

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

Preliminary Environmental Assessment

**NEPA # DOI-BLM-NV-L000-2014-0002-EA
DECEMBER 2014 COMPETITIVE OIL AND GAS LEASE
SALE**

June 11, 2014

PREPARING OFFICE

U.S. Department of the Interior
Bureau of Land Management
HC 33 Box 33500
702 N. Industrial Way
Ely, NV 89301
775-289-1800
FAX 775-289-1910

BLM



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Assessment
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DECEMBER 2014 COMPETITIVE OIL AND
GAS LEASE SALE**

**Prepared by
U.S. Department of the Interior
Bureau of Land Management
Ely District Office**

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Chapter 1. Introduction

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1.1. Identifying Information:

December 2014 Competitive Oil And Gas Lease Sale

Ely District Office

NEPA# DOI-BLM-NV-L000-2014-0002-EA

1.1.1. Background Information

Areas available for fluid mineral leasing are identified through management determinations during the planning process. These determinations designate the land as closed or open to leasing, and if open, what stipulations (resource protection) should be applied to the lease. All leases are subject to the terms and conditions of the standard lease form which allows for up to 60-day timing deferments and 200-meter (656 feet) displacements (Title 43 Code of Federal Regulations (CFR) Section 3101.1-2). Stipulations modify the lease rights beyond the standard lease terms. Constraints are considered to be either major, such as “No Surface Occupancy” (NSO), or moderate. Moderate constraints consist of timing limitations (seasonal restrictions) and controlled surface use restrictions. Timing limitations indicate that a leased area generally is open to development activities except during a specified period of time to protect identified resource values such as wildlife. Controlled surface use stipulations may require operating constraints to protect resources year round; for example, staying on existing roads (BLM 2008b, the Ely RMP page 92).

In addition to the above major and moderate constraints, a lease notice may be attached to the lease to inform potential lessees of important resource issues under existing laws and regulations that may result in delays associated with subsequent permitting, and appropriate mitigation of those resource concerns (Ely RMP, page 92).

Over 10 million acres (87%) of the Ely District are open to fluid mineral leasing (Table 1.1 below). Closed areas include designated wilderness and wilderness study areas. Discretionary closures (such as Areas of Critical Environmental Concern, ACEC) and no surface occupancy areas make up about 5% of the Ely District.

Resources are further protected during operational activities through the application of Best Management Practices (BMP), as contained in the Gold Book (U.S. Department of the Interior and U.S. Department of Agriculture 2006) and the development of site-specific conditions of approval (Ely RMP, page 92).

Table 1.1. Summary of Fluid Mineral Leasing in Ely District

Ely District Office Area	Acres (approx.)
Open to Fluid Mineral Leasing	
Standard Lease Terms and Conditions	6,532,500
Moderate Restrictions (Timing/Surface Use Limitations)	3,277,200
Major Restrictions (No Surface Occupancy)	230,100
Open —Total:	10,039,800
Closed to Fluid Mineral Leasing	
Designated Wilderness/Wilderness Study Areas	1,153,500
Discretionary Closures	306,700
Closed —Total:	1,460,200
Total:	11,500,000
<i>Note: There will be about 1,087,620 acres of lease notices that could apply to any of the above open categories.</i>	

Under certain conditions, waivers, exceptions, and modification to lease stipulations may be granted by the Authorized Officer (AO). The circumstances for granting an exception, waiver, or modification are attached to each stipulation.

Any lease stipulation may be waived or modified as per Title 43 CFR, Section 3101.1-4. A waiver or modification is allowable only if the authorized officer determines that the factors leading to its inclusion in the lease have changed sufficiently to make requirements of the stipulation(s) no longer justified, or mitigation contained in individual permits will preclude unacceptable impacts. If the waiver or modification is of major concern to the public, such modification will be subject to a 30-day public review. This review can be held concurrent with the required 30-day posting of applications for permit to drill. Ely RMP amendments are not required to waive, modify, or provide exception to lease stipulations.

A waiver eliminates a stipulation from the lease. The stipulation waiver can be considered concurrent with application for permit to drill approvals and can be accomplished with the appropriate NEPA analysis.

A modification usually is considered a long-term change in the stipulation to fit the new conditions for which the stipulation was applied; however, it can be short term as well. Depending upon the site conditions, the stipulation may or may not apply to all actions or authorizations on the leasehold. Public notice is required only if the AO determines it is of major public concern.

An exception is a one-time exception to all or part of the stipulation for a particular action due to changed environmental conditions at the time and place of the action being considered. For example, a seasonal restriction on drilling in critical winter range could be excepted if the winter is mild and the target species have not moved onto the critical portions of the winter range (near the drilling location). In subsequent years, the conditions could change and preclude an exception being granted. Normally, exceptions are considered minor actions and, therefore, are not subject to a 30-day public review.

1.2. Geology of Oil and Gas in Eastern Nevada

Many of the rock formations found within the Assessment Area are indicative of a continental plate margin converging with an oceanic plate. A combination of depositional and orogenic (mountain building) events along this margin have resulted in the Assessment Area being generally prospective for hydrocarbon production.

The development of the Antler Orogeny in the Late Devonian to Early Mississippian allowed the deposition of the organic-rich source rocks necessary for hydrocarbon development. Late Cretaceous Sevier Orogeny created stacked set of thrust sheets, which buried the mid-Paleozoic organic sediments beneath a thickened crust where they could pass into the oil and gas-generating temperature and pressure windows. The Sevier Orogeny in Late Cretaceous also placed locally prospective reservoir rocks above the Mississippian source rocks in potential oil and gas traps. In geologic time following the Sevier Orogeny, the assessment area experienced varying amounts of volcanism and the development of the present-day basin and range topography. The late Tertiary volcanic rocks constitute the main reservoir of the oil fields in the Railroad Valley petroleum province. However, the Chainman Shale and the Pilot Shale of Mississippian ages are the potentially oil-bearing formations mostly sought after in the majority of the Assessment Area. New directional drilling and hydraulic fracturing (HF) technology may allow for more extensive exploration into these tight formations not previously considered feasible.

1.3. History of Oil and Gas Exploration within the Ely District

The first oil discovery in Nevada occurred in 1954 in Railroad Valley. Railroad Valley is the predominant area of oil and gas production in Nevada. Nevada's only oil refinery is located here. Most of the valley lies in Nye County, but it crosses into White Pine County at its northern end. Since 1907, over 970 wells have been drilled in Nevada. This includes about 270 wells drilled since 1986 of which about 50 were producers.

Locally, numerous exploration or "wildcat" wells have been drilled throughout White Pine, northeast Nye, and Lincoln Counties. Even though many have had oil shows (evidence of oil or gas), there are currently only two producing wells within the Ely District boundary; however, new advancements in directional drilling and HF (hydraulic fracturing) technology may increase this number in the next ten years.

The first well drilled in the Ely District was in 1920 when the Illipah Syndicate drilled a well in the Barrel Springs area of the White Pine Range in White Pine County. The well was drilled in Section 11, Township 17 North, Range 58 East and reached a total depth of 929 feet with gas and oil shows (Garside et al. 1988). The Illipah Syndicate drilled three (3) more wells in the 1920s in the Barrel Springs area with numerous oil and gas shows, but with no commercial results.

Approximately 200 wells have been drilled in the district since the 1920s. Since 1950, slightly more than 170 wells have been drilled, and 90% of them were abandoned with only two wells currently in production. Many wells had evidence of the presence of hydrocarbons, but not in commercially producible quantities.

Drilling activity in the 1950s was sparse with only one well drilled in some years, and in other years, no drilling occurred. Since 1964, an average of about four (4) wells per year has been drilled in the district, with most of the wells being drilled in White Pine County (Hess 2001). However, approximately 68 wells have been drilled in the Nye County portion of the district, and most of those are in the Railroad Valley. Most of the drilling occurred on federal leases, and the federal government owns the overwhelming amount of leased minerals. More than one-third of the wells in the district were drilled to depths of between 2,500 and 5,000 feet.

A little more than 5% of the wells were drilled to more than 10,000 feet deep. The deepest well in the district, drilled in 1983, was the Commodore Resources Outlaw Federal #1 drilled to a total depth of 13,000 feet in White Pine County (Section 1, Township 10 North, Range 70 East). The

well was drilled east of the Snake Range and had reported hydrocarbon shows, but tests on the oil were not conclusive of naturally occurring hydrocarbons (Poole and Claypoole 1984).

The U.S. Geological Survey (Peterson and Grow 1995) estimated the potential undiscovered technically recoverable hydrocarbon resources for the Eastern Basin and Range area, of which the Assessment Area is part. Their estimates, when extrapolated to the Ely District, indicate that the potential hydrocarbon resource is nearly 98 million barrels of oil and almost 16 billion cubic feet of natural gas.

These estimates are the mean values presented by Peterson and Grow (1995). Low-grade coal (lignite) is present in the district, but mineable deposits have not been found. Therefore, there is very low or no potential for coalbed natural gas resources in the Ely District and coalbed natural gas is not included in the natural gas resource estimate.

Based on the foregoing, much of the Assessment Area has a high potential for hydrocarbons based on the following geologic characteristics:

- Presence of hydrocarbon source rocks
- Evidence of thermal maturation
- Presence of reservoir rocks with adequate porosity and permeability
- Potential for hydrocarbon traps to exist

There are places in the district where Precambrian-age metamorphic and volcanic rocks are the dominant surface rock types, but the presence of these rocks does not preclude the potential for the occurrence of deeper hydrocarbons in these areas. It is possible that hydrocarbon resources may have been buried by thrust faults or extrusive igneous rocks and that current exploration technique, exclusive of random drilling, cannot define the location or depth of these hidden potential resources.

1.4. Frequency of Oil and Gas Leasing within the Ely District

Based on 2002 to 2013 leasing numbers, federal lease sales average approximately 325,000 acres per year (see table below). The largest amount of acreage leased within the past 10 years was in 2005 where it surpassed 800,000 acres. However, since the new oil and gas leasing reform in 2011, the BLM state office put a limit of 200 parcels per sale and one sale per district office per year. At a maximum of 2,560 acres per parcel, this calculates the total leasable acreage per sale to 512,000. Taking on additional parcels and lease sales are optional to the District Office.

The Table APDs Approved also demonstrates the constant turnover of leased parcels. Although the Ely District has leased over 4.2 million acres of public land for oil and gas development in the past 12 years, only 2.1 million acres remain active. The December 2014 lease sale could add another 407,000 leased acres.

Only 32 wells were authorized in the Ely District over the past 12 years, even though there are 936 active leases covering just over 2 million acres of public land, as of May 21, 2014, based on information obtained from the LR2000 database (see table below).

Table 1.2. Ely District APDs Approved

Year Leased	No. of Parcels Leased	Leased Acreage	Currently Active Leases	Current Acreage Leased	# of APDs Approved
2002	29	109,226	2	3,000	3
2003	56	77,916	13	13,825	2
2004	118	309,339	30	73,728	7
2005	344	826,686	71	135,145	1
2006	288	691,539	128	281,800	3
2007	92	165,955	27	41,531	3
2008	281	539,564	160	291,159	1
2009	138	263,519	76	150,153	1
2010	178	551,722	164	497,267	3
2011	131	325,637	118	288,237	0
2012	66	108,484	66	108,484	4
2013	81	260,401	81	260,401	4
Totals:	1,802	4,229,990	936	2,124,731	32

1.4.1. Current Leasing Review Guidelines

It is the policy of the BLM as derived from various laws, including the Mineral Leasing Act of 1920 and the Federal Land Policy and Management Act of 1976, to make mineral resources available and to encourage development of mineral resources to meet national, regional, and local needs. The Nevada State Office conducts a yearly competitive lease sale for oil and gas lease parcels in the Ely District.

The Nevada State Office publishes a Notice of Competitive Lease Sale (NCLS) that lists lease parcels offered at the auction at least 45 days before the auction is held. The BLM bases its decision as to which parcels to offer for this competitive lease sale on current information and the management framework developed in the land use plan. Surface management of non-BLM administered lands overlaying federal minerals is determined by BLM in consultation with the appropriate surface management agency or the private surface owner.

In the process of preparing a lease sale, the Nevada State Office sends a list of nominated parcels to each District Office where the parcels are located. The staff then review the parcels to determine:

- If they are in areas identified in the Ely District Record of Decision and Approved Resource Management Plan (Ely RMP) as open to fluid mineral leasing;
- If new information has become available which might change any analysis conducted during the planning process;
- If appropriate consultations have been conducted;
- What appropriate stipulations should be included; and
- If there are special resource conditions, of which potential bidders should be made aware.

Once the draft parcel review is completed and returned to the Nevada State Office, a list of available lease parcels and stipulations is made available to the public through a NCLS. Lease stipulations applicable to each parcel are specified in the Sale Notice. On rare occasions,

additional information obtained after the publication of the NCLS, may result in withdrawal of certain parcels prior to the day of the lease sale.

The EA verifies conformance with the approved land use plan and provides the rationale for deferring parcels from the lease sale. Additionally, it provides the rationale for any lease stipulations applied to specific parcels.

Resource specialists relied on historical data, assessed environmental impacts that might result from an oil and gas lease sale, and personal knowledge of the areas involved. They also conducted field inspections and reviewed existing databases and file information to determine the appropriate stipulations to attach to specific parcels. This complies with National Environmental Policy Act (NEPA) of 1969, as amended (Public law 91-90, 42 USC 4321 et seq.)

For the December 2014 lease sale, 1 out of the 193 parcels received pre-sale offers of \$2 an acre. Pre-sale offers can be submitted when submitting an Expression of Interest (EOI) under the new Leasing Reform Act. If no one else bids on these parcels on the day of the competitive lease sale, the parcels will be awarded to the person who submitted the pre-sale offer.

At the time of this review, it is not known whether all nominated parcels will receive bids, if leases will be issued, or if well sites or roads might be proposed in the future. Detailed site-specific analysis of individual wells or roads would occur when an Application for Permit to Drill (APD) is submitted. In accordance with The Gold Book, ground disturbance and drilling can only happen when the APD is authorized. See Appendix E for an example of some Environmental Mitigation Best Practices to be applied during site development.

1.5. Purpose and Need for Action

The purpose of the action is to offer nominated parcels for competitive oil and gas leasing in the December 2014 Competitive Oil and Gas Lease Sale. Offering nominated parcels for competitive oil and gas leasing allows private individuals or companies to explore the federal mineral estate of lands managed by the federal government for the development of oil and gas resources.

The sale of oil and gas leases is needed to allow continued exploration for additional petroleum reserves which would help the United States meet its growing energy needs and to enable the United States to become less dependent on foreign oil sources. This action is being initiated to facilitate the Ely District Office's implementation of the requirements in Executive Order 13212 (2001) and the National Energy Policy Act (2005).

1.6. Conformance with BLM Land Use Plan

The Proposed Action is in conformance with the Ely District Record of Decision and Approved Resource Management Plan (Ely RMP), which states, *"To provide for the responsible development of mineral resources to meet local, regional, and national needs, while providing for the protection of other resources and uses."* The RMP also states in part, *"It is BLM policy to apply the least restrictive constraint to meet the resource protection objective."* (page 97). In addition, *"Timing limitations indicate that a leased area generally is open to development activities except during a specified period of time to protect identified resource values such as wildlife"* (Ely RMP, page 92).

This document is tiered to, and incorporates by reference, the Ely Proposed Resource Management Plan/Final Environmental Impact Statement (BLM 2007, the RMP/FEIS). 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 existing NEPA documents, a Finding of No Significant Impact (FONSI) would be prepared to document that determination and a Decision Record (DR) issued that provides a rationale for approving the selected alternative (BLM 2007).

1.7. Relationship to Statutes, Regulations, or other Plans

The Proposed Action complies with federal, state, and local laws, and regulations, and is consistent with federal, state, and local policies, and plans to maximum extent possible.

Purchasers of oil and gas leases are required to obey all applicable federal, state, and local laws and regulations including obtaining all required permits required should lease development occur.

Federal regulations and policies require the BLM to make its public land and resources available based on the principle of multiple-use. At the same time, it is BLM policy to conserve special status species and their habitats, and ensure that actions authorized by the BLM do not contribute to the need for the species to become listed as threatened or endangered by the United States Fish and Wildlife Service (FWS).

Compliance with Section 106 responsibilities of the National Historic Preservation Act (NHPA) are adhered to by following the BLM – Nevada State Historical Preservation Office (SHPO) protocol agreement, which is authorized by the National Programmatic Agreement between the BLM, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers, and other applicable BLM handbooks. As the BLM reviews draft parcel locations, the cultural resource staff reviews the locations to determine if any are within known areas of cultural or archeological concern.

Native American consultation is conducted for each lease sale. If Traditional Cultural Properties (TCP) or heritage related issues are identified, such parcels are deferred from the sale while letters requesting information, comments, or concerns are sent to Native American representatives. If the same draft parcels appear in a future sale, a second request for information is sent to the same recipients and the parcels may be deferred again. If no response to the second letter is received, the parcels are allowed to be offered in the next sale.

If responses are received, BLM will discuss the information or issues of concern with the Native American representative to determine if all or only portions of a parcel need to be withdrawn from the sale or if special stipulations need be attached as lease stipulations.

The Proposed Action and alternatives are in conformance with the National Environmental Policy Act (NEPA) of 1969, (P.L. 91-190 as amended (42 USC §4321 et seq.); Mineral Leasing Act (MLA) of 1920 as amended and supplemented (30 USC 181 et seq.); the Federal Oil and Gas Leasing Reform Act of 1987, which includes the regulatory authority under 43 Code of Federal Regulation (CFR) 3100, Onshore Oil and Gas Leasing; General, and Title V of the Federal Land Policy and Management Act of 1976 (FLPMA); Right-of-Way (ROW) under regulatory authority under 43 CFR 2800 for ROWs.

1.8. Decision to be Made

The Ely District Office must determine whether or not to recommend leasing all or part of the nominated parcels in the upcoming December 2014 Oil and Gas Competitive Lease Sale to the Nevada BLM Deputy State Director for Minerals Management by August 15, 2014. The Ely District must also determine which notices and stipulations must be attached to the parcels in order to help protect the resources. The Deputy State Director for Minerals Management will make the final decision and sign the DR.

1.8.1. Identification of Issues

While many issues may arise during scoping, not all of the issues raised warrant analysis. Issues raised through scoping are analyzed if:

- Analysis of the issue is necessary to make a reasoned choice between alternatives.
- The issue is significant (an issue associated with a significant direct, indirect, or cumulative impact, or where analysis is necessary to determine the significance of impacts).
- There is a disagreement about the best way to use a resource, or resolve an unwanted resource condition, or potentially significant effects of a proposed action or alternative.

An interdisciplinary (ID) team discussed the potential consequences of the proposed action during internal scoping held on May 5, 2014. This was a combined Ely District scoping with staff from the Egan Field Office (FO), the Schell FO and the Caliente FO participating. Those issues listed in Chapter 3 were analyzed in this EA as a result of scoping.

External Scoping included a general press release notifying the public of the proposed action,, a web based announcement and the means of providing input. Managers made presentations describing the proposed action to the White Pine Board of County Commissioners, the Lincoln County Board of Commissioners, and the White Pine County Public Land Use Advisory Committee (PLUAC).

Approximately 5000 identical and 9 individual responses were received through direct e-mail from the Wild Horse America Association. All responses asked that the proposed action be modified by deferring fourteen parcels because they overlapped a Herd Management Area (HMA). They cited disruption to the animals and a concern over the quality of surface water. Surface water is addressed in this EA. HMAs are open to fluid mineral leasing and other multiple uses per the Ely RMP, and no additional information was provided to require a deferral or RMP amendment.

The PLUAC suggested that potential springs be investigated and pointed out potential inter-basin flow could be occurring between Spring Valley, the north end of Hamlin Valley and the south end of Snake Valley. PLUAC requested that potential impacts of both of these concerns be addressed in the EA. For leasing, these impacts will be addressed in the water resources section of this EA, under cumulative impacts. Site specific development concerns will be addressed in the future if an APD is submitted.

Letters were received from and discussion occurred with the Nevada Department of Wildlife (NDOW) and the U.S. Fish and Wildlife Service (FWS). Useful information was received and both agencies asked that in order to protect threatened and endangered species, the proposed action be modified. Both agencies requested deferral of lands within 4 miles of the following

features: Key Pittman Wildlife Management Area, Ash Spring, Crystal Spring, and Hiko Spring. NDOW preferred that all parcels in this area be deferred because of concern over hydrologic connectivity. As discussed above, for leasing, these impacts will be addressed in the water resources and wildlife sections of this EA under cumulative impacts. Site specific development concerns will be addressed in the future if an APD is submitted.

The FWS also asked that the proposed action be modified by closing critical desert tortoise habitat; this would require an RMP amendment and is outside the scope of this EA. This closure will be considered in an upcoming RMP Amendment. Standard lease stipulations will be applied to desert tortoise habitat.

The Triple Aught Foundation (TAF) identified parcels they believe would have an adverse impact to the visual integrity of a landscape scale art installation, known as “City”. They cite City’s artistic value and state that exploration will destabilize the ecosystem, import noxious weeds, affect grazing, and introduce structures which would degrade the relationship of the artwork to its environs. They have requested deferral of these forty parcels which are located at the southern end of Garden Valley and Coal Valley.

The proposed action was modified to reflect portions of the Triple Aught and the FWS deferral requests and appropriate legal descriptions are being developed.

The BLM Ely District Office posted invitations by certified mail on May 9, 2014 to the following Tribes to consult and provide information concerning any known traditional religious sites and cultural sites of importance as required by the National Historical Preservation Act of 1966, as amended: Section 106.

The eight federally recognized Tribes that were notified are: Confederated Tribes of the Goshute Reservation, NV-UT; the Duckwater Shoshone Tribe of the Duckwater Reservation, NV; Ely Shoshone Tribe of Nevada; Las Vegas Paiute Tribe of the Las Vegas Indian Colony; Moapa Band of Paiute Indians of the Moapa River Indian Reservation, NV; Paiute Indian Tribe of Utah; Yomba Shoshone Tribe of the Yomba Reservation, NV; and Te-Moak Tribe of the Western Shoshone Indians of Nevada. On April 4, 2014 the Egan Field Manager met with the Business Council of the Confederated Tribes of the Goshute Indian Reservation in Ibapah, Utah; on April 28, 2014 with the Duckwater Shoshone Tribe of the Duckwater Reservation, Nevada; and on May 13, 2014 with the Ely Shoshone Tribe of Nevada. No issues were raised during these meetings. A site visit with the Duckwater Shoshone Tribe occurred on June 4, 2014. A site visit occurred with the Ely Shoshone Tribe on May 16, 2014. The Ely Shoshone Tribe of Nevada expressed concerns that two nominated parcels are adjacent to the Tribe’s reservation which is designated as traditional use area. No other responses were received.

The preliminary EA will be placed on the BLM NEPA Register website for 30 days to receive public comments until July 11, 2014.

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Chapter 2. Proposed Action and Alternatives

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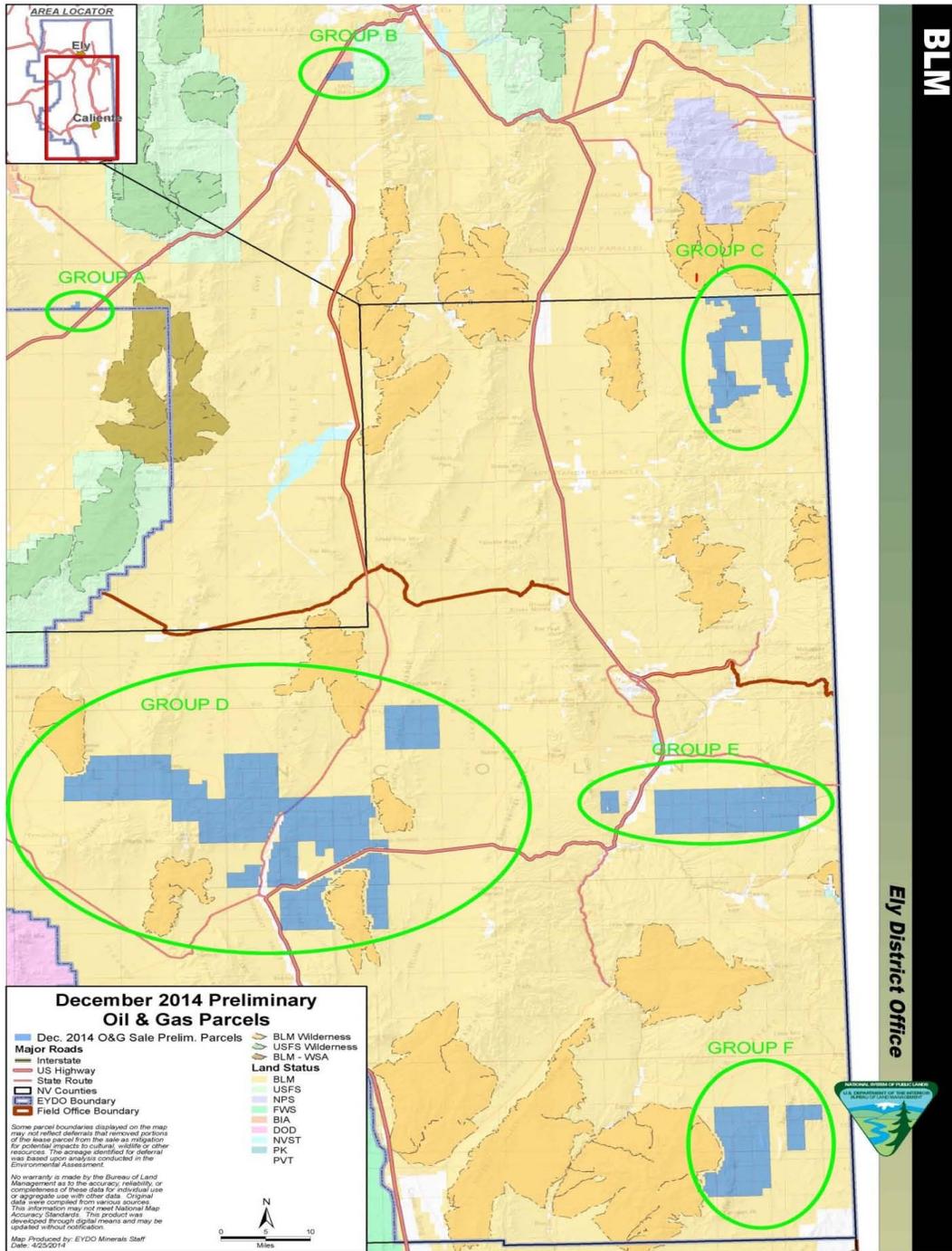
2.1. Introduction

The previous chapter presented the Purpose and Need for the proposed project along with the identified relevant issues (i.e., those elements that could be affected by the implementation of the proposed project). In order to meet the purpose and need of the proposed project in a way that resolves the issues, the BLM considered a range of action alternatives; however, only a proposed action alternative and no action alternative seemed feasible. No other alternatives to the proposed action were apparent which would meet the purpose and need. The potential environmental effects resulting from the implementation of each alternative are analyzed in Chapter 4 for each of the identified issues.

The Nevada State Office submitted a list of 193 nominated parcels totaling 406,653 acres of the Ely District on April 29, 2014 (see Map and Table). Lincoln County contains the majority of the parcels (190). Nye County has one parcel and White Pine County has two. Appendix A lists all 193 parcels, the parcel number, acreage, legal description, and Appendix B lists known stipulations for all parcels.

Table 2.1. Map Key for Parcels with Acreage

Area	Area Name	Number of Parcels	Field Office	County	Acres *
A	North Railroad Valley	1	Egan	Nye	473
B	South West Ely	2	Schell	White Pine	3,500
C	Hamlin Valley	24	Schell	Lincoln	47,500
D	Hiko - Pahroc	111	Caliente	Lincoln	230,100
E	Panaca	30	Caliente	Lincoln	69,980
F	Tule Springs Hills	25	Caliente	Lincoln	55,100
Totals	* Acres are approximate	193			406,653



Map 2.1. Nominated Parcels Map

2.2. Description of the Proposed Action

The Proposed Action is to offer one hundred ninety three (193) parcels for competitive oil and gas leasing. Standard terms and conditions as well as special stipulations would apply. Lease stipulations (as required by Title 43 CFR 3131.3) would be added to those parcels offered for sale to address site-specific concerns or new information not identified in the land use planning process.

Once sold, the lessee has the ability to develop the lease by exploring, drilling, and producing all of the oil and gas within the lease boundaries, subject to the stipulations attached to the lease (Title 43 CFR 3101.1-2). Oil and gas leases are issued for a 10-year period or may continue for as long thereafter as oil or gas is produced in paying quantities.

If a lessee fails to produce oil and gas, does not make annual rental payments, does not comply with the terms and conditions of the lease, or relinquishes the lease, the lease is terminated and all lessee rights revert back to the federal government and the lease may be resold.

Drilling of wells on a lease is not permitted until the lease owner or operator secures approval of a drilling permit and a surface use plan specified under Onshore Oil and Gas Orders, Notice to Lessee's (NTL's) listed in Title 43 CFR 3162.

Anyone submitting an informal "Expression of Interest" (EOI) that certain lands be offered in an oil and gas competitive lease auction, and that the EOI includes split-estate lands (private Surface ownership/federal minerals ownership) must provide, with the EOI, the name and address of the current private surface owner(s). Whenever a split-estate parcel is included in an oil and gas Notice of Competitive Lease Sale, the Bureau of Land Management (BLM) will send a courtesy letter to the surface owner(s). The letter will provide the surface owner(s) notice of the scheduled auction as well as information about the BLM's regulations and procedures for federal oil and gas leasing and development on split-estate lands. Any EOI including split-estate lands that is submitted in the future, or is now pending with a BLM State Office, that does not provide the name and address of the surface owner(s) will not be processed by the BLM. Such lands will not be placed on a list of lands included in a Notice of Competitive Lease Sale until the required information is provided.

All of the parcels contain a special Cultural Resources Lease Notice stating that all development activities proposed under the authority of these leases are subject to compliance with Section 106 of the NHPA and Executive Order 13007. All parcels also contain an Endangered Species Act Notice. Standard terms and conditions as well as special stipulations listed in the RMP would also apply.

Many of the parcels have one or more of the stipulations which limit activity associated with the lease. See Appendix B for details of these stipulations. In addition, if any parcels are developed in the future, site-specific mitigation measures and BMPs (Appendix C) would be attached as Conditions of Approval (COA) for each proposed activity, which would be analyzed under their own site-specific NEPA analysis.

2.2.1. Recommended Deferrals

Based on issues identified through scoping and analysis, the Ely District Office recommends to the Nevada State Office that the following parcels (in whole or in part) be deferred:

- 1) Defer 40 parcels in Group “D”: NV-14-12-001 through NV-14-12-008 (8 parcels), NV-14-12-010 through NV-14-12-019 (10 parcels), NV-14-12-020 through NV-14-12-023 (4 parcels), NV-14-12-024 through NV-14-12-031 (8 parcels), NV-14-12-032 through NV-14-12-041 (10 parcels) . The Triple Aught Foundation (TAF) identified parcels that they believe would have an adverse impact to a landscape scale art installation, known as “City” and requested deferral.
 - 2) Defer parcels within a 4-mile buffer of Ash Springs and its associated outflow,, which contains critical habitat for endangered White River springfish (*Crenichthys baileyi baileyi*) as requested by NDOW and FWS.
 - 3) Defer parcels within a 4-mile buffer of Key Pittman Wildlife Management Area (WMA) as requested by NDOW and FWS. Critical habitat for endangered southwestern willow flycatcher (*Empidonax traillii extimus*)SWFL) was proposed for Key Pittman WMA and then did not appear in the recent final designation for critical habitat because protection at Key Pittman was thought to be adequate. This area contains the largest breeding population of SWFL in Nevada. Key Pittman WMA also contains habitat for the proposed threatened yellow —billed cuckoo (*Coccyzus americanus*), as well as a refugia pond for endangered Pahrnagat roundtail chub (*Gila robusta jordani*).
 - 4) Defer parcels within a 4-mile buffer of Crystal and Hiko Springs and their associated outflow, which are designated critical habitat for endangered Hiko White River springfish (*Crenichthys baileyi grandis*) as requested by NDOW and FWS.
- The Ely District Office recommends the parcels for items 2, 3, and 4 (above) be deferred. These parcels would require Section 7 consultation under the Endangered Species Act (ESA), and there is insufficient time to conduct a thorough consultation for this lease sale.
- 5) Defer and permanently remove from the sale list and all future sale lists thirteen parcels occupying the corridor defined by the Lincoln County Conservation Recreation Development Act (LCCRDA) P.L. 108–424, which identified this corridor as closed to mineral entry, (Parcels NV-14–12–046, 050, 055, 059, 060, 063, 156, 157, 159, 160, 162, 165, and 168).
 - 6) Defer for one year the following parcels: NV-14–12–046 and 050. These lands were identified for disposal in the Ely District Resource Management Plan.
 - 7) Defer parcels that contain Las Vegas buckwheat (NV-14–12–168 and 171)) because of a potential listing of this candidate species and at the request of the FWS.
 - 8) Defer split-estate parcels NV-14–12–159, 162 and 165, because current owner information (name and address) was not provided with the EOI.

2.3. No Action Alternative

In accordance with BLM NEPA guidelines H-1790-1, Chapter V (BLM 2008a), this EA evaluates the No Action Alternative. The objective of the No Action Alternative is to describe the environmental consequences that would result if the Proposed Action were not implemented. The No Action Alternative forms the baseline from which the impacts of all other alternatives can be measured. In the case of a lease sale, this would mean that all expressions of interest to lease (parcel nominations) would be denied or rejected.

Under the No Action Alternative, the BLM would not offer any parcels and there would be no December 2014 lease sale. Surface management would remain the same and ongoing oil and gas development would continue on surrounding leased federal, private, and state lands.

If the BLM does not lease these federal mineral resources, demand would likely be addressed through imports or production elsewhere.

2.4. Alternatives Considered but not Analyzed in Detail

No other alternatives to the proposed action were apparent that would meet the purpose and need of the Proposed Action. No other alternatives were submitted or proposed during the public comment period.

2.5. Reasonably Foreseeable Development Scenario for Oil and Gas Resources

A Reasonably Foreseeable Development scenario (RFD) for oil and gas is a long-term projection of oil and gas exploration, development, production, and reclamation activity. The RFD covers oil and gas activity in a defined area for a specified period of time. The RFD projects a baseline scenario of activity assuming all potentially productive areas can be open under standard lease terms and conditions, except those areas designated as closed to leasing by law, regulation, or executive order. The baseline RFD provides the mechanism to analyze the effects that discretionary management decisions have on oil and gas activity. The RFD also provides the basic information that is analyzed in the NEPA document under various alternatives. The RFD discloses indirect future or potential impacts that could occur once the lands are leased. Prior to any future development, the BLM would require a site-specific NEPA analysis at the exploration and development stages in order to comply with NEPA.

Fluid mineral development potential in the decision area is based on RFD scenarios for oil and gas and geothermal energy and was developed in conformance with BLM Instruction Memorandum No. 2004-089 (BLM 2004). This analysis is based largely on the reasonably foreseeable development scenarios presented in detail in the mineral report prepared for the RMP/EIS (ENSR 2004). Various additional assumptions have been incorporated based on changes in the mineral markets in the recent past. The minerals report is available at the Ely District Office. It is impossible to predict with certainty how resource development would occur in the future. The interaction of prices, markets, technology, and environmental concerns all play a role. The reasonably foreseeable development scenarios were developed based on past exploration activities and estimates of future exploration and development activity given the potential occurrence of the resources (BLM 2007, page 4.18-3).

The RFD provides the basis for the analysis of the environmental effects in Chapter 4 of this document. The RFD for the Assessment Area is based on the geology, oil and gas development history, oil and gas potential, BLM well data, and data from other EAs for oil and gas leases in eastern Nevada. The RFD scenario is made without respect to any existing or proposed leasing stipulations and conditions of approval in accordance with BLM guidance.

The Proposed Action does not include any surface disturbance, such as exploration, development, production, or final reclamation of oil and gas resources. However, the authorization of oil and gas leasing does convey a right to subsequent exploration and production activities. Therefore,

this EA will consider possible impacts from potential indirect effects under RFD scenarios associated with oil and gas leasing development of the approximately 407,000 acres proposed in this lease sale, which represents just over four percent (4.07%) of the 10 million acres open to leasing in the Ely District.

General Assumptions for the Reasonably Foreseeable Development Scenario

The following is a list of general assumptions upon which the reasonably foreseeable development scenario is based (BLM 2007).

- There would be no major regulatory changes in federal or state statutes, regulations, policy, and guidance that govern the exploration and development of fluid minerals, including lease royalty provisions and lease rental fees.
- Oil prices would remain sufficiently high to stimulate continued exploration and drilling. Recent historic highs in the price of oil may stimulate exploration activity above levels of the recent past. It is possible that higher prices may persist for the next few years. The reasonably foreseeable development scenario (ENSR 2004) is a planning tool that was developed to accommodate the maximum development that could reasonably be expected to occur. However, actual activity levels, as with prices, cannot be predicted with certainty.
- It cannot be predicted at this time how much acreage eventually would be held by production, which is entirely dependent on the discovery of commercial oil and gas fields.
- New field discoveries would be similar in size and surface disturbance to the Trap Springs and Kate Springs oil fields within Railroad Valley.
- The reasonably foreseeable development scenario is made without respect to any existing or proposed leasing stipulations and conditions of approval in accordance with BLM guidance.

Geophysical Exploration Assumptions

Within the Ely District, the subsurface geology is not always accurately represented by the surface outcrop and it is for this reason exploration geologists use geophysical methods to help locate oil and gas traps. Geophysical exploration includes a variety of instruments and techniques, but all geophysical exploration is based on the measurement of one of three physical properties: A) gravitational field, B) magnetic field, and C) seismic reflection characteristics. Of these types, only seismic reflection surveys result in any detectable surface disturbance. Initial geophysical surveys may cross tens of miles in what appear to be a random pattern. These surveys attempt to piece together the local subsurface geology or confirm geologic inference. If real or perceived geologic structures of interest are located, surveys of specific areas will be intense and may be repeated frequently.

The Ely RMP projected that 30 miles of seismic surveys per year at a surface disturbance rate of 2 acres per mile would be conducted in the Ely District. Therefore in this EA, one can assume that there is a potential for 1.2 miles of seismic exploration per year on these 407,000 acres. At a rate of 2 acres per mile, this would equate to 2.4 acres of surface disturbance per year from geophysical exploration.

Exploration and Production Drilling Assumptions

*Chapter 2 Proposed Action and Alternatives
Reasonably Foreseeable Development Scenario for
Oil and Gas Resources*

June 11, 2014

Actual locations of potential exploration wells and field development are unknown. The impacts associated with these activities are likely to occur anywhere within the leased parcels that are of high or moderate, or even low, potential for oil and gas resources.

The Ely RMP/FEIS assumes a total of 448 wells would be drilled resulting in total short-term (5 to 10 years) disturbance of approximately 8,400 acres and a long-term (about 20 years for producing wells) disturbance of approximately 1,400 acres (BLM 2007). Short-term disturbance as defined for the RFD scenario identifies wells in the plugged and abandoned category that would be reclaimed immediately after drilling or construction.

There have been 32 APDs approved by the Ely District over the past 12 years and only 12 have been approved since the Ely RMP was approved. It would be highly speculative that 448 wells would be drilled over the next 15 years, even with advancements in well stimulation techniques. For the purposes of this EA, approximately 4% of the total district is subject to lease, this percentage indicates that approximately 18 exploration and production wells should be expected as a result of this sale. Short-term (5 to 10 years) and long-term (over 10 years) disturbance for this EA would be approximately 340 acres and 60 acres, respectively. This assumption is supported by Table 1.2 APDs Approved.

Exploration Drilling

The RFD scenario in the Ely District RMP/EIS planned for 200 exploration wells over the life of the RMP that could result in 740 acres of short-term surface disturbance. Under the RMP scenario, approximately 1,000 miles of new roads would be created to access the well pads. This would add another 4,800 acres of short-term surface disturbance (Ely RMP/FEIS Table 4.18-2) (BLM 2007). Short-term (5 to 10 years) disturbance for this EA results in approximately 230 acres. Under this EA's Proposed Action scenario, one could then assume that up to eight (8) exploration well pads and 40 miles of new roads could be constructed within the proposed 407,000 lease acres.

Typically, constructing the roads and pads, and drilling the well should take less than six months to complete. If the well is a dry hole, then it is plugged immediately before the drill rig leaves the site. Reclamation of the pad and access road takes place once conditions permit, typically within six months of abandoning the well. If the well becomes a producer, then the access road would remain until the well is no longer producing. The pad would be reclaimed to a smaller size necessary to accommodate production operations.

Production

The average geographic area for a producing oil and gas field in the United States is about 640 acres. Field sizes tend to be smaller in Nevada. There would be 40-acre spacing for wells less than 5,000 feet in depth and 160-acre spacing for wells deeper than 5,000 feet. Most wells drilled in Nevada are deeper than 5,000 feet, so well spacing would probably be 160 acres.

The RFD scenario in the Ely RMP/FEIS planned for six (6) new production well fields within the Ely District; four (4) small fields and two (2) large fields. The four small well fields would be comprised of 88 wells, 40 being producing wells and the other 48 being plugged and abandoned. The two large well fields would be comprised of 160 wells, 100 being producing wells and the other 60 being plugged and abandoned. This RFD also included 56 miles of new access and service roads, and eight (8) miles of new pipelines for the small well fields. The two large well fields would include 55 miles of new access and service roads, and 10 miles of new pipelines. A

projection of adding a new refinery to the area was also included in this RFD (Ely RMP/FEIS Table 4.18-2) (BLM 2007).

Under the RFD for this EA, one could assume that only one small well field would be developed within the proposed 407,000 lease acres. This could result in 10 producing wells and 12 other wells being plugged and abandoned. In addition, 14 miles of new access roads and two miles of pipeline could be developed. Total short- and long-term disturbance would be approximately 185 acres and 90 acres, respectively.

Well Stimulation

Well Stimulation may be used to enhance oil recovery. Several methods of well stimulation could be used. Hydraulic Fracturing is one of these methods that may be considered for leases proposed for sale in Nevada. Hydraulic fracturing is the process of applying high pressure to a subsurface formation via a wellbore, to the extent that the pressure induces fractures in the rock. The process can increase the yield of a well, and development of hydraulic fracturing methods and the drilling technology in which it is applied (in particular, long wells drilled horizontally within zones of interest) have enabled production of oil and gas from tight formations formerly not economically feasible.

In order to mitigate potential environmental impacts from hydraulic fracturing methods:

- Wells are cased multiple times and sealed with cement between the wellbore and the formation. Well integrity is tested throughout the process.
- Drilling and hydraulic fracturing fluids will either be contained in a pitless system (above ground tanks) or a lined pit. Cuttings could be contained in roll-off boxes for hauling to disposal or surface casing interval cuttings could be spread over the site during reclamation.
- Hydraulic fracturing fluids may be returned to the surface as “flowback” or produced water when the well is tested or produced.
- All recovered fluids are generally handled by one of four methods:
 - Underground injection.
 - Captured in steel tanks and disposed of in an approved disposal facility.
 - Treatment and reuse.
 - Surface disposal pits.

A detailed discussion of hydraulic fracturing is found in Appendix F.

Chapter 3. Affected Environment:

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3.1. Introduction

This chapter describes the existing environment in the project area including physical, biological, social, and economic resources.

3.2. General Setting

There are no known oil reserves within any of the proposed parcel areas. The oil-bearing formations sought in White Pine, Lincoln, and Nye Counties are the Chainman and Pilot shales, as well as, Devonian age subthrust structures thought to be present in some valleys within the analysis areas. The nominated parcels have been segregated into five groups of analysis (Table 2.1 and Map 2.1). The total acreage is approximately 406,653 acres.

Group A or North Railroad Valley contains one parcel administered by the Egan Field Office and is 473 acres in size. It is entirely in Nye County. It is located near Highway 6, west of Current. This parcel occurs within the Great Basin Desert. Exploration wells have been drilled within 25 miles to the south and west. The Duckwater Reservation lies 20 miles to the northwest.

Group B or Southwest Ely contains two parcels administered by the Schell Field Office and is 3,500 acres in size. This area is sometimes described as the “Ward Mountain Bench”, adjacent to Highway 6, and 18 miles southwest of Ely. It lies within the Great Basin Desert and is adjacent to Ely Shoshone Tribal lands.

Group C or Hamlin Valley contains 24 parcels administered by the Schell Field Office and is 47,500 Acres in size. The Great Basin National Park lies to the north and the Atlanta Mine lies to the south. These parcels are located within the Great Basin Desert.

Group D or Hiko-Pahroc is the largest area comprised of 111 parcels roughly surrounding the town of Hiko. The bulk of this group occurs within Pahrnagat, Coal, and Garden Valleys. This area transitions from Great Basin Desert to Mojave Desert.

Group "E" or Panaca, contains 30 parcels administered by the Caliente Field Office and is 69,980 acres in size. The parcels lie predominately on the east side of Highway 93, with three on the west side, near the town of Caliente and near Cathedral Gorge State Park. This area transitions from Great Basin Desert to Mojave Desert.

Group "F" or Tule Springs Hills lies in the southern Tule Desert approximately 25 miles from Interstate-15. It contains 25 parcels administered by the Caliente Field Office and is 55,100 Acres in size. This area occurs within the Mojave Desert.

3.3. Resources/Concerns Analyzed

The following sections evaluate resources for the potential for significant impacts to occur, either directly or indirectly, due to implementation of the proposed action. Potential impacts were evaluated in accordance with criteria listed in section 1.5 of this EA to determine if detailed analysis was required. Consideration of some of these items is to ensure compliance with laws, statutes 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 District in particular.

The Supplemental Authorities and Ely District additional resources to consider are listed in **Table 3.1**. Elements that may be affected would be further described in this EA. A rationale for elements that may or may not be adversely affected is also included in **Table 3.1**

At the time of this review, it is not known whether all nominated parcels will be offered for lease, will receive bids, if leases will be issued, or if well sites or roads might be proposed in the future. Detailed site-specific analysis of individual wells or roads would occur when an APD is submitted.

Table 3.1. Supplemental Authorities and Ely District additional resources to consider.

Resource/Concern	Issue(s) (Y/N)	Rationale for Dismissal from Detailed Analysis or Issue(s) Requiring Detailed Analysis
Air Quality / Climate Change	Y	Analyzed in Potentially Affected Resources and Environmental Effects sections due to potential impacts.
Cultural Resources	Y	Analyzed in Potentially Affected Resources and Environmental Effects sections due to potential impacts.
Native American Religious and Other Concerns	N	Tribal consultation is described in Section 1.8.1. Ely Shoshone concerns regarding Group B are addressed in Visual Resources. No further analysis is necessary.
Heritage Special Designations (Officially recognized National Scenic and Historic Trails, ACEC's designated for Cultural Resources)	N	Resource not present.
Water Resources and Water Rights	Y	Analyzed in Potentially Affected Resources and Environmental Effects sections due to potential impacts.
Water Quality, Drinking/ Groundwater	Y	Analyzed in Potentially Affected Resources and Environmental Effects sections.
Fish and Wildlife	Y	Analyzed in Potentially Affected Resources and Environmental Effects sections due to potential impacts.
Special Status Animal Species, other than those listed or proposed by the FWS as Threatened or Endangered	Y	Analyzed in Potentially Affected Resources and Environmental Effects sections due to potential impacts.
Special Status Plant Species, other than those listed or proposed by the FWS as Threatened or Endangered	Y	Analyzed in Potentially Affected Resources and Environmental Effects sections due to potential impacts.
FWS Listed or proposed for listing Threatened or Endangered Species or critical habitat.	Y	Analyzed in Potentially Affected Resources and Environmental Effects sections due to potential impacts.
Environmental Justice	N	There are no minority populations disproportionately at risk that will be affected by this lease sale. No further analysis is necessary.
Socioeconomics	Y	Analyzed in Potentially Affected Resources and Environmental Effects sections due to potential impacts.
Noxious and Invasive Weeds	Y	Analyzed in Potentially Affected Resources and Environmental Effects sections due to potential impacts.
Lands with Wilderness Characteristics (LWC)	Y	59 proposed oil and gas lease sale parcels overlap 13 units which were found to possess lands with wilderness characteristics.
Soil Resources	Y	Analyzed in Potentially Affected Resources and Environmental Effects sections due to potential impacts.
Visual Resources Management (VRM)	Y	Analyzed in Potentially Affected Resources and Environmental Effects sections due to potential impacts.

Resource/Concern	Issue(s) (Y/N)	Rationale for Dismissal from Detailed Analysis or Issue(s) Requiring Detailed Analysis
Recreation Uses	N	No potential direct or indirect impacts to recreation uses would occur as a result of the lease sale. Impacts to recreation uses would be considered in subsequent NEPA, should parcel development be proposed.
Vegetative Resources (including Riparian/Wetland vegetation)	Y	Analyzed in Potentially Affected Resources and Environmental Effects sections due to potential impacts.
Wastes, Hazardous or Solid	Y	Analyzed in Potentially Affected Resources and Environmental Effects sections due to potential impacts.
Floodplains	N	Some parcels are within flood areas on GIS flood maps. Any concerns during development of parcels subsequent to lease sales would be handled through design features, mitigation measures, and/or project stipulations during the APD.
Farm Lands (Prime or Unique)	N	Resource not present.
Human Health and Safety	N	Human Health and Safety is not an issue for lease sales since activities are not associated with lease sales per se. A detailed analysis is not required.
Wild and Scenic Rivers	N	Resource is not present.
Wild Horses	Y	Analyzed in Potentially Affected Resources and Environmental Effects sections due to potential impacts.
Wilderness/ WSA	N	None of the proposed parcels are within designated wilderness or WSA boundaries. A one-quarter mile offset has been established around these features to compensate for the uncertainty in establishing the legal description of the lease parcels in relation to the largely unsurveyed boundaries of the Wilderness and WSA's. A detailed analysis is not required.
Paleontological Resource	N	A BLM records search was conducted to ensure that no known paleontological resources were present in the parcels that have special interest or importance to the general public. A detailed analysis is not required. This area has low potential for vertebrate paleontological resources but may contain vertebrate paleontological resources. In the event that previously undiscovered paleontological resources are discovered in the performance of any surface disturbing activities, the item(s) or condition(s) will be left intact and immediately brought to the attention of the authorized officer of the BLM. Operations within 250 feet of such discovery will not be resumed until written authorization to proceed is issued by the Authorized Officer. The lessee will bear the cost of any required paleontological appraisals, surface collection of fossils, or salvage of any large conspicuous fossils of significant scientific interest discovered during the operations.
Migratory Birds	N	Long-term population trends of migratory birds would not be affected by the leasing of parcels. A detailed analysis is not required.
Range	N	No direct impacts to grazing livestock would occur from the leasing of land. Livestock distribution would not be impacted. A detailed analysis is not required.
Land Use & Access	Y	Analyzed in Potentially Affected Resources and Environmental Effects sections due to potential impacts.
Forest and Woodland Products	N	No direct impacts to forest and woodland products from leasing activities. Potential indirect impacts if parcels are developed would be attributed to parcels in Groups C, D, E and F where commercial pine nut units overlap. Pine nut loss is estimated to be minimal based on the infrequent production of pine nuts (one good crop approximately every five years). A detailed analysis is not required.

3.3.1. Air Quality & Climate Change

The U.S. Environmental Protection Agency (EPA) has established national ambient air quality standards (NAAQS) for criteria pollutants, such as carbon monoxide (CO). Exposure to air

pollutant concentrations greater than the NAAQS has been shown to have a detrimental impact on human health and the environment. The EPA has delegated regulation of air quality under the federal Clean Air Act to the State of Nevada. In addition to the criteria pollutants, regulations also exist to control the release of hazardous air pollutants (HAPs). HAPs are chemicals that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects. EPA currently lists 188 identified compounds as hazardous air pollutants, some of which can be emitted from oil and gas development operations, such as benzene, toluene, and formaldehyde. Ambient air quality standards for HAPs do not exist; rather these emissions are regulated by the source type, or specific industrial sector responsible for the emissions.

Ambient air quality in the affected environment (i.e. compliance with the NAAQS) is demonstrated by monitoring for ground level atmospheric air pollutant concentrations. In general, the ambient air measurements show that existing air quality in the region is good. Concentrations for the criteria air pollutants are below the applicable state and federal ambient air quality standards. However, recent ozone monitoring data (shown below) suggests ambient concentrations are approaching the 8 hour air quality standard of 0.075 ppm during the summer ozone season (3 year average of the annual 4th highest 8-hour average). Ozone has the potential to be transported across long ranges. For more information on pollutant monitoring values, including the other criteria pollutants not shown below, please visit the EPA's Air Data website at www.epa.gov/airdata.

There is broad scientific consensus that humans are changing the chemical composition of our atmosphere. Activities such as fossil fuel combustion, deforestation, and other changes in land use are resulting in the accumulation of trace greenhouse gasses (GHGs) such as carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), water vapor, and several industrial gases in our atmosphere. An increase in GHG emissions is said to result in an increase in the earth's average surface temperature, primarily by trapping and decreasing the amount of heat energy radiated by the earth back into space. The phenomenon is commonly referred to as global warming. Global warming is expected, in turn, to affect weather patterns, average sea level, ocean acidification, chemical reaction rates, precipitation rates, etc., which is commonly referred to as climate change. Climate is the composite of generally prevailing weather conditions of a particular region throughout the year, averaged over a series of years. Climate change includes both historic and predicted climate shifts that are beyond normal weather variations.

3.3.2. Cultural Resources (including Heritage Special Designations) Affected Environment

A Cultural Resources Inventory Needs Assessment (8111 NANV040FY14-043) was completed for all parcels and was completed with current information on inventories and sites within the nominated parcels

The cultural landscape on the Ely District has evidence of a long history of human occupation. The earliest commonly accepted date for human prehistoric presence in the Eastern Great Basin is approximately 10,000 to 11,000 years before present and the area has been consistently, though not densely populated up to the present day (Aikens and Madsen 1986). The historic cultural landscape encompasses artifacts, features, and sites related to mining, ranching, agriculture, and the settlement of Nevada. A literature review (Class I) was conducted to ensure that previously recorded cultural sites with significance or importance in accordance with National Register of

Historic Places criteria were identified within the parcels.. Data for the assessment of cultural resources was reviewed from the Nevada Cultural Resource Inventory System (NVCRIS), Government Land Office (GLO) records, and BLM Ely District Office cultural resource files. and is located in Appendix G. Less than 10% of the Ely District has been adequately inventoried for cultural resources.

The leasing of oil and gas parcels does not entail ground-disturbing activities as part of the undertaking. Furthermore, all subsequent activities on leased parcels shall be subject to Section 106 of the NHPA and further NEPA study. Therefore, this lease undertaking will not result in impacts to cultural resources in and of itself; however, ground disturbance from lease development may result in substantial impacts to cultural resources and will require cultural (Class III) inventory and potential consultation/mitigation. Avoidance is the preferred measure of mitigation in order to preserve and protect the resource. Lands within a lease may contain areas of known high potential for cultural resources. The lease parcels may also contain historic properties, TCP, and/or sacred sites currently unknown to the BLM that were not identified during the lease parcel review process.

3.3.2.1. Heritage Special Designations (Historic Trails, ACEC's designated for Cultural Resources) Affected Environment

No Heritage Special Designations fall within the nominated parcels.

The National Scenic and Historic Trails (NSHT) are formally designated through Congressional and Presidential process in conjunction with the National Landscape Conservation System (NLCS). The Ely District has three such trails: The Pony Express NSHT, the California Trail NSHT and the Old Spanish Trail NSHT. None of these trails fall within the proposed oil and gas lease parcels.

Within the Ely Resource Management Plan there is a special designation cultural areas known as the White River Narrows Archaeological District (WRN). WRN is is approximately two miles distance from nominated parcels. There are two ACECs to consider within the oil and gas lease areas/parcels. Parcels 85 & 88 are outside of, but immediately adjacent to the Pahroc Rock Art ACEC. Parcels 27, 29 & 30 are outside of, but immediately adjacent to the Mt. Irish ACEC.

3.3.3. Water Resources Affected Environment

Ground water and surface water conditions are described in Section 3.3 of the RMP/FEIS. Trends and current management of ground water, surface water, water rights, and water quality are also discussed in Section 3.3.

Regulatory Background

Objectives for Water Resources and Water Quality are listed in the Ely RMP. The Ely RMP requires that authorized activities on public lands do not degrade water quality. This includes compliance with the Clean Water Act and Nevada Water Pollution Control Regulations (Nevada Revised Statute 445A) and compliance with the Memorandum of Understanding between the BLM and Nevada Division of Environmental Protection, dated September 2004. Objective WR-2 also requires the integration of land health standards, best management practices, and appropriate mitigation measures into authorized activities to ensure water quality meets state requirements and BLM resource management objectives in BLM Manual 7240 Nevada Supplement.

Groundwater

Groundwater conditions are described in Section 3.3 of the RMP/FEIS. Precipitation moves from areas of recharge to surface waters via alluvial aquifers and on the surface during spring melt and rain storms. A portion of annual precipitation infiltrates to deeper bedrock aquifers that may contribute to springs. Springs and groundwater inputs generally occur in both bedrock and alluvial aquifers along valley bottoms. Many of the drainages have interrupted flow characteristics (i.e., some reaches are ephemeral with water moving in the alluvium and other reaches there is surface expression) as a result of groundwater recharge characteristics. There is groundwater stored in both the Carbonate Rock Aquifer Province and Basin-Fill (alluvial) Aquifers within the district. Carbonate Aquifer Systems are not extensively utilized (BLM 2007).

The RMP/FEIS summarizes water availability in the shallow alluvial aquifers (Basins) of the planning area. The perennial yield values shown in Table 3.3-1 of the RMP/FEIS were derived by the state to estimate the water in shallow alluvial aquifers that can be withdrawn without creating substantial drawdown in the water table. Perennial yield is a hydrologic concept; it generally is about equal to the estimated net annual recharge. It should be noted that values for perennial yields are subject to change, and represent estimates from Nevada Division of Water Resources which are periodically updated. Other values exist from other sources. Additional investigations of perennial yield and potential pumping effects were undertaken for water development projects and NEPA actions involving the planning area (BLM, 2012).

The committed resources represent the total volume of permitted, certificated, and vested groundwater rights recognized by the Nevada Division of Water Resources in each basin. Groundwater quality in shallow alluvial aquifers of the planning area is highly variable. Evapotranspiration by phreatophytic plant communities accounts for a significant consumption of groundwater recharge resources. Consumptive use of soil moisture and groundwater by plant transpiration is one of the major factors affecting water availability in the planning area (BLM 2007).

Surface Water

Group A: The Duckwater Creek drainage bisects the parcel. The soil within the parcel is a very strongly alkaline sandy loam which drains moderately well.

Group B: The soils in the parcels are shallow calcareous loam to a loamy fan which drains well.

Group C: Most of the soils are shallow calcareous loam, calcareous slope, or calcareous hill. There is a small percentage of coarse silty to coarse gravelly loam. All these soil types drain well. The Snake and Spring Valley aquifers are underneath these parcels.

Group D: The soils within these parcels range from a shallow calcareous loam to droughty loam. All these types of soils drain well. White River Valley is located in a shallow alluvial aquifer; it has parcels within proximity to numerous private agricultural uses, springs (such as Ash, Hiko, and Crystal), and Key Pittman WMA. The Pahranaagat water system flows south into the Pahranaagat National Wildlife Refuge.

Group E: The soils range from a loamy to a shallow calcareous loam to a cobbly claypan. All these types of soils drain well.

Group F: The soils within the parcels range from a shallow limestone slope to a limy soil to a clay pan. These types of soils drain well.

Surface water resources in the eastern Great Basin include perennial, intermittent, and ephemeral streams, marshlands and small lakes, intermittently inundated playas, and manmade impoundments. The RMP/FEIS describes surface water conditions in some detail. Salinity management tamarisk control, and soil erosion is also discussed. Most streams in the planning area are ephemeral and flow from the mountains to seep into unconsolidated deposits or are diverted for irrigation. Map 3.3-1 in the RMP/FEIS shows the approximate location of perennial streams and mapped springs within the overall boundary of the planning area. The classification of waters in White Pine, northeastern Nye, and Lincoln counties (Nevada Administrative Code 445A.124 to 445A.127) are presented in Table 3.3-2 of the RMP/FEIS. This table shows that many reservoirs are Class B or Class C waters, while most streams in the planning area are Class A waters. See the RMP/FEIS for definitions.

Table 3.3-1 of the RMP/FEIS shows the groundwater demands and estimated perennial yield in the planning area (per hydrographic areas). Many of these hydrographic areas are designated basins, indicating that the Nevada Division of Water Resources would closely monitor future groundwater use and may not issue new groundwater permits (BLM 2007).

3.3.4. Fish and Wildlife Affected Environment

The Assessment Area includes 6 groups of parcels across the Ely District. These parcels are expected to provide habitat for a large number of wildlife species. Many species of birds, mammals, reptiles, amphibians, fish and invertebrates may find any one of the proposed lease areas suitable habitat. A number of parcels proposed for leasing fall in areas of special importance to one or more wildlife species, such as crucial winter range for mule deer. These areas may have special stipulations concerning drilling activities, which will have to be followed by anyone proposing to develop specific sites (Appendix B).

3.3.4.1. Special Status plant and animal species other than those listed as Threatened or Endangered Affected Environment

BLM Manual 6840 entitled Special Status Species Management states BLM special status species are those that 1) are listed or proposed for listing as endangered or threatened under the Endangered Species Act (ESA), and (2) species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA, which are designated as Bureau Sensitive by the State Director(s). Additionally, all federal candidate species, proposed species and delisted species in the 5 years following delisting will be conserved as Bureau sensitive species. Those species that are currently listed or proposed for listing under the ESA are analyzed below. See Appendix D for a complete list of all Special Status Species that have the potential to be affected indirectly by oil and gas leasing.

- Parcels NV-14-12-168 and -171 contain occupied Las Vegas buckwheat (*Eriogonum corymbosum* var. *nilesii*) habitat. This is a BLM sensitive plant species as well as a federal candidate. Recent genetic studies have shown this particular population to be unique. This Toquop population of Las Vegas buckwheat is being looked at very closely by USFWS and may be proposed to be federally listed under the ESA, based upon BLM regulatory actions in this area. Per the BLM Manual 6840, Special Status Species Management, BLM shall, “implement measures to conserve these species ... promote their conservation and reduce the likelihood and need for such species to be listed pursuant to ESA.” The current RMP says these lands are open to leasing, but recent science shows concern for this population due

to its unique genetics. One of the threats identified by USFWS for this species is inadequacy of existing regulatory mechanisms to protect this species.

- The Greater Sage-Grouse (*Centrocercus urophasianus*) has recently been determined by the Fish and Wildlife Service (FWS) that the species is “warranted for listing but precluded by species of higher priority” and it was categorized as a Candidate species. The BLM is emphasizing conservation measures to promote sustainable Greater Sage-Grouse populations and conservation of its habitat. As a result, all lands within Preliminary Primary Habitat (PPH) and Preliminary General Habitat (PGH) have been removed from consideration for the December 2014 Oil and Gas Lease Sale. Additionally, there are no parcels that are within four miles of any currently known Sage-Grouse leks.
- Parcels NV-14-12-147, 148, 149, 150, 151, 153 and 154 contain or are within one mile of populations of the Great Basin fishhook cactus (*Sclerocactus pubispinus*) which, in addition to being a BLM sensitive species in Nevada, is also a cactus species and thus subject to Nevada state regulation NRS 527.060.
- Parcels NV-14-12-120 and 123 contain or are within one mile of populations of Needle Mountain milkvetch (*Astragalus eurylobus*).
- Parcel NV-14-12-031 contains a population of Watson’s goldenbush (*Ericameria watsonii*).
- Parcels or portions of parcels in Group D may contain the following BLM special status species: sheep fleabane (*Erigeron ovinus*), rock purpusia (*Ivesia arizonica* var. *saxosa*), dark kangaroo mouse (*Microdipodops megacephalus*), St. George blue-eyed grass (*Sisyrinchium radicum*), golden eagle (*Aquila chrysaetos*), and western pipistelle (*Pipistrellus hesperus*). Numerous parcels in Group D overlap the Hiko Range, which contains year-round desert bighorn sheep (*Ovis canadensis nelsoni*) habitat.
- Parcels or portions of parcels in Group F may contain the following BLM special status species: desert bighorn sheep (*Ovis canadensis nelsoni*), banded Gila monster (*Heloderma suspectum cinctum*), and golden eagle (*Aquila chrysaetos*).
- Parcels NV-14-12-001, 006, 007, 010, 011, 013, 014, 017, 019, 020, 022, 027, 030, 031, 032, 036, 039, 040, 041, 042, 044, 046, 050, 053, 056, 059, 060, 063, 066, 068, 072, 074, 076, 077, 083, 084, 085, 086, 087, 090, 093, 094, 096, 097, 098, 101, 102, 106, 109, 110, 112, 113, 127, 128, 138, 139, 140, 143, 144, 145, 146, 148, 149, 151, 153, 154, 167, 170, 173, 176 and 177 have known raptor nests within one half mile. Some raptor species such as the golden eagle (*Aquila chrysaetos*) and ferruginous hawk (*Buteo regalis*) are BLM Sensitive but all are protected under the Bald and Golden Eagle Protection Act and/or the Migratory Bird Treaty Act. This information has been obtained from NDOW and the Great Basin Bird Observatory (GBBO) and is subject to change at any time.
- Numerous groundwater dependent springs are scattered throughout the valleys and provide habitat for sensitive springsnails, such as Pahrnagat pebblesnail (*Pyrgulopsis merriami*), and Hubb’s pyrg (*Pyrgulopsis hubbsi*). Springsnails are highly sensitive to water quantity and quality changes.
- Special status raptor species, such as golden eagle (*Aquila chrysaetos*), western burrowing owl (*Athene cunicularia*), and ferruginous hawk (*Buteo regalis*) may inhabit the project area.

- Pygmy Rabbit (*Brachylagus idahoensis*) - Generally, pygmy rabbits burrow in areas of tall dense sagebrush, with loamy soils that are deep and friable enough to hold their shape. Pygmy rabbits may be found in habitats of this type in many locations throughout the District.
- Additionally there are numerous other sensitive species of birds, bats, amphibians small mammals and invertebrates inhabiting the area.

3.3.4.2. FWS Listed or Proposed for Listing Threatened, Endangered Species, and their Critical Habitat

- Desert Tortoise (Federally Threatened) –Agassiz’s desert tortoise (*Gopherus agassizii*), habitat occurs throughout the Tule Desert in all Group F parcels. A portion of the tortoise habitat in this area has been designated as critical habitat for the desert tortoise and occurs in the Tule Desert. Parcels NV-14-12-192 and -193 contain U.S. Fish and Wildlife Service (USFWS)-designated desert tortoise critical habitat within the Beaver Dam Slope Critical Habitat Unit. The Revised Recovery Plan for the Mojave Population of the Desert Tortoise recommends withdrawal of critical habitat units from mineral entry (USFWS 2011).
- Southwestern Willow Flycatcher (Federally Endangered) (SWFL)(*Empidonax traillii extimus*) – The range of this subspecies in Nevada is confined to the southern portion of the state (in areas such as the Virgin River, Meadow Valley Wash, and , Pahranaagat Valley). The southwestern willow flycatcher breeds in dense patches of riparian habitat along streams or other wetland areas, near or adjacent to surface water or saturated soils. Nesting habitat in Nevada includes willow species like coyote willow (*Salix exigua*), Gooding's willow (*Salix gooddingii*), and seep willow (*Baccharis salicifolia*). The birds also nest in other tree species including ash (*Fraxinus* spp.) and Russian olive (*Eleagnus angustifolia*). Critical habitat for the (SWFL) was proposed for the Key Pittman WMA and then did not appear in the recent final designation for critical habitat because protection at Key Pittman was thought to be adequate. This area contains the largest breeding population of SWFL in Nevada.
- Key Pittman also contains a refugia pond for the Pahranaagat roundtail chub (*Gila robusta jordani*) (endangered) near Nesbitt Lake.
- Ash Springs and its associated outflow are USFWS-designated critical habitat for White River springfish (*Crenichthys baileyi baileyi*) (endangered) and the habitat downstream from Ash Springs contains Pahranaagat roundtail chub (endangered).
- Crystal and Hiko Springs, contain critical habitat for endangered Hiko White River springfish (*Crenichthys baileyi grandis*).

These springs are located on private land, and lease parcels are proposed adjacent to the critical habitat.

- The Railroad Valley springfish (*Crenichthys nevadae*), is federally threatened under the Endangered Species Act. This species inhabits Big Warm Springs and Little Warm Springs on Duckwater Tribal Land in the Railroad Valley hydrobasin. Both springs are designated critical habitat for the Railroad Valley springfish. Threats to this species include habitat alteration, non-native aquatic species introductions, and ground water depletion (USFWS

1996). The parcel in Group A is approximately 12 to 16 miles from critical habitat for this species. Parcels in Group B are approximately 36 miles from critical habitat for this species.

- The White River spinedace (*Lepidomeda albivallis*) is listed as endangered. Flag Springs and its associated outflows are designated as critical habitat for this species as well as the historically occupied Preston Big Spring and Lund Spring. Parcels in Group A are approximately 33 miles from critical habitat for this species; parcels in Group B are approximately 12 miles from critical habitat for this species.

See Appendix B for the general notice (for all parcels) of the requirement of section 7 consultation due to the presence of a federally threatened or endangered species.

3.3.5. Socioeconomics Affected Environment

The proposed lease parcels are located within White Pine County, Lincoln County, and Nye County. The vast majority of land area in all three counties is managed by the federal government. White Pine County's total population, according to the 2010 Census, is approximately 10,030 with a population density of approximately 1.1 persons per square mile..

Lincoln County's total population, according to the 2010 Census, is approximately 5,345, with a population density of approximately 0.5 persons per square mile.

Nye County has experienced considerable population growth in the last few decades: the population of Nye County was about 9,000 people in 1980; 18,000 people in 1990; 32,000 people in 2000, and about 44,000 people in 2010 (US Census Bureau 1995, 2000, 2010). Nye County is the third-largest county in the continental United States in terms of land area. Of the 11,560,960 acres that comprise Nye County, 822,711 acres, or just over 7% of the total, is private land (Nye County 1994). As of 1990, 18% of Nye County residents made their living in mining, which includes oil and gas extraction (Nye County 1994).

The following Table demonstrates income and poverty data for residents of the three counties. Nye and Lincoln Counties exceed Nevada poverty levels.

NEVADA 2013 Annual Not Adjusted Unemployment Rates			
Area	Unemployment Rate		
Nevada	9.0		
Lincoln	12.3		
Nye	11.9		
White Pine	7.2		
2012 Persons below Poverty Level		2012 Median Household Income	
Nevada	14.2%	\$54,083	Nevada
Lincoln	15.9%	\$39,293	Lincoln
Nye	20.1%	\$39,150	Nye
White Pine	13.9%	\$46,505	White Pine
U.S. Census			

3.3.6. Noxious and Invasive Weeds

Noxious and invasive species are documented within the parcel areas. See the attached Weed Risk Assessment in Appendix H for a list of specific species in these areas.

3.3.7. Lands with Wilderness Characteristics

On June 1, 2011, the Secretary of the Department of the Interior issued a memorandum to the BLM Director that in part affirms BLM's obligations relating to wilderness characteristics under Sections 201 and 202 of the Federal Land Management Policy Act. The BLM released Manuals 6310 and 6320 in March 2012, which provide direction on how to conduct and maintain wilderness characteristics inventories and provides guidance on how to consider whether to update a wilderness characteristics inventory.

The primary function of an inventory is to determine the presence or absence of wilderness characteristics. An area having wilderness characteristics is defined by:

- Size - at least 5,000 acres of contiguous, roadless federal land,
- Naturalness, and
- Outstanding opportunities for solitude or primitive and unconfined types of recreation.
- The area may also contain supplemental values (ecological, geological, or other features of scientific, educational, scenic, or historical values).

The Nevada BLM published the original draft wilderness review in 1979, and issued the intensive wilderness inventory decision in 1980. At that time, the inventory found wilderness character present in five units that overlap the proposed oil and gas parcels: Mormon Mountains (inventory unit number NV-050-0161), Table Mountain (NV-040-197), East Pahranaagat (NV-050-0131), South Pahroc/Hiko (NV-050-0132) and Worthington Mountain (NV-040-242). Portions of each became Wilderness Study Areas in 1980. Later, in 2004, the Mormon Mountains, South Pahroc Range, and Worthington Mountains were designated as wilderness. At that time, Table Mountain WSA was released.

In 2011, the Ely District Office BLM began updating the lands with wilderness characteristics (LWC) inventory on a project-by-project basis until there is a land use plan revision. The project area has had an inventory update. The one exception is oil and gas parcel NV-14-12-018 which overlaps about 80 acres at the far northeastern corner of inventory unit NV-040-0112. Inventory unit NV-040-0112 (approximately 79,500 acres) did not receive an inventory update at this time. The original inventory found wilderness characteristics lacking in the unit. If wilderness characteristics were to be found present in the unit today, full development of the oil and gas parcel would only affect a very small portion of the unit.

Of the 193 proposed Oil & Gas lease parcels, 59 overlap 13 units of lands with wilderness characteristics. Of this, 11 of the inventory units were found to possess wilderness characteristics on their own merits. The other two units inherited the outstanding opportunities of the adjacent wilderness (Mt. Irish and Mormon Mountains Wildernesses). There has not been a land use plan amendment to determine if or how these LWC units would be preserved to protect the wilderness characteristics. The following LWC units cover a total of 32,694 acres. These units lie within parcel areas C, D, E and F.

Table 3.2. Units containing LWC which overlap oil and gas parcels

Wilderness characteristics inventory unit number	Acres	Natural	Solitude	Recreation	Supplemental Value	LWC present?
NV-040-242-2	Yes 32,694	Yes	Yes	Yes	No	Yes*
NV-040-243-3-2013	Yes 72,228	Yes	Yes	Yes	Yes	Yes
NV-040-197-2-2011	Yes 56,709	Yes	Yes	Yes	many canyons, vistas, geologic features	Yes
NV-040-0180-1-2011	Yes 35,519	Yes	Yes	No	yes - geologic formations, arch, scenic hills	Yes
NV-040-184A-1-2012	Yes 11,498	Yes	Yes	Yes	scenic	Yes
NV-040-184A-2-2012	Yes 6,687	Yes	Yes	Yes	scenic	Yes
NV-040-0120-1-2012	Yes 9,106	Yes	Yes	Yes	Yes — historic	Yes
NV-040-0161-4-2012	Yes 416	Yes	Yes	Yes	No	Yes
NV-040-0122-2-2012	Yes 19,870	Yes	Yes	Yes	No	Yes
NV-040-0161-3-2012	Yes 7,232	Yes	Yes	Yes	No	Yes
NV-040-249D-1-2013	Yes 16,570	Yes	Yes	Yes	No	Yes*
NV-040-0121-3b-2012	Yes 11,521	Yes	Yes	Yes	Yes – Cultural, educational & scientific value	Yes
NV-040-0107-1	Yes 33,205	Yes	Yes	Yes	Archaeological	Yes

* unit possesses wilderness characteristics based on the adjacent designated wilderness

3.3.8. Soil Resources Affected Environment

For the purposes of this EA the Affected Environment for the proposed oil and gas leasing area is the same as that described in Section 3.4 of the RMP/FEIS (BLM 2007).

3.3.9. Visual Resource Management Affected Environment

The proposed parcels nominated for lease fall within Visual Resource Management (VRM) Classes II, III, and IV. Visual resources are identified through the Visual Resource Management inventory. This inventory consists of a scenic quality evaluation, sensitivity level analysis and a delineation of distance zones. Based on these factors, BLM-administered lands are placed into four visual resource inventory classes: VRM Class I, II, III and IV. Class I and II are the most sensitive, Class III represents a moderate sensitivity and Class IV is of the least sensitivity (see table below). VRM classes serve two purposes: (1) as an inventory tool that portrays the relative value of visual resources in the area, and (2) as a management tool that provides an objective for managing visual resources.

Group A parcels are located within VRM Class III. The Blue Eagle Wilderness Study Area is located to the southeast.

Group B consists of VRM Class II and III with the majority of parcels located within Class III. This area is located adjacent to Ely Shoshone Tribal lands.

Group C consists of VRM Classes II, III, and IV with the majority of parcels located within Class IV. Mt. Wheeler, located in Great Basin National Park, can be viewed from the southwest parcels. The Highland Ridge Wilderness is to the north and the Fortification Range Wilderness is to the west.

Group D consists of VRM Classes II, III, and IV with the majority located within Class III. Coal Valley and south Garden Valley can be seen looking north from the west side of this area. Weepah Spring Wilderness lies to the north of this Group. Big Rocks Wilderness and South Pahroc Wilderness are in the eastern half of this group. The middle portion of this area lies in Pahrangat Valley which includes the Key Pittman Wildlife Management Area. The west side parcels are bound by the Mt. Irish Wilderness and Worthington Mountains Wilderness to the northwest. *City*, a landscape-scale art form on private lands, is approximately 12 miles north of the western parcels in this Group.

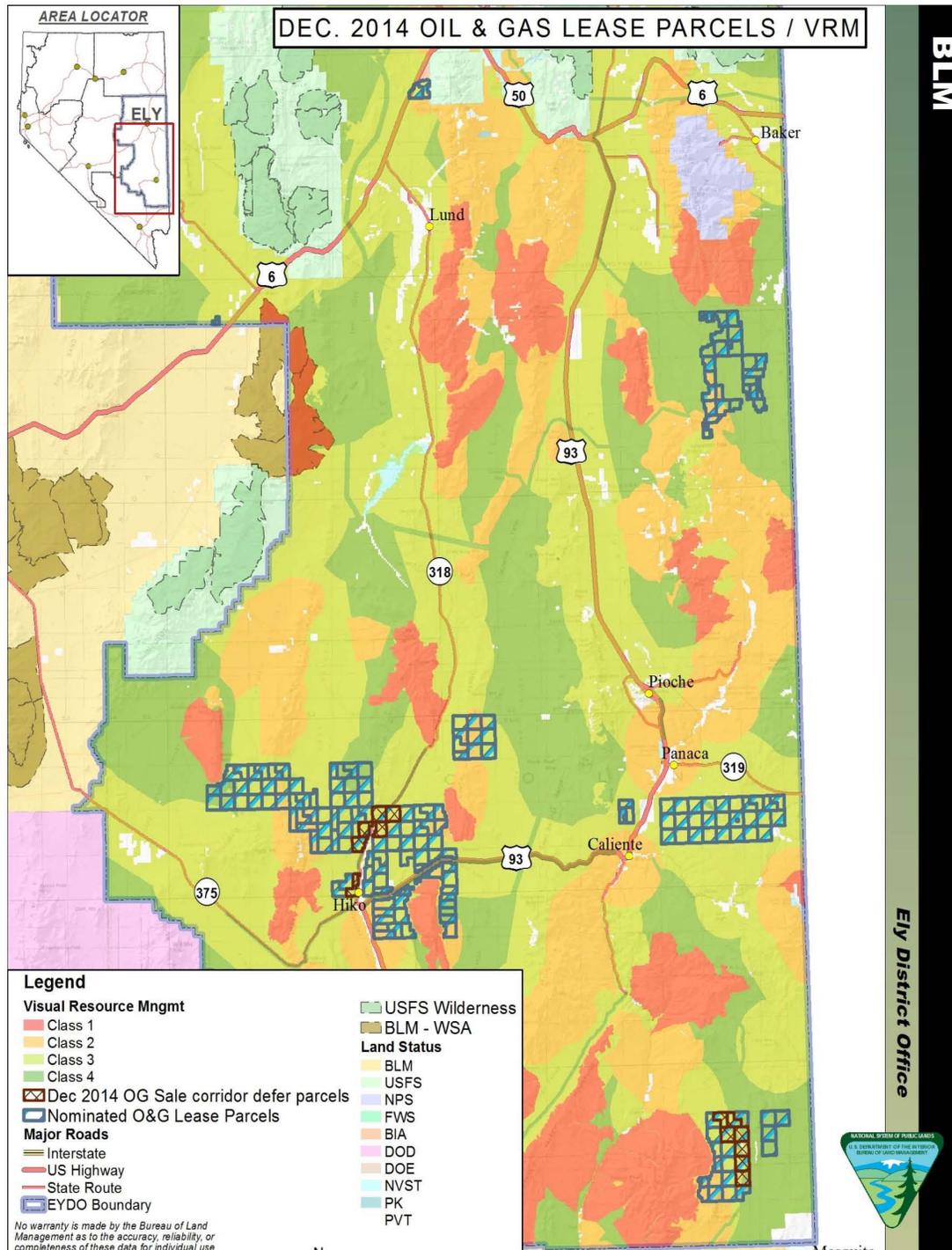
Group E consists of VRM Classes III and IV with the majority of parcels located within VRM Class III. The parcels lie predominately on the east side of Highway 93, with three parcels located on the west side. The town of Caliente is to the west and the town of Panaca is to the north, with Cathedral Gorge State Park also being to the north. Tunnel Spring Wilderness is to the southeast.

Group F consists of VRM Classes II, III, and IV somewhat evenly spread between each of the classes. These parcels are located in the remote southeastern edge of the District, the Clover Mountains Wilderness is to the west and Mormon Mountains Wilderness to located southwest.

Table 3.3. VRM Classification Objectives

VRM CLASS	Visual Resource Objective	Change Allowed (Relative Level)	Relationship to the Casual Observer
Class I	Preserve the existing character of the landscape. Provide for natural ecological changes; however it does not preclude very limited management activity.	Very Low	Activities must not attract attention.
Class II	Retain the existing character of the landscape. The level of change to the characteristic landscape should be low.	Low	Activities may be seen, but should not dominate the view.
Class III	Partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate	Moderate	Activities may attract attention, but should not dominate the view.
Class IV	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.	High	Activities may attract attention, may dominate the view.

The Map below provides the location of these inventoried VRM Classes, relative to the proposed parcels.



Map 3.1. VRM Classes for the Lease Sale

3.3.10. Vegetative Resources (including Wetland/Riparian Vegetation) Affected Environment

For the purposes of this EA the Affected Environment for the proposed oil and gas leasing area is the same as that described in Section 3.5 of the RMP/FEIS (BLM 2007).

3.3.11. Wild Horse

The Ely District Office (EYDO) administers 6 Herd Management Areas (HMAs), land areas designated through the Land Use planning process for the long term management of wild horses.

The EYDO also has horses in 16 Herd Areas (HAs) areas which are areas that do not provide sufficient habitat or resources to sustain healthy populations (Ely RMP, page 47).

Parcels 105-114 are within the Silver King HMA, parcels 140-142 and 146 are partially or completely within the Eagle HMA.

Parcels 118, 119, 121-126, 134, and 137 are partially or completely within the Little Mountain HA, parcels 129, 130, 132, 133, 135, 136, 174—182 are within the Miller Flat HA, and parcels 115, 116, and 117 are partially or completely within the Highland Peak HA.

3.3.12. Land Uses & Access

Three of the proposed lease parcels overlap private property and are considered split-estates (Parcels 159, 162 and 165, totaling 7700 acres in Lincoln County). This is a case where the subsurface minerals are federally owned and the private ownership is limited to the surface of the land. Many of the parcels would require a right-of-way (ROW) in order to access the lease parcels. Some parcels include pre-existing land use authorizations such as grants, leases, permits, and withdrawals. The table below provides a summary of the land use authorizations in the lease area.

Table 3.4. Land Use Authorziation Summary

Lease Parcel	ROW Case File	ROW Holder	ROW Description
NV-14-12-009	N-4874	Mt Wheeler Power	25ft Distribution
NV-14-12-011	N-88977	Lincoln County Water District	Water Monitoring
NV-14-12-012	N-88977	Lincoln County Water District	Water Monitoring
NV-14-12-017	N-88977	Lincoln County Water District	Water Monitoring
NV-14-12-020	N-88977	Lincoln County Water District	Water Monitoring
NV-14-12-023	N-88977	Lincoln County Water District	Water Monitoring
NV-14-12-027	N-88977	Lincoln County Water District	Water Monitoring
NV-14-12-029	N-88977	Lincoln County Water District	Water Monitoring
NV-14-12-032	N-57490	Lincoln County	60 ft. Road ROW
NV-14-12-045	N-35536	Lincoln County Commissioners	60 ft. Road ROW

Lease Parcel	ROW Case File	ROW Holder	ROW Description
NV-14-12-047	N-35536	Lincoln County Commissioners	60 ft. Road ROW
NV-14-12-046	N-74959	Lincoln County Telephone Co	Buried Fiber Optic
	N-88046	Bureau of Land Management	Disposal Lands
	Pending	Pending	LCWD Corridor
NV-14-12-048	N-35536	Lincoln County Commissioners	Road ROW
NV-14-12-050	N-35536	Lincoln County Commissioners	Road ROW
	N-88046	Bureau of Land Management	Disposal Lands
	Pending	Pending	LCWD Corridor
	CC-23426	NDOT	200ft Federal Aid Highway ROW
NV-14-12-055	Pending	Pending	LCWD Corridor
	N-11748	NDOT	200ft Federal Aid Highway ROW
NV-14-12-059	Pending	Pending	LCWD Corridor
	N-11748	NDOT	200ft Federal Aid Highway ROW
NV-14-12-060	Pending	Pending	LCWD Corridor
	N-11748	NDOT	200ft Federal Aid Highway ROW
	N-74959	Lincoln County Telephone District	Buried Fiber Line
NV-14-12-063	Pending	Pending	LCWD Corridor
	N-11748	NDOT	200ft Federal Aid HighwayROW
	N-74959	Lincoln County Telephone District	Buried Fiber Line
NV-14-12-090	N-6956	NDOT	Material Site & 60ft Access Road
	N-12182	Lincoln County Power District 1	40ft Powerline ROW
NV-14-12-099	N-49861	Nellis AFB	Communication Facility
NV-14-12-103	N-61326	Mt. Wheeler Power	24ft Powerline ROW
NV-14-12-104	N-18286	NDOT	Federal Aid Highway ROW
	N-7769	Forest Service	60 Ft. Access Road
	N-45076	NDOT	Federal Aid Highway ROW
	N-66758	SBC/NV Bell	20ft Communication Cable
	N-17924	Mt Wheeler Power	60ft Powerline ROW
	N-61326	Mt Wheeler Power	24ft Powerline ROW
NV-14-12-105	N-77880	DOE	100ft Corridor
NV-14-12-108	N-77880	DOE	100ft Corridor
NV-14-12-118	N-77880	DOE	100ft Corridor
NV-14-12-123	N-77880	DOE	100ft Corridor
NV-14-12-126	N-77880	DOE	100ft Corridor
NV-14-12-130	N-77880	DOE	100ft Corridor
NV-14-12-131	N-77880	DOE	100ft Corridor
NV-14-12-132	N-77880	DOE	100ft Corridor
NV-14-12-133	N-77880	DOE	100ft Corridor
NV-14-12-136	N-61494	Nellis AFB	Communication Facility

Lease Parcel	ROW Case File	ROW Holder	ROW Description
NV-14-12-147	N-84333	SNWA	Water Monitoring Well
NV-14-12-151	N-84333	SNWA	Water Monitoring Well
NV-14-12-154	N-40106	GS	Water Monitoring Well
NV-14-12-156	Pending	Pending	LCWD Corridor
NV-14-12-157	Pending	Pending	LCWD Corridor
	N-66087	LCWD	Water Monitoring Well
	N-83110	LCWD	Water Monitoring Well
	N-77486	Toquop	30ft Powerline ROW
NV-14-12-158	N-80825	LCWD	Water Monitoring Well
	N-83110	LCWD	Water Monitoring Well
NV-14-12-159	Pending	Pending	LCWD Corridor
NV-14-12-161	N-77486	Toquop	30ft Powerline ROW
NV-14-12-162	Pending	Pending	LCWD Corridor
NV-14-12-163	N-77486	Toquop	30ft Powerline ROW
NV-14-12-164	Pending	Pending	LCWD Corridor
	N-77486	Toquop	30ft Powerline ROW
	N-78413	Lincoln County Commissioners	Monitoring Well
	N-83110	LCWD	Water Monitoring Well
NV-14-12-165	Pending	Pending	LCWD Corridor
	N-79734	LCWD	Water Collection/ Transmission
NV-14-12-166	N-79734	LCWD	Water Collection/ Transmission
	N-77486	Toquop	30ft Powerline ROW
NV-14-12-167	N-42723	Nellis AFB	Communication Facility
NV-14-12-168	Pending	Pending	LCWD Corridor
	N-77486	Toquop	30ft Powerline ROW
	N-79734	LCWD	Water Collection/ Transmission
NV-14-12-169	N-79734	LCWD	Water Collection/ Transmission
	N-77486	Toquop	30ft Powerline ROW
NV-14-12-170	N-79734	LCWD	Water Collection/ Transmission
NV-14-12-171	N-79734	LCWD	Water Collection/ Transmission
NV-14-12-174	N-63221	Level 3 Communications	15ft buried fiber cable
	N-77880	DOE	100ft Corridor
NV-14-12-175	N-77880	DOE	100ft Corridor
NV-14-12-176	N-77880	DOE	100ft Corridor
NV-14-12-177	N-77880	DOE	100ft Corridor
NV-14-12-178	N-77880	DOE	100ft Corridor
	N-42771 A	UPRR	100ft Railroad Corridor
	CC-0360	LA & SLRR Co	100ft Railroad Corridor
NV-14-12-179	N-77880	DOE	100ft Corridor
NV-14-12-180	N-77880	DOE	100ft Corridor
NV-14-12-184	N-90903	LCRD	60ft Road ROW
NV-14-12-185	N-90903	LCRD	60ft Road ROW

The Ely District Office recommends that all or part of the following parcels be deferred and permanently removed from this sale list and all future sale lists: NV-14-12-046, NV-14-12-050, NV-14-12-055, NV-14-12-059, NV-14-12-060, NV-14-12-063, NV-14-12-156,

NV-14-12-157, NV-14-12-159, NV-14-12-160, NV-14-12-162, NV-14-12-165, and NV-14-12-168. The Lincoln County Conservation Recreation Development Act (LCCRDA) P.L. 108-424 was signed into law in 2004 and designated the LCCRDA and LCWD corridors. The corridors are withdrawn from all forms of entry, appropriation, and disposal under the public laws; are withdrawn for location, entry, and patent under the mining laws; and are withdrawn from operation of the mineral leasing and geothermal leasing laws. The corridor is 0.5 miles in width.

The Ely District Office recommends that the following parcels have a Notice be provided to the lessee on the authorized rights of current users: NV-14-12-050, NV-14-12-063, NV-14-12-090, and NV-14-12-104. These parcels overlaps Nevada Department of Transportation federal Highway & Material Sites. If these parcels are sold the lessee accepts this lease subject to the right of the federal Highway Administration and the State Department of Transportation and agrees that its use will not interfere with the free flow of traffic, impair the full use and safety of the highway, or be inconsistent with the provision of Title 23 of the United States Code:

The Ely District recommends that the following parcels (in whole or in part) have a Notice provided to the lessee on the authorized corridor withdrawal: NV-14-12-105, NV-14-12-108, NV-14-12-118, NV-14-12-123, NV-14-12-126, NV-14-12-130, NV-14-12-131, NV-14-12-132, NV-14-12-133, NV-14-12-174, NV-14-12-175, NV-14-12-176, NV-14-12-177, NV-14-12-178, NV-14-12-179, and NV-14-12-180. These parcels fall within the Department of Energy (DOE) Corridor. The DOE corridor was signed under Public Land Order (PLO) No. 7653, 70FR 76854-76858, on December 28, 2005. The corridor designation withdrew approximately 308,600 acres of public lands from surface entry and mining. The corridor is 1 mile wide and expires December 2015. A Notice will be provided of No Surface Occupancy until December 2015 in the Appendix B.

The Ely District Office recommends that the following parcels (in whole or in part) be deferred for one year: NV-14-12-046 and NV-14-12-050. The lands were identified in the approved Ely District Resource Management Plan for disposal. The lands identified in the approved plan upon signature of the Record of Decision will be withdrawn from all forms of entry, appropriation, and disposal under the public laws; are withdrawn for location, entry, and patent under the mining laws; and are withdrawn from operation of the mineral leasing and geothermal leasing laws. Once the lands are disposed of by sale or an election by the County to obtain under the Recreation and Public Purposes Act, the withdrawal will no longer apply.

Chapter 4. Environmental Effects:

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4.1. Introduction

Approximately two (2) million of the 10 million acres open to fluid mineral leasing in the Ely District are currently leased. This leaves 80% of the land available for leasing. Therefore, based on current leasing and development trends for the Ely District, it is expected that only 1,680 acres of the 8,400 acres (20%) potential disturbance estimated in the RFD scenario for oil and gas would be disturbed. If one considers the increase in possible oil and gas production potential by the advancements made in formation stimulation, then there could be the potential for an additional 10% to 25% increase in surface disturbance over the next ten years associated with additional well fields and all the additional equipment and water needed to perform such operations. A 25% increase in surface disturbance would increase the potential surface disturbance from 1,680 acres to 3,780 acres, which is still within the RFD scenario described in the RMP/FEIS.

Approximately 8,400 acres, as estimated in the RFD scenario would be disturbed by oil and gas exploration activities. Oil exploration and production activities involve the potential for soil compaction, erosion, excavation, and losses of soil quality in these areas. The effects of surface disturbance on soils vary based on soil type, texture, moisture content, depth, and slope. Vegetation removal for roads and well pad construction can alter existing drainage patterns and contribute to accelerated gully and rill erosion, especially on steeper slopes. Soil compaction would be expected on areas utilized by heavy equipment for oil and gas exploration, development, and production. Compaction typically is greatest when soil moisture is high and where heavy equipment activities are concentrated. Soil compaction reduces vegetation productivity because it decreases root penetration and water infiltration.

Within the State of Nevada, a Memorandum of Understanding for exploration and mining reclamation exists between the BLM and the Nevada Division of Environmental Protection. Reclamation permits are supported by site-specific reclamation plans which are submitted and maintained according to an agency review and approval process. If approved, a permit defines post-project land uses, growth media salvage and replacement, seedbed amendments and erosion controls, site drainage, public safety provisions, roads, recontouring and revegetation practices, post-treatment monitoring, and other site restoration considerations according to best management practices. As a result, and given the comparatively small extent of mineral exploration and extraction acreage in the Assessment Area, the effects of these activities on soil resources are expected to be minimal.

These impacts would be mitigated through the use of management actions and best management practices and other conditions of approval imposed during the permitting process on a specific site-by-site basis.

4.2. Air Quality & Climate Change

4.2.1. Proposed Action Effects on Air Quality & Climate Change

There are no impacts to air quality associated with leasing, since there isn't any surface disturbance. However, there is a potential for indirect impacts associated with lease development activities that could potentially affect air quality. Those potential indirect impacts are analyzed in this EA. Air resources include air quality, air quality related values (AQRVs), and climate change. As part of the planning and decision making process, BLM considers and analyzes the potential effects of BLM and BLM-authorized activities on air resources.

The EPA air quality index (AQI) is an index used for reporting daily air quality (<http://www.epa.gov/oar/data/geosel.html>) to the public. The index tells how clean or polluted an area's air is and whether associated health effects might be a concern. The EPA calculates the AQI for five criteria air pollutants regulated by the Clean Air Act (CAA): ground-level ozone, particulate matter, carbon monoxide, sulfur dioxide, and nitrogen dioxide. For each of these pollutants, EPA has established NAAQS to protect public health. An AQI value of 100 generally corresponds to the primary NAAQS for the pollutant. The following terms help interpret the AQI information:

- **Good** – The AQI value is between 0 and 50. Air quality is considered satisfactory and air pollution poses little or no risk.
- **Moderate** – The AQI is between 51 and 100. Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people. For example, people who are unusually sensitive to ozone may experience respiratory symptoms.
- **Unhealthy for Sensitive Groups** – When AQI values are between 101 and 150, members of “sensitive groups” may experience health effects. These groups are likely to be affected at lower levels than the general public. For example, people with lung disease are at greater risk from exposure to ozone, while people with either lung disease or heart disease are at greater risk from exposure to particle pollution. The general public is not likely to be affected when the AQI is in this range.
- **Unhealthy** – The AQI is between 151 and 200. Everyone may begin to experience some adverse health effects, and members of the sensitive groups may experience more serious effects.
- **Very Unhealthy** – The AQI is between 201 and 300. This index level would trigger a health alert signifying that everyone may experience more serious health effects.

AQI data show that there is little risk to the general public from air quality in the analysis area (Table 4.2.1).

Table 4.1. US EPA – Air Data Air Quality Index Report (2012)

County*	# Days in Period	# Days Rated Good or No Data	# Days Rated Moderate	# Days Rated Unhealthy for Sensitive Groups	# Days Rated Unhealthy	# Days Rated Very Unhealthy
White Pine	322	242	76	4	0	0
Nye	366	344	24	1	0	0

* Lincoln County Data unavailable.

(<http://www.epa.gov/airdata/> accessed August 19, 2013)

While the act of leasing the parcels would produce no substantial air quality effects, potential future development of the lease could lead to increases in area and regional emissions. Further, the timing, construction and production equipment specifications and configurations, and specific locations of activities are also unforeseeable at this time. Additional air effects will be addressed in a subsequent analysis when lessees file an APD. All proposed activities including, but not limited to, exploratory drilling activities would be subject to applicable local, state, and federal air quality laws and regulations.

Any subsequent activity authorized after APD approval could include soil disturbances resulting from the construction of well pads, access roads, pipelines, power lines, and drilling. Any disturbance is expected to cause increases in fugitive dust and potentially inhalable particulate matter in the project area and immediate vicinity. Particulate matter, mainly dust, may become airborne when drill rigs and other vehicles travel on dirt roads to drilling locations. Air quality may also be affected by exhaust emissions from engines used for drilling, transportation, gas processing, compression for transport in pipelines, and other uses. These sources will contribute to potential short and long term increases in the following criteria pollutants: carbon monoxide, ozone, nitrogen dioxide, and sulfur dioxide. Non-criteria pollutants (for which no national standards have been set) such as carbon dioxide, methane, nitrous oxide, air toxics (e.g., benzene), and total suspended particulates (TSP) could also be emitted.

During exploration and development, 'natural gas' may at times be flared and/or vented from conventional, coal bed methane, and shale wells. The gas is likely to contain volatile organic compounds that could also be emitted from reserve pits, produced water disposal facilities, and/or tanks located at the site.

Mitigation

The BLM encourages industry to incorporate and implement BMPs to reduce impacts to air quality by reducing emissions, surface disturbances, and dust from field production and operations. Measures may also be required as COAs on permits by either the BLM or the applicable state air quality regulatory agency. The BLM also manages venting and flaring of gas from federal wells as described in the provisions of Notice to Lessees (NTL) 4A, Royalty or Compensation for Oil and Gas Lost.

Some of the following measures could be imposed at the development stage:

- flaring or incinerating hydrocarbon gases at high temperatures to reduce emissions of incomplete combustion;
- emission control equipment of a minimum 95 percent efficiency on all condensate storage batteries, dehydration units, pneumatic pumps, produced water tanks;
- vapor recovery systems where petroleum liquids are stored;
- tier II or greater, natural gas or electric drill rig engines;
- secondary controls on drill rig engines;
- no-bleed pneumatic controllers (most effective and cost effective technologies available for reducing VOCs);
- gas or electric turbines rather than internal combustion engines for compressors;
- NOx emission controls for all new and replaced internal combustion oil and gas field engines;
- water dirt and gravel roads during periods of high use and control speed limits to reduce fugitive dust emissions;
- interim reclamation to re-vegetate areas of the pad not required for production facilities and to reduce the amount of dust from the pads.

- co-located wells and production facilities to reduce new surface disturbance;
- directional drilling and horizontal completion technologies whereby one well provides access to petroleum resources that would normally require the drilling of several vertical wellbores;
- gas-fired or electrified pump jack engines;
- velocity tubing strings;
- cleaner technologies on completion activities (i.e. green completions), and other ancillary sources;
- centralized tank batteries and multi-phase gathering systems to reduce truck traffic;
- forward looking infrared (FLIR) technology to detect fugitive emissions;
- air monitoring for NO_x and ozone; and
- methane emission reduction using the EPA Natural Gas STAR Program.

In the context of the oil sector, additional mitigation measures to reduce GHG emissions include methane reinjection and CO₂ injection.

Furthermore, the EPA is expected to promulgate new federal air quality regulations that would require GHG emission reductions from many oil and gas sources.

4.2.2. No Action Alternative Effects on Air Quality & Climate Change

The No Action Alternative would not impact air quality or climate change in the area. Activities on current leased parcels adjacent to the proposed parcels would still be permitted.

4.3. Cultural Resources (including Heritage Special Designations) Environmental Effects

4.3.1. Proposed Action Effects on Cultural Resources

The potential direct impacts from reasonably foreseeable oil and gas exploration/development would be prevented through the Section 106 process. Ground disturbing activity requires compliance with Section 106 of National Historic Preservation Act (NHPA) and the State Protocol. The aforementioned documents require Class III (30 meter transects) inventory of all proposed project areas, recordation and evaluation of sites and evaluation of project effects on National Register eligible sites. Avoidance of eligible sites (those meeting the National Register of Historic Places criteria), Traditional Cultural Properties, or sacred sites is the preferred mitigation choice. If avoidance is not possible, then the most common form of mitigation is through data collection and excavation. The BLM may require modification to exploration or development to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized, or mitigated.

Subsequent activities on leased parcels may additionally be subject to Section 106 of the NHPA. Any party proposing oil and gas exploration or development on leased parcels shall be responsible for all costs related to conducting Section 106 of the NHPA. The successful leasing of a parcel does not guarantee the feasibility of future oil and gas exploration or development because of those costs.

Although the White River Narrows Archaeological District (Group D) does not have nominated parcels contained within its borders, access roads to and from parcels that intersect with WRN will only be allowed if it is determined that maintenance will not have an effect on the setting and features that placed this site on the National Register of Historic Places. New roads will not be permitted. These stipulations are within the Ely Resource Management Plan SD-7(1).

Mt. Irish ACEC borders nominated parcels 27, 29 & 30 (Area D) and will not be directly affected by exploration/development. However, the indirect effect of exploration/development would potentially be a visual impact and adverse effect. The visual characteristics (Class II & III visual rating) that contribute to the uniqueness of the ACEC may be affected and would need to be assessed during the Section 106 process for any exploration/development.

Pahroc Rock Art ACEC borders nominated parcels 85 & 88 (Area D) and will not be directly affected by exploration/development. However, the indirect effect of exploration/development would potentially be a visual impact and adverse effect. The visual characteristics (Class II & III visual rating) that contribute to the uniqueness of the ACEC may be affected and would need to be assessed during the Section 106 process for any exploration/development.

Section 800.5 of the 36 CFR Part 800 specifically addresses an adverse effect as “introduction of visual, atmospheric or audible elements that diminish the integrity of the property’s significant historic features”. This tenet may be applicable to any eligible property.

4.3.2. No Action Alternative Effects on Cultural Resources

The No Action Alternative would not impact cultural resources in the area. Under the No Action Alternative, the parcels would not be leased. The cultural resources would continue to be managed as they currently are, mitigation would not be required and visual impacts would not occur.

4.4. Water Resources Environmental Effects

4.4.1. Proposed Action Effects on Water Resources

As previously stated, the sale of parcels and issuance of oil and gas leases is strictly an administrative action. The act of offering, selling, and issuing federal oil and gas leases does not produce impacts to water quality and surface water. Nominated lease parcels will be reviewed against the Ely RMP, and stipulations are attached to mitigate any known environmental or resource conflicts that may occur on a given lease parcel. Potential on-the-ground impacts would not occur until a lessee applies for and receives approval of their Application for Permit to Drill (APD) to drill on the lease. Environmental consequences for water resources are discussed in Section 4.36 of the RMP/FEIS (BLM 2007).

The BLM cannot determine at the leasing stage whether or not a proposed parcel will actually be sold, or if it is sold and issued, whether or not the lease would be explored and developed.

Consequently, the BLM cannot determine exactly where a well or wells may be drilled or what technologies that may be used to drill and produce wells, so the impacts listed below are general, rather than site-specific.

Additional NEPA analysis would be conducted prior to approval of an APD and would provide site-specific analysis for the well location. Exploration and development activities in Groups A through F, would be assessed on a site-specific and wellhead basis for environmental impacts and water quality impacts before they would be approved. Appropriate stipulations in compliance with the Ely RMP and specifically Objective WR-2 will be applied to leases to address determined vulnerability.

For the purposes of this EA, less than 5% of the total district is subject to this lease sale. This percentage indicates that no more than 23 exploration and production wells should be expected as a result of this sale. This assumption is supported by Table 1.2 APDs Approved. Short-term (5 to 10 years) disturbance could be approximately 420 acres if development occurs.

Potential Effects, Surface Water: Subsequent development of a lease may result in long-and short term alterations to the hydrologic regime depending upon the intensity of development. Clearing, grading, and soil stockpiling activities associated with exploration and development actions could alter short term overland flow and natural groundwater recharge patterns resulting in *de minimis* risk. In risk assessment, it refers to a level of risk that is too small to be concerned with.

Runoff associated with storm events could increase sediment/salt loads in surface waters down gradient of the disturbed areas. Sediment may be deposited and stored in minor drainages where it could be readily moved downstream (within closed basins) during heavy storms. Sediment from future development activity may be carried into contained basins and sloughs where water quality classifications could be exceeded. The land-locked nature of most lease parcels and distance of other parcels to potentially impacted surface waters would restrict effect on the amount of sediment and salt contributed by lease exploration and development activities. Surface erosion may be greatest during the construction and would be controlled through integrated measures, BMPs, and appropriate mitigation measures.

The magnitude of the impacts to surface water resources from future development activities depends on the proximity of disturbances to drainage channels, slope aspect and gradient, degree and area of soil disturbance, soil character, duration of construction activities, and the timely implementation and success/failure of mitigation measures. Natural factors which attenuate the transport of sediment and salts into susceptible water bodies include water available for overland flow; the texture of the eroded material; the amount and kind of ground cover; the slope shape, gradient, and length; and surface roughness. Impacts could likely be greatest shortly after the start of construction activities and would likely decrease in time due to stabilization, reclamation, and revegetation efforts. Potential minor long-term impacts to the watershed and hydrology could continue for the life of surface disturbance from water discharge from roads, road ditches, and well pads, but would decrease once all well pads and road surfacing material has been removed and reclamation of well pads, access roads, pipelines, and powerlines has taken place. Potential short-term impacts to the watershed and hydrology from access roads that are not surfaced with impervious materials may occur and would likely decrease in time due to reclamation efforts. Limiting factors include the small area affected and implementation of integrated measures, BMPs, and appropriate mitigation measures.

Although there is a low potential for oil and gas development to contribute sediment loads to aquatic systems, there is no reasonable likelihood that siting adjustments, State and

federally-imposed sedimentation and storm-control measures, and reclamation strategies would fail to provide adequate means to effectively prevent substantive off-site transport and delivery of sediments or fluids that may impair downstream riparian or aquatic conditions in the closed basins.

Potential Effects, Groundwater:

HF is designed to change the producing formations' physical properties by increasing the flow of water and gas around the well bore. Well stimulation may also introduce chemical additives into the producing formations. This change in physical properties may open up new fractures or enhance existing fractures that could result in freshwater aquifers being contaminated with natural gas, condensate and/or chemicals used in drilling, completion and HF. Impacts to groundwater resources could occur due to failure of well integrity, failed cement, surface spills, and/or the loss of drilling, completion and hydraulic fracturing fluids into groundwater. Types of chemical additives used in drilling activities may include acids, hydrocarbons, thickening agents, lubricants, and other additives that are operator and location specific. Concentrations of these additives also vary considerably and are not always known since different mixtures can be used for different purposes in gas development and even in the same well bore. Known production zones in Nevada are generally below 3,000 feet and do not contain freshwater.

Loss of drilling fluids may occur during the drilling process due to changes in porosity or other properties of the rock being drilled through. When this occurs, drilling fluids may be introduced into the surrounding formations which could include freshwater aquifers, if it occurs when drilling the surface casing. Some or all of the produced water from these leases is likely to be injected in wells for disposal. Petroleum products and other chemicals could result in groundwater contamination through sources such as pipeline and well casing failure, well (gas and water) construction, and spills. Similarly, improper construction and management of reserve and evaporation pits could degrade ground water quality through leakage and leaching. The potential for negative impacts to groundwater caused from HF, are currently being investigated by the EPA. Authorization of the proposed projects would require full compliance with local, state, and federal directives and stipulations that relate to surface and groundwater protection.

If contamination of freshwater aquifers from oil and gas development occurs, changes in groundwater quality could impact springs and residential wells if these springs and residential wells are sourced from the same aquifers that have been affected. Potential impacts to surface water would likely be greatest shortly after the start of construction activities and would likely decrease in time due to natural stabilization, and reclamation efforts. Impacts to groundwater would be less evident and occur on a longer time scale. Construction activities would occur over a relatively short period (commonly less than a month); however, natural stabilization of the soil can sometimes takes years to establish to the degree that will adequately prevent accelerated erosion caused by compaction and removal of vegetation. Spills or produced fluids (e.g., saltwater, oil, hydrofracturing chemicals, and/or condensate in the event of a breach, overflow, or spill from storage tanks) could result in contamination of the soil onsite, or offsite, and may potentially impact surface and groundwater resources in the long term (BLM 2013).

Not all wells resulting from APD will employ fracturing and water consumption will be temporary. Oil and gas wells are cased and cemented at a depth below all usable water zones; consequently impacts to water quality at springs and residential wells are not expected. Additional specific COAs will be utilized to reduce the risks to groundwater. These mitigations would be identified at the APD stage.

4.4.2. No Action Alternative Effects on Water Resources

There would be no direct, indirect or cumulative impacts to surface or groundwater under the No Action Alternative.

4.5. Fish and Wildlife Environmental Effects

4.5.1. Proposed Action Effects on Fish and Wildlife

There would be no direct effects from issuing new oil and gas leases because leasing does not directly authorize oil and gas exploration and development activities. Direct impacts from these activities would be analyzed under a separate site-specific NEPA analysis. The RFD scenario is the basis for indirect future or potential impacts that could occur once the parcels are leased.

Oil and gas exploration, and production activities, as outlined in the RFD scenario, have the potential to affect individuals but not populations in the following ways:

- Any ground disturbance; including vegetation removal, bulldozing, digging or drilling, has the potential to injure or kill slow moving and/or ground dwelling animals.
- Noise and other elements of human presence in wildlife habitats could have detrimental effects on various wildlife species, through causing animals to move away from the areas of disturbance. Such movement is likely to bring animals into territories already occupied, increasing competition of available resources.
- Reduction or degradation of habitat quantity and/or quality (including food sources and cover), due to the possible establishment and spread of noxious weeds from exploration and development. Failure to reestablish native vegetation during required rehabilitation following cessation of activities would be likely to increase this possibility.
- The potential of groundwater contamination from spills or evaporation pond runoff and/or overflow could change the water chemistry at springs, altering aquatic habitat. However, this could possibly alter survivorship and reproduction of aquatic species; the effects would be analyzed in the APD..
- Pumping of groundwater in the general vicinity of springs could possibly cause reduced water quantity or possible de-watering of riparian areas. Reduction of water could also alter water chemistry or temperature, affecting aquatic or riparian species. Changes in water quantity and quality could alter the survivorship and reproduction of aquatic species; the effects would be analyzed in the APD.

Timing and other stipulations outlined in Appendix B have been designed to minimize these potential effects to fish and wildlife.

4.5.2. No Action Alternative Effects on Fish and Wildlife

The No Action Alternative would not impact fish and wildlife.

4.6. Special Status Species

4.6.1. Proposed Action Effects on FWS Listed or Proposed for Listing Threatened, Endangered Species, or Critical Habitat

There would be no direct effects from issuing new oil and gas leases because leasing does not directly authorize surface disturbance such as oil and gas exploration, development, production, or final reclamation. However, the authorization of oil and gas leasing does convey a right to subsequent exploration and production activities. Therefore, there could be indirect effects from leasing under the RFD scenario.

Future exploration activities in desert tortoise habitat would be subject to section 7 consultation as activities associated with exploration, such as driving in desert tortoise habitat and seismic testing, could result in take of a listed species. Phases that may follow exploration (such as development and production) in desert tortoise habitat would also require subsequent section 7 consultation. The BLM and FWS are in agreement that section 7 consultation on leasing parcels within desert tortoise habitat (both critical and non-critical) was adequate per the Programmatic Biological Opinion for the BLM's Ely District Resource Management Plan (Service File No. 84320-2008-F-0078). Leasing for oil and gas in desert tortoise habitat is within the scope of the Programmatic Biological Opinion. The timing stipulation of No Surface Occupancy (NSO) within desert tortoise habitat from March 1 to October 31 will be applied to all parcels in desert tortoise habitat in order to mitigate potential effects. Lessees may explore for or exploit the fluid minerals under leases restricted by this stipulation by using directional drilling from sites outside the no surface occupancy area. However, directional drilling outside the NSO area would also be subject to section 7 consultation because it could result in take of desert tortoise.

Indirect impacts from the Proposed Action on on the SWFL and the aforementioned listed fish species are difficult to determine. A discussion between biologists from BLM, USFWS, and NDOW resulted in the delineation of a 4-mile zone of influence afforded these species at Key Pittman WMA, Ash Springs and its associated outflow, and Crystal and Hiko Springs to avoid or minimize effects. This area was recommended for deferral from leasing at this time. Both FWS and NDOW expressed concern about uncertainty regarding effects to sensitive areas and hydrology. Many riparian and aquatic species in Pahrnagat Valley are highly dependent on groundwater and could potentially be indirectly impacted by effects to water in future phases, such as exploration, development, and production.

The pumping of groundwater in the same hydrographic basin or a connected hydrographic basin as a federally listed aquatic or riparian species could potentially alter the quantity, quality or temperature of spring water or riparian areas, thereby negatively affecting survivorship and reproduction. There is also the potential of groundwater contamination from spills, or evaporation pond runoff and/or overflow which could change the water chemistry at springs, altering aquatic and riparian habitat. Changes in water quality/quantity and groundwater contamination may affect the survivorship and reproduction of federally threatened or endangered species.

Where these species or habitat exist, Section 7 consultation with FWS would be required prior to any surface disturbance as part of the site specific analysis. The level of formal consultation would be determined based upon the proposed action. Specific measures would be enforced to prevent or minimize the take of a listed species as a result of drilling. See Appendix B for details.

4.6.2. No Action Alternative Effects on FWS Listed or Proposed for Listing Threatened, Endangered, or Critical Habitat

There would be no effects to the listed species from the no action alternative, as no leases would be issued for the parcels covered in this EA.

4.6.3. Proposed Action Effects on Special Status species other than those listed as Threatened or Endangered

There would be no direct effects from issuing new oil and gas leases because leasing does not directly authorize oil and gas exploration and development activities. Direct impacts from these activities would be analyzed under a separate site-specific NEPA analysis. Stipulations from the Ely RMP, such as a seasonal stipulation applied to parcels that contain desert bighorn sheep habitat, have been applied to the parcels to minimize impacts to special status species. The RFD scenario is the basis for indirect future or potential impacts that could occur once the parcels are leased.

Potential effects to special status animal species if development were to occur would be similar to those outlined for fish and wildlife above. Additionally, a site-specific NEPA analysis would include measures to mitigate effects.

4.6.4. No Action Alternative Effects on Special Status species other than those listed as Threatened or Endangered

There would be no effects to special status species under the no action alternative, as no leases would be issued for the parcels covered in this EA.

4.7. Socioeconomics Environmental Effects

4.7.1. Proposed Action Effects on Socioeconomics

A direct effect of issuing new oil and gas leases on socioeconomics within the three counties would be the generation of revenue from the sale of the leases. The State of Nevada would receive 49 percent of the proceeds from the initial sale of each lease parcel.

Subsequent oil and gas exploration, development, and production could create additional positive impacts. During the exploration phase, oil and gas companies typically provide in-house scientists and technicians to do the majority of the work. After initial surveys have been completed, road building, drill pad, and other construction and reclamation activities could occur as a result of oil and gas exploration and development activities. Much of this work could be contracted to local contractors, producing a potential economic impact to the local area through additional jobs, income, and added demand for additional services. Any oil exploration or development on these parcels may provide these counties with positive financial gains.

4.7.2. No Action Alternative Effects on Socioeconomics

The No Action Alternative would not impact the current socioeconomic climate in the area.

4.8. Noxious and Invasive Weeds

4.8.1. Proposed Action Effects on Noxious and Invasive Weeds

The act of offering, selling, and issuing federal oil and gas leases does not produce invasive/non-native species impacts. Each APD could result in additional disturbance throughout the future project areas creating opportunity for noxious weeds to spread. Cheatgrass and other weedy annuals are common along roadsides and other disturbed areas. These and the other species of noxious weeds are spread by vehicle traffic, livestock, wind, water, recreational vehicles, and wildlife. There would also be potential for new weeds to be transported onto the site on equipment used for construction activities. Any disturbance of soil or removal of vegetation has the potential to create opportunity for weeds to establish or spread into the surrounding plant community. In disturbed areas, bare soils and the lack of competition from an established perennial plant community would allow weed species opportunity to grow and produce seed. However, successful reclamation using a seed mix adapted to the site in conjunction with integrated weed management would create an opportunity to improve vegetative communities and reduce the amount of weedy species in the project area.

Subsequent development produces impacts in the form of ground disturbance. The construction of an access road and well pad could unintentionally contribute to the establishment and spread of noxious weeds. Noxious weed seed could be carried to and from the project areas by numerous methods, including construction equipment, the drilling rig and transport vehicles. The main mechanism for seed dispersion on the road and well pad is by equipment and vehicles that were previously used and or driven across or through noxious weed infested areas. The potential for the dissemination of invasive and noxious weed seed may be elevated by the use of construction equipment typically contracted out to companies that may be from other areas.

Prior to any ground disturbing activities, further analysis addressing the potential effects related to noxious, non-native species would be conducted, and BMPs including Appendix C, would be applied.

4.8.2. No Action Alternative Effects on Noxious and Invasive Weeds

The lease sale and subsequent development of the parcels would not occur; thereby no further impact to non-native invasive species would occur.

4.9. Lands with Wilderness Characteristics Environmental Effects

4.9.1. Proposed Action Effects on Lands with Wilderness Characteristics

The proposed action to authorize oil and gas leasing could impact, and potentially eliminate, wilderness characteristics in the 13 inventory units when and if exploration and production activities occur. Short-term (5-10 years) disturbances would have a negative effect on the inventory units by reducing and possibly eliminating the wilderness characteristics. Depending on the location and density of exploration wells, the inventory units may be reduced to areas of less than 5,000 acres; naturalness would be eliminated across the developed portions of the units; and opportunities for solitude or a primitive and unconfined type of recreation may be eliminated throughout the unit.

If exploration wells are plugged and abandoned, they would be reclaimed immediately after drilling or construction. Therefore, in the long term, it is possible that all disturbances would be reclaimed allowing the area to return to a natural state; and opportunities for solitude or a primitive and unconfined type of recreation would return. Impacts to size may also be reclaimed after exploration, but depending on the extent of wells and associated facilities (roads, gravel pits, etc.) impacts may remain should any of the supporting facilities continue to be used that could continue to eliminate wilderness characteristics based on size. For any producing wells, the impacts would be long term (20 years) or much longer. At that point, the impacts to wilderness characteristics would be considered permanent.

4.9.2. No Action Alternative Effects on Lands with Wilderness Characteristics

Under the No Action Alternative, the lease sale would not occur. Therefore, there would be no human-caused alterations to the existing landscape and there would be no impacts to the wilderness characteristics.

4.10. Soil Resources Environmental Effects

4.10.1. Proposed Action Effects on Soil Resources

The act of offering, selling, and issuing federal oil and gas lease does not create impacts to soil. Impacts to soil, both direct and indirect, would occur when the lease is developed in the future. The potential impacts would be analyzed on a site-specific basis prior to oil and gas development.

If oil and gas development were to occur in the proposed area(s) for leasing, impacts would occur due to ground disturbance and potential reduction of water resources. Most of the disturbance would be in the form of well pad construction, roads to access the well pad, road spurs off of the main well pad access road and the large amount of water resources needed to extract the petroleum resources. The soil resources that would primarily be affected would be the areas dominated by soil types sensitive to ground disturbance and water table reduction (i.e. silty and wetland soils).

If oil and gas development were to occur in the proposed area(s) for leasing, the magnitude and extent this would affect the soil resources in the area is directly proportional to the amount of oil and gas development that would occur in the given area. One could extrapolate the potential magnitude and extent of these affects by reviewing the disturbance scenario in Section 2.5 Reasonably Foreseeable Development Scenario for Oil and Gas Resources.

4.10.2. No Action Alternative Effects on Soil Resources

Under the No Action Alternative, the lease sale would not occur. Therefore, no impacts to soil resources would occur

4.11. Visual Resource Management Environmental Effects

4.11.1. Proposed Action Effects on Visual Resource Management

The actual sale of the lease parcels would not impact visual resources, though the development of the lease parcels may impact visual resources. When an APD is submitted a site-specific visual contrast rating would be conducted. The contrast rating will identify what types of mitigation is needed to minimize any visual contrast. Those recommended mitigation measures would be incorporated into site-specific NEPA or become applicant committed mitigation measures incorporated into the APD as a means to meet the VRM class objectives, at the beginning of the project planning phase.

Areas B, C, D, and F have portions of VRM Class II. Exploration and development within these parcels have a high probability of not meeting the VRM Class II objectives. Objectives for VRM Classes III and IV would be met by incorporating design features. The objectives of each VRM class would be taken into consideration for the development of lease parcels. Modifications to decrease visual contrast may include, but are not limited to, painting of facilities, the use of low profile tanks, placing facilities to avoid or minimize visibility from travel corridors, residential areas, and other sensitive observation points, the use of existing vegetation would be considered when designing the position of certain pads to blend into the existing characteristic landscape, minimizing hard edges of the well pads to avoid stark line contrasts and blend with the surrounding landscape, when possible.

4.11.2. No Action Alternative Effects on Visual Resource Management

Under the No Action Alternative the lease sale would not occur, therefore no impacts to visual resources would occur.

4.12. Vegetative Resources (including Wetlands/Riparian Vegetation) Environmental Effects

4.12.1. Proposed Action Effects on Vegetative Resources (including Wetlands/Riparian Vegetation)

The act of offering, selling, and issuing federal oil and gas lease does not create impacts to vegetation. Impacts to vegetation, both direct and indirect, would occur when the lease is developed in the future. The potential impacts would be analyzed on a site-specific basis prior to oil and gas development.

If oil and gas exploration and development were to occur in the proposed area(s) for leasing, impacts would occur due to ground disturbance and potential reduction of water resources. Most of the disturbance would be in the form of well pad construction, roads to access the well pad, road spurs off of the main well pad access road and the large amount of water resources needed to extract the petroleum resources. The vegetation resources that would primarily be affected would be the areas dominated by upland vegetation communities and associated soil types sensitive to ground disturbance and water table reduction (i.e. winterfat plant communities/the associated silty soils and riparian/spring vegetation).

If oil and gas exploration and development were to occur in the proposed area(s) for leasing, the magnitude and extent this would affect the vegetative resources in the area is directly proportional to the amount of oil and gas development that would occur in the given area. One could extrapolate the potential magnitude and extent of these affects by reviewing the disturbance scenario in Section 2.5 Reasonably Foreseeable Development Scenario for Oil and Gas Resources.

The potential impacts of oil and gas leasing on upland vegetation communities would be:

1. Reduction or loss in production, distribution and vigor of sensitive upland plant communities (i.e. winterfat) due to oil and gas activities.
2. Introduction of invasive plant species to upland plant communities by way of oil and gas activities.

If oil and gas exploration and development were to occur in the proposed area(s) for leasing, the magnitude and extent this would affect the riparian/spring vegetative resources in the area is directly proportional to the amount of oil and gas development that would occur in the given area. Riparian vegetation is reliant upon both precipitation in the form of rain and snow, in conjunction with ground water table levels of the given area. One could extrapolate the potential magnitude and extent of these affects by reviewing the Water consumption scenario in Section 2.5 Reasonably Foreseeable Development Scenario for Oil and Gas Resources.

The potential impacts of oil and gas leasing on riparian vegetation communities would be:

1. Reduction or loss in production and vigor of riparian plant communities due to oil and gas activities and associated water table loss.
2. A contraction or drying up of existing riparian plant communities' distribution due to oil and gas activities, and associated water table loss.

3. Introduction of invasive plant species to riparian plant communities by way of oil and gas activities.

4.12.2. No Action Alternative Effects on Vegetative Resources (including Wetlands/Riparian Vegetation)

Under the No Action Alternative, the lease sale would not occur and no impacts to vegetative resources (including wetlands/riparian vegetation) would occur.

4.13. Wild Horses

4.13.1. Proposed Action Effects on Wild Horses

No impacts to wild horses would occur from leasing. However, if parcels are later developed indirect and cumulative impacts could result in temporary disturbance and a minimal impact to forage available within the HMAs/HAs. Springs exist in and near parcels. Pumping of ground water in the general vicinity of springs could possibly cause reduced water quantity or possible de-watering of riparian areas. However it is believed that the amount of water necessary for drilling would not affect neighboring springs. Should exploration or development be proposed within these lease areas, additional, site specific NEPA analysis would be completed to assess the potential impacts to wild horses and their habitat.

At the APD stage, COAs for development within HMAs would reduce impacts. For example: flagging all new fences, road signs for safety, and water resource mitigation measures.

4.13.2. No Action Alternative Effects on Wild Horses

Under the No Action Alternative, the lease sale would not occur and, therefore, no impacts to wild horses would occur.

4.14. Land Uses & Access

4.14.1. Proposed Action Effects on Land Uses & Access

Leasing creates a valid existing right, which could conflict with other existing or future land use authorizations. These conflicts would be mitigated through agreements between relevant operators.

Applications for ROW's may be required for roads for oil and gas exploration and production activities. These off-lease ROW's would be non-exclusive where possible, that is, they can be used by the general public for other purposes such as access to public lands.

Impacts to existing ROW's may occur as a result of disturbance activities such as road construction. These impacts may cause temporary disruptions to ROW holders, but the Federal Land Policy and Management Act (FLPMA) requires that prior existing rights must be recognized. If parcels were developed in the future, site-specific mitigation measures and BMPs

would be attached as COAs for each proposed activity, which would be analyzed under their own site-specific NEPA analysis.

Lease parcels that overlap private property could potentially have an impact on the character, usage, or integrity of the private land due to the surface occupancy associated with energy development. There would be greater activity from construction and operation of the facility, potential residency of maintenance staff, and the opportunity cost of lost use of the developed area. Due to the regulations of the split-estate arrangement, the landowner has little control over allowing the use on their land, but can negotiate with the operator to determine parameters of development.

4.14.2. No Action Alternative Effects on Land Uses and Access

Under the No Action Alternative, the lease sale would not occur and, therefore, no impacts to current Land Uses or Access would occur.

4.15. Waste, Hazardous or Solid

4.15.1. Proposed Action Effects on Wastes, Hazardous or Solid

The lease parcels fall under environmental regulations that impact exploration and production waste management and disposal practices and impose responsibility and liability for protection of human health and the environment from harmful waste management practices or discharges. Any potential for waste impact would not occur until post-lease development activities are initiated. Any subsequent activity authorized after APD approval could be in the form of drilling fluid spills, solid chemical spills, fuel spills, trash scatter on and off the well pads, and hydrocarbon or gas releases.

The lease sale parcels are regulated under the Resource Conservation and Recovery Act (RCRA), Subtitle C regulations. Leaseholders proposing development would be required to have approved Spill Prevention Control and Countermeasure Plans, if the applicable requirements of 40 CFR 112 are met, and comply with all requirements for reporting of undesirable events.

4.15.2. No Action Alternative Effects on Waste, Hazardous or Solid

The No Action Alternative would not impact hazardous or solid wastes in the area.

Chapter 5. Cumulative Effects Analysis

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5.1. Past Actions

The Ely District is rich in natural resources and the cumulative effects study area has been used for a wide array of activities over the years. Mining, grazing, recreation, realty actions, and oil exploration have been conducted throughout the Ely District and more than likely, will continue for many more years. While more than 200 wells have been drilled in the Ely District, only two are in production.

The following area parcels contain reclaimed and unreclaimed disturbance from past oil well pads:

- Group A parcel contains approximately 6 acres of disturbance from two unreclaimed oil well pads and their associated access roads.
- Group B parcels contain approximately 6.5 acres of disturbance from one unreclaimed oil well pad and associated access road and power line.
- Group C parcels contain approximately 12 acres of reclaimed disturbance from four oil well pads.

Parcels in Group D, E, and F have not had any past oil wells drilled within them. There are roads, gravel pits, and abandoned mining prospects throughout the parcels.

5.2. Present Actions

Mining, grazing, recreation, realty actions, and oil exploration are being conducted throughout the District and more than likely, will continue for many more years. There is currently one active mining operation within Group D that is located in the South Pahroc Range and there are locatable mineral exploration projects and gravel pits that are active within Group D, E, and F.

5.3. Reasonably Foreseeable Future Actions

There are many new projects coming to rural Nevada, especially around Ely. Several wind development projects, solar projects, transmission lines, and a groundwater development project are being proposed in the Ely District. Due to the current prices of gold and oil, the potential for more exploration and development for each of these commodities are likely to occur in the Ely District in the future.

Other than the continuation of activities on authorized mineral projects, there are currently no future mining or mineral exploration projects proposed within any of the parcels analyzed in this EA.

Although the proposed action does not include exploration, development, production, or final reclamation of oil and gas resources, authorization of oil and gas leasing does convey a right to subsequent exploration and development activities. Even though these later activities can be associated with oil and gas leasing, they would be analyzed in a separate, site-specific NEPA document, once an APD is received.

The RFD scenario in the Ely RMP projects that a total of 448 wells would be drilled resulting in total short-term (5 to 10 years) disturbance of approximately 8,400 acres and a long-term (about 20 years for producing wells) disturbance of approximately 1,400 acres. It also suggests

that a new field discovery similar in size and surface disturbance to the Trap Springs and Kate Springs oil fields within Railroad Valley could be made over the next several years. Short-term disturbance as defined for the reasonably foreseeable development scenario includes locations for wells in the plugged and abandoned category that would be reclaimed immediately after drilling or construction.

For the purposes of this EA, less than 5% of the total district is subject to this lease sale. This percentage indicates that approximately 18 exploration and production wells should be expected as a result of this sale. Short-term (5 to 10 years) and long-term (over 10 years) disturbance for future development would be approximately 340 acres and 60 acres, respectively.

Under the RFD for this EA, one could assume that only one small well field would be developed within the proposed 407,000 lease acres. This could result in 10 producing wells and 12 other wells being plugged and abandoned. In addition, 14 miles of new access roads and two miles of pipeline could be developed. Total short- and long-term disturbance would be approximately 185 acres and 90 acres, respectively.

5.4. Cumulative Impacts from Past, Present, and Reasonably Foreseeable Future Actions

For the purpose of this EA, only indirect impacts are discussed in this section. Direct incremental cumulative impacts from a potentially proposed oil well would be analyzed during the APD review process. There are no cumulative impacts from leasing. The following is a discussion of cumulative impacts resulting from potential future development.

5.4.1. Air Quality and Climate Change Cumulative Impacts

Leasing the parcels would have no direct impacts on air quality. Any potential effects from sale of lease parcels could occur at the time the leases are developed.

Current monitoring data show that criteria pollutants concentrations are below applicable air quality standards, indicating good air quality. The potential level of development and mitigation described below is expected to maintain this level of air quality by limiting emissions. In addition, pollutants would be regulated through the use of state-issued air quality permits or air quality registration processes developed to maintain air quality below applicable standards.

It is currently not possible to know with certainty the net impacts from lease parcel development on climate. The inconsistency in results of scientific models used to predict climate change at the global scale, coupled with the lack of scientific models designed to predict climate change on regional or local scales, limits the ability to quantify potential future impacts of decisions made at this level. It is therefore beyond the scope of existing science to relate a specific source of GHG emission or sequestration with the creation or mitigation of any specific climate-related environmental effects.

It is not possible to predict effects on climate change of potential GHG emissions discussed above in the event of lease parcel development for alternatives considered in this EA; the act of leasing does not produce any GHG emissions in and of itself. Releases of GHGs could occur at the exploration/development stage.

5.4.2. Cultural Resources Cumulative Impacts

Cultural resources include, but are not limited to, historic cemeteries and townsites, rockshelters, caves, rock art, and Paleo-Indian and other prehistoric sites. The primary impact mechanisms that could affect cultural resources within the district include off-highway vehicle and recreational use, minerals development, land disposal, fire, special designations, and livestock grazing. Some of these mechanisms would have a negative impact on cultural resources, which would be mitigated through project abandonment, redesign, and, if necessary, data recovery. However, some of these mechanisms may have a positive or beneficial impact on cultural resources, such as protection under an ACEC designation.

Any program, activity, or project has an effect on a cultural resource if it alters any of the characteristics or criteria that may qualify the resource for inclusion on the National Register of Historic Places or otherwise affects a cultural property's legally protected status. Impacts to cultural properties are considered adverse if the effect diminishes the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Negative or adverse effects can include, but are not limited to: physical destruction of or damage to all or part of a property; alteration of a property (e.g., restoration, rehabilitation, stabilization); removal of a property from its historic location; or, transfer, lease, or sale of property out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation (BLM 2007).

5.4.3. Water Resources Cumulative Impacts

The cumulative effects analysis area for water resources includes the closed to semi-closed basins of White Pine, Lincoln, and northeastern Nye counties located within the boundaries of the planning area. The cumulative effects analysis area is the same as the RMP for Water Resources. This EA incorporates by reference the RMP/FEIS. The RMP analysis lost two Coal Fired Plants at the time of writing, but has gained three large Mining Operations in the EIS stage, (Bald, Pan, and Gold Rock); and the net impact is equivalent. The Southern Nevada Groundwater pipeline EIS analyzed impacts to all resources regarding groundwater pumping, including cumulative effects. Other impacts to water resources from activities other than oil and gas development includes dispersed recreation (mostly hunting) and livestock grazing. Dispersed recreation in the lease parcels may result in erosion in some localized areas from vehicle use. Livestock grazing may lead to localized erosion in some areas. In general, oil & gas surface disturbance within the boundaries of the lease parcels could lead to limited increased erosion and instability of soils in local areas which may increase sediment and salt loading in confined basins *de minimis*. There may be some loss of water quality characteristics in groundwaters that may or may not be used as water sources in the future. Oil and gas exploration and development would likely add to sediment and salt loads, but may not be measurable. The actual leasing of the parcels would not contribute to existing riparian disturbances, nor is future development expected to have any measurable contribution cumulatively to degradation of riparian character. Avoidance of riparian habitats, reclamation strategies and State and federally-imposed sediment and storm-control measures provide effective means of controlling excess sediment transport to those systems that support riparian communities.

Cumulative impacts of the RMP/FEIS would be minimized over the long term by extensive vegetation management and administration of other land utilizing a balanced ecological system approach. Salinity inputs to the Colorado River system would be reduced over time. Short-term

increases in runoff, soil erosion, and related sedimentation may occur on those areas where vegetation treatments occur. Interrelated projects would have the potential to create impacts on both surface and groundwater resources through additional erosion and sedimentation as a result of land disturbance, further consumption of available water resources, and additional releases of undesirable water quality constituents (e.g., industrial chemicals, treated domestic effluent) into receiving waters.

5.4.4. Fish and Wildlife Cumulative Impacts

All wildlife species have preferred habitats, some of which may be seasonal. Many disturbances, both natural and human caused may result in wildlife moving to less optimal habitats, which may already be at carrying capacity. This could result in reductions in population sizes due to less successful reproduction or direct mortality. Species dependent on very restricted habitats may be especially affected. A number of ongoing and future activities combined could result in loss of specific habitats, fragmentation and disruption of movement patterns. The stipulations required through the RMP or COAs on a site-specific basis will help to minimize impacts from these activities.

5.4.5. Special Status Species Cumulative Impacts

5.4.5.1. Federally Threatened or Endangered Cumulative Impacts

The combination of past, present and future activities could cumulatively impact the listed species included in this document. The Clark, Lincoln, and White Pine Counties Groundwater Development Project EIS and accompanying Biological Opinion, is a future action that has fully evaluated the environmental effects of groundwater withdrawal to aquatic species. These potential impacts could result in loss of aquatic habitat, resulting in reductions in reproductive success or may have direct adverse effects on individuals in populations, which are small to begin with. Any future actions in listed species habitat would be subject to Section 7 Consultation under the Endangered Species Act with the level of consultation to be determined based upon the project site-specific proposed action.

The BLM is in the process of re-configuration of the TransWest Express project powerline to avoid the Las Vegas buckwheat area plant population.

5.4.5.2. Special Status Species other than those listed as Threatened or Endangered Cumulative Impacts

The combination of past, present and future activities could cumulatively impact special status species other than those listed as threatened or endangered. These impacts could result in loss of habitats, which may uniquely support some species, may fragment habitats resulting in reductions in reproductive success of some species, or may have potential adverse effects on individuals in populations, which are small to begin with.

5.4.6. Socioeconomics Cumulative Impacts

If other construction projects were to occur at the same time as any future exploration or development activities related to these leases, the direct and indirect positive economic impacts to

the local area could be magnified. There are no cumulative impacts expected to result directly from the proposed action.

5.4.7. Noxious and Invasive Weeds Cumulative Impacts

Future development within the proposed lease sale parcels would result in additional vegetation loss and surface disturbance. Past and present oil and gas activities in the area have already created disturbance, and oil and gas development is anticipated to continue throughout the area. Successful reclamation would reduce the risk to healthy plant communities and provide an opportunity to improve degraded vegetative communities within the project area.

5.4.8. Lands with Wilderness Characteristics Cumulative Impacts

There are no cumulative impacts expected to result directly from the proposed action since the proposed action does not include any surface disturbance. The possible future development described in the RFD could cumulatively reduce the availability of lands with wilderness character.

5.4.9. Visual Resource Management Cumulative Impacts

The reasonably foreseeable future actions listed in Section 5.3 could have an impact on visual resources. The possible future development described in the RFD could result in direct and indirect impacts to visual resources, particularly to VRM Class II areas. Future activities would attempt to avoid VRM Class I areas. Class II, III and IV areas would have site-specific design features incorporated. . The stipulations required through the RMP or those determined to be needed on a site-specific basis will help to minimize impacts from these activities.

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Chapter 6. List of Acronyms Used

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ACEC Area of Critical Environmental Concern
AO Authorized Officer
APD Application for Permit to Drill
AQRV Air Quality Related Values
BLM Bureau of Land Management
BMP Best Management Practice
CFR Code of Federal Regulations
COA Condition of Approval
DOE Department of Energy
DOI Department of the Interior
DR Decision Record
EA Environmental Assessment
EOI Expression of Interest
EPA U.S. Environmental Protection Agency
ESA Endangered Species Act
FWS United States Fish & Wildlife Service
FEIS Final Environmental Impact Statement
FLPMA Federal Land Policy & Management Act
FO Field Office
FONSI Finding of No Significant Impact
GBBO Great Basin Bird Observatory
GIS Geographic Information Systems
GHG Greenhouse Gasses
GLO Government Land Office
HA Herd Area
HMA Herd Management Area
HAP Hazardous Air Pollutants
HF Hydraulic Fracturing
ID Interdisciplinary

LCCRDA Lincoln County Conservation, Recreation, and Development Act

LWC Lands with Wilderness Characteristics

NAAQS National Ambient Air Quality Standards

NCLS Notice of Competitive Lease Sale

NDEP Nevada Division of Environmental Protection

NDOW Nevada Department of Wildlife

NEPA National Environmental Policy Act

NHPA National Historic Preservation Act

NLCS National Landscape Conservation System

NPS National Park Service

NSHT National Scenic and Historic Trails

NSO No Surface Occupancy

NTL Notice to Lessee

NVCRIS Nevada Cultural Resource Inventory System

PGH Preliminary General Habitat

PLUAC Public Landuse Advisory Committee

POD Plan of Development

PPH Preliminary PriorityHabitat

RCRA Resource Conservation & Recovey Act

RFD Reasonably Foreseeable Development

RMP Resource Management Plan

ROW Right-of-Way

SHPO Nevada State Historic Preservation Office

SWFL Southwestern Willow Fly Catcher

T&E Threatened and Endangered

TCP Traditional Cultural Properties

TSP Total Suspended Particulates

VOC Volatile Organic Compounds

VRM Visual Resource Management

WMA Wildlife Management Area

WSA Wilderness Study Area

WRN White River Narrows

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Chapter 7. External Communications

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Table 7.1. List of Persons, Agencies and Organizations Consulted

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
USFWS	Threatened, Endangered or Proposed Species	Recommendations for deferrals, stipulations or consultations.
NDOW	Sensitive or General Wildlife Species and Wildlife Management Areas	Recommendations for deferrals, stipulations or other mitigation measures.
White Pine County	Commission, PLUAC, special knowledge of economic development, lands and resources	Recommendations for deferrals, stipulations or other mitigation measures.
Lincoln County	Commission, special knowledge of economic development, lands and resources	Recommendations for deferrals, stipulations or other mitigation measures.
Confederated Tribes of the Goshute Indian Reservation in Iapah, Utah	Traditional Religious sites, Economic Development, special knowledge of lands and resources and NHPA.	Recommendations for deferrals, stipulations or other mitigation measures.
Duckwater Shoshone Tribe of the Duckwater Reservation, Nevada	Traditional Religious sites, Economic Development, special knowledge of lands and resources and NHPA.	Recommendations for deferrals, stipulations or other mitigation measures.
Ely Shoshone Tribe, Ely Nevada	Traditional Religious sites, Economic Development, special knowledge of lands and resources and NHPA.	Recommendations for deferrals, stipulations or other mitigation measures.
SHPO	Cultural resources, eligibility determinations, and NHPA	Concurrence and ongoing consultation.

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Chapter 8. List of Preparers

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NAME	TITLE	TASK ASSIGNMENT
Miles Kreidler	Geologist	Minerals
Lisa Gilbert	Archeologist Technician	Cultural Resources/Paleontology
Marian Lichtler	Wildlife Biologist	Special Status Species Wildlife/Migratory Birds
Nancy Herms	Wildlife Biologist	Special Status Species
Alicia Styles	Wildlife Biologist	Special Status Species
Travis Young	Planning and Environmental Coordinator	NEPA; Socioeconomics; Environmental Justice; Air Quality
Erin Rajala	Outdoor Recreation Planner	Recreation and Visual Resources
Emily Simpson	Outdoor Recreation Planner (Wilderness)	Wilderness/WSA/Wild & Scenic Rivers/LWC
Ruth Thompson	Wild Horse/Burro Specialist	Wild Horse & Burros
Stephanie Trujillo	Realty Specialist	Land Uses
Ty Chamberlain	Realty Specialist	Land Uses
Scott Standfill	Range Management Specialist	Rangeland, Grazing, Vegetative Resources, Soils, Riparian/Wetlands, Farmlands, and Floodplains
Cody Coombs	Fire Management Specialist (Fire Planner)	Fire Management
Randy Johnson	Unit Aviation Manager	Hazardous Materials
Steve Moore	GIS Specialist	GIS Analysis
Elvis Wall	Native American Coordinator	Native American Religious and other Concerns
Chris McVicars	Natural Resource Specialist	Invasive Non-native Species

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Chapter 10. List of Appendices:

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Appendix A: December 2014 Nominated Parcels

Appendix B: December 2014 Parcels with Attached Stipulations

Appendix C: BLM Best Management Practices (BMP)

Appendix D: Special Status Species List

Appendix E: Environmental Mitigation Best Practices

Appendix F: Hydraulic Fracturing White Paper

Appendix G: Cultural Resources Inventory Needs Assessment

Appendix H: Weed Risk Assessment (WRA)