfere with management objectives for that site. A weed is an invasive species that requires a concerted effort (manpower and resources) to remove from its current location, if it can be removed at all. "Noxious" weeds refer to those plant species which have been legally designated as unwanted or undesirable. This includes national, state, county, or local designations.

Botanical surveys of the Proposed Action area (well sites and associated discharge drainage paths) were conducted on April 10, 11, and 21, 2008 by SWCA Environmental Consultants. The invasive non-native peppergrass (*Lepidium* sp.) was observed at site SPR7009M. The invasive non-natives cheatgrass (*Bromus tectorum*) and African mustard (*Malcolmia africana*) were observed at site SPR7010M. At site HAM1005M, the invasive non-natives halogeton (*Halogeton glomeratus*) and cheatgrass were observed. At site HAM1006M, the invasive non-natives halogeton, cheatgrass, bur buttercup (*Ranunculus testiculatus*), filaree (*Erodium cicutarium*), and Russian thistle (*Salsola tragus*) were identified. The invasive non-natives halogeton, cheatgrass, bur buttercup, and Russian thistle were identified at site HAM1007M.

The Ely District weed inventory documented the invasive non-native weed cheatgrass within the surrounding area of site HAM1006M. The weed inventory also identified cheatgrass and an invasive mustard species within the surrounding area of site HAM1007M.

None of the invasive non-native species found at the Proposed Action area during the April 2008 surveys are included on the official Nevada Department of Agriculture list of noxious weeds. The Ely District weed inventory documented the noxious weed salt cedar (*Tamarix* spp.) approximately 1.0 mile from site HAM1006M.

A Risk Assessment for Noxious & Invasive Weeds was completed for the Proposed Action and submitted to the BLM on May 22, 2008 (Attachment 3). The likelihood of noxious/invasive weed species spreading to the Proposed Action sites (Factor 1) rates as Moderate (4) and the consequences of noxious/invasive weed establishment at the Proposed Action sites (Factor 2) rates as High (8). The Risk Rating for the Proposed Action is Moderate (32).

6. Paleontological Resources

Paleontological resources or fossils are the imprints or remains of once-living plants and animals preserved in rocks and sediments. Paleontological resources on public lands are considered nonrenewable records of the history of life on earth, and so they represent important and critical components of America's natural history. Once damaged, destroyed, or improperly collected, their scientific value could be greatly reduced or lost forever.

The BLM manages paleontological resources under a number of federal laws including the Federal Land Policy and Management Act of 1976, Sections 302(b) and 310, which direct the BLM to manage public lands to protect the quality of scientific and other values. In addition, the BLM provides management direction for the identification, evaluation, protection, and use of fossils in the Paleontological Resource Management Program. This program is described in *H-8270-1 - General Procedural Guidance for Paleontological Resource Management* (BLM, 1998).

Fossils occur in sedimentary rocks and also in deposits found in caves, lake bottoms, and older alluvial surfaces. The BLM manual, *H-8270-1 - General Procedural Guidance for Paleontological Resource Management*, describes a classification system for ranking areas as to their potential for noteworthy occurrences of fossils. Two conditions described below may contain paleontological resources in the Proposed Action area. The BLM Manual indicates unlikely occurrence of paleontological resources in areas with igneous and metamorphic rocks; extremely young alluvium, colluvium or aeolian deposits; or deep soils.

Condition 1 – Areas that are known to contain vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils. Consideration of paleontological resources would be if the BLM Field Office review of available information indicates that such fossils are present in the area.

Condition 2 – Areas with exposures of geologic units or settings that have high potential to contain vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils. The presence of geologic units from which fossils have been recovered elsewhere may require further assessment of these same units where they are exposed in the area of consideration.

The BLM Ely Field office has not categorized specific geologic formations according to the ranking system described above in the Proposed Action area; however, there are deposits and sedimentary rocks that have a greater potential to contain important fossils. A general list of

formations or deposits that have a high sensitivity rating for fossil potential occurrence is presented in Table 5.

A review of geologic data of the Proposed Action area identified well site SPR7010M to be located on the Simonson Dolomite Formation. This formation has the potential to contain stromatoporoids (sponge-like fossils); however, stromatoporoid fossils in the Simonson Dolomite Formation have been found to be primarily in a fragmented condition. The remaining four Proposed Action well locations are located on Pliocene and Pleistocene alluvial deposits. (Hose and Clark, 1976; Tschanz and Pampeyan, 1970). Typically, fossils are not discovered in Pliocene and Pleistocene alluvial deposits; however, Pleistocene deposits found in caves or in fissures have the potential to contain pack rat (*Neotoma* sp.) middens (i.e., concentrations of bone and fecal waste from wood rats [Betancourt et al., 1990]). Pleistocene deposits found in caves would be considered highly sensitive for paleontological resources. Cave or fissure deposits have not been documented within the Proposed Action well locations.

Table 5. General List of Proposed Action Well Locations and Associated Geologic Formations

Formation	Age (million years ago)	Fossil Types	Location
Simonson Dolomite	Early to Middle Devonian (410 to 398)	Abundant, poorly preserved stromatoporoidal (similar to a sponge) fossil fragments (Simonson and Blake 1976)	SPR7010M
Alluvium	Quaternary (1.8 to present)	None	SPR7009M
Alluvium	Pliocene to Holocene (5.3 to present)	None	HAM1005M
Alluvium	Quaternary (1.8 to present)	None	HAM1006M
Alluvium	Pliocene to Holocene (5.3 to present)	None	HAM1007M

7. Range / Livestock Grazing

The BLM manages grazing under the authority and grazing and rangeland specific laws (Taylor Grazing Act of 1934, and Public Rangelands Improvement Act of 1978) and the mandates of the Federal Land Policy and Management Act of 1976 that stipulates management of public lands under the principals of sustainability and multiple use. Under this management, ranchers may obtain permits for an allotment of public land on which a specified number of livestock may graze. Term permits authorize grazing use based on perennial vegetation. The number of permitted livestock on a particular allotment is determined by how many animal unit months (AUMS) that the land will support. An AUM is the amount of forage needed to sustain one 1,000-pound cow and her calf, five sheep or five goats for a month. The BLM operates a program to stabilize or improve the ecological condition of the allotments. The program includes proper management of livestock grazing and such improvements as fences and water developments. The Proposed Action well sites would occur in the two grazing allotments of South Spring Valley and Hamlin Valley.

Sites SPR7009M and SPR7010M are located within the South Spring Valley grazing allotment (Table 5). There are approximately 84,619 acres in the South Spring Valley Allotment of

which approximately 79,542 are public land acres and approximately 5,077 are private land acres. The total permitted use is 6,329 (Animal Unit Months) AUMs of which 2,103 AUMs are active permitted use and 4,226 AUMs are in voluntary non-use.

Table 5. Allotment Information for the South Spring Valley Grazing Allotment

Allotment/Use Area	Number of Livestock	Kind of Livestock	Type of Use	Period of Use	Percent Public Lands	Permitted Use (AUMS)
10130 South Spring Valley	800	Sheep	A	05/01 to 06/15	100%	242
	800	Sheep	A	09/01 to 09/30	100%	158
	13,971	Sheep	N*	05/01 to 06/15	100%	4,226
	383	Cattle	A	02/01 to 06/15**	100%	1,703

* AUMs are held in voluntary non-use (N) for the conservation and protection of natural resources.

** In accordance with the Agreement for Implementation of Changes in Livestock Grazing Use on the Majors and South Spring Valley Allotments, cattle would be authorized annually on the allotment from 02/01 through 06/15 pending evaluation of previous years grazing plan and monitoring data.

Sites HAM1005M, HAM1006M and HAM1007M would be located within the Hamlin Valley grazing allotment (Table 6). There are approximately 106,372 acres in the Hamlin Valley Allotment of which approximately 105,392 are public land acres and 980 are private land acres. Total permitted use is 8,268 AUMs of which 8,177 AUMs are active permitted use and 91 AUMs are historic suspended.

Table 6. Allotment Information for Hamlin Valley Grazing Allotment

Allotment/Use Area	Number of Livestock	Kind of Livestock	Type of Use	Period of Use	Percent Public Lands	Permitted Use* (AUMS)
00133 Hamlin Valley	2,890	Sheep	A	11/01 to 05/31	100%	4,048
	590	Cattle	A	11/01 to 05/31	100%	4,132

* AUMs in the table are calculated and reflect a small round off difference compared to the active permitted use of 8,177 AUMs.

8. Recreation

Recreation through the BLM's Ely Field Office is managed through the designation of special recreation management areas (SRMAs) and extensive recreation management areas (ERMAs) as described in the Ely District Record of Decision and Approved RMP (August 2008). A SRMA is an area where more intensive recreation management is needed. An ERMA includes all BLM managed land outside the SRMA and may include developed and primitive recreation sites with minimal facilities. The Proposed Action sites are within an ERMA. Other recreation opportunities within the vicinity of the Proposed Action sites include the Humboldt-Toiyabe National Forest located approximately 9 miles north of sites SPR7009M, HAM1005M, and HAM1006M and the Troughs located approximately 0.2 mile north of site HAM1007M.

The primary recreation within the Spring and Hamlin Valleys areas is dispersed casual use and includes camping, off-highway vehicles, and hiking. The majority of recreation use associated with wildlife in these areas is attributed to wildlife viewing and hunting.

There are no state parks or state recreation areas in the project area.

The mountains and valleys surrounding the Propose Action area offer a variety of seasonal hunting opportunities on BLM-administered public lands. According to the 2008 Nevada Hunt Book (2008-2009 hunting season), the proposed well sites are within Hunt Areas 231 or 115. Proposed sites HAM1005M, HAM1006M, and SPR7009M, are located within Hunt Area 115 and in Unit Group 24. Proposed sites HAM1005M, HAM1006M, and SPR7009M, are located

at approximately 6,300, 5,700, and 6,450 feet in elevation, respectively. For this reason they are within hunting range for mule deer between August 1 and November 25, and pronghorn antelope from August 1 through September 5. Proposed sites HAM1007M and SPR7010M are both located within Hunt Area 231 and in Unit Group 23. Proposed sites HAM1007M and SPR7010M are located at approximately 6,000 and 6,400 feet in elevation, respectively. For this reason the two sites are within hunting range for mule deer from August 1 through November 5, desert bighorn sheep from November 10 through December 10, and pronghorn antelope from August 1 through September 5.

According to Nevada Division of Wildlife (http://www.ndow.org/hunt/seasons/mig/index.shtm) for the 2008-2009 hunting season, the wells are in the hunting range for upland game species, furbearer animals, and mountain lion. The hunting season for furbearer animals and upland game species extends from September 1 to April 15 and the hunting season for mountain lion is year long

9. Soils

The Natural Resources Conservation Service (NRCS) maintains a database on soils in the project region. Based on soil types, the NRCS database provides an ecological site description (ESD). Each ESD describes physical, geography, and soil characteristics and potential native vegetation (grasses, forbs, shrubs, and trees). The ESDs for the Proposed Action sites are listed below (http://soildatamart.nrcs.usda.gov/Report.aspx?Survey=NV779&UseState=NV, accessed on May 1, 2008).

Site SPR7009M borders two different map units, the Kyler-Amtoft-Eaglepass association (map unit symbol 1307) and the Ursine-Armespan association (map unit symbol 1380). The ESD for Kyler soil is SHALLOW CALCAREOUS SLOPE 8-10" P.Z. (R028AY004NV) and is described as:

- Occurs on summits and side slopes of hills and piedmont slopes on all exposures and slope gradients are typically 15 to 50 percent;
- Soils are high in lime and have high amounts of rock fragments throughout the soil profile;
- Water intake rates are moderate, runoff is rapid, and the soils are well drained;
- Available water holding capacity of soils is low;
- Potential native plant community (as described in the NRCS database) is dominated by black sagebrush, Indian ricegrass, and needleandthread; and
- Potential native vegetative composition is approximately 40 percent grasses, 5 percent forbs, and 55 percent shrubs.

The ESD for Amtoft soil is SHALLOW CALCAREOUS HILL 10-14" P.Z. (R028AY102NV) and is described as:

- Occurs on summits and side slopes of hills on all exposures and slope gradients are typically 8 to 50 percent;

- Soils are very shallow and associated with rock outcrop, parent materials are usually from limestone, dolomite, or other highly calcareous rock sources, and the soil surface may be cobbly, stony, or gravelly;
- Runoff is rapid and the soils are well drained;
- Available water holding capacity of soils is very low;
- Potential native plant community (as described in the NRCS database) is dominated by black sagebrush and Indian ricegrass; and
- Potential native vegetative composition is approximately 35 percent grasses, 5 percent forbs, 45 percent shrubs, and 15 percent trees.

The ESD for Eaglepass soil is LIMESTONE HILL (R028AY029NV) as is described as:

- Occurs on hill and lower mountain side slopes on all exposures and slope gradients are typically 15 to 50 percent;
- Soils have formed from highly calcareous sedimentary rock (i.e., limestone and dolomite), are typically very shallow to bedrock, and usually have high amounts of gravels, cobbles or stones on the surface;
- Runoff is medium to very rapid and the soils are well drained;
- Available water holding capacity is very low to low;
- Potential native plant community (as described in the NRCS database) is dominated by little leaf mountain mahogany; and
- Potential native vegetative composition is approximately 15 percent grasses, 10 percent forbs, and 75 percent shrubs, tree-like shrubs, and trees.

The ESD for both Ursine and Armespan soils is SHALLOW CALCAREOUS LOAM 8-10" P.Z. (R028AY013NV) and is described as:

- Occurs on summits and side slopes of piedmont slopes, hills and lower mountains on all aspects and slope gradients are typically 2 to 15 percent;
- Soils are shallow to moderately deep;
- Runoff is slow to medium and the soils are well drained;
- Available water holding capacity is low to moderate;
- Potential native plant community (as described in the NRCS database) is dominated by black sagebrush, Indian ricegrass, and needleandthread; and
- Potential native vegetative composition is approximately 45 percent grasses, 10 percent forbs, and 45 percent shrubs.

Soils around site SPR7010M are classified as Kyler-Eaglepass-Rock outcrop association (map unit symbol 1090). The ESD for Kyler soil is SHALLOW CALCAREOUS HILL 8-10" P.Z. (R028AY027NV) and is described as:

- Occurs on the summits and sideslopes of hills on all exposures, although south and west aspects are most typical and slope gradients are typically 8 to 50 percent;

- Soils are mostly very shallow and associated with rock outcrop, parent materials are usually from limestone, dolomite, or limy material, and the surface may be cobbly, stony, or gravelly;
- Runoff is rapid and the soils are well drained;
- Available water holding capacity is very low;
- Potential native plant community (as described in the NRCS database) is dominated by black sagebrush and Indian ricegrass; and
- Potential native vegetative composition is approximately 35 percent grasses, 5 percent forbs, and 60 percent shrubs and trees.

The ESD for Eaglepass soil is LIMESTONE HILL (R028AY029NV) as is described above. Rock outcrop is not assigned an ESD. The map unit description for rock outcrop however is an area with a slope of 50 to 75 percent with no frequency of flooding or ponding, containing little or no soil material, and supporting little or no vegetation.

Soils around site HAM1005M are classified as Ursine-Eastmore association (map unit symbol 1386). The ESD for Ursine soils is SHALLOW CALCAREOUS LOAM 8-10" P.Z. (R028AY013NV) and SHALLOW CALCAREOUS HILL 8-10" P.Z. (R028AY027NV). Both ESDs are described above. The ESD for Eastmore soils is SHALLOW CALCAREOUS SLOPE 8-10" P.Z. (R028AY004NV) and is described above.

Soils around site HAM1006M are classified as Eastmore-Summermute-Ursine association (map unit symbol 1388). The ESD for Eastmore soils is SHALLOW CALCAREOUS LOAM 8-10" P.Z. (R028AY013NV) and is described above.

The ESD for Summermute soils is COARSE GRAVELLY LOAM 5-8" P.Z. (R028AY018NV) and is described as:

- Occurs on fan piedmonts, alluvial fans, inset fans, alluvial flats, and fan skirts on all exposures and slope gradients are typically 2 to 15 percent;
- Soils have formed in alluvium from mixed rock sources, are typically moderately coarse-textured in the upper soil profile, are moderately to strongly alkaline and calcareous, and contain high volumes of rock fragments throughout the soil profile;
- Runoff is slow to medium and the soils are well drained;
- Available water holding capacity is low;
- Potential native plant community (as described in the NRCS database) is dominated by Indian ricegrass and shadscale; and
- Potential native vegetative composition is approximately 55 percent grasses, 5 percent forbs, and 40 percent shrubs.

The ESD for Ursine soils is SHALLOW CALCAREOUS LOAM 8-10" P.Z. (R028AY013NV) and is described above.

Soils around site HAM1007M are classified as Eastmore-Escalante association (map unit symbol 1003). The ESD for Eastmore soils is SHALLOW CALCAREOUS LOAM 8-10" P.Z.

(R028AY013NV) and SHALLOW CALCAREOUS SLOPE 8-10" P.Z. (R028AY004NV). Both ESDs are described above.

The ESD for Escalante soils is COARSE SILTY 5-8" P.Z. (R028AY002NV) and is described as:

- Occurs on fan piedmonts, rock pediments, offshore bars, and fan skirts on all exposures and slope gradients are typically 2 to 8 percent;
- Soils are deep to very deep and are coarse textured;
- Runoff is slow and the soils are well drained;
- Infiltration rates are high and the soils have moderately rapid permeability;
- Potential native plant community (as described in the NRCS database) is dominated by Indian ricegrass and winterfat; and
- Potential native vegetative composition is approximately 60 percent grasses, 5 percent forbs, and 35 percent shrubs.

10. Special Status Species (Federally Listed, Proposed and Candidate Species; State Protected Species; and BLM Sensitive Species)

Special status species known to occur within the vicinity well sites SPR7009M and HAM1007M include Pinyon Jay (*Gymnorhinus cyanocephalus*) (BLM Nevada Special Status Species and Nevada State Protected Species), Ferruginous Hawk (*Buteo regalis*) (Nevada State Protected and BLM Nevada Special Status Species), Golden Eagle (*Aquila chrysaetos*) (Nevada State Protected and BLM Nevada Special Status Species), and Bald Eagle (*Haliaeetus leucocephalus*) (Nevada Endemic Species and BLM Nevada Special Status Species). Special status species known to occur within the vicinity of well sites SPR7010M, HAM1005M, and HAM1006M include Ferruginous Hawk, Golden Eagle, and Bald Eagle. Additionally, well sites SPR7010M, HAM1005M, HAM1006M, and HAM1007M are all located within winter range Sage Grouse habitat.

Special status species biological surveys of the five well sites and associated discharge drainage paths were conducted on April 10 (sites SPR7010M, HAM1005M, and HAM1006M), April 11 (site HAM1007M), and April 21 (site SPR7009M) of 2008 by SWCA Environmental Consultants. No federally listed, proposed or candidate plant species were observed within the proposed areas of disturbance. However, potential habitat for sensitive plant species was observed at the well sites, as described below:

- SPR7009M, SPR7010M, HAM1006M, and HAM1007M - potential habitat was observed for long-calyx eggvetch (*Astragalus oophorus var. lonchocalyx*) (Nevada Special Status Species) and Tunnel Springs beardtongue (*Penstemon concinnus*) (Nevada Special Status Species and Forest Service Sensitive Species). Suitable habitat for these two species is widespread within sagebrush (*Artemisia tridentata*) and pinyon-juniper (*Pinus monophylla-Juniperus osteosperma*) vegetation communities at this elevation.
- HAM1005M - potential habitat was observed for Long-calyx eggvetch, Tunnel Springs beardtongue, Nevada willowherb (*Epilobium nevadense*) (Nevada Special Status Species and Forest Service Sensitive Species), rock purpursia (*Ivesia arizonica* var.

saxosa) (Nevada Special Status Species and Nevada Endemic Species), and waxflower (*Jamesia tetrapetala*) (Nevada Special Status Species and Forest Service Sensitive Species). Suitable habitat for long-calyx eggvetch and Tunnel Springs beardtongue is widespread within sagebrush and pinyon-juniper vegetation communities at this elevation. Potential habitat for Nevada willowherb, rock purpursia, and waxflower is limited to the lower portion of the 1-mile long surveyed wash area, where the channel enters an area with vertical rock walls.

Special status wildlife species were also observed during the biological surveys of the five well sites. A pair of Prairie Falcons (*Falco mexicanus*) (Nevada State Protected and BLM Sensitive Species) were observed nesting in a crevice in a large rock formation approximately 1.0 mile downstream of well site HAM1005M in the discharge drainage path area. Two Long-billed Curlews (*Numenius americanus*) (Nevada State Protected and BLM Special Status Species), a Vesper Sparrow (*Pooecetes gramineus*) (Nevada State Protected and BLM Special Status Species), and a Prairie Falcon were observed at site HAM1006M. A Western Burrowing Owl and its burrow (*Athene cunicularia hypugaea*) (Nevada State Protected and BLM Nevada Special Status Species) were observed adjacent to the discharge drainage path area of site HAM1007M.

11. Vegetation

Botanical surveys of the well sites and associated discharge drainage areas that would be disturbed by the Proposed Action were conducted on April 10 (sites SPR7010M, HAM1005M, and HAM1006M), April 11 (site HAM1007M), and April 21 (site SPR7009M) of 2008 by SWCA Environmental Consultants. Site SPR7009M is located at the base of the northwest end of the Fortification Mountains and the well site is open, flat, and exposed to sun, wind, and grazing. The site is characterized as Intermountain Basins Big Sagebrush Shrubland with big sagebrush, rabbitbrush (*Chrysothamnus* sp.), pinyon pine, and widely scattered Utah juniper as the dominant species. Three Mojave prickly pear cacti (*Opuntia erinacea*) were observed at the site. Site SPR7010M is characterized as Intermountain Basins Big Sagebrush, with Utah juniper and big sagebrush as the dominant species. Four Mojave prickly pear cacti and one beehive cactus (*Coryphantha* [*Escobaria*] *vivipara*) were identified. HAM1005M is characterized as Intermountain Basins Big Sagebrush, with big sagebrush and viscid rabbitbrush (*Chrysothamnus viscidiflorus* var. *viscidiflorus*) as the dominant species and Utah juniper as an associate. Two fish-hook cacti (*Mammilaria* sp), one Coryphantha (*Escobaria* sp) cactus, and one Mojave prickly pear cacti was observed. Site HAM1006M is characterized as Great Basin Xeric Mixed Sagebrush Shrubland, with big sagebrush and shadscale (*Atriplex confertifolia*) as the dominant species. The site is heavily grazed and the habitat is of low quality. Fifteen Mojave prickly pear cacti and sixteen Simpson's foot cacti (*Pediocactus simpsonii*) were observed. Site HAM1007M is characterized as Great Basin Xeric Mixed Sagebrush Shrubland, with viscid rabbitbrush and white greasewood (*Sarcobatus vermiculatus*) as the dominant species. The site is located near a cattle watering site, is heavily trampled and grazed, and is of low quality. One Mojave prickly pear was identified.

12. Visual Resource Management

For the lands managed by the BLM, Visual Resource Management (VRM) objectives have been developed to protect the most scenic public lands, especially those lands that receive the greatest amount of public viewing. The VRM system is the basic tool used by the BLM to

inventory and manage visual resources on public lands. VRM classes are objectives that outline the amount of disturbance an area can tolerate before it no longer meets the visual quality of that class. The VRM classifications range from Class 1, the most restrictive to Class 4, the least restrictive. The VRM takes visual values for an area into account in order to establish management objectives and actions. Visual resources contribute to people's enjoyment when using an area and may be unique or unusual landscapes of natural scenic value.

The Proposed Action area is located in the Great Basin Desert, southern Spring and northern Hamlin valleys, where most vegetative cover is low. The area is characterized by clear skies and broad, open landscapes of the flat valley bottom bounded by mountain ranges. The valley vegetation has little variety and the color variation is subtle and generally muted shades. The vegetation cover is low and fairly common within the region. The landscapes do not contain any unique scenic vistas, features, or landforms and are common to the well site areas; however, the natural setting is an important aspect of the Spring and Hamlin valley terrain.

The well sites would be located adjacent to existing roads, which receive sporadic visitation. The well sites would not be easily seen from any major roads or highways. During the night, activities would be seen throughout the two valleys. Well sites SPR7009M, HAM1005M, HAM1006M, and HAM1007M are all considered to be in a VRM Class 4. The objective within a Class 4 management class is to provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. Well site SPR7010M is considered to be in a VRM Class 2. The objective within a Class 2 management class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low.

13. Water Quality (Drinking/Ground)

Public water supply intakes do not occur at the Proposed Action sites. Groundwater in Spring and Hamlin valleys occurs in both a shallow basin-fill (alluvial) aquifer, and a deep carbonate rock aquifer. To date there has been limited groundwater monitoring in southern Spring and northern Hamlin valleys.

14. Wetlands / Riparian

As stated in the section above on water resources, the springs in the vicinity of HAM1006M include Big Springs, Big Springs Creek, Big Springs Pond, North Little Spring, South Little Spring, and two unnamed springs just north of Big Springs. These areas are the only areas near the project area that have the potential to host wetlands and riparian species. BIO-WEST, Inc. surveyed the vegetation in these areas in September 2004 and June/August 2005.

The primary vegetation surveyed at Big Springs included watercress (*Rorippa Nasturtiumaquaticum*), baltic rush (*Juncus balticus*), giant reed grass (*Phragmites Australis*), Kentucky bluegrass (*Poa pratensis*), and redtop (*Agrostis gigantean*).

Both Big Springs Creek and Big Springs Pond could not be surveyed due to a lack of access onto the private land and a lack of water in the pond at the time of the survey, respectively.

Nebraska sedge (*Carex nebrascensis*) and analogue sedge (*Carex simulate*) were the dominant vegetation at North Little Spring. Baltic rush and Nebraska sedge were the dominant vegetation at South Little Spring.

The dominant vegetation at the two unnamed springs north of Big Springs included Nebraska sedge and mixed wetland graminoid herbaceous vegetation.

15. Wild Horses and Burros

On December 15, 1971, Congress enacted the Wild and Free-Roaming Horse and Burro Act (Public Law 92-195), authorizing the BLM to manage wild horses and burros on public lands. BLM's policy is to protect and manage wild horses and burros in Herd Management Areas (HMAs). Site SPR7010M is located within the Eagle HMA and site HAM1007M is located approximately 0.5 miles north of this HMA.

16. Wildlife

The diversity of wildlife resources around the Proposed Action sites is typical of Great Basin ecological systems. Big game species in these habitat zones primarily include pronghorn antelope (*Antilocapra americana*) and mule deer (*Odocoileus hemionus*). Well sites SPR7009M and HAM1005M are located within a mule deer corridor, mule deer crucial winter range habitat, and year-long pronghorn antelope habitat. Well site SPR7010M is located within mule deer crucial winter range habitat. Well site HAM1006M is located within year-long pronghorn antelope habitat. Well site HAM1007M is located within mule deer crucial winter range and year-long pronghorn antelope habitat.

Nongame species found at the Proposed Action sites include a diversity of small mammals, raptors, passerines, and reptiles. Examples include a variety of rabbits, mice, rats, lizards and snakes.

During sensitive species biological surveys conducted by SWCA Environmental Consultants on April 10, 11, and 21, 2008, wildlife species and wildlife species sign were also noted. While these surveys only represent a snapshot in time, species identified include black-tailed jackrabbit (*Lepus* californicus), Common Raven (*Corvus corax*), antelope ground squirrel (*Ammospermophilus leucurus*), desert cottontail (*Sylvilagus auduboni*), Mountain Bluebird (*Sialia currucoides*), Mountain Chickadee (*Poecile gambelii*), side-blotched lizard (*Uta stansburiana*), Horned Lark, Turkey Vulture (*Cathartes aura*), Rock Wren (*Salpinctes obsoletus*), and Western Meadowlark (*Sturnella neglecta*).

IV. ENVIRONMENTAL CONSEQUENCES

A. Proposed Action

The following resources have been analyzed and may be potentially affected by the Proposed Action.

1. Air Quality

Any dust generated during construction activities would be minimal and short term in duration. The use of water for dust suppression would minimize fugitive dust. Thus the Proposed Action would have little, if any, impacts to air quality.

2. Geology and Minerals

Drilling the groundwater wells would not change the characteristics of the geology and minerals at the Proposed Action sites. Additionally, since there are no granted or pending

mining claims at or within the vicinity of the Proposed Action sites. The proposed action wells are expected to be between 600 and 1,100 feet in depth and are not located within the proper geologic structure for oil and gas. Drilling is not anticipated to encounter oil and gas deposits, Thus, the Proposed Action would have no impact on geology and minerals.

3. Land Use

The Proposed Action would not affect the pending ROW grant for the SNWA GWD Project (N-78803). Drilling operations are not anticipated to affect any existing fences or cattle guards. No long-term ponding of water would occur during the hydraulic testing. The discharged water would be directed into natural washes near the well sites and would avoid existing roads and travel routes. Thus, the Proposed Action would have no impact on land use.

4. Migratory Birds

Based on BLM's list of migratory bird species of conservation concern, nine species were determined to have 50 percent probability of occurrence or greater. These species are the Black-throated Gray Warbler, Brewer's Sparrow, Horned Lark, Loggerhead Shrike, Northern Harrier, Pinyon Jay, Sage Sparrow, Spotted Towhee, and Vesper Sparrow. The breeding period for these birds extends from April to the end of August in the Great Basin Desert. No construction activity would occur at the Proposed Action site during critical nesting periods for the affected species (April through the end of August) unless a biological survey is conducted to determine if migratory bird breeding or nesting is occurring. These surveys would be conducted by the Ely BLM Field Office wildlife team or an authorized biologist, no more than one week prior to site disturbance. The BLM wildlife team would be notified and either the BLM wildlife team or the proponent would conduct the required surveys. Authorization for construction during this breeding period would be contingent on the findings of the survey and guidance from the BLM. Since no construction activity would occur within the nesting season without guidance from the BLM, no impacts are expected to individual migratory birds.

The total amount of bird habitat potentially affected at the Proposed Action five sites (HAM1005M, HAM1006M, HAM1007M, SPR7009M, and SPR7010M) would be 5.0 acres permanent ROW and 5.0 acres short-term ROW. The amount of habitat that would be disturbed by the Proposed Action is negligible compared with the total available habitat in Hamlin and Spring Valley. Thus, there would be a negligible impact to migratory bird habitat resulting from the Proposed Action.

Since there would be no effect on individual migratory bird species and negligible impact to migratory bird habitat from the Proposed Action, there would be no impact to migratory bird populations.

5. Non-native, Invasive Species and Noxious Weeds

Botanical surveys of the well sites and associated discharge drainage paths that may be disturbed by the Proposed Action identified the following invasive non-native plant species: peppergrass, cheatgrass, African mustard, halogeton, bur buttercup, filaree, and Russian thistle. The Ely District weed inventory documented cheatgrass within the surrounding area of two sites and an invasive mustard species within the surrounding area of one site. Although the Ely District weed inventory documented the noxious weed salt cedar approximately 1.0 mile from a well site, no noxious weeds were found at any Proposed Action sites during the SWCA Environmental Consultants April 2008 surveys. Any new noxious weed introductions therefore

could adversely impact the current native plant community at the Proposed Action sites. Also, any increase in cheatgrass could alter the fire regime in the area.

To minimize the potential impact, environmental protection measures included in the Proposed Action would reduce the potential for spread of noxious and invasive weeds. All drilling equipment would be washed prior to arrival on the site, prior to moving between sites, and prior to removal to prevent and minimize the introduction or spread of non-native vegetation. All washing would occur at the drilling sites, except for the initial washing which would occur off-site. Each Proposed Action site would be staked and flagged and no ground disturbance would occur outside of the designated site. Existing vegetation, primarily sagebrush scrub, would be crushed rather than bladed wherever possible. Any topsoil and vegetation that are scraped would be stockpiled within the site and re-spread at the completion of construction. Ground disturbance at each site would be kept to a minimum. Additionally, any backfill used for the Proposed Action would consist of native material directly from the sites themselves, any necessary erosion control material would be certified weed-free, and the sites would be monitored for noxious and invasive weeds as part of the re-vegetation effort. If any populations of noxious weeds are observed, the Ely District Noxious and Invasive Weeds Coordinator would be notified and SNWA would treat the infestations accordingly.

To eliminate the transport of vehicle-borne weed seeds, roots, or rhizomes all vehicles and heavy equipment used for the completion, maintenance, inspection, or monitoring of ground disturbing activities or for authorized off-road driving would be free of soil and debris capable of transporting weed propagules. All such vehicles and equipment would be cleaned with power or high pressure equipment prior to entering or leaving the work site or project area. Cleaning efforts would concentrate on tracks, feet and tires, and on the undercarriage. Special emphasis would be applied to axels, frames, cross members, motor mounts, on and underneath steps, running boards, and front bumper/brush guard assemblies. Vehicle cabs would be swept out and refuse would be disposed of in waste receptacles. Cleaning sites would be recorded using global positioning systems or other mutually acceptable equipment and provided to the Ely District Noxious and Invasive Weeds Coordinator or designated contact person. Thus, the Proposed Action would have minimal impact on non-native invasive species and noxious weeds.

6. Paleontological Resources

One fossil bearing formation (i.e., the Simonson Dolomite Formation) is within the permanent and short-term ROW of proposed well SPR7010M. Fossils found in this formation are typically in poor condition. If a significant fossil is found as a result of Proposed Action-related construction activities all work must cease within 328 feet (100 meters) of the find, and BLM management must be informed within 24 hours of the find. Construction activities may continue once BLM management has assessed the find, implemented treatment or removal, and has approved the results of the treatment. Thus, the Proposed Action would have no impact on paleontological resources.

7. Range / Livestock Grazing

Well construction would disturb relatively little area (approximately 5.0 acres permanent ROW and 5.0 acres short-term ROW) and would have limited impacts to livestock grazing and rangeland resources. Construction of the well sites would result in a minor loss of vegetation and ground cover. However, no reduction of Animal Unit Months would be necessary due to

the small amount of forage which may be lost compared to the size of the allotments overall. Following construction, the well sites would be reseeded with the exception of a small area immediately surrounding the well site for access during monitoring.

Livestock management would not be impacted by disturbances related to the construction and testing of the wells. Construction and testing would occur over a short period of time, and livestock would become accustomed to the presence of equipment and any noise associated with drilling equipment or would avoid the areas. Also, the five well sites are not located in the vicinity of any main water sources for livestock. The distance to the nearest livestock-accessible water source is approximately 2.8 miles for SPR7009M, 4.5 miles for HAM1005M, and 7.8 miles for the well HAM1006M. For HAM1007M and SPR7010M, the nearest livestock–accessible water source is approximately 1.0 mile and 3.0 miles, respectively. The Proposed Action would not impact livestock access to existing water. No known range improvements are anticipated to be disturbed or damaged as a result of the Proposed Action; if any damages occur the improvements would be rebuilt to BLM specifications. Due to the temporary nature of the proposed construction and testing activities, no long-term impact on range or livestock grazing is anticipated.

8. Recreation

Public use of the landscape in the project area is low, and because the area receives low levels of dispersed recreation use, current visitation to the proposed sites is nearly zero. During construction, the extent of traffic is anticipated to be approximately 6-8 construction and support vehicles traveling to the site each day. Increased traffic in the area would result in an increased attraction to the area, potentially resulting in approximately 1-2 social encounters per day for each site during construction. Once construction was complete, the social setting at the sites would return to pre-construction levels following completion of drilling. During construction, the abundance of public land similar in nature to the project area would provide other opportunities for solitude and minimal encounters for recreationists. The temporary noise increase would contribute to the decrease in opportunities for solitude in the immediate area; however, noise levels would return to pre-construction levels following completion of drilling.

The Proposed Action would result in the installation of wells, concrete pads, and well housings that would change the physical setting and decrease the naturalness of the immediate area. These changes in the physical setting would not have any impact on recreation in the immediate area.

All five Proposed Action sites would be located within an ERMA. Management practices for ERMAs are primarily to provide basic recreation information to the public and to allow public access. Since the Proposed Action does not hinder either of these management practices, the Proposed Action would not have an impact on recreation management as currently permitted.

Additionally, the Proposed Action would not block or disturb any existing access roads, and would not impact recreational access to the region. There would be only a temporary increase in commercial traffic on the existing access roads near the Proposed Action sites and only a temporary increase in noise and activity at the Proposed Action sites during construction. Following completion of construction, the traffic and noise would return to pre-construction levels.

The proposed sites are located within the hunting range for furbearer animals, upland game, and mountain lions. The hunting seasons for these animals are primarily in the fall, winter, and early spring. Construction of the Proposed Action would likely occur within this time period. Increased human presence and drilling activities during construction may discourage hunting in the immediate vicinity of the well sites. Discharged water may attract animals to the sites, but noise from the drilling operation would likely deter the animals as well. Hunters in the area may also encounter additional vehicles on backcountry dirt roads. The well sites and immediate vicinity from which hunters may be temporarily discouraged are minor compared to the total available hunting range in Spring and Hamlin valleys. After completion of construction, there would be only infrequent visitation for monitoring of the well sites, which would not impact animals or hunters.

9. Soils

Due to the relatively low slope gradients and well drained nature of the soils around the Proposed Action sites, water ponding or flooding issues are not anticipated. Runoff at the sites ranges from slow to rapid. Environmental protection measures would be implemented during discharge of drilling or hydraulic water testing to reduce discharge rates to prevent scouring and erosion and the well sites would be restored at the completion of construction, including replacement of topsoil and reseeding, which would stabilize the site and minimize the potential for any future erosion. Thus, no impacts to soils from the Proposed Action are anticipated.

10. Special Status Species (Federally Listed, Proposed, and Candidate Species; State Protected Species; and BLM Sensitive Species)

No federally listed, proposed or candidate plant or animal species were identified in biological reports or databases or observed within the Proposed Action sites during the SWCA Environmental Consultants April 2008 surveys. Potential special status and sensitive plant species habitat was identified at the well sites. Although suitable habitat for long-calyx eggvetch and Tunnel Springs beardtongue was observed at the Proposed Action sites, the habitat is widespread within sagebrush and pinyon-juniper vegetation communities at the elevation of the well sites. All Proposed Action activities would occur within the boundaries of the designated ROW, and existing vegetation would be crushed rather than bladed whenever possible. For these reasons, there would be minimal effect on special status plant habitat from the Proposed Action. Similarly, the potential habitat for Nevada willowherb, rock purpursia, and waxflower is limited to the lower portion of the 1-mile long surveyed wash area. It is highly unlikely that any discharged water from the well drilling or hydraulic testing would reach this area due to distance, thus no impacts are anticipated.

Well sites SPR7010M, HAM1005M, HAM1006M, and HAM1007M are all located within winter range Sage Grouse habitat. The best management practice guidelines to manage Sage Grouse winter range habitat restricts, where appropriate, activities from November 1 through March 31. If construction at the Proposed Action sites occurs between these dates, the area of disturbance would be flagged and the BLM Ely Field Office wildlife team or an authorized biologist would conduct surveys no more than one week prior to the disturbance to identify any Sage Grouse in the area. Authorization for construction during this period would be contingent on the findings of the survey and guidance from the BLM. Impacts to Sage Grouse are therefore not anticipated.

The pair of Prairie Falcons observed nesting approximately 1.0 mile downstream of well site HAM1005M would not be impacted by the Proposed Action due to distance and due to the elevation of the nesting area above the ground. The Long-billed Curlews, Vesper Sparrow, and Prairie Falcon observed at site HAM1006M were flying through the area and no nests or nesting behavior was observed. A survey of the Western Burrowing Owl burrow observed adjacent to the discharge drainage path area of site HAM1007M would be conducted no more than one week prior to site disturbance by the BLM Ely Field Office wildlife team or an authorized biologist to identify if nesting is occurring. Authorization for construction would be contingent on the findings of the survey and guidance from the BLM. Thus, no impacts to special status species or their potential habitat are anticipated.

11. Vegetation

Existing vegetation at each site would be disturbed, but would be crushed rather than bladed whenever possible. Any topsoil and vegetation that are scraped would be stockpiled within the Proposed Action site and re-spread at the completion of construction. Ground disturbance at each site would be kept to a minimum. Restoration, including reseeding, would be conducted at the end of well construction and hydraulic testing. No ponding of water would occur since the water would rapidly evaporate or percolate into the alluvial sediments. Thus, vegetation would not be impacted by the water discharged during hydraulic testing. At the five well sites, restoration, including reseeding, would be conducted at the end of well construction and hydraulic testing. Therefore, the Proposed Action would have no impact on vegetation due to rehabilitation and reseeding.

12. Visual Resource Management

The Proposed Action occurs within VRM Class 4 (for well sites SPR7009M, HAM1005M, HAM1006M, and HAM1007M) and VRM Class 2 (for well site SPR7010M). The management objective for Class 4 is to provide for major modification of the existing character of the landscape. Thus, management activities and uses allow for a high level of change to the characteristic landscape. The management objective for Class 2 requires the existing character of the landscape to be retained. Accordingly, management activities and uses should not dominate the view, but may attract some attention of the casual observer.

The Proposed Action is consistent with uses within VRM Classes 4 and 2. There would be a temporary visual impact during construction and drilling activities, due to the presence of the drill rig and associated vehicles and equipment. Measures included in the Proposed Action to shield and direct lighting would minimize visual effects at night. At the completion of the drilling and hydraulic testing activities, the drill rig, vehicles, equipment, and lighting would be removed from the sites.

At the completion of construction, the physical setting of the area would be permanently changed. The visible facilities on site would consist of a well housing, approximately five feet tall, installed over the well head and bolted to a concrete pad. The completed well housing would be a BLM-approved color selected to blend in with the surrounding vegetation and overall environment color and form. The completed well housings would be seldom seen from the dirt access roads and would blend with the natural environment due to their size, color, and form. Their presence would not substantially alter the character of the existing landscape. Contrasts to the basic landscape would be evident, but would remain subordinate to the existing landscape.

Since the Proposed Action would retain the existing character of the landscape with only minimal changes, it would meet the VRM Class 2 management objectives. It would also meet VRM Class 4 management objectives. As a result, the Proposed Action would have no impact on visual resource management.

13. Water Quality (Drinking Ground)

For the Proposed Action there would be no impacts to drinking or groundwater quality. The amount of groundwater pumped for the hydraulic testing would have no measurable impacts on groundwater resources. There may be localized groundwater drawdowns in the immediate vicinity of the testing wells. These drawdowns would quickly recover at the termination of testing. Environmental protection measures would ensure hazardous materials are controlled and accidental spills contained. Temporary discharges of water during drilling and testing would be managed to avoid erosion or scouring. As a result, no measurable impacts on water resources from the Proposed Action are anticipated.

14. Wetlands / Riparian

The purpose of the Proposed Action is to collect groundwater level data to evaluate groundwater flow and the hydraulic gradient between Spring and Snake valleys via Hamlin Valley. The Proposed Action wells are not production wells and hydraulic testing would be limited in duration. Any localized groundwater drawdown would occur within the immediate vicinity of the monitoring wells and these drawdowns would quickly recover at the end of hydraulic testing. The wetlands and riparian areas associated with the water resources mentioned in the section above are not expected to be impacted since the waterways would not be impacted. Groundwater withdrawal associated with the Proposed Action would not cause a drawdown that would impact riparian vegetation at nearby springs. Thus, the Proposed Action would have no impact on wetlands and riparian areas.

15. Wild Horses and Burros

Wild horses and burros within the Eagle HMA may be temporarily frightened away from the Proposed Action sites during construction and well development activities, but drawn to the water in the discharge paths resulting from the hydraulic testing. However there would be increased human activity in the area when the water is available, the discharged water would rapidly evaporate or percolate into the alluvial sediments surrounding the area, and no long-term ponding of water would result from the tests. Additionally, water resources in the area are not expected to be impacted, therefore the horses and burros would not lose a watering source. For these reasons, impacts to wild horses and burros, beyond the short term, are not anticipated.

16. Wildlife

Larger wildlife common to the project area and various bird species could be disturbed or temporarily frightened away from the Proposed Action sites as a result of the increased activity and equipment during construction. Smaller species of wildlife, such as lizards or small mammals, would also likely be frightened away from the sites during construction, but some may inadvertently be crushed during construction activities. These impacts would be temporary and after completion of the construction activities, there would be no impacts to wildlife. Wildlife may be drawn to discharged water during hydraulic testing and well development; however, there would be increased human activity in the area when the water is

available, the discharged water would rapidly evaporate or percolate into the alluvial sediments surrounding the area, and no long-term ponding of water would result from the tests. For these reasons, impacts to wildlife are not anticipated.

The total amount of wildlife habitat potentially affected at the Proposed Action sites would be 5.0 acres permanent ROW and 5.0 acres short-term ROW. The amount of habitat that would be disturbed by the Proposed Action is negligible compared with the total available habitat in Spring and Hamlin valleys, and the vegetation restoration would be implemented at the completion of construction. If well construction occurs during November 1 to March 31, in the crucial winter range habitat for mule deer, SNWA would consult with the BLM Ely Field Office wildlife team to prioritize the well drilling sequence. Due to the limited duration of well construction and the amount of available habitat, there would be negligible impacts to wildlife habitat resulting from the Proposed Action.

B. No Action Alternative

Under the No Action alternative selection, none of the above-described impacts would occur to the potentially affected resources.

C. Cumulative Impacts

Cumulative impacts are those that result from the incremental impact of the Proposed Action when added to other past, present, and reasonably foreseeable future actions. The purpose of the cumulative analysis in the EA is to evaluate the addition of the Proposed Action's contributions to cumulative impacts. A cumulative impact is defined under federal regulations as follows:

> "…the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." (40 CFR 1508.7).

A cumulative impacts analysis is limited to those past, present, and reasonably foreseeable future actions that involve effects on a resource value that overlaps with the Proposed Action's effects on that same resource value.

1. Past, Present and Reasonably Foreseeable Future Actions

Past: The U.S. Geological Survey has completed geophysical surveys in Spring Valley (BARCASS). This activity did not overlap in the same geographic area or time with the Proposed Action.

Past/Present: Lincoln and White Pine counties conduct periodic maintenance of county roads in southern Spring and northern Hamlin valleys. This maintenance is conducted as needed, and includes grading and leveling of the existing roads.

Past/Present: SNWA has completed installing monitoring and testing wells in Spring Valley. These wells and the hydraulic testing did not overlap in the same geographic area or time as the hydraulic testing under the Proposed Action. However, the wells continue to be monitored.

Past/Present: SNWA has installed and continues to monitor hydrological and meteorological stations on BLM lands in northern Spring Valley (N-83341) and southern Spring and Snake

valleys (N-83342). These stations record scientific information. These stations did not overlap in the same geographic area or time as the Proposed Action.

Past/Present/Reasonably Foreseeable Future: The BLM currently manages grazing allotments in Spring and Hamlin valley. Permittees utilize several grazing allotments in these two valleys for cattle and sheep. The Bureau will manage livestock grazing on public lands under the principle of multiple use and sustained yield, and in accordance with applicable land use plans.

Past/Present: SNWA has completed installing monitoring and testing wells in northern Spring Valley (N-82765) and southern Spring Valley (N-82357). These wells and the hydraulic testing would be completed prior to initiation of the Proposed Action, and would not overlap in the same geographic area or time as the hydraulic testing under the Proposed Action.

Past/Present: SNWA has completed the installation of an irrigation well at the Harbecke Ranch (N-84215). An associated pipeline is currently under construction, but does not overlap in the same geographic area as the Proposed Action.

Reasonably Foreseeable Future: Recreational use of public land managed by BLM is n the project area has continued to increase in recent years. Off-highway vehicle (OHV) use is enjoying popularity across the west with an increase in OHVs in eastern Nevada. Population growth in Clark County, Nevada, along with reduced access for OHV use in the Mojave Desert area have led to greater use of BLM-administered land in eastern Nevada. Special recreation permits (motorized and non-motorized) would be required from BLM for such activities as OHV races, mountain bike races, and equestrian events.

Reasonably Foreseeable Future: SNWA anticipates that additional hydraulic monitoring and testing wells may be requested in other hydrographic basins. The specific location and schedule for these other wells is not currently known, however, they would not overlap in time or the same geographic area as the Proposed Action.

Reasonably Foreseeable Future: SNWA has applied to the BLM for rights-of-way to install piezometers and associated appurtenances on BLM lands in Spring Valley (N-84216). Installation of these facilities is anticipated for fall of 2009. The closest piezometer is approximately 10 miles from the Proposed Action. Construction of these facilities would not overlap in time with the Proposed Action

Reasonably Foreseeable Future: SNWA has applied to the BLM for ROWs to construct and operate the GWD Project, which is currently undergoing environmental analysis. Construction of the GWD Project would not overlap in time with the Proposed Action. Per the Stipulated Agreement, SNWA is required to establish hydraulic and biologic monitoring programs. The Proposed Action would meet some of the requirements of the Stipulated Agreement, and may be used for monitoring of the GWD Project.

2. Issues and Resource Values

The following resources or concerns have the potential to be impacted by the Proposed Action and thus potentially may cumulatively be impacted in conjunction with other past, present, and reasonably foreseeable future actions: air quality, non-native, invasive species and noxious weeds, range / livestock grazing, recreation, special status species (federally listed, proposed and candidate species; state protected species and BLM sensitive species), wild horses and burros, and wildlife.

Air Quality: The resource analysis area for air quality is the Spring Valley and Hamlin Valley air shed. Road maintenance activities and OHV use, if occurring at the same time as ground disturbance under the Proposed Action, could result in a temporary cumulative increase in dust emissions. These activities are not anticipated to affect the current attainment status of the air shed, and thus there would be no cumulative impact to air quality.

Non-native, Invasive Species and Noxious Weeds**:** The cumulative resource analysis area for weeds is the Spring Valley and Hamlin Valley watersheds. The Proposed Action, along with county road maintenance, OHV use, and vehicle traffic associated with other present and reasonably foreseeable future projects, have the potential to increase the spread of noxious or invasive weeds. Measures to minimize the spread of noxious and invasive vegetation would be implemented in accordance with approved ROW grants and roadwork authorizations, and a substantive cumulative increase in noxious or invasive weeds is not anticipated.

Range / Livestock Grazing: The cumulative resource analysis area for range / livestock grazing is the Spring Valley and Hamlin Valley watershed. None of the other past/present/reasonably foreseeable future projects would be under construction at the same time and in the same area as the Proposed Action, thus no cumulative impacts to range / livestock grazing would occur.

Recreation: The cumulative resource analysis area for recreation is the Spring Valley and Hamlin Valley watersheds. None of the other past/present/reasonably foreseeable future projects would be under construction at the same time and in the same area as the Proposed Action, thus substantive cumulative impacts on hunting are not anticipated.

Special Status Species (Federally Listed, Proposed and Candidate Species; State Protected Species and BLM Sensitive Species): The cumulative resource analysis area for special status species is Spring Valley and Hamlin Valley watersheds. The Proposed Action, along with OHV use, has the potential to disturb suitable habitat for long-calyx eggvetch and Tunnel Springs beardtongue. However, the amount of suitable habitat for these species is widespread in the area within sagebrush and pinyon-juniper vegetation communities. Thus, substantive cumulative impacts on special status plant species habitat are not expected.

Wild Horses and Burros: The cumulative resource analysis area for recreation is the Spring Valley and Hamlin Valley watersheds. None of the other past/present/reasonably foreseeable future projects would be under construction at the same time and in the same area as the Proposed Action, thus no cumulative impact to wild horses and burros is anticipated.

Wildlife: The cumulative resource analysis area for wildlife is the Spring Valley and Hamlin Valley watersheds. The Proposed Action, along with county road maintenance and OHV use, has the potential to disturb larger wildlife and frighten away bird species in the area due to the increased noise levels. These impacts would be temporary and after completion of the activities the noise would return to pre-construction levels; thus, there would be no cumulative impact to wildlife.

D. Proposed Mitigation Measures

If fence lines or cattle guards are damaged as a result of implementing the Proposed Action, the damaged portion would be rebuilt to BLM specifications.

Environmental Protection Measures have been identified for the Proposed Action. Appropriate mitigation has been included as part of the Proposed Action and no additional mitigation is proposed based on this environmental analysis.

E. Suggested Monitoring

BLM and SNWA would monitor the Proposed Action sites until the wells have been plugged, abandoned, and reclaimed.

V. REFERENCES

Betancourt, Julio L., Thomas R. Van Devender, and Paul S. Martin. 1990. *Packrat Middens: The Last 40,000 Years of Biotic Change*. University of Arizona Press, Tucson, Arizona.

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Parsons Water & Infrastructure, Inc. 2008. A Class III Inventory of Five Monitoring Well Locations (N-84333) in Lincoln and White Pine Counties, Nevada for the Southern Nevada Water Authority.

SWCA Environmental Consultants. 2008. Southern Nevada Water Authority Spring Valley, Hamlin Valley, Delamar Valley, and Dry Lake Valley Groundwater Monitoring and Testing Well Sites, Lincoln and White Pine Counties, Nevada Biological Survey/Inventory Report.

Tschanz, C.M. and Pampeyan, E.H. 1976. *Geologic Map of Lincoln County, Nevada*. Nevada Bureau of Mines and Geology, Reno, Nevada.

VI. GLOSSARY

Alluvial – the term used for describing an object composed of alluvium.

Alluvium – a general term for clay, silt, sand, gravel or similar unconsolidated, eroded material deposited during comparatively recent geologic time by stream or other body of moving water.

Appurtenances – an adjunct or accessory to the main object/piece of equipment being identified.

Clasts – a rock fragment or grain resulting from the breakdown of larger rocks.

Consolidated – a solid, firm, compact or hardened mass.

Hydrogeochemistry – the chemical characteristics of ground and surface waters as related to geology.

Hydraulic conductivity – the property of a water bearing formation as it relates to a measurement of the formations' capacity to transmit water through its porous or fractured media.

Passerine – of or relating to the largest order (Passeriformes) of birds which includes over half of all living birds and sometimes known as perching birds.

Propagule – any plant material used for the purpose of plant propagation, such as a seed, spore, or a part of the vegetative body capable of independent growth if detached from the parent.

Surficial – of or pertaining to a surface as in a land surface.

Transmissivity – the rate at which water moves through a measured width of an aquifer under a correlative hydraulic gradient.

Unconsolidated – not compact or dense in structure or arrangement.

VII. CONSULTATION & COORDINATION

This EA was prepared at the direction of the BLM Ely Field Office, Ely, Nevada, by SNWA. The following is a list of individuals responsible for preparation of the EA.

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Gavin Kistinger – Hydrologist

Carol Watson– Biologist

Don Jolly – Principal Archaeologist

Allen Cattell - Biologist

Attachment 1
Maps and Site Photographs

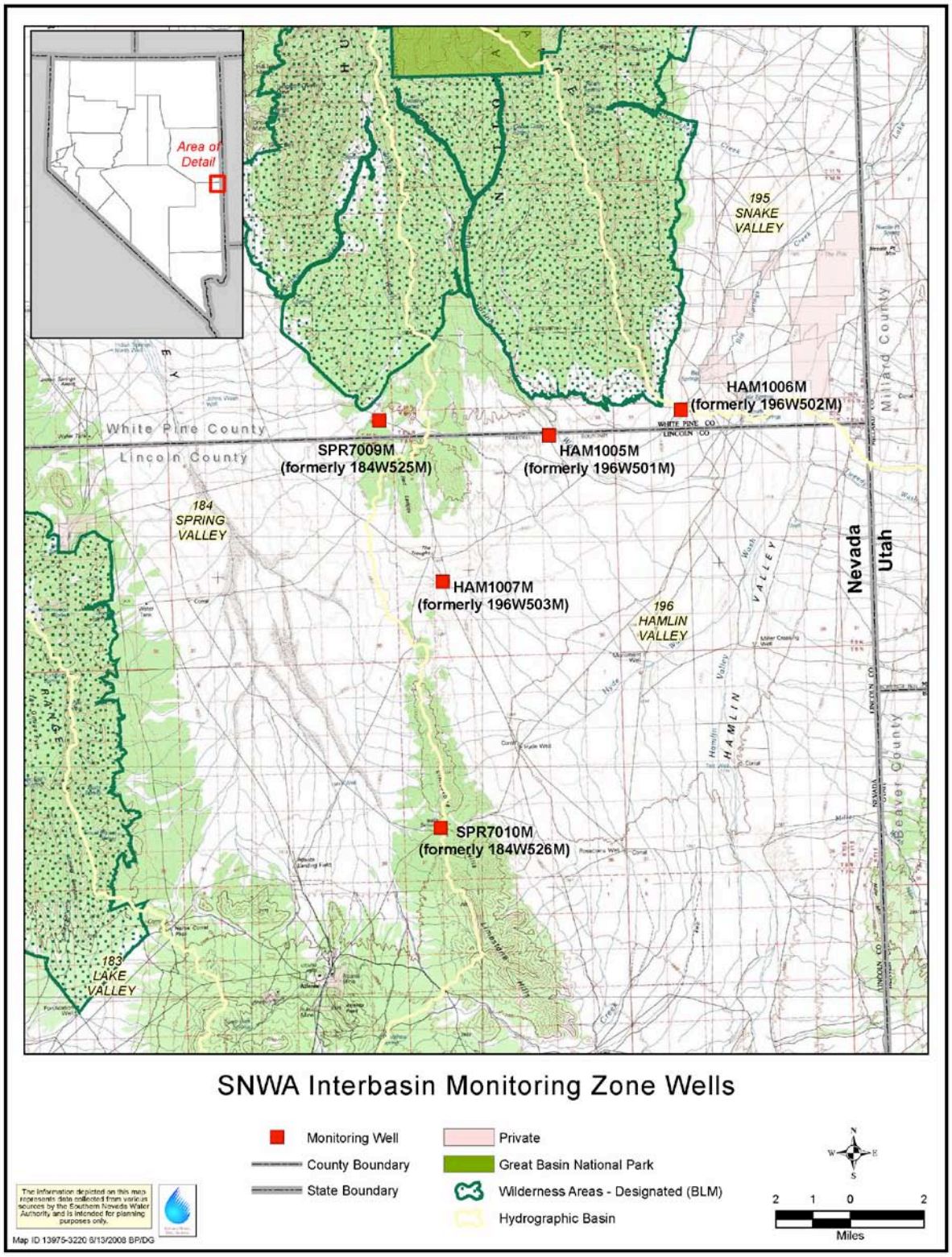


Figure 1: General Location Map

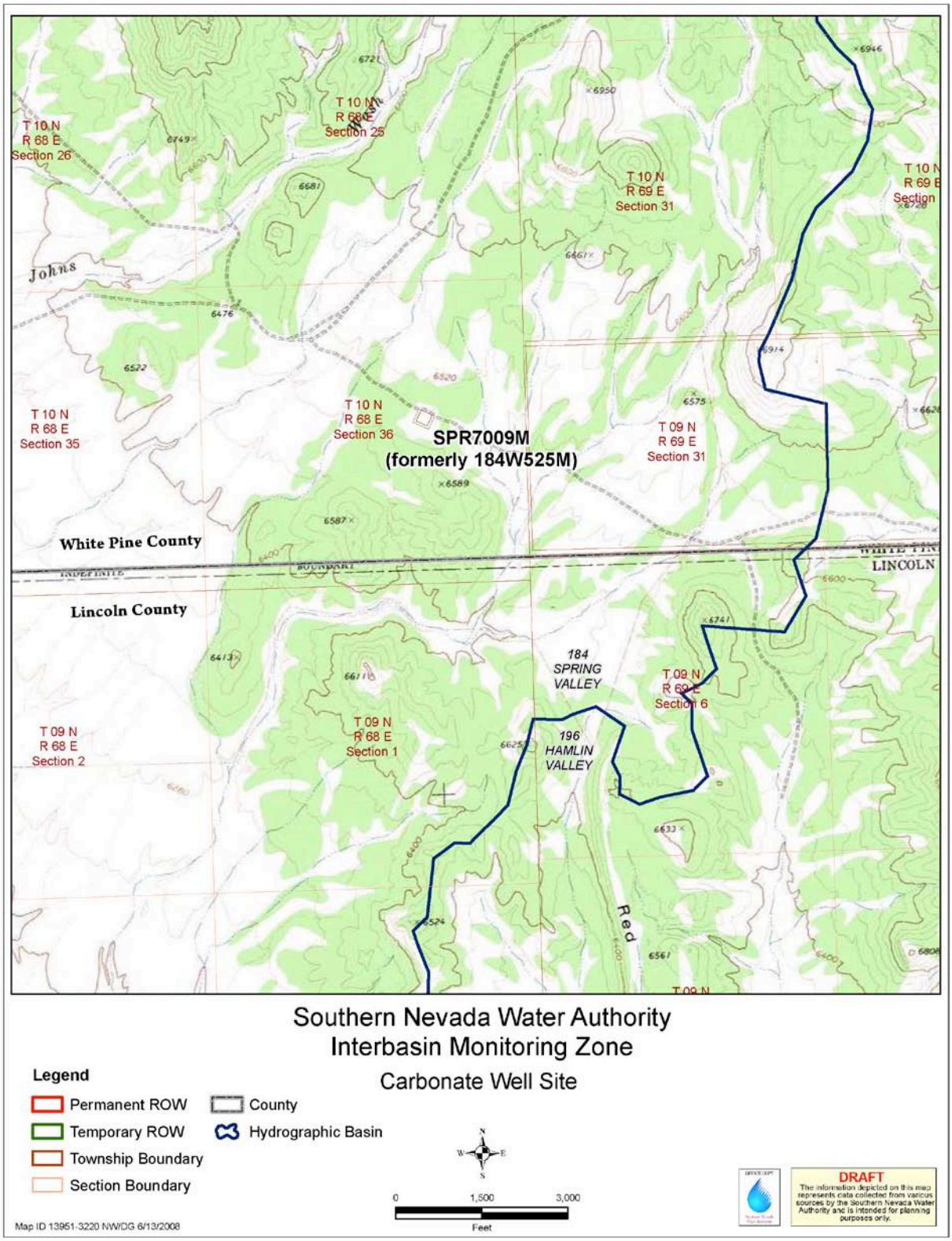


Figure 2: Site SPR7009M Topo View

Figure 3: Site SPR7009M Aerial View

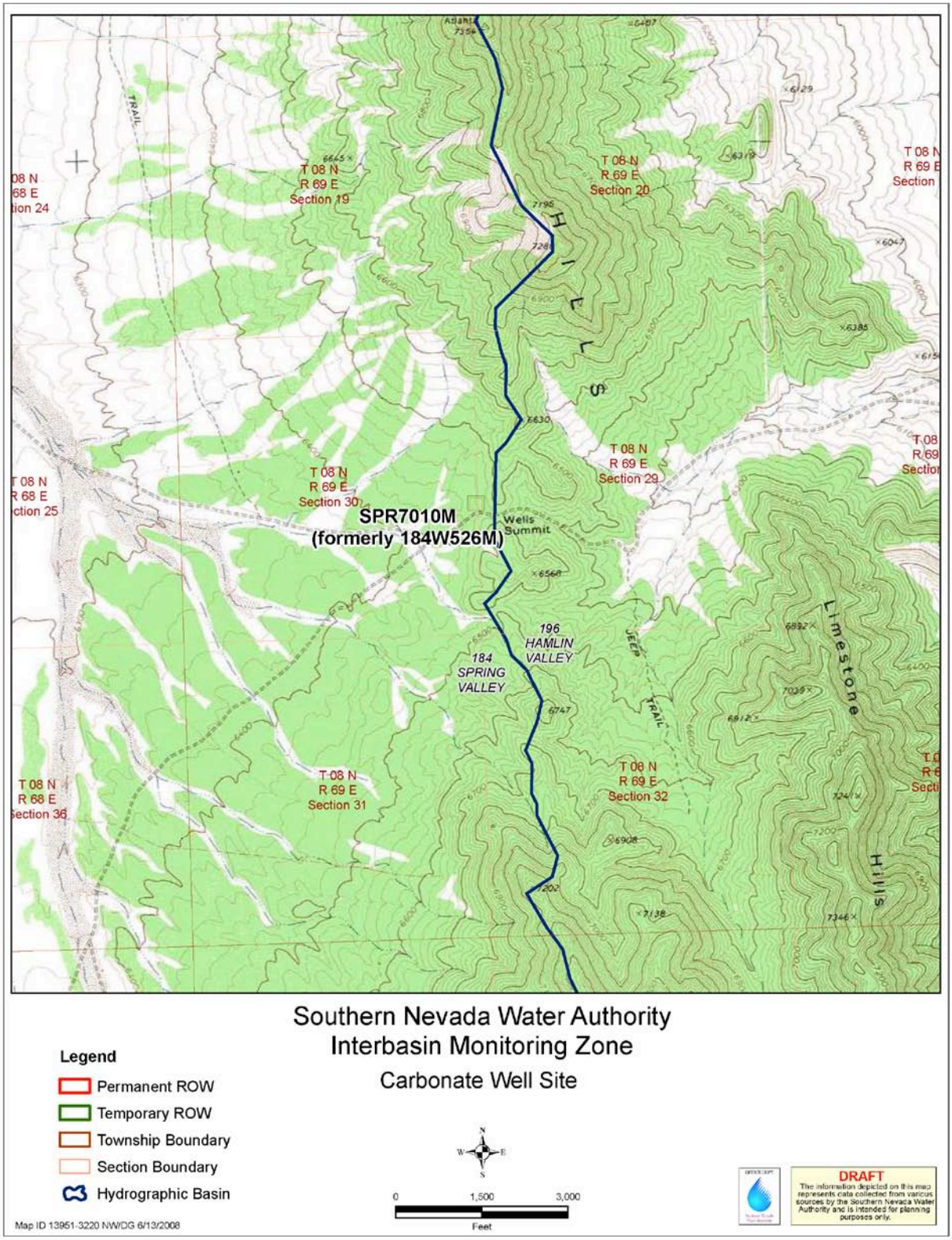


Figure 4: Site SPR7010M Topo View

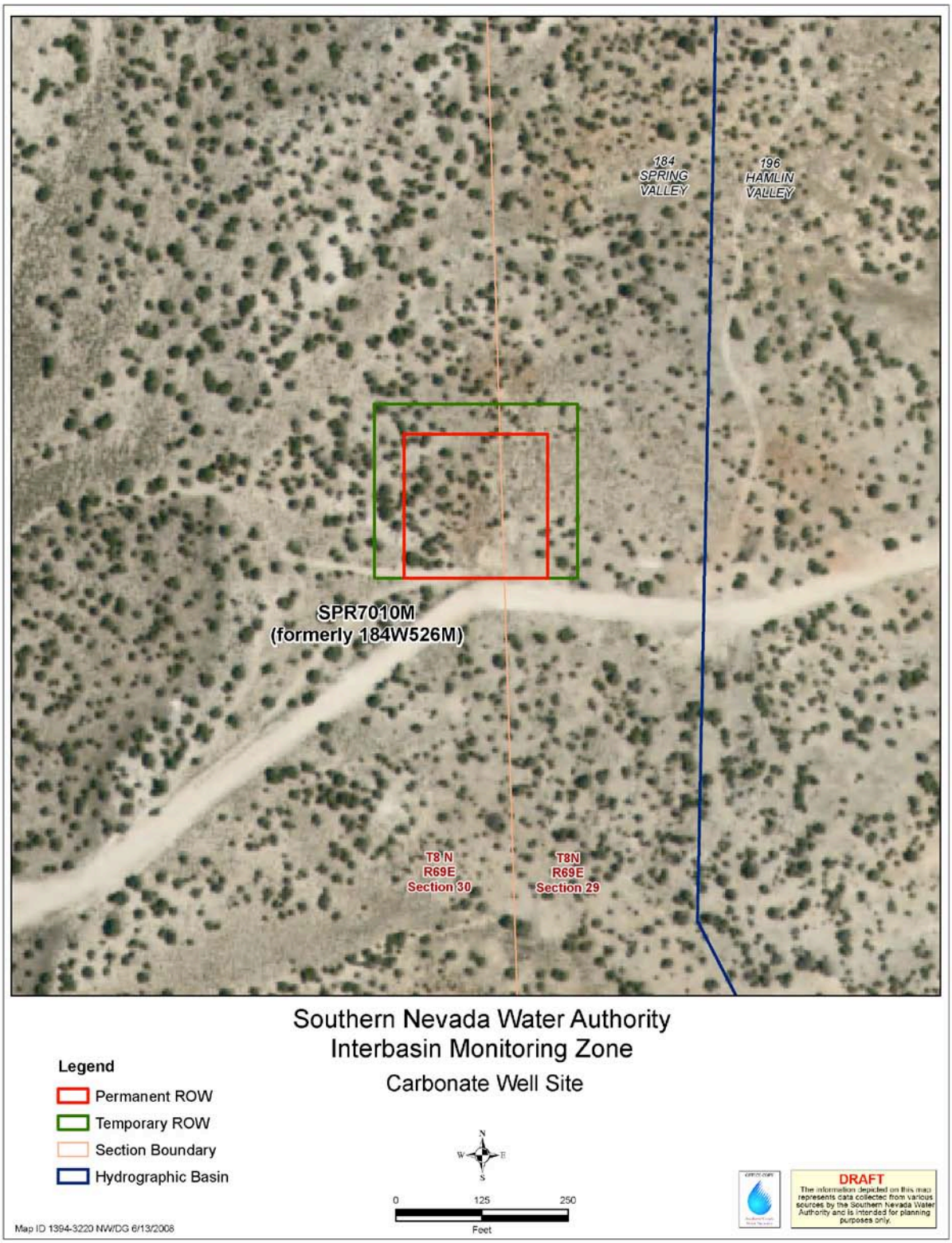


Figure 5: Site SPR7010M Aerial View

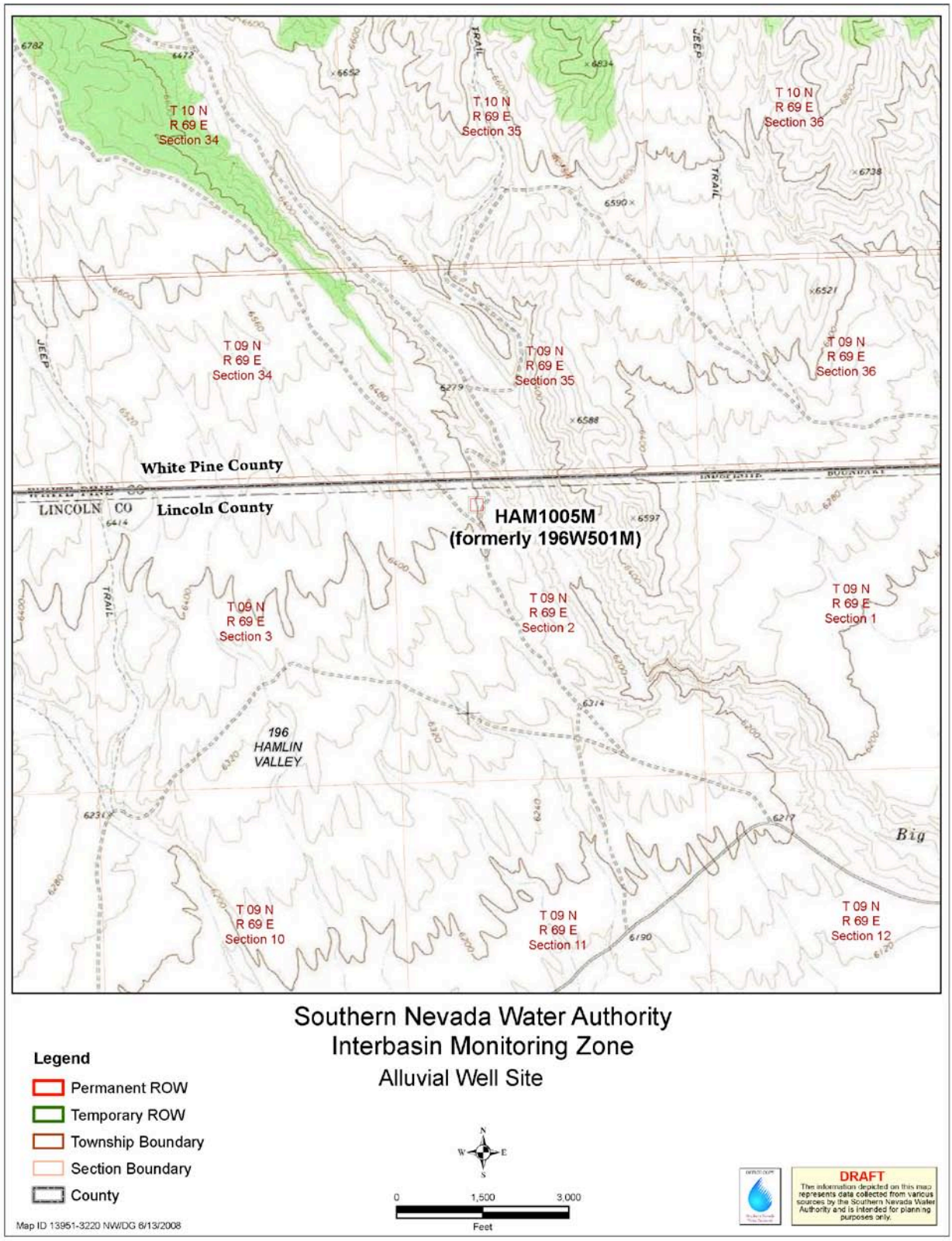


Figure 6: Site HAM1005M Topo View

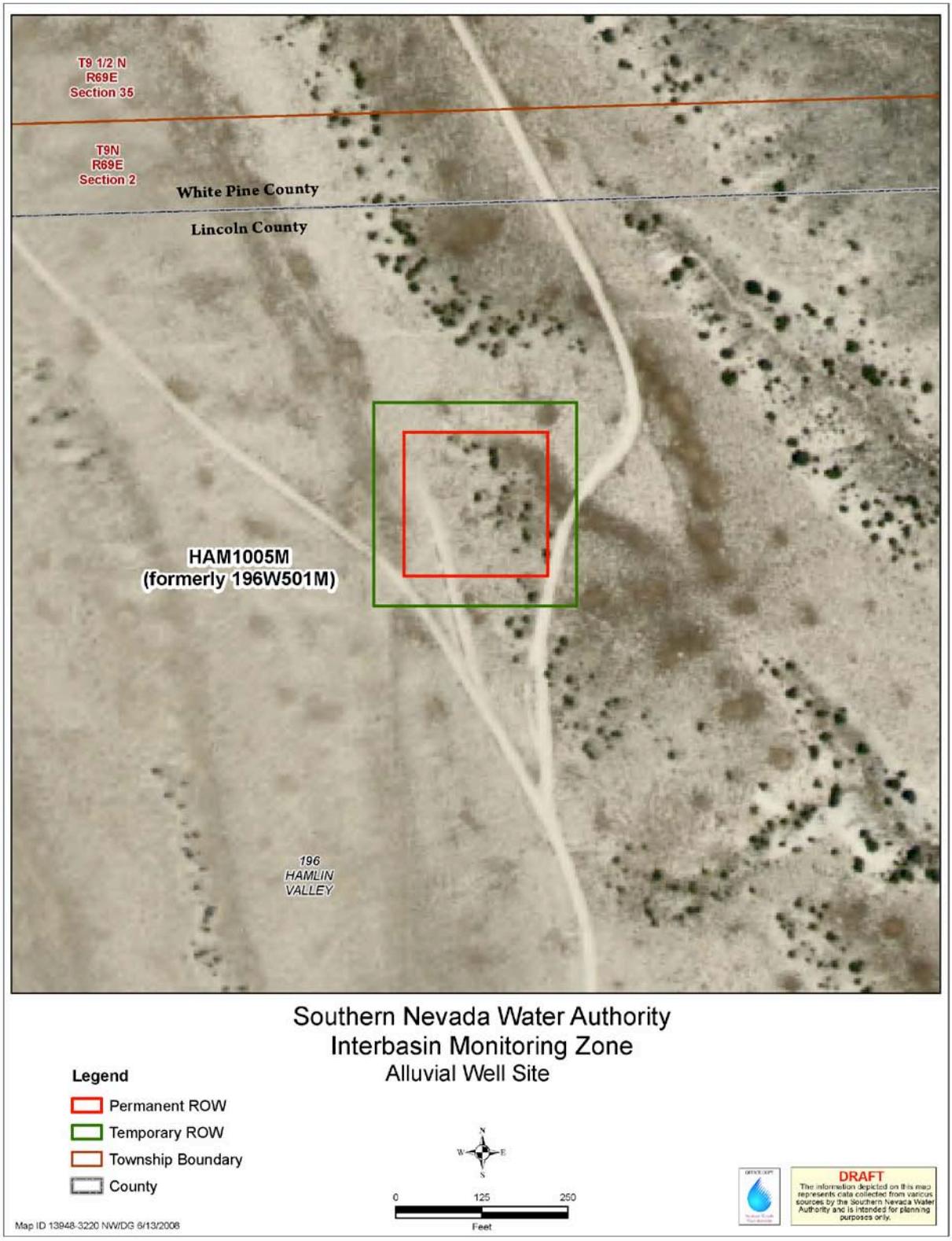


Figure 7: Site HAM1005M Aerial View

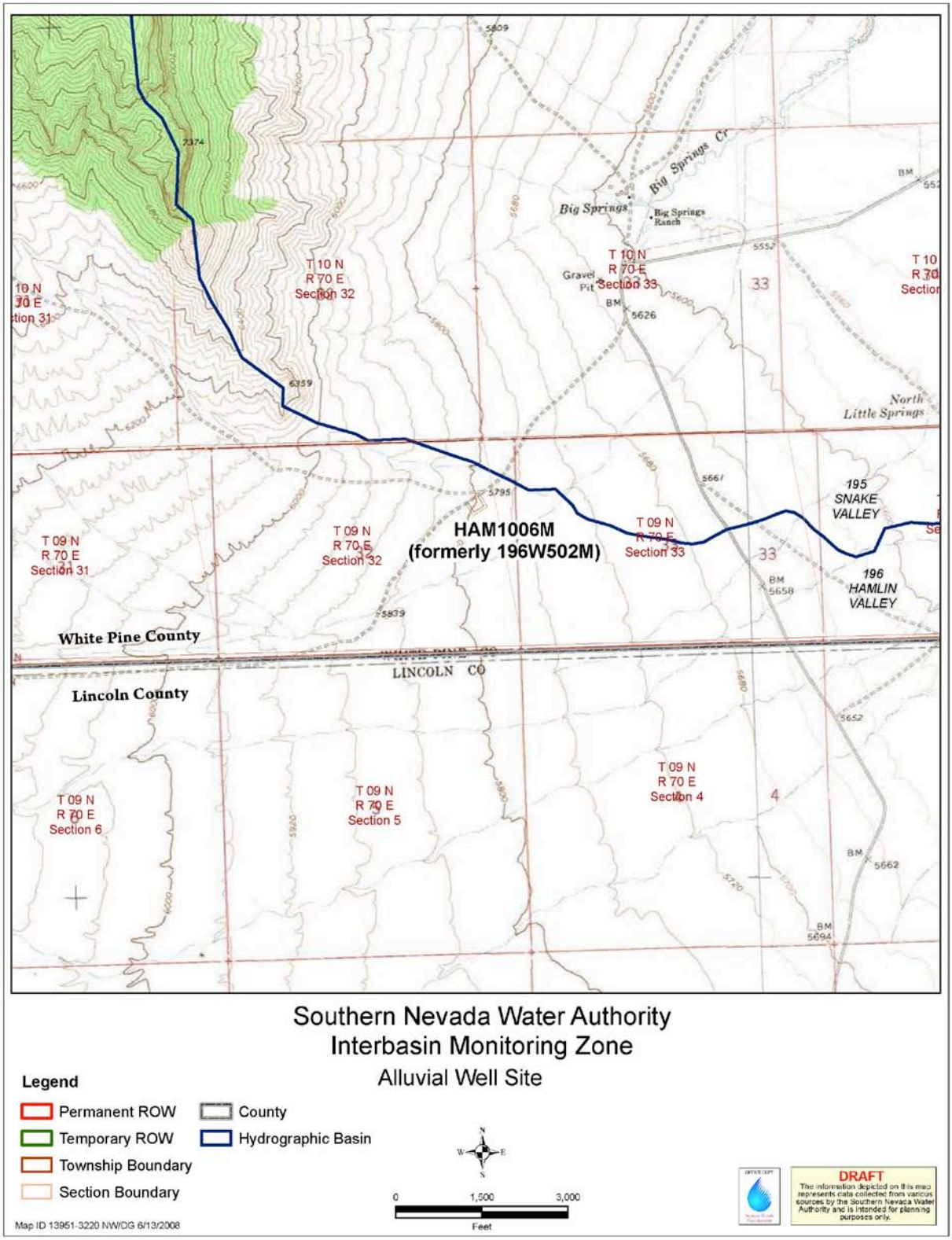


Figure 8: Site HAM1006M Topo View

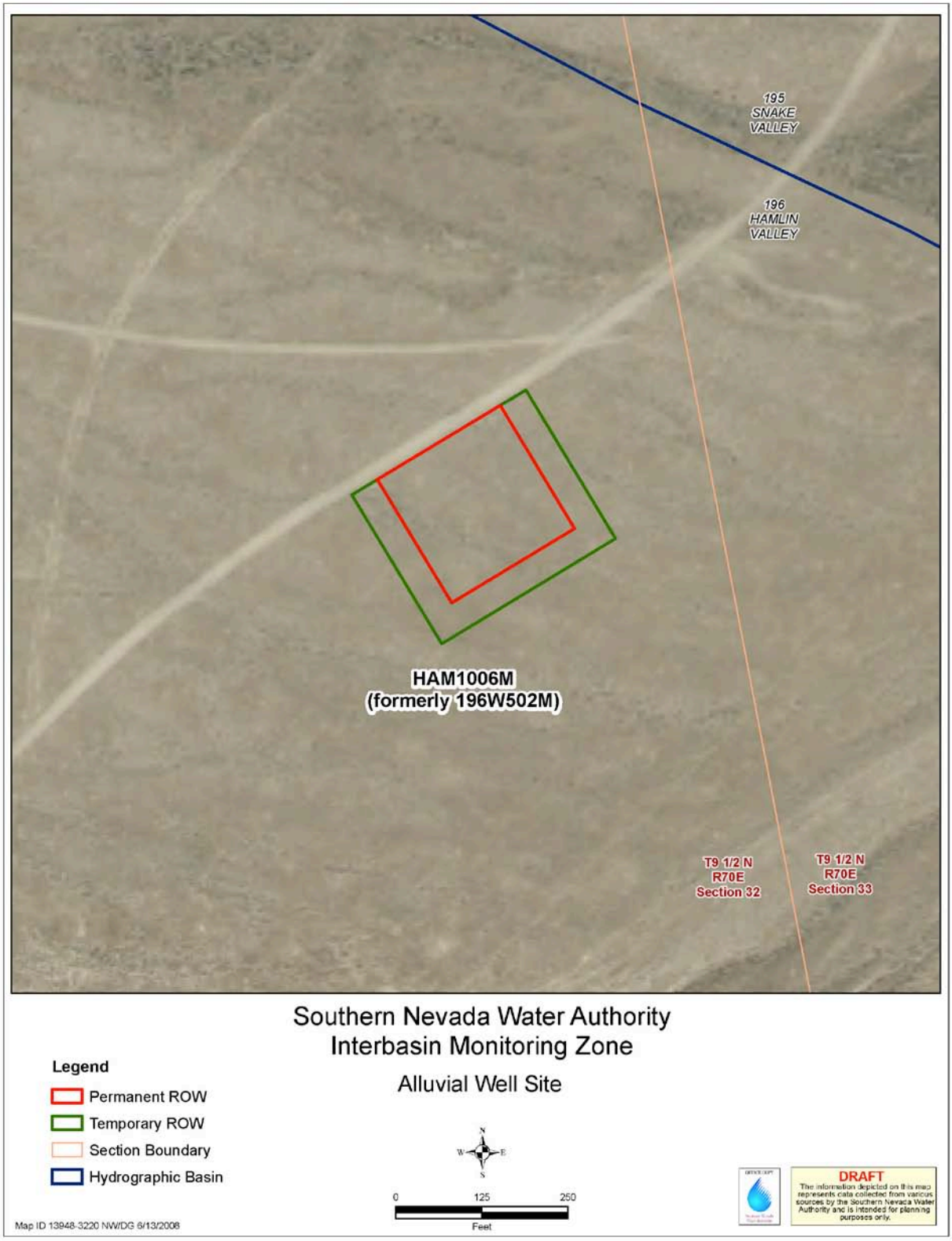


Figure 9: Site HAM1006M Aerial View

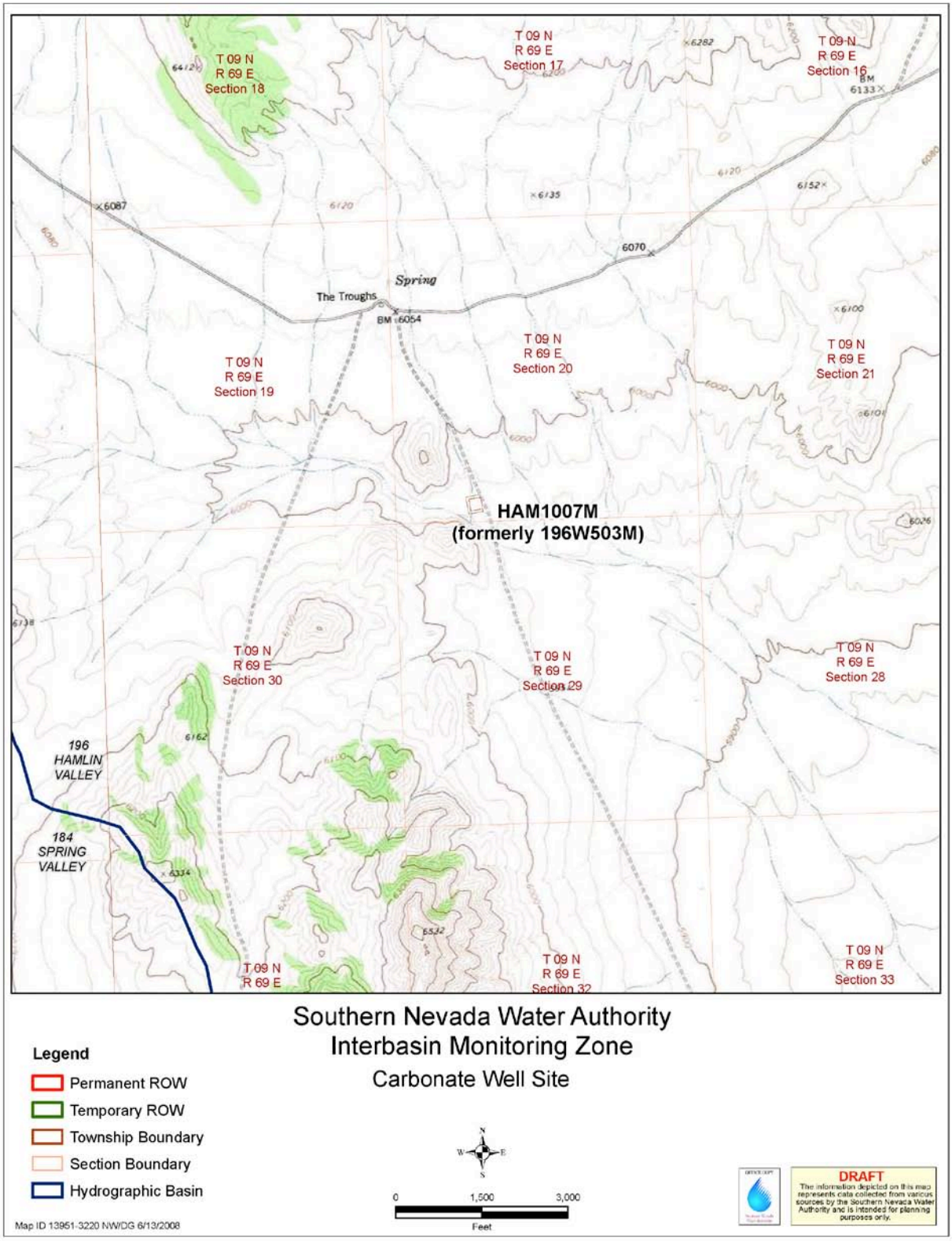


Figure 10: Site HAM1007M Topo View

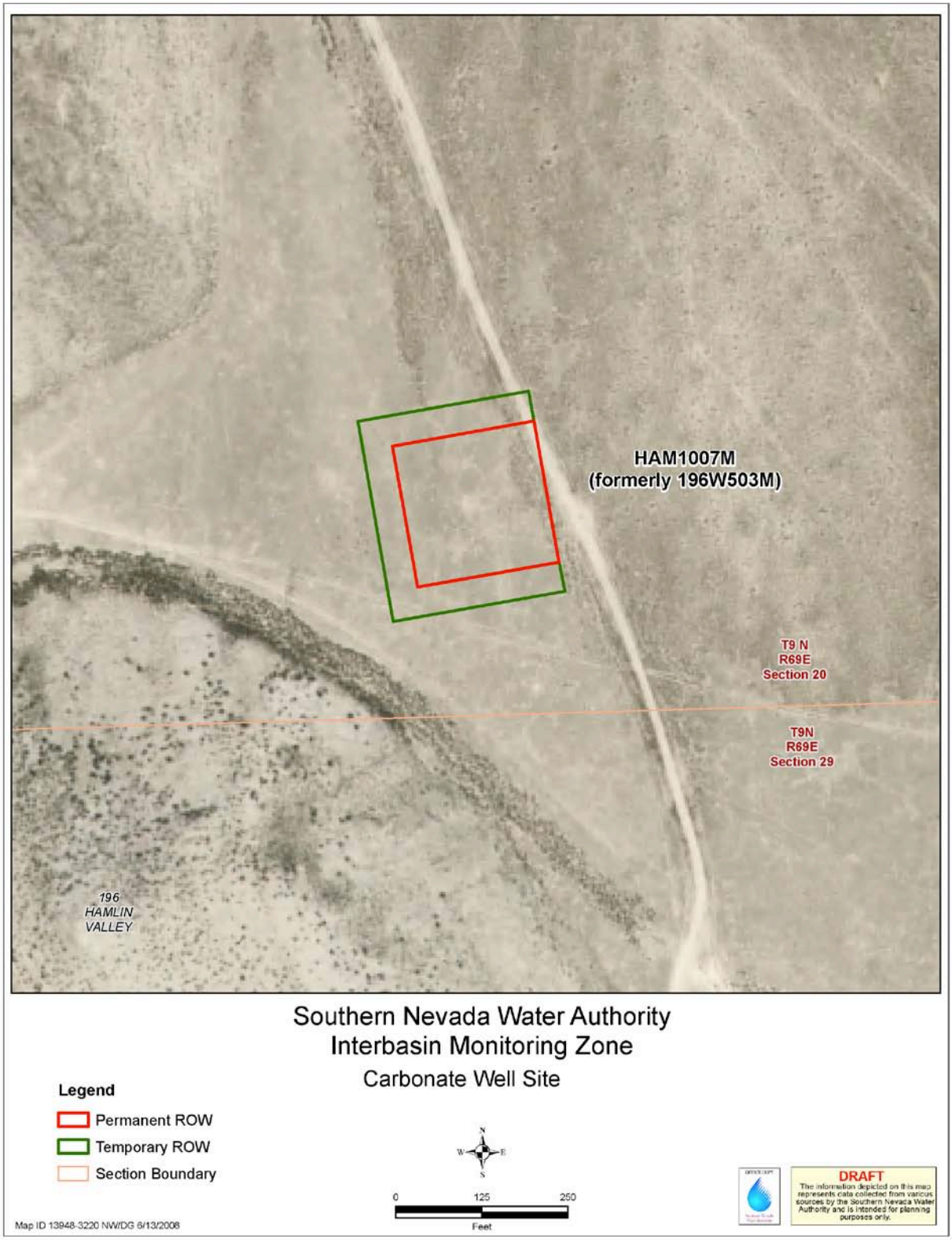


Figure 11: Site HAM1007M Aerial View

Figure 12: Site SPR7009M HRA, Inc., April 2008

Figure 13: Site SPR7010M HRA, Inc., April 2008

Figure 14: Site HAM1005M HRA, Inc., April 2008

Figure 15: Site HAM1006M HRA, Inc., April 2008

Figure 16: Site HAM1007M HRA, Inc., April 2008

Attachment 2
Exhibit “A”
Spring Valley Stipulated Agreement

EXHIBIT A

HYDROLOGIC MONITORING, MANAGEMENT AND MITIGATION PLAN FOR DEVELOPMENT OF GROUNDWATER IN THE SPRING VALLEY HYDROGRAPHIC BASIN PURSUANT TO APPLICATION NOS. 54003 THROUGH 54021 BY THE SOUTHERN NEVADA WATER AUTHORITY

1. Introduction

This hydrologic monitoring, management and mitigation plan (plan) is a component of a Stipulation between the Southern Nevada Water Authority (hereinafter referred to as "SNWA") and the U.S. Department of the Interior bureaus, including the Bureau of Indian Affairs, the Bureau of Land Management, the Fish and Wildlife Service, and the National Park Service (hereinafter referred to as the "DOI Bureaus"). Collectively, SNWA and each of the DOI Bureaus are hereinafter referred to as the "Parties."

This Plan describes the Parties' obligations regarding the development, monitoring, management, and mitigation related to SNWA's applications 54003 through 54021 ("SNWA Applications") to withdraw groundwater from points of diversion in the Spring Valley Hydrographic Basin ("Spring Valley HB"). The Plan consists of three principal components:

Monitoring Requirements - including, but not limited to monitoring wells, spring flow measurements, water chemistry analyses, quality control procedures, and reporting requirements; and

Management Requirements - including, but not limited to the creation of a Technical Review Panel ("TRP") to review information collected under this Plan and advise the Executive Committee (a group consisting of one management-level person from each Party, as described below in Management Requirements), the use of an agreed-upon regional groundwater flow system numerical model(s) to predict effects of groundwater withdrawals by SNWA in the Spring Valley HB, and the establishment of a consensus-based decision-making process; and

Mitigation Requirements - including, but not limited to the modification, relocation or reduction in points of diversion and/or rates and quantities of groundwater withdrawals or the augmentation of Federal Water Rights and/or Federal Resources as well as measures designed and calculated to rehabilitate, repair or replace any and all Federal Water Rights and Resources *if* necessary to achieve the goals set forth in Recital G of the Stipulation.

A. *Common Goals*

The common goals of the Parties are 1) manage the development of groundwater by SNW A in the Spring Valley HB without causing injury to Federal Water Rights and/or unreasonable adverse effects to Federal Resources in the Area of Interest as defined in Recital B of the

Stipulation that this Exhibit A is attached to and incorporated therein, 2) accurately characterize the groundwater gradient from Spring Valley HB to Snake Valley HB via Hamlin Valley, and 3) to avoid any effect on Federal Resources within the boundaries of Great Basin National Park from groundwater withdrawals by SNW A in the Spring Valley HB. The Parties, through the TRP and BWG (as described in Exhibit B that is attached to and incorporated in the Stipulation), shall collaborate on data collection and technical analysis and shall rely on the best scientific information available in making determinations and recommendations required by the Plan

2. Monitoring Requirements

A. *General*

The Parties agree to cooperatively implement a monitoring plan sufficient to collect and analyze data to assess the effects, if any, of SNWA's proposed groundwater withdrawals in the Spring Valley HB on Federal Water Rights and Federal Resources. The monitoring network shall be comprised of SNWA exploratory wells, SNWA production wells, existing monitoring wells selected by the TRP, new monitoring wells, the springs selected by the TRP and the BWG listed in Table 1, and certain selected stream discharge sites. Some of the wells within the monitoring network shall be designed and constructed to detect any potential change in the groundwater gradient from Spring Valley HB to Snake Valley HB via Hamlin Valley HB. Other wells in the monitoring network shall be located throughout Spring Valley to provide early warning of the spread of drawdown toward Federal Water Rights and Federal Resources as well as data for future groundwater model calibration. Shallow piezometers and wells shall be used to evaluate the effects of groundwater withdrawals near discharge areas that are within areas the Parties are seeking to protect and preserve.

The cost of the monitoring plan shall be borne primarily by SNWA. The DOI Bureaus shall provide staffing to the TRP and shall seek funding to contribute to monitoring efforts. Except as otherwise provided in this Plan, each DOI Bureau is responsible for monitoring its own Federal Water Rights and Federal Resources, and for sharing this information with the other Parties within 90 days of its collection.

Any requirement of SNWA to continuously monitor wells, piezometers, and surface water sites pursuant to the Plan shall require SNWA to install all equipment necessary to continuously record discharge and/or water levels at all monitoring sites and shall, unless prevented by circumstances beyond its control, ensure that all such discharge and/or water level data is recorded on a continuous basis.

B. *Exploratory and Production Well Monitoring*

SNWA shall record discharge and water levels in all SNWA production wells on a continuous basis.

SNWA shall record water levels in all SNWA exploratory wells at least quarterly. Following the beginning of the groundwater withdrawals pursuant to any permits issued for the SNWA Applications, the TRP shall select a representative number of exploratory wells for which

SNWA shall thereafter continuously record water levels.

C. ***Existing Monitoring Wells***

SNWA shall monitor groundwater levels quarterly in 10 representative monitoring wells and continuously monitor groundwater levels in 15 representative monitoring wells in the Spring Valley HB and the Hamlin Valley HB. These wells shall be selected by the TRP from the wells listed in Table D.I-I in SNWA exhibit 509 ("Water Resources Assessment for Spring Valley, June 2006"), which was submitted to the Nevada State Engineer on June 30, 2006. The wells shall include as many existing carbonate wells as is possible and the wells shall be selected to: (1) serve as monitoring points between SNWA's pumping and Federal Water Rights and Federal Resources; and (2) obtain hydrologic information throughout the Spring Valley HB in order to produce annual groundwater level contour and water-level change maps, calibrate the groundwater flow model(s), and evaluate the effects of SNWA's groundwater withdrawals.

Modification of this monitoring requirement, including any addition, subtraction or replacement of the wells initially selected by the TRP or the frequency of monitoring for these wells may be made through consensus recommendations from the TRP as set forth in Section 3 of this Plan.

D. ***New Monitoring Wells***

The DOI Bureaus agree to expedite NEPA and other clearances, within the limits of applicable laws, to help meet the monitoring requirement of this Plan. The construction of the new monitoring wells is contingent upon accessibility and issuance of appropriate rights-of-way by various Federal and State agencies.

SNWA shall begin continuous measurement of water levels at all new monitoring wells upon their completion, contingent upon accessibility and issuance of appropriate rights-of-way by various Federal and State agencies. SNWA shall purchase and install all necessary water-level measuring equipment.

I. *New Monitoring Wells located within the Interbasin Groundwater Monitoring Zone (Zone)*

The Parties agree to collect data to accurately characterize the groundwater gradient from Spring Valley HB to Snake Valley HB via Hamlin Valley. In doing so, the Parties agree to establish an Interbasin Groundwater Monitoring Zone ("Zone") having the initial boundaries as depicted on Figure Al which is attached hereto.

SNWA, in consultation with the TRP, shall construct and equip four monitoring wells in the carbonate-rock aquifer and two monitoring wells in the basin-fill aquifer within the Zone. SNWA may substitute existing wells for the monitoring wells required to be constructed pursuant to this paragraph if agreed upon by the TRP. The Parties, through the TRP, shall work together on the design and location of the wells to be constructed to monitor potential changes in the groundwater gradient in the Zone. Such wells shall be located, designed, and constructed to achieve the monitoring goals and requirements of this Plan.

SNWA shall not file any applications with the Nevada State Engineer to change the points of diversion of any permits granted pursuant to the SNWA Applications to a point of diversion within the Zone for a period of five years following the completion of the six (6) monitoring wells within the Zone or ten (10) years from the date of the execution of this Stipulation, whichever is shorter.

II New Monitoring Wells located outside the Zone that are adjacent to SNWA Production Wells

SNWA, in consultation with the TRP, shall construct and equip two monitoring wells in conjunction with the two SNWA production wells in the Spring Valley HB proposed to be constructed closest to the boundary of the Zone, unless alternative monitoring sites are recommended by the TRP and approved by the Executive Committee. The TRP shall determine the location and aquifer in which these wells will be completed. Both these near-field monitoring wells shall have their water levels monitored continuously. To ensure baseline aquifer conditions are established, SNWA shall use its best efforts to construct, begin monitoring, and make available for sampling the two monitoring well described in this paragraph at least two years prior to any groundwater withdrawals, other than for aquifer tests and construction water, from the two SNWA production wells described in this paragraph.

III New Monitoring Wells located outside the Zone that are in the vicinity of Shoshone Ponds

SNWA, in consultation with the TRP, shall construct and equip two monitoring wells in the vicinity of Shoshone Ponds. One of these shall be located in the basin-fill aquifer near the SNWA carbonate-rock aquifer production well that is closest to Shoshone Ponds. The other monitoring well shall be located in the carbonate-rock aquifer near the SNWA carbonate-rock aquifer production well closest to the Shoshone Ponds. The Parties, through the TRP, shall work together on the design and location of the wells to be constructed to monitor potential changes in the basin-fill and carbonate-rock aquifers near Shoshone Ponds. Such wells shall be located, designed, and constructed to achieve the monitoring goals and requirements of this Plan. SNWA shall continuously monitor the water levels in each of the wells. SNWA may substitute existing wells for the monitoring wells required to be constructed pursuant to this paragraph if agreed upon by the TRP. SNWA shall not withdraw any quantity of groundwater for beneficial use in accordance with any permit issued pursuant to SNWA Application No. 54019 for a period of three years from the completion of the last of the two monitoring wells referred to in this paragraph or four years from the issuance of the permit for the SNWA carbonate-rock aquifer production well constructed closest to the Shoshone Ponds.

IV. New Monitoring Wells located outside the Zone that are adjacent to Federal Water Rights and Federal Resources

SNWA shall install, equip, and maintain at least one shallow well or piezometer near twelve (12) of the springs listed in Table 1 in order to measure water-level changes nearby. While the TRP, in coordination with the BWG, shall determine which sites are to be monitored, and may increase or decrease the total number of sites, the following seven (7) sites should be monitored because of their location and/or the habitat or species associated with the site unless the TRP determines other sites are better suited. The basis for the selection of any site

and the total number of sites selected shall be to meet the goals and objectives of this Plan.

Number	Latitude	Longitude	Name	Township/Range/Sec
58134	38.936493	-114418228	Shoshone Ponds	12N 67E 02 SW NE
54109	38.842444	-114.366388	Swallow Spring	11N 68E 5 SE NW
R05276	38.611113	-114.429845	Deer Spring	09N 67E 26 NE SW
	39.159833	-114.352416	Turnley Spring	15N 68E 16 SW SW
	39.1075	-114.453305	Layton Spring	14N 67E 04 NW SE
R05289	39.22918	-114.543761	Unnamed	16N 66E 22 SW SW
R05294	39.204746	-114.462256	Unnamed	16N 67E 32 NE SW

Table 1 - List of Springs to be Monitored

Number	Latitude	Longitude	Name	T ownshiplRange/Sec
R05269	38.878515	-114.495421	4WD Spring	15N 67E 30 SE NW
R05272	38.878053	-114.496272	Unnamed	15N 67E 30 SE NW
R05273	38.957224	-114.488871	Spring Creek Springs	13N 67E 30 SE SE
R05274	38.979402	-114.404312	Unnamed	13N 67E 24 SE NW
R05276	38.611113	-114.429845	Deer Spring	09N 67E 26 NE SW
R05278	39.139732	-114.496816	Unnamed	15N 67E 30 NW NW
R05279	39.195582	-114.457849	Unnamed	15N 67E 04 SE NW
R05280	39.187502	-114.464393	Unnamed	15N 67E 04 SW SW
R05281	39.181658	-114.37323	Rock Spring	15N 68E 08 SW NW
R05282	39.178682	-114.358414	Unnamed	15N 68E 08 NW SE
R05283	39.183993	-114.35807	Unnamed	15N 68E 08 NE NE
R05284	39.1852	-114.3563	Unnamed	15N 68E 08 SE NE
R05285	39.177372	-114.37053	Unnamed	15N 68E 08 NW SW
R05286	39.171858	-114.368555	Unnamed	15N 68E 17 NW NW
R05287	39.243687	-114.535882	Unnamed	16N 66E 22 NE NW
R05288	39.244052	-114.542418	Unnamed	16N 66E 22 NW NW
R05289	39.22918	-114.543761	Unnamed	16N 66E 22 SW SW
R05290	39.246442	-114.522184	Indian Spring	16N 66E 14 SW SW
R05291	39.255056	-114.430904	Unnamed	16N 67E 15 NW NW
R05292	39.203392	-114.461555	Unnamed	16N 67E 32 SE SW
R05293	39.214819	-114.45982	Unnamed	16N 67E 32 NE NW
R05294	39.204746	-114.462256	Unnamed	16N 67E 32 NE SW
R05295	39.228372	-114.38669	Unnamed	16N 67E 25 NE NW
58134	38.936493	-114418228	Shoshone Ponds	12N 67E 02 SW NE
	39.159833	-114.352416	Turnley Spring	15N 68E 16 SW SW
	39.1075	-114.453305	Layton Spring	14N 67E 04 NW SE
	39.135611	-114.473305	South Bastian Spring	15N 67E 29 NW SE
	38.801888	-114.411388	Blind Spring	11 N 67E 23 NE SE
	38.842444	-114.366388	Swallow Spring	11N 68E 5 SE NW

SNWA shall continuously monitor the water level in each well or piezometer using a pressure transducer/data logger. SNWA shall use its best efforts to construct, begin monitoring, and make available for sampling the 12 shallow wells and piezometers selected by the TRP and the BWG as described in this paragraph at least two years prior to the withdrawal of any groundwater permitted by the State Engineer pursuant to the SNWA Applications for beneficial use, other than for aquifer tests and construction.

E. ***Constant Rate Aquifer Tests***

An understanding of aquifer properties is necessary in order to make predictions regarding changes in groundwater levels and flows and facilitate the modeling of the groundwater flow systems. Furthermore, constant-rate aquifer tests are needed to help determine such aquifer properties. As such, two constant-rate aquifer tests shall be performed. The TRP shall examine the distribution of aquifer property data and determine the need for specific parameters, such as duration, depth, and monitoring points. for such tests. One constant-rate aquifer test shall be performed by pumping the SNWA basin-fill aquifer production well located closest to the boundary between the Spring Valley HB and the Hamlin Valley HB. Similarly, one constant-rate aquifer test shall be performed by pumping the SNW A carbonate production well located closest to the boundary between the Spring Valley HB and the Hamlin Valley HB. In the event that SNWA constructs a production well at the point of diversion specified in Application No. 54019, SNWA shall perform one constant-rate aquifer test pursuant to the parameters determined by the TRP.

F. ***Water Chemistry Sampling Program***

SNWA shall collect and analyze water chemistry for the parameters set forth in Table 2 for the wells, piezometers, and surface water sites in the monitoring network. An initial sampling of 40 wells, piezometers, and surface water sites selected by the TRP from the monitoring network, excluding however all SNWA production wells, shall be conducted three times at six-month intervals pursuant to a schedule determined by the TRP, but completed by no later than five years from the date of the execution of the Stipulation, unless prevented by circumstances beyond SNWA's control. Thereafter, sampling of the 40 wells, piezometers, and surface water sites selected by the TRP shall be conducted once every five years following the start of groundwater withdrawals by SNWA. The TRP, in consultation with the BWG, may change any aspect of this water chemistry sampling program, including but not limited to the addition and/or deletion of sampling sites, the addition and/or deletion of water chemistry parameters, and an increase or decrease in sampling frequency, if deemed appropriate by the TRP. SNWA may subcontract this obligation to a third party, such as but not limited to the U.S. Geological Survey (USGS), the Desert Research Institute (DRI), etc., if approved by the TRP.

Table 2 - Water Chemistry Parameters

Field Parameters	Major Ions	Isotopes	Metals
Water temperature	TDS	Oxygen-I 8	Arsenic
Air temperature	Calcium	Deuterium	Barium
pH	Sodium	Tritium	Cadmium
Electrical conductivity	Potassium	Chlorine-36	Chromium
Dissolved oxygen	Chloride	Carbon-I4	Lead
	Bromide	Carbon-I3	Mercury
	Fluoride		Selenium
	Nitrate		Silver
	Phosphate		
	Sulfate		
	Carbonate alkalinity		

	Alkalinity Silica Manganese Magnesium Aluminum Iron			

All analyses shall be conducted and reported in accordance with standard EPA listed methods.

SNWA shall make the monitoring wells available to the DOI Bureaus for additional data collection.

G. ***Spring and Stream Discharge Measurements***

SNWA shall either directly or through funding of the USGS, DRl or another mutually agreed to third party operate and maintain a discharge monitoring site on Big Springs Creek and report such measurements over the Internet via the USGS NWIS or other appropriate publicly available website throughout the duration of this Plan.

SNWA shall either collect or fund the collection of at least two sets of synoptic-discharge measurements (a/k/a "gain/loss runs") for the Big Springs Creek surface water system from the spring orifice to Preuss Lake. These data shall be collected during the irrigation and non irrigation seasons at least one year prior to the start of groundwater withdrawals by SNWA and again during the irrigation and non-irrigation seasons every five years following the start of groundwater withdrawals by SNWA. Through consensus, the TRP shall recommend the number of measurement sites during the discharge study. Measurements at each site shall include discharge, water temperature, and electrical conductivity.

SNW A shall work with the TRP to collect data in order to investigate the relationship between discharge at Big Springs and hydraulic head in the basin-fill and regional carbonate-rock aquifers, including but not limited to the installation, equipping, and maintenance of one or more monitoring wells located in the immediate vicinity of Big Springs.

SNWA shall either directly or through funding of the USGS, DRI, or another mutually agreed to third party continue to operate and maintain a discharge monitoring site on Cleve Creek and report such measurements over the Internet via the USGS NWIS or other appropriate website throughout the duration of this Plan.

H. ***Precipitation Stations***

The coverage of existing precipitation stations shall be reviewed by the TRP, and, if necessary, the TRP may recommend that additional precipitation stations be established. SNWA shall fund the construction, operation, and maintenance of any such additional stations.

I. ***Elevation Control***

SNWA shall conduct a detailed elevation survey of all production wells and monitoring sites that are used in this Plan.

J. ***Quality of Data***

SNWA and the DOI Bureaus shall ensure that all measurement and data collection is done according to USGS established protocols, unless otherwise agreed-upon by the TRP.

K ***Reporting***

All data collected pursuant to this Plan shall be fully and cooperatively shared among the Parties.

Using data derived from groundwater level measurements of all production and monitoring wells used in this Plan, SNWA shall produce groundwater contour maps and water-level change maps for both the basin-fill and carbonate-rock aquifers at the end of baseline data collection, and annually thereafter at the end of each year of groundwater withdrawals by SNWA, or at a frequency agreed-upon by the TRP.

Water level and water production data shall be made available to the other Parties within 90 calendar days of collection using a shared data-repository website administered by SNWA. Water quality laboratory reports shall be made available to the other Parties within 90 calendar days of receipt using a shared data-repository website administered by SNWA.

SNWA shall report the results of all monitoring and sampling pursuant to this Plan in an annual monitoring report that shall be submitted to the TRP and the Nevada State Engineer's Office by no later than March 31 'of each year that this Plan is in effect. SNWA shall submit as part of its annual report a proposed schedule of groundwater withdrawals (testing and production) for the immediately succeeding two calendar years. The DOI Bureaus may, at their option, provide comments to the Nevada State Engineer's Office on the annual report.

3. **<u>Management Requirements</u>**

A. ***General***

Through the TRP, described below, the Parties shall collaborate on data collection and technical analysis to ensure decisions are consistent with the common goals as stated in Section 1.A. of this Exhibit A. Decisions must be based on the best scientific information

available and the Parties shall collaborate on technical data collection and analysis. The Parties shall use existing data, data collected under this Plan, and an agreed-upon regional groundwater flow system numerical model(s) as tools to evaluate the effects of groundwater development on Federal Water Rights and Federal Resources in the Area of Interest. The Parties agree that a model(s) shall be used to inform the Executive Committee about the potential for effects of groundwater withdrawals to spread through the basin-fill and the regional carbonate-rock aquifers, as well as the effectiveness of the potential mitigation actions.

B. *Executive Committee*

The Parties shall create and convene an Executive Committee, to include one manager from each of the Parties, within 30 days of a State Engineer Office decision granting any of the SNWA Applications in total or in part. The purpose of the Executive Committee is to: 1) review agreed-upon TRP recommendations for actions to reduce or eliminate an injury to Federal Water Rights and/or unreasonable adverse effects to Federal Resources in the Area of Interest and/or any effect on Federal Resources within the boundaries of Great Basin National Park from groundwater withdrawals by SNWA in the Spring Valley HB and 2) negotiate a resolution in the event that the TRP cannot reach consensus on monitoring requirements/research needs, technical aspects of study design, interpretation of results, and/or appropriate actions to minimize or mitigate unreasonable adverse effects or to avoid any effects on Federal Resources located within the boundaries of Great Basin National Park from groundwater withdrawals by SNWA in the Spring Valley HB.

The Executive Committee shall meet within 21 calendar days of being notified by the TRP of a need for action. The Executive Committee shall strive for consensus in all decisions and work to begin implementation of TRP recommendations or other mutually acceptable course(s) of action as negotiated by the Executive Committee within 60 calendar days of TRP notification. If any Party disagrees on recommended courses of action, then the Executive Committee shall refer the issue to a neutral third party, as described below in Section E.II.

C. *Technical Review Panel (TRP)*

The Parties shall create and convene a Technical Review Panel within 30 days of a State Engineer Office decision granting any of the SNWA Applications in total or in part, or at such earlier date as mutually agreed-upon by the Parties. The purpose of the TRP is to carry out the functions required of it under this Plan, including reviewing, analyzing, and interpreting information collected under this Plan, evaluating the results of the model(s), and making recommendations to the Executive Committee. Membership shall include one representative from SNWA and one representative from each of the DOI Bureaus. Each Party at its sole discretion may invite such additional staff or consultants to attend, as each deems necessary. To assist the TRP, the Parties mutually agree to invite a representative of the State Engineer's Office to participate in the TRP. Furthermore, the Parties may mutually agree to invite other non-Party entities to assist and participate in the TRP as deemed necessary or appropriate.

The TRP shall:

1. strive for consensus in all determinations and recommendations;
2. disseminate data and provide a scientific and technical forum to evaluate data and analyses, including hydrologic parameters of a model(s) and model(s) results;
3. review data collection and quality assurance procedures;
4. identify needs for additional data collection and scientific investigations;
5. review and consider any and all data and analysis resulting from the ongoing USGS "Basin and Range Carbonate Aquifer System Study";
6. consider from time to time whether the modification of the initial boundaries of the Interbasin Groundwater Monitoring Zone is warranted as new data become available;
7. review SNWA proposed or ongoing pumping schedules (testing and production);
8. provide a forum for discussion to help develop agreement for prescribed courses of action on technical issues and make recommendations to the Executive Committee; and,
9. form recommendations about monitoring, modeling, groundwater management, and mitigation, including but not limited to the addition, deletion, or replacement of monitoring wells, the frequency of data collection, and the types of monitoring, sampling, and testing to be conducted; and,
10. other responsibilities as delegated by the Executive Committee.

D. *Regional Groundwater Flow Numerical Modeling*

The Parties agree that regional groundwater flow system numerical modeling is a useful tool in the prudent management of basin-fill and regional carbonate-rock aquifer systems. Therefore, the Parties agree that this Plan must include a well calibrated regional groundwater flow system numerical model(s). The Parties acknowledge that model results must be qualified based on a comparison of the accuracy of the model(s) and the capability of the model(s) to predict actual conditions. As the effects of SNWA's groundwater withdrawals in the Spring Valley HB on groundwater levels and spring flows are measured, refinement of the model(s) shall be necessary to achieve better agreement with the actual field measurements. Furthermore, the collection of additional hydrologic, geologic, geophysical, and/or geochemical data may indicate that modification of the conceptual and numerical model(s) of the regional groundwater flow system is warranted.

The Parties shall share all geologic, geophysical, hydrologic, and geochemical information collected in the Spring Valley HB and adjacent hydrographic basins. This data shall be evaluated by the TRP for inclusion into the regional groundwater flow system numerical model(s).

SNWA shall maintain, update, and operate an agreed-upon regional groundwater flow system numerical model(s), in cooperation with the TRP. SNWA may subcontract this obligation to a third party, such as but not limited to the USGS or DRI, if approved by the TRP. The cost of all modeling described herein shall be borne by SNWA.

SNWA shall provide model output in cooperation with the TRP for evaluation by the TRP in the form of input files, output files, draw down maps, tabular data summaries, and plots of simulated water levels through time for the aquifer system, unless otherwise recommended by the TRP.

E. Criteria Initiating TRP Consultation and Management or Mitigation Actions

The Parties recognize that the establishment of accurate early-warning indicators to meet the goals stated in Section 1.A. of this Exhibit A is difficult until adequate monitoring data are developed during a period of groundwater withdrawals by SNW A and the model is calibrated to actual pumping effects. The TRP shall be responsible for determining the sufficiency of monitoring data and recommending changes to established specific early warning indicators, based on actual hydrologic effects of groundwater withdrawals, to the Executive Committee. The TRP shall review water-level responses and model results to determine if potential injury to Federal Water Rights and/or unreasonable adverse effects to Federal Resources and if any effect on Federal Resources within the boundaries of Great Basin National Park are occurring or are predicted to occur due to ongoing or proposed groundwater withdrawals by SNWA in the Spring Valley HB. Criteria for the initiation of consultation, management, and/or mitigation actions are as follows:

I. <u>TRP Consultation Initiation Criteria</u>

Any Party may initiate a TRP consultation when that Party is concerned that there may be 1) an injury to Federal Water Rights and/or unreasonable adverse effects to Federal Resources, and 2) any effect on Federal Resources within the boundaries of Great Basin National Park as the result of:

a) a change in surface water and/or groundwater level and/or discharge measured by one or more of the monitoring wells included in this Plan, or
b) a change in groundwater level predicted by the agreed-upon regional groundwater flow system model(s),

that is due to groundwater withdrawals by SNWA in the Spring Valley HB.

Any Party may also initiate a TRP consultation when that Party is concerned about a possible change in a regional groundwater gradient as the result of:

c) change in surface water and/or groundwater level and/or discharge measured by one or more of the monitoring wells included in this Plan, or
d) a change in groundwater level predicted by the agreed-upon regional groundwater flow system model(s),

that is due to groundwater withdrawals by SNWA in the Spring Valley HB.

If TRP consultation is initiated pursuant to Section E. I.a) or c) above, the following TRP consultation process shall apply:

1) Parties shall notify each other and the TRP shall confer by teleconference or in person within 30 calendar days;
2) The TRP shall evaluate the water level and/or discharge measurement data. The TRP objective for the consultation is to determine if the change in water level and/or discharge may be due to groundwater withdrawals by SNWA in the Spring Valley HB.

i. The TRP shall compare the observed field data with model predictions to evaluate how well the model predictions match observed drawdown and shall discuss potential changes to the model(s) as agreed to by consensus of the TRP.

ii. Based on observed data, the model(s) shall be recalibrated and sensitivity analysis applied if necessary, and the model(s) shall be rerun to evaluate the effects of groundwater withdrawals by SNWA in the Spring Valley HB on Federal Water Rights and Federal Resources and on regional groundwater gradients.

iii. If the TRP agrees the measured change in water level and/or discharge is not attributable to groundwater withdrawals by SNWA in the Spring Valley HB, no further management actions shall be taken at that time. The TRP may conduct further investigation into the cause(s) of such changes.

iv. If any member of the TRP is concerned that the measured change in water level and/or discharge is attributable to groundwater withdrawals by SNWA in Spring Valley HB and is causing or has the potential to cause injury to Federal Water Rights and/or unreasonable adverse effects to Federal Resources and/or an effect on Federal Resources within the boundaries of Great Basin National Park, then the TRP shall work to develop consensus-based courses of action to address the concern and/or that manage or mitigate any injury or unreasonable adverse effect(s) or affect on Federal Resources within the boundaries of Great Basin National Park. The TRP may use the model(s) to evaluate the effects of various courses of action outlined in the Section 4 to manage or mitigate such injury, unreasonable adverse effect(s) and/or effects on Federal Resources within the boundaries of Great Basin National Park. The TRP shall convey all recommended courses of action to the Executive Committee, and the Parties shall proceed to Section E.II.1.

v. If the water level and/or discharge measurement data indicates that there is injury or the potential for injury to Federal Water Rights and/or unreasonable adverse effects to Federal Resources and/or effect Federal Resources within the boundaries of Great Basin National Park, and the TRP is unable to develop a consensus-based course of action, the TRP shall notify the Executive Committee, and the Parties shall proceed to Section E.II.2.

If TRP consultation is initiated pursuant to Section E.l.b) or d) above, the following TRP consultation process shall apply:

1) Parties shall notify each other and the TRP shall confer by teleconference or in person within 30 calendar days;

2) The TRP shall evaluate the modeling parameters, variances to water level changes relative to modeling predictions, the translation of modeling variances to areas of interest and variables influencing the model results. The TRP objective for the consultation *is* to determine if the response may be due to groundwater withdrawals by SNWA in the Spring Valley HB.

i. The TRP shall compare the observed field data with model predictions to evaluate how well the model predictions match observed drawdown and shall discuss potential changes to the model(s) as agreed to by consensus of the TRP. All Parties recognize that future modeling of predicted effects for the verification of the model(s) shall be a necessary component to determine the validity of the modeling results and any course of action.

ii. Based on observed data, the model(s) shall be recalibrated as necessary, and shall be rerun to evaluate the effects of groundwater withdrawals by SNWA in the Spring Valley HB on Federal Water Rights and Federal Resources 'and on regional groundwater gradients.

iii. If the TRP agrees the recalibrated model(s) does not predict a potential injury to Federal Water Rights and/or unreasonable adverse effects to Federal Resources and/or an effect on Federal Resources within the boundaries of Great Basin National Park, no further management actions shall be taken at that time.

iv. If any member of the TRP is concerned that the recalibrated model(s) predicts a potential injury to Federal Water Rights and/or unreasonable adverse effects to Federal Resources and/or an effect on Federal Resources within the boundaries of Great Basin National Park, then the TRP shall develop consensus-based actions to address the concern and/or that manage or mitigate those effect(s). The TRP shall also use the model(s) to evaluate the effects of different courses of action to manage or mitigate those effect(s) outlined in the Section 4. The TRP shall convey all recommended courses of action to the Executive Committee, and the Parties shall proceed to Section E.II.1.

v. If the recalibrated model(s) predicts a potential injury to Federal Water Rights and/or unreasonable adverse effects to Federal Resources and/or an effect on Federal Resources within the boundaries of Great Basin National Park, and the TRP is unable to develop a consensus-based course of action, the TRP shall notify the Executive Committee, and the Parties shall proceed to Section E.II.2.

II. <u>Actions to Manage or Mitigate Injury. Unreasonable Adverse Effects. and/or Effects to Federal Resources within the boundaries of Great Basin National Park</u>

1) If the TRP determines, by consensus, that a predicted or measured change in groundwater levels would result in injury to Federal Water Rights and/or unreasonable adverse effects to Federal Resources and/or an effect on Federal Resources within the boundaries of Great Basin National Park, the Executive Committee shall consider the TRP's recommended courses of action. Upon receiving any consensus-based TRP recommendation, the Parties, through the Executive Committee (with input from the TRP as necessary), may seek a negotiated resolution of a course of action to reduce or eliminate the injury, unreasonable adverse effect, and/or effects to Federal Resources within the boundaries of Great Basin National Park, through the management of

groundwater withdrawals and/or the mitigation of the injury, unreasonable adverse effect, or effects. If the Executive Committee cannot reach consensus, any Party may refer the issue to the Nevada State Engineer or other agreed-upon third party after notifying all other Parties of its intent to refer the matter to the Nevada State Engineer or other agreed-upon third party.

2) If the TRP notifies the Executive Committee that it is unable to make a determination by consensus that a predicted or measured change in groundwater levels would result in injury to Federal Water Rights and/or unreasonable adverse effects to Federal Resources and/or effects to Federal Resources within the boundaries of Great Basin National Park, or that the TRP is unable to obtain consensus on a recommended course of action, the Executive Committee shall attempt to negotiate a mutually acceptable course(s) of action. If that is not successful, any Party may refer the issue to the Nevada State Engineer or other agreed-upon third party after notifying all other Parties of such actions.

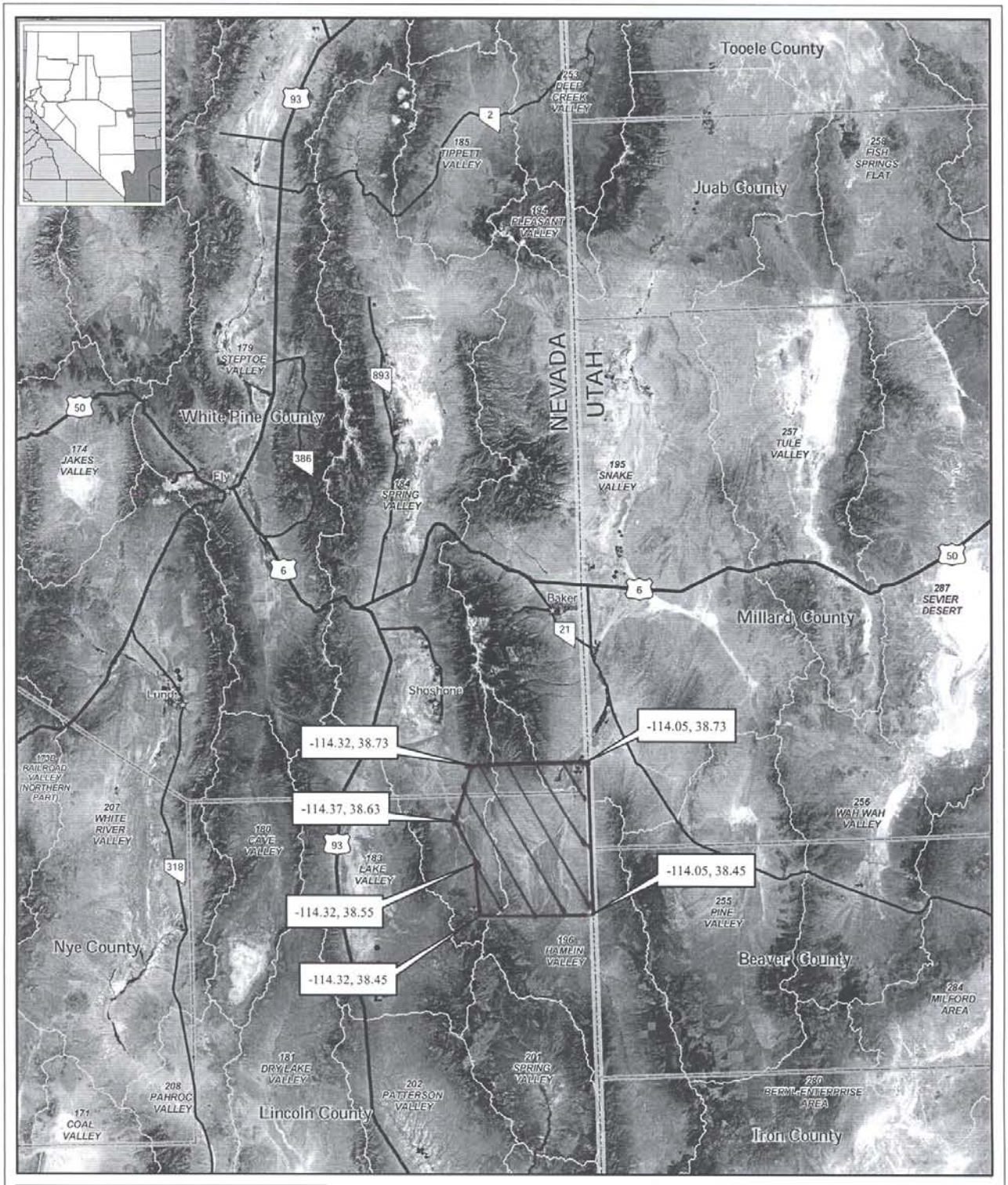
4. Mitigation Requirements

SNWA shall mitigate any injury to Federal Water Rights and/or unreasonable adverse effects to Federal Resources and/or effects to Federal Resources within the boundaries of Great Basin National Park agreed upon by the Parties as determined through the process described in Section 3.E.II. above or after the Nevada State Engineer determines whether there are any such effects due to groundwater withdrawals by SNWA in the Spring Valley HB. The Parties shall take all necessary steps to ensure that mitigation actions are feasible and are timely implemented. Mitigation measures may include, but are not limited to one or more of the following:

1. Geographic redistribution of groundwater withdrawals;
2. Reduction or cessation in groundwater withdrawals;
3. Provision of consumptive water supply requirements using surface and groundwater sources;
4. Augmentation of water supply for Federal Water Rights and Federal Resources using surface and groundwater sources; and
5. Other measures as agreed to by the Parties and/or required by the State Engineer that are consistent with the Stipulation

5. Modification of the Plan

The Parties may modify this Plan by mutual written agreement.



Legend

- Town
- Interstate
- US Highway
- State Route
- County Boundary
- State Boundary
- Hydrographic Basin
- Interbasin Groundwater Monitoring Zone

Figure A1. Interbasin Groundwater Monitoring Zone

Grid based on Universal Transverse Mercator projection, North American Datum 1983, Zone 11 meters.

N W E S

0 2.5 5 10 15 20 25

Miles

Scale 1:1,000,000

Map ID # 12866 9/7/06 RH

Attachment 3
Risk Assessment for Noxious & Invasive Weeds

RISK ASSESSMENT FOR NOXIOUS & INVASIVE WEEDS

N-84333, Interbasin Zone Monitoring Wells

The Southern Nevada Water Authority (SNWA) proposes to construct five monitoring wells in Spring and Hamlin Valleys, Lincoln and White Pine Counties (Proposed Action). On April 10, 11, and 21, 2008, site habitat and weed evaluations were completed by SWCA Environmental Consultants for SNWA for monitoring well sites SPR7009M (formerly site 184W525M), SPR7010M (formerly site 184W526M), HAM1005M (formerly site 196W501M), HAM1006M (formerly site 196W502M), and HAM1007M (formerly site 196W503M) and associated discharge drainage paths that may be disturbed by the Proposed Action. Noxious and invasive weed surveys were not completed for the surrounding area but instead the Ely District weed inventory data was consulted.

Under Title V of the Federal Land Management Policy Act, SNWA has requested a BLM right-of-way (ROW) to construct five monitoring well sites. The monitoring wells would be equipped with pressure transducers and dataloggers. Groundwater water level measurements would be collected at least daily by the data loggers and SNWA staff would visit each site and download this data approximately every 6 weeks from the data loggers. A permanent ROW for the monitoring wells is requested for a 30-year term and a short-term ROW is requested for a 1-year term.

The purpose of the Proposed Action is to collect groundwater level data to evaluate groundwater flow and the hydraulic gradient between Spring and Snake Valleys via Hamlin Valley. Water quality samples would also be collected and analyzed to evaluate hydrogeochemistry of the carbonate and alluvial basin-fill aquifers. Geologic, geophysical, and hydrogeologic data would be collected from the well sites to evaluate hydrogeologic conditions to be used for regional flow models and basin characterization. The need for the proposal is to comply with the Spring Valley Stipulated Agreement between SNWA and the Department of the Interior agencies on water rights in Spring Valley. According to Exhibit A of the Stipulated Agreement (Section 2, D., I., page 3), "The Parties agree to collect data to accurately characterize the groundwater gradient from Spring HB [Hydrologic Basin] to Snake Valley HB via Hamlin Valley. In doing so, the Parties agree to establish an Interbasin Groundwater Monitoring Zone ("Zone")…SNWA, in consultation with the TRP [Technical Review Panel], shall construct and equip four monitoring wells in the carbonate-rock aquifer and two monitoring wells in the basin-fill aquifer within the Zone. SNWA may substitute existing wells for the monitoring wells required to be constructed pursuant to this paragraph if agreed upon by the TRP." Since the stipulated agreement was signed, the stipulated agreement's TRP has agreed to substitute one existing monitoring well, 184W502M (granted under ROW number N-82357), for one of the required wells in the carbonate-rock aquifer.

Access to the sites would be from existing roads. No new access roads would be required. Improvements to existing roads are not anticipated to be needed for this project. Each monitoring well site would be 1.0 acre in permanent ROW and 1.0 acre in short-term ROW. Total, the well sites would encompass approximately 5.0 acres of permanent ROW and approximately 5.0 acres of short-term ROW.

Botanical Information:
The Proposed Action sites were surveyed and the Ely District weed inventory data was consulted in order to determine the presence of noxious and/or invasive weed populations within the surrounding area of the sites. When comparing the Proposed Action site locations to the Ely District weed inventory, the following standards have been applied:

- If the weed inventory documented a weed at ≤ 0.5 mile from the Proposed Action site, the weed was considered within the surrounding area.
- If the weed inventory documented a weed ≤ 1.0 mile but > 0.5 mile from the Proposed Action site, the weed was considered within the surrounding area, but the distance to the nearest weed population to the Proposed Action site is provided.
- If the weed inventory documented a weed > 1.0 mile from the Proposed Action site, the weed was not included as being within the surrounding area.

SPR7009M: This site was surveyed on April 21, 2008. No noxious weeds were observed at this site, but the invasive non-native peppergrass (*Lepidium* sp.) was observed. The Ely District weed inventory documented no noxious or invasive weeds within the surrounding area.
SPR7010M: This site was surveyed on April 10, 2008. No noxious weeds were identified at this site, but the invasive non-natives cheatgrass (*Bromus tectorum*) and African mustard (*Malcolmia africana*) were observed. The Ely District weed inventory documented no noxious or invasive weeds within the surrounding area.
HAM1005M: A survey of this site on April 10, 2008 identified no noxious weeds. The invasive non-natives halogeton (*Halogeton glomeratus*) and cheatgrass were observed. The Ely District weed inventory documented no noxious or invasive weeds within the surrounding area.
HAM1006M: This site was surveyed on April 10, 2008. No noxious weeds were observed at this site. Invasive non-native weeds observed included halogeton, cheatgrass, bur buttercup (*Ranunculus testiculatus*), filaree (*Erodium cicutarium*), and Russian thistle (*Salsola tragus*). The Ely District weed inventory documented the noxious weed salt cedar (*Tamarix* spp.) approximately 1.0 mile from the site and the invasive non-native weed cheatgrass within the surrounding area of the site.
HAM1007M: A survey of this site on April 11, 2008 identified no noxious weeds. Invasive non-natives observed included halogeton, cheatgrass, bur buttercup, and Russian thistle. The Ely District weed inventory documented no noxious weeds within the surrounding area. However the invasive non-native weeds cheatgrass and a mustard species (*Chenopodium* sp.) were identified within the surrounding area.

Factor 1 assesses the likelihood of noxious/invasive weed species spreading to the project area.

None (0)	Noxious/invasive weed species are not located within or adjacent to the project area. Project activity is not likely to result in the establishment of noxious/invasive weed species in the project area.
Low (1-3)	Noxious/invasive weed species are present in the areas adjacent to but not within the project area. Project activities can be implemented and prevent the spread of noxious/invasive weeds into the project area.
Moderate (4-7)	Noxious/invasive weed species located immediately adjacent to or within the project area. Project activities are likely to result in some areas becoming infested with noxious/invasive weed species even when preventative management actions are followed. Control measures are essential to prevent the spread of noxious/invasive weeds within the project area.
High (8-10)	Heavy infestations of noxious/invasive weeds are located within or immediately adjacent to the project area. Project activities, even with preventative management actions, are likely to result in the establishment and spread of noxious/invasive weeds on disturbed sites throughout much of the project area.

This Proposed Action rates as Moderate (4) for Factor 1 at the present time. During the April 2008 surveys by SWCA Environmental Consultants, no noxious weeds were observed at any of the sites. The invasive weeds peppergrass, cheatgrass, African mustard, halogeton, bur buttercup, filaree, and Russian thistle were observed during these surveys. The Ely District weed inventory documented the noxious weed salt cedar approximately 1.0 mile from site HAM1006M and the invasive non-native weed cheatgrass within the surrounding area of the site. The inventory also identified cheatgrass and an invasive mustard species within the surrounding area of site HAM1007M.

All drilling and earthmoving equipment would be washed prior to arrival on the site, prior to moving between sites, and prior to removal to prevent and minimize the introduction or spread of non-native vegetation. All washing would occur at the drilling sites, except for the initial washing which would occur off-site. The Proposed Action sites would be staked and flagged and no ground disturbance would occur outside of the designated sites. Existing vegetation, primarily sagebrush scrub, would be crushed rather than bladed wherever possible. Any topsoil and vegetation that are scraped would be stockpiled within the site and re-spread at the completion of construction. Ground disturbance at each site would be kept to a minimum.

Factor 2 assesses the consequences of noxious/invasive weed establishment in the project area.

Low to Nonexistent (1-3)	None. No cumulative effects expected.
Moderate (4-7)	Possible adverse effects on site and possible expansion of infestation within the project area. Cumulative effects on native plant communities are likely but limited.
High (8-10)	Obvious adverse effects within the project area and probable expansion of noxious/invasive weed infestations to areas outside the project area. Adverse cumulative effects on native plant communities are probable.

This Proposed Action rates at High (8) for Factor 2 at the present time. Since no noxious weed populations were observed at or immediately adjacent to any of the Proposed Action sites, any new noxious weed introductions could adversely impact the current native plant community. Also, any increase in cheatgrass could alter the fire regime in the area.

The Risk Rating is obtained by multiplying Factor 1 by Factor 2.

None (0)	Proceed as planned.
Low (1-10)	Proceed as planned. Initiate control treatment on noxious/invasive weed populations that get established in the area.
Moderate (11-49)	Develop preventative management measures for the proposed project to reduce the risk of introduction of spread of noxious/invasive weeds into the area. Preventative management measures should include modifying the project to include seeding the area to occupy disturbed sites with desirable species. Monitor the area for at least 3 consecutive years and provide for control of newly established populations of noxious/invasive weeds and follow-up treatment for previously treated infestations.
High (50-100)	Project must be modified to reduce risk level through preventative management measures, including seeding with desirable species to occupy disturbed site and controlling existing infestations of noxious/invasive weeds prior to project activity. Project must provide at least 5 consecutive years of monitoring. Projects must also provide for control of newly established populations of noxious/invasive weeds and follow-up treatment for previously treated infestations.

The Risk Rating for the Proposed Action is Moderate (32) at the present time. The following measures would be taken to control and manage invasive and noxious weeds.

Preventive Measures:

- All vehicles and equipment used for the completion or monitoring of the Proposed Action would be free of soil and debris capable of transporting weed propagules. All such vehicles and equipment would be cleaned with power or high pressure equipment prior to entering or leaving the Proposed Action site.
- Any backfill would consist of native material directly from the Proposed Action site itself.
- Any necessary erosion control material would be certified weed-free.

Monitoring Measures:

- When the sites are visited approximately every 6 weeks, the crew would monitor for any new infestations of noxious or invasive weeds.

Treatment Measures:

- If any populations of noxious weeds are observed, the Ely District Noxious & Invasive Weeds Coordinator would be notified.

Reviewed by: _____ _____

Bonnie Million Date
Ely District Noxious & Invasive Weeds Coordinator