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September 2017 Oil and Gas Lease Sale

Location: West Desert District
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Juab County

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September 2017 Oil and Gas Lease Sale

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1.0 PURPOSE & NEED

1.1 Introduction

The Fillmore Field Office (FFO) of the Bureau of Land Management (BLM) has prepared this environmental assessment (EA) to disclose and analyze the environmental consequences for the sale of parcels during the September 2017 oil and gas lease sale and subsequent lease issuance to successful bidders. The EA is a site-specific analysis of potential impacts that could result from the implementation of a proposed action or alternatives to the proposed action. The EA assists the BLM in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any significant impacts could result from the analyzed actions. Significance is defined by NEPA and the regulations implementing NEPA at Title 40 of the Code of Federal Regulations (CFR) section 1508.27. An EA provides evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a statement of Finding of No Significant Impacts (FONSI). If the decision maker determines that this project has significant impacts following the analysis in the EA, then an EIS would be prepared for the project. If not, a Decision Record (DR) may be signed for the EA approving the selected alternative, whether the proposed action or another alternative. A DR, including a FONSI statement, for this EA would document the reasons why implementation of the selected alternative would not result in significant environmental impacts (effects) beyond those already addressed in the 1987 House Range Resource Area Resource Management Plan and Record of Decision (BLM, 1987) (“HRRR RMP/ROD”).

1.2 Background

The BLM policy is to make mineral resources available for use and to encourage their orderly development to meet national, regional, and local needs. This policy is based in various laws, including the Mineral Leasing Act of 1920 and the Federal Land Policy and Management Act of 1976. The Federal Onshore Oil and Gas Leasing Reform Act of 1987 (Sec. 5102(a)(b)(1)(A)) directs the BLM to conduct quarterly oil and gas lease sales in each state whenever eligible lands are available for leasing.

Expressions of Interest (EOI) to nominate parcels for leasing by the BLM are submitted by the public. From these EOIs, the BLM Utah State Office (UTSO) forwards a preliminary parcel list to the West Desert District Office (WDD), which includes the FFO and the Salt Lake Field Office (SLFO), for review and processing. The FFO determines whether or not the existing analyses in the land use plan, as amended, provides an adequate basis for leasing oil and gas resources or that additional NEPA analysis is needed before making a leasing recommendation. In order to meet the requirements of H-3120-1, in most instances an EA will be initiated for the parcels within the FFO.

After the draft EA is prepared, it and the unsigned FONSI are made available to the public along with the list of available lease parcels and stipulations and notices for a 30-day public comment period on the BLM National Register for NEPA documents (ePlanning) <http://go.usa.gov/xXkvq> and the BLM Utah’s Oil and Gas Leasing website. After the end of the public comment period, the BLM analyzes and incorporates the comments where appropriate and changes to the document and/or lease parcel list are made, if necessary. The final parcel list with stipulations

and notices is made available to the public through a Notice of Competitive Lease Sale which starts the protest period (30 days) with a copy of the EA and an unsigned FONSI. The protest period ends 30 days after the Notice of Competitive Lease Sale is posted. The Utah BLM resolves any protests within the 60 days between the end of the protest period and the lease sale when possible. If any changes are needed to the parcels or stipulations/notices, an erratum is posted to the BLM website to notify the public of the change.

The parcels would be available for sale at an auction held by the UTSO tentatively scheduled for September 14, 2017. If a parcel is not purchased at the lease sale by competitive bidding, it may still be leased within two years after the initial offering. A lease may be held for ten years, after which the lease expires unless oil or gas is produced in paying quantities. A producing lease can be held indefinitely by economic production.

A lessee must submit an Application for Permit to Drill (APD) (Form 3160-3) to the BLM for approval and must possess an approved APD prior to any surface disturbance in preparation for drilling.¹ Any stipulations attached to the standard lease form must be complied with before an APD may be approved. Following BLM approval of an APD, a lessee may produce oil and gas from the well in a manner approved by BLM in the APD or in subsequent sundry notices. The operator must notify the appropriate authorized officer (AO) 48 hours before starting any surface disturbing activity approved in the APD.

Standard lease terms provide for reasonable measures to minimize adverse impacts to specific resource values, land uses, or users (Standard Lease Terms are contained in Form 3100-11, Offer to Lease and Lease for Oil and Gas, U.S. Department of the Interior, BLM, October 2008 or later edition). Once a lease has been issued, the lessee has the right to use as much of the leased land as necessary to explore for, drill for, extract, remove, and dispose of oil and gas deposits located under the leased lands with exceptions for restrictions that may be imposed consistent with the standard lease terms and the stipulations and notices attached to the lease. Operations must be conducted in a manner that avoids unnecessary or undue degradation of the environment and minimizes adverse impacts to the land, air, water, cultural, biological, and visual elements of the environment, as well as other land uses or users. Compliance with valid, nondiscretionary statutes (laws) is included in the standard lease terms and would apply to all lands and operations that are part of all of the alternatives.

Nondiscretionary actions include the BLM's requirements under federal environmental protection laws, such as the Clean Water Act, Clean Air Act, Endangered Species Act, National Historic Preservation Act, and Federal Land Policy Management Act, which are applicable to all actions on federal lands even though they are not reflected in the oil and gas stipulations in the governing land use plans and would be applied to all potential leases regardless of their category. Also included in all leases are mandatory stipulations as referenced within BLM H-3120-1 *Competitive Leases Handbook* ("H-3120-1").

Parcels were prioritized by the Fillmore Field Office consistent with Instruction Memorandum 2016-143 Implementation of Greater Sage-Grouse Resource Management Plan Revisions or Amendments – Oil and Gas Leasing and Development Sequential Prioritization *provides the BLM guidance for prioritizing implementation decisions for oil and gas leasing and development*

¹ Additional information regarding the BLM's oil and gas management program can be accessed online at: <https://www.blm.gov/programs/energy-and-minerals/oil-and-gas>

to be consistent with the Approved Resource Management Plan Amendments (BLM 2015). Of the 9 parcels being considered, 4 of those are within PHMA. The Fillmore Field Office prioritized proposed lease parcels outside of sage-grouse PHMA and GHMA consistent with the IM and elected to consider leasing 4 parcels within PHMA based upon NEPA analysis completed in this EA and the application of lease notices and stipulations for PHMA to minimize conflicts with greater sage-grouse consistent with the amended Fillmore RMP.

The WDD parcels originally contained 9 parcels consisting of 15,293.64 acres all within the FFO. Prior to sending the preliminary list to the FFO, the BLM Utah State Office (UTSO) had removed 350.55 acres of lands unavailable for leasing.

This EA has been prepared to disclose and analyze the environmental consequences of leasing nine (9) parcels (14,943.09 acres) located in the FFO to be included as part of a competitive oil and gas lease sale tentatively scheduled to occur September 15, 2017. For reference, Appendix A contains the proposed September 2017 FFO Oil and Gas Lease Sale Parcel List and Appendix B contains a map of the subject parcels.

1.3 Purpose and Need of the Proposed Action

The parcels proposed for leasing were nominated by industry. The need for the lease sale is to respond to the nomination requests. Offering parcels for competitive oil and gas leasing provides for the orderly development of fluid mineral resources under BLM's jurisdiction in a manner consistent with multiple use management and environmental consideration for the resources that may be present.

The purpose for analyzing the preliminary parcels for potential sale is to ensure that adequate provisions are included in the lease stipulations to protect public health and safety, and assure full compliance with the objectives of NEPA and other federal environmental laws and regulations designed to protect the environment and mandating multiple use of public lands. The BLM is required by law to review areas that have been nominated, and there has been ongoing interest in oil and gas exploration in the FFO area. Oil and gas leasing is a principal use of the public lands as identified in Section 102(a) (12), 103(1) of the Federal Land Policy and Management Act of 1976 (FLPMA), and it is conducted to meet requirements of the Mineral Leasing Act of 1920, as amended, the Mining and Minerals Policy Act of 1970, and the Federal Onshore Oil and Gas Leasing Reform Act of 1987 (Reform Act). Leases would be issued pursuant to 43 CFR Subpart 3100.

1.4 Conformance with BLM Land Use Plan

The alternatives described below are in conformance with the governing land use plan (as amended and supplemented) because they are specifically provided for in the planning decisions as follows:²

- The HRRR RMP/ROD decisions for Mineral Resources - Oil and Gas (at page 76, Table 2-6, and Map 9), which identify the leasing categories for Juab County, as augmented by the DR prepared for the HRRR RMP Oil and Gas Leasing Implementation EA (EA UT-050-89-025, BLM, 1988 ("HRRR Oil and Gas Leasing Implementation EA")) and the DR

² The page numbers, maps or figures referenced in the decisions are found in the House Range Resource Area RMP and are not those found directly in this document.

prepared for the Oil and Gas Leasing in the Fillmore Field Office EA (EA UT-010-2008-050, BLM, 2009). The alternatives are also consistent with the RMP decisions related to the management of the following resources, including but not limited to: soil, water, visual resources, cultural resource and range management.

- Record of Decision and Approved Resource Management Plan Amendments for the Great Basin Region, Including the Greater Sage-Grouse Sub-Regions of Idaho and Southwestern Montana Nevada and Northeastern California Oregon Utah. ROD 9/21/2015.

1.5 Relationship to Statutes, Regulations, or Other Plans

The proposed action is consistent with federal environmental laws and regulations, Executive Orders, and Department of Interior and the BLM policies and is in compliance, to the maximum extent possible, with state laws and local and county ordinances and plans to the maximum extent possible, including the following:

- Federal Land Policy and Management Act (1976) and the associated regulations at 43 CFR, Part 1600
- National Environmental Policy Act (1969) and the associated Council on Environmental Quality (CEQ) regulations at 40 CFR §§ 1500 - 1508
- National Historic Preservation Act (1966), as amended and the associated regulations at 36 CFR Part 800
- Bald and Golden Eagle Protection Act (1962)
- Endangered Species Act (1973), as amended
- Migratory Bird Treaty Act (1918)
- BLM Manual 6840 – Special Status Species Management
- MOU Among the USDA, USDI and EPA Regarding Air Quality Analysis and Mitigation for Federal Oil and Gas Decisions Through the NEPA Process (2011)
- Determining Conformity of Federal Actions to State or Federal Implementation Plans (40 CFR Part 93 Subpart E)
- Juab County General Plan, as revised
- BLM H-3120-1 *Competitive Leasing Handbook*
- Instruction Memorandum #2016-143, Implementation of Greater Sage-Grouse Resource Management Plan Revisions or Amendments-Oil & Gas Leasing and Development Sequential Prioritization
- Permanent Instruction Memorandum 2017-3 *The Council on Environmental Quality Guidance on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews.*

EISs/EAs that influence the scope of this document include:

- HRRRA Oil and Gas Leasing Implementation EA (EA UT-050-89-025, BLM , 1988)
- Oil and Gas Leasing in the Fillmore Field Office EA and DR (2009) (EA UT-010-2008-050, BLM, 2009)
- Proposed House Range Resource Area RMP and Final EIS (BLM, 1986)
- Utah Greater Sage Grouse EIS, 2015

- Inventory of Onshore Federal Oil and Natural Gas Resources and Restrictions to Their Development 2008 Phase III Inventory – Onshore United States³

These documents and their associated information or analysis are hereby incorporated by reference, based on their use and consideration by various authors of this document. The attached Interdisciplinary Team Checklist, Appendix C, was also developed after consideration of these documents and their content. These resources are either analyzed later in this document or, if not impacted, are also listed in Appendix C.

1.6 Identification of Issues

The proposed action was reviewed by an interdisciplinary parcel review (IDPR) team composed of resource specialists from the BLM's FFO. This team identified resources in the parcel area which might be affected and considered potential impacts using current office records, geographic information system (GIS) data, and site visits. The UTSO specialist for air quality also reviewed the proposal and contributed the analysis in this EA. The results of the IDPR team and UTSO specialist's reviews are contained in the Interdisciplinary Team Checklist in Appendix D.

On October 26, 2016, the UTSO sent letters to the National Park Service (NPS), United States Fish and Wildlife Service (USFWS), United States Forest Service (USFS) and the State of Utah's Public Lands Policy Coordination Office (PLPCO), Utah Division of Wildlife Resources (UDWR) and the State Institutional Trust Lands Administration (SITLA) to notify them of the pending lease sale, solicit comments and concerns on the preliminary parcel list and invite them to participate in site visits. The UTSO also provided GIS shapefiles to contact points within the NPS, USFWS and UDWR. Section 5.2 documents the results of the notifications.

Site visit was done by the project lead and the wildlife biologist on 1/27/2017 and data searches were conducted by the BLM staff on the proposed action parcels to validate the existing data and gather new information in order to make informed leasing recommendations. None of the other agencies participated in the site visits with the FFO IDPR team.

The deadline for the public to nominate areas or otherwise submit EOIs was October 3, 2016. Public notification was initiated by entering the project information on the BLM National NEPA Register website on 11/22/2016. Public participation is also documented in section 5.3.

1.7 Summary

This chapter has presented the purpose and need of the proposed project, as well as the relevant issues, i.e., those elements of the human environment 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 has considered and/or developed a range of action alternatives. These alternatives are presented in Chapter 2. The potential environmental impacts or consequences resulting from the implementation of each alternative considered in detail are analyzed in Chapter 4 for each of the identified issues.

³ EPCA Phase III Inventory is located online at: http://www.blm.gov/style/medialib/blm/wo/MINERALS_REALTY_AND_RESOURCE_PROTECTION_/energy/0.Par.4483.File.dat/EPCA2008LOfront.pdf

2.0 DESCRIPTION OF ALTERNATIVES, INCLUDING THE PROPOSED ACTION

2.1 Introduction

This EA addresses the Proposed Action and No Action alternatives. Other alternatives were not considered because the issues identified during scoping did not indicate a need for additional alternatives or protective measures beyond those contained in the Proposed Action. The No Action alternative is considered and analyzed to provide a baseline for comparison of the impacts of the Proposed Action.

Leasing is an administrative action that affects economic conditions but does not directly cause environmental consequences because it does not authorize any surface disturbing activities. However, leasing is considered to be an irretrievable commitment of resources because the BLM generally cannot deny all surface use of a lease unless the lease is issued with a No Surface Occupancy (NSO) stipulation. Potential oil and gas exploration and production activities, committed to in a lease sale, could impact other resources and uses in the planning area. Direct, indirect, or cumulative effects to resources and uses could result from as yet undetermined and uncertain future levels of lease exploration or development.

2.2 Analysis Assumptions

2.2.1 Reasonably Foreseeable Development Scenario

The West Desert Districts and western part the Color Country District of the BLM lie within the Great Basin and the lower Colorado basin. Within the part of the State of Utah within these hydrographic basins there is one small discovery producing oil, the Wolverine field in Sevier County Utah. Outside of the area adjacent to this discovery, the development potential within the entire region is low; however new methods for finding and extracting hydrocarbons drives exploratory activities along with oil and gas leasing. If leased, a “wildcat” well, or one drilled in anticipation of a “strike,” may be drilled on one or more of the leases sold in any lease sale. However, the great majority of parcels leased in the region in the past have never undergone any drilling activity.

Although at this time it is unknown when, where, or if future well sites or roads might be proposed on any leased parcel, should a lease be issued, site specific analysis of individual wells or roads would occur when a lease holder submits an APD. The HRRRA Oil and Gas Leasing Implementation EA (EA UT-050-89-025), which was prepared to implement the HRRRA RMP/ROD, outlines the reasonably foreseeable development scenario (RFD) for the lands addressed by the HRRRA RMP/ROD.

The RFD scenario for the HRRRA RMP/ROD, as established in the HRRRA O&G Leasing Implementation EA, identifies the following RFD:

- Exploration drill pads (including roads):
 - Anticipate one well every two years or 5 wells every 10 years
 - 1 acre per well pad plus 5 acres for access (6 acres of total disturbance per well)
 - 5 wells x 6 acres disturbed per well = 30 acres disturbed every 10 years
- Producing wells
 - No producing wells anticipated

The RFD would appear to be reasonable in light of the fact that only nine (9) Federal wells have been drilled on 54 acres in Juab County, which is the county where all of the proposed lease parcels are located, over the last 60 years, and all of these wells have been plugged and abandoned (State of Utah Well History Database, 2013).⁴ The most recent APD (Nephi City, Juab county #1-36, API# 43-023-50002; T12S-R1E), was approved in September 2013 for a well that is located on private surface and private mineral estate and was plugged and abandoned in 2014. The actual amounts of disturbance and wells drilled in the area have not exceeded and are in fact less than what was anticipated by the RFD for the HRRR RMP/ROD.

Since completion of the HRRR RMP/ROD, the House Range Resource Area was combined with the Warm Springs Resource Area to form the Fillmore Field Office. In 2009, a DR was signed for the *Oil and Gas Leasing in the Fillmore Field Office EA*, which provided updated analysis of the impacts of leasing within the Field Office.

The reasonably foreseeable development, (RFD), scenario in the 2009 Fillmore Field Office Oil and Gas Leasing EA, (BLM 2009, p. 52) anticipated one well per year would be drilled within the Field Office. Because there has been a lease sale about every other year within the Field Office, and leases expire after 10 years if they are not producing, there is a one in five chance every year that a well would be drilled on a lease sold in a particular lease sale. Over the ten years that the parcels from the September 2017 lease sale would be authorized, it is reasonable to base the impact analysis of the September 2017 lease sale on the typical impacts of drilling two wells.

2.2.2 Well Pad and Road Construction

Equipment for well pad construction could consist of dozers, scrapers, excavators and graders. All well pads would be reclaimed after completion, unless they go into production for a period of time than an interim reclamation is done. All available topsoil from each well pad would be stripped and stockpiled around the edge of the pad for future reclamation. When needed, topsoil would be spread over interim reclamation areas, seeded, left in place for the life of the well, and the remaining topsoil would be used during the final reclamation process. For this analysis, it was assumed that disturbance would be 6 acres per well to account for well pads and any infrastructure (e.g., pipelines) that would be required if the wells were to go into production (section 2.1.3). Disturbed land would be seeded with a mixture (certified weed free) and rate as recommended or required by the BLM.

Depending on the locations of the proposed wells, it is anticipated that some new or upgraded access roads would be required to access well pads and maintain production facilities. Any new roads constructed for the purposes of oil and gas development would be utilized year-round for maintenance of the proposed wells and other facilities, and for the transportation of fluids and/or equipment, and would remain open to other land users. Construction of new roads or upgrades to existing roads would require a 30-foot construction width and would be constructed of native material. After completion of road construction activities, the 30-foot construction width would be reclaimed to an 18-foot wide crowned running surface as well as drainage ditches. It is not

⁴ State of Utah Well History Database data accessed online at:
http://oilgas.ogm.utah.gov/Data_Center/LiveData_Search/well_history_lookup.cfm

possible to determine the distance of any road that would be required because the location of the wells would not be known until the APD stage.

2.2.3 Production Operations

If wells were to go into production, facilities would be located at the well pad and typically include a well head, a dehydrator/separator unit, and storage tanks for produced fluids. The production facility would typically consist of two storage tanks, a truck load-out, separator, and dehydrator facilities. Construction of the production facility would be located on the well pad and not result in any additional surface disturbance.

All permanent surface structures would be painted a flat, non-reflective color (e.g., juniper green) specified by the BLM in order to blend with the colors of the surrounding natural environment. Facilities that are required to comply with the Occupational Safety and Health Act (OSHA) would be excluded from painting color requirements. All surface facilities would be painted immediately after installation and under the direction and approval of the BLM.

If oil is produced, the oil would be stored on location in tanks and transported by truck to a refinery. The volume of tanker truck traffic for oil production would be dependent upon production of the wells.

If natural gas is produced (which is more likely to occur than the production of oil), construction of a gas sales pipeline would be necessary to transport the gas. An additional Sundry Notice, right of way (ROW) and NEPA analysis would be completed, as needed, for any pipelines and/or other production facilities proposed across public lands. The BLM BMPs (Best Management Practices), such as burying the pipeline or installing the pipeline within the road, would be considered at the time of the proposal.

All operations would be conducted following the “Gold Book”, *Surface Operating Standards for Oil and Gas Exploration and Development*. The Gold Book was developed to assist operators by providing information on the requirements for conducting environmentally responsible oil and gas operations on federal lands. The Gold Book provides operators with a combination of guidance and standards for ensuring compliance with agency policies and operating requirements, such as those found at 43 CFR 3000 and 36 CFR 228 Subpart E; Onshore Oil and Gas Orders (Onshore Orders); and Notices to Lessees. Included in the Gold Book are environmental BMPs; these measures are designed to provide for safe and efficient operations while minimizing undesirable impacts to the environment.

Exploration and development on split-estate lands is also addressed in the Gold Book, along with IM 2003-131, Permitting Oil and Gas on Split-Estate Lands and Guidance for Onshore Oil and Gas Order No. 1, and IM 2007-165, Split-Estate Report to Congress – Implementation of Fluid Mineral Leasing and Land Use Planning Recommendations. Proper planning and consultation, along with the proactive incorporation of these BMPs into the APD Surface Use Plan of Operations by the operator, would typically result in a more efficient APD and environmental review process, increased operating efficiency, reduced long-term operating costs, reduced final reclamation needs, and less impact to the environment.

2.2.4 Produced Water Handling

Water is often associated with either produced oil or natural gas. Water is separated out of the production stream and can be temporarily stored in the reserve pit for 90 days. Permanent

disposal options include discharge to evaporation pits or underground injection. Handling of produced water is addressed in Onshore Oil and Gas Order No. 7.

2.2.5 Maintenance Operations

Traffic volumes during production would be dependent upon whether the wells produced natural gas and/or oil, and for the latter, the volume of oil produced. Well maintenance operations may include periodic use of work-over rigs and heavy trucks for hauling equipment to the producing well, and would include inspections of the well by a pumper on a regular basis or by remote sensing. The road and the well pad would be maintained for reasonable access and working conditions. Portions of the well pad not needed for production of the proposed well, including the reserve pit, would be re-contoured and reclaimed, as an interim reclamation of the site.

2.2.6 Plugging and Abandonment

If the wells do not produce economic quantities of oil or gas, or when it is no longer commercially productive, the well would be plugged and abandoned. The wells would be plugged and abandoned following procedures approved by a BLM Petroleum Engineer, which would include requiring cement plugs at strategic positions in the well bore. All fluids in the reserve pit would be allowed to dry prior to reclamation work. After fluids have evaporated from the reserve pit, sub-soil would be backfilled and compacted within 90 days. If the fluids within the reserve pit have not evaporated within 90 days (weather permitting or within one evaporation cycle, i.e. one summer), the fluid would be pumped from the pit and disposed of in accordance with applicable regulations. The well pad would be re-contoured, and topsoil would be replaced, scarified, and seeded within 180 days of the plugging the well.

2.3 Alternative A – Proposed Action

The Proposed Action would offer for lease nine (9) nominated parcels (14,943.09 acres) within the administration of the FFO which have been proposed for auction in the September 2017 oil and gas lease sale and identified in Appendix A. Currently areas are offered for oil and gas leasing subject to measures necessary to mitigate adverse impacts, according to the categories, terms, conditions, notices, and stipulations identified in the HRRRA RMP and the Oil and Gas Leasing in the Fillmore Field Office. In addition to the RMP (as amended), the HRRRA O&G Leasing Implementation EA outlines specific stipulations for resources. Measures identified in the HRRRA RMP are applied through a category system at the time of leasing and the on-the-ground implementation of those stipulations and categories is accomplished through the APD process (BLM 1986, BLM 1987). There are four fluid mineral leasing categories located within the analysis area Categories I through IV.

Category 1 lands within the FFO would be available for leasing with standard lease terms (BLM Form 3100-11). There are no parcels in Category 1 lands. In addition to protections provided for under standard terms of the lease, two mandatory stipulations are imposed by policy by the BLM on every lease issued: one refers to the statutory protection of cultural resources and one for the statutory protection of threatened or endangered species, as described below.

All leases issued, would include the lease stipulation for the protection of cultural resources from H-3120-1, which states:

“This lease may be found to contain historic properties and/or resources protected under the National Historic Preservation Act, American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, or other statutes and executive orders. The

BLM will not approve any ground disturbing activities that may affect any such properties or resources until it completes its obligations under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized or mitigated.”

All leases issued would include the lease stipulation for the protection of threatened or endangered species from H-3120-1 which states:

“The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that would contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity until it completes its obligations under applicable requirements of the ESA as amended, 16 United States Code (USC) 1531 et seq. including completion of any required procedure for conference or consultation.”

In addition, BLM regulations at 43 CFR 3101.1-2 allow, at a minimum, for the relocation of proposed oil and gas leasing operations up to 200 meters and/or timing limitations up to 60 days to provide additional protection to ensure that proposed operations minimize adverse impacts to resources, uses, and users.

There are nine parcels with Category 2 lands within the FFO being offered in the September 2017 Lease Sale. Category 2 lands would be available for leasing subject to the moderate constraints, in addition to the standard lease terms, the two mandatory lease stipulations described above, and the special stipulations identified in the HRRR RMP and the HRRR O&G Leasing Implementation EA. The special stipulations applied to Category 2 lands include timing limitations (TL) and/or controlled surface use (CSU) stipulations for resources such as wildlife habitat, riparian/wetland areas, drinking water source protection zones and visual resource management.

Stipulations serve to modify the rights granted by the standard lease terms when the BLM determines that conflicts exist between the relative resource values, uses, and/or users and oil and gas operations that cannot be adequately managed under the standard lease terms or by relocating the proposed operations up to 200 meters or delaying operations by up to 60 days. In addition to stipulations, lease notices can be attached to a lease to inform the lease purchaser of other resource issues that may occur on the parcel.

Category 3 lands would be available for leasing only with major constraints on the use of the surface, such as the No Surface Occupancy (NSO) stipulations identified in the HRRR RMP and HRRR O&G Leasing Implementation EA. Major constraints would be applied to those leases where adverse impacts would occur through surface use of the land for oil and gas exploration and development. However, there are no parcels in Category 3 lands.

Category 4 lands would include portions of the FFO that have been identified in the RMP, amendments, wilderness designation or interim policy such as the Interim Management Policy for Lands Under Wilderness Review (H-8550-1) that designated the land as closed to leasing. However, there are no parcels in Category 4 lands.

Legal descriptions of each FFO nominated parcel along with the stipulations and the lease notices that would be attached to the parcels under this alternative can be found in Appendix A.

2.4 Alternative B – No Action

The No Action Alternative would not offer any of the nominated parcels for sale.

2.5 Alternatives Considered but Not Carried Forward

A total of nine (9) parcels were nominated and forwarded to the FFO IDPR for review. No unresolved impacts or issues arose from the IDPR review or scoping (internal or external) so there were no additional alternatives considered but not carried forward.

3.0 AFFECTED ENVIRONMENT

3.1 Introduction

This chapter presents the potentially affected existing environment (i.e., the physical, biological, social, and economic values and resources) of the impact area as identified in the FFO Interdisciplinary Team Checklist found in Appendix D and introduced in Chapter 1 of this assessment. This chapter provides the baseline for comparison of impacts/consequences described in Chapter 4. Only those aspects of the affected environment that are potentially impacted are described in detail in this chapter. Resources or uses that are either not present or present but not affected to a degree where detailed discussion in Chapters 3 and 4 is needed are addressed in the Interdisciplinary Team Checklist in Appendix D.

3.2 General Setting

The proposed action would result in the leasing for oil and gas development of nine (9) parcels within the FFO (Appendix C, Juab County Parcels Map). The parcel legal land descriptions are contained in Appendix A.

The FFO parcels UT0817-001, UT0817-002, UT0817-003, UT0817-004, UT0817-005, UT0817-006, UT0817-007, UT0817-008, and UT0817-009 are located west and south of Nephi, in Juab County, Utah. All nine parcels lie on the west side of interstate 15 and encompass parts of the area known as the West Hills, Sage Valley, and Spring Canyon.

3.3 Resources/Issues Brought Forward for Analysis

The affected environment of the Proposed Action and No Action alternatives were considered and analyzed by the interdisciplinary team as documented in the Interdisciplinary Team Checklist, Appendix D. The checklist indicates which resources of concern are either not present in the project area or would not be impacted to a degree that requires detailed discussion in Chapters 3 and 4 of this EA. Resources which could be impacted to a level requiring further analysis are described in this chapter and impacts to these resources are analyzed in Chapter 4.

3.3.1 Air Quality and Greenhouse Gas Emissions

Air quality is affected by various natural and anthropogenic factors. Industrial sources such as oil and gas extraction activities within Central Utah contribute to local and regional air pollution. Air pollutants generated by motor vehicles include tailpipe emissions and dust from travel over dry, unpaved road surfaces. Strong winds can generate substantial amounts of windblown dust.

Air pollution emissions are characterized as point, area, or mobile. Point sources are large, stationary facilities such as power plants and manufacturing facilities and are accounted for on a facility by facility basis. Area sources are smaller stationary sources and, due to their greater number, are accounted for by classes. Production emissions from an oil and gas well and dust from construction of a well pad would be considered area source emissions. Mobile sources consist of non-stationary sources such as cars and trucks. Mobile emissions are further divided into on-road and off-road sources. Engine exhaust from truck traffic to and from oil and gas locations would be considered on-road mobile emissions. Engine exhaust from drilling operations would be considered off road mobile emissions.

The Clean Air Act required the Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The Utah Division of Air Quality (UDAQ) is responsible to ensure compliance

with the NAAQS within the state of Utah. Table 1 shows NAAQS for the EPA designated criteria pollutants (EPA 2008).

Table 1: National Ambient Air Quality Standards

Pollutant	Primary Standards		Secondary Standards	
	Level	Averaging Time	Level	Averaging Time
Carbon Monoxide (CO)	9 ppm (10 mg/m ³)	8-hour ⁽¹⁾	None	
	35 ppm (40 mg/m ³)	1-hour ⁽¹⁾		
Lead (Pb)	0.15 µg/m ³ ⁽²⁾	Rolling 3-Month Average	Same as Primary	
	1.5 µg/m ³	Quarterly Average	Same as Primary	
Nitrogen Dioxide (NO _x)	0.053 ppm (100 µg/m ³)	Annual (Arithmetic Mean)	Same as Primary	
	100 ppb	1-hour	Same as Primary	
Particulate Matter (PM ₁₀)	150 µg/m ³	24-hour ⁽³⁾	Same as Primary	
Particulate Matter (PM _{2.5})	15.0 µg/m ³	Annual ⁽⁴⁾ (Arithmetic Mean)	Same as Primary	
	35 µg/m ³	24-hour ⁽⁵⁾	Same as Primary	
Ozone (O ₃)	0.075 ppm (2008 std)	8-hour ⁽⁶⁾	Same as Primary	
Sulfur Dioxide (SO ₂)	0.03 ppm	Annual (Arithmetic Mean)	0.5 ppm (1300 µg/m ³)	3-hour ⁽¹⁾
	0.14 ppm	24-hour ⁽¹⁾		
	75 ppb	1-hour ⁽¹⁾	None	
<p>Not to be exceeded more than once per year. Final rule signed October 15, 2008. Not to be exceeded more than once per year on average over 3 years. To attain this standard, the 3-year average of the weighted annual mean PM_{2.5} concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m³. To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m³ (effective December 17, 2006). To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm. (effective May 27, 2008).</p>				

Air quality in the area of the parcels is classified as attainment or unclassifiable for the NAAQS, State Department of Environmental Quality and the Division of Air Quality Standards (Utah Division of Air Quality 2013 Annual Report).⁵

An “unclassified” designation indicates that sufficient air monitoring is not available to make a determination as to attainment status. For regulatory purposes an unclassified county is considered the same as attainment. The UDAQ 2013 annual report includes a 2011 emissions inventory (EI) by county (Table 2).

⁵ Accessed online at: http://www.airquality.utah.gov/docs/2013AnnualReport_FINAL.pdf

Table 2. 2011 Triennial Inventory (tons/year)

County	CO	NO _x	PM ₁₀	PM _{2.5}	SO _x	VOC
Juab	12,021.12	1,994.33	1,557.70	426.40	89.63	29,287.15

Although not listed as a NAAQS criteria pollutant, volatile organic compounds (VOC) are also considered in this EA as they, along with NO_x, are precursors to the formation of ozone and are listed by UDAQ as a pollutant that, if the threshold is exceeded, would require an approval order.

This EA addresses mobile off road engine exhaust emissions from drilling activities, venting and flaring emissions from completion and testing activities, emissions from ongoing production activities, and fugitive dust emissions, specifically emissions of total particulate matter of less than 10 micrometers (PM₁₀), from heavy construction operations. PM₁₀ emissions are converted from total suspended particulates by applying a conversion factor of 25%. PM_{2.5} is not specifically addressed as it is included as a component of PM₁₀. PM_{2.5} is converted from PM₁₀ by applying a conversion factor of 15%. This EA does not consider mobile on road emissions as they are dispersed, sporadic, temporary, and not likely to cause or contribute to an exceedance of the NAAQS.

Greenhouse Gases Emissions

“Climate change” refers to any significant change in the measures of climate lasting for an extended period of time. In other words, climate change includes major changes in temperature, precipitation, or wind patterns, among other effects, that occur over several decades or longer. “Global warming” refers to the recent and ongoing rise in global average temperature near Earth’s surface. It is caused mostly by increasing concentrations of greenhouse gases in the atmosphere. Global warming is causing climate patterns to change. However, global warming itself represents only one aspect of climate change. Climate is both a driving force and limiting factor for ecological, biological, and hydrological processes, and has great potential to influence resource management.

CEQ’s first Annual Report in 1970 referenced climate change, indicating that “[m]an may be changing his weather.” It is now well established that rising global atmospheric GHG emission concentrations are significantly affecting the Earth’s climate. These conclusions are built upon a scientific record that has been created with substantial contributions from the United States Global Change Research Program (USGCRP).⁶ Studies have projected the effects of increasing GHGs on many resources normally discussed in the NEPA process, including water availability, ocean acidity, sea-level rise, ecosystem functions, energy production, agriculture and food security, air quality and human health. BLM Permanent Instructional Memorandum (PIM) 2017-003 provides guidance on incorporating GHG emissions and the effects of climate change in the NEPA process.

Based primarily on the scientific assessments of the USGCRP, the National Research Council, and the Intergovernmental Panel on Climate Change, in 2009 the Environmental Protection Agency (EPA) issued a finding that the changes in our climate caused by elevated concentrations of greenhouse gases in the atmosphere are reasonably anticipated to endanger the public health

⁶ See Global Change Research Act of 1990, Pub. L. 101–606, Sec. 103 (November 16, 1990). For additional information on the United States Global Change Research Program [hereinafter “USGCRP”], visit <http://www.globalchange.gov>.

and public welfare of current and future generations. In 2015, EPA acknowledged more recent scientific assessments that “highlight the urgency of addressing the rising concentration of CO₂ in the atmosphere,” [EPA 2015] finding that certain groups are especially vulnerable to climate-related effects. Broadly stated, the effects of climate change observed to date and projected to occur in the future include more frequent and intense heat waves, longer fire seasons and more severe wildfires, degraded air quality, more heavy downpours and flooding, increased drought, greater sea-level rise, more intense storms, harm to water resources, harm to agriculture, ocean acidification, and harm to wildlife and ecosystems.

Consistent with the guidance in PIM 2017-003,, this EA includes a qualitative and quantitative analysis of possible greenhouse gas emissions that could occur as a result of reasonably foreseeable oil and gas development associated with the parcels being offered for lease. Additional information about potential emissions would also be available and calculated as part of subsequent site-specific reviews at the APD stage.

It is accepted within the scientific community that global temperatures have risen at an increased rate and the likely cause is gases that trap heat in the atmosphere, referred to as greenhouse gases (GHG). GHGs are composed mostly of carbon dioxide (CO₂), nitrous oxide (N₂O), methane (CH₄), water vapor, and ozone. The greenhouse gas effect is the process in which the radiation from the sun that heats the surface of Earth gets blocked by GHG molecules in Earth’s atmosphere. Since GHGs are composed of molecules that absorb and emit infrared electromagnetic radiation (heat), they form an intrinsic part of the greenhouse effect.

Greenhouse gases are often presented using the unit of Metric Tons of CO₂ equivalent (MT CO₂e) or Million Metric Tons (MMT CO₂e), a metric to express the impact of each different greenhouse gas in terms of the amount of CO₂ making it possible to express greenhouse gases as a single number. For example, 1 ton of methane would be equal to 25 tons of CO₂ equivalent, because it has a global warming potential (GWP) 25 times that of CO₂ [USEPA, 2016a].

As defined by USEPA, the GWP provides “ratio of the time-integrated radiative forcing from the instantaneous release of one kilogram of a trace substance relative to that of one kilogram of CO₂.” The GWP of greenhouse gas is used to compare global impacts of different gases and used specifically to measure how much energy the emissions of one ton of gas will absorb over a given period of time (e.g. 100 years), relative to the emissions of one ton of CO₂. The GWP accounts for the intensity of each GHG’s heat trapping effect and its longevity in the atmosphere. The GWP provides a method to quantify the cumulative effects of multiple GHGs released into the atmosphere by calculating carbon dioxide equivalent for the GHGs:

- Carbon dioxide (CO₂), by definition, has a GWP of 1 regardless of the time period used because it is the gas being used as the reference. CO₂ remains in the climate system for a very long time; CO₂ emissions cause increases in the atmospheric concentrations of CO₂ that will last thousands of years [EPA, 2016a].
- Methane (CH₄) is estimated to have a GWP of 28-36 times that of CO₂ over 100 years. CH₄ emitted today lasts about a decade on average, which is much less time than CO₂. But CH₄ also absorbs much more energy than CO₂. The net effect of the shorter lifetime and higher energy absorption is reflected in the GWP. The methane GWP also accounts

for some indirect effects, such as the fact that methane is a precursor to ozone, and ozone is in itself a greenhouse gas [EPA, 2016a].

- Nitrous Oxide (N₂O) has a GWP of 265-298 times that of CO₂ for a 100-year timescale. N₂O emitted today remains in the atmosphere for more than 100 years, on average [EPA, 2016a]. Table 3 contains GHGs regulated by USEPA and global warming potentials.

Table 3. GHG Regulated by USEPA and Global Warming Potentials

Air Pollutant	Chemical Symbol/ Acronym	Global Warming Potential
Carbon Dioxide	CO ₂	1
Methane	CH ₄	25
Nitrous Oxide	N ₂ O	298
Hydrofluorocarbons	HFCs	Varies
Perfluorocarbons	PFCs	Varies
Sulfur hexafluoride	SF ₆	22,800

Source: [USEPA, 2016a]

The IPCC concluded that “warming of the climate system is unequivocal” and “most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic GHG concentrations.” [IPCC 2007]. Extensive research and development efforts are underway in the field of carbon capture and sequestration (CCS) technology, which could help direct management strategies in the future. The IPCC has identified a target worldwide “carbon budget” to estimate the amount of CO₂ the world can emit while still having a likely chance of limiting global temperature rise to 2°C above pre-industrial levels. The international community estimates this budget to be 1 trillion tons of carbon [IPCC, 2016].

Because GHGs circulate freely throughout Earth’s atmosphere, climate change is a global issue. The largest component of global anthropogenic GHG emissions is CO₂. Global anthropogenic carbon emissions reached about 7,000,000,000 MT per year in 2000 and an estimated 9,170,000,000 MT per year in 2010 [Boden, Marland, & Andres, 2013]. Oil and gas production contributes to GHGs such as CO₂ and CH₄. Natural gas systems were the largest anthropogenic source category of CH₄ emissions in the United States in 2014 with 176.1 MMT CO₂ e of CH₄ emitted into the atmosphere. Those emissions have decreased by 30.6 MMT CO₂ e (14.8 percent) since 1990 [EPA, 2016b].

Global mean surface temperatures have increased nearly 1.0°C (1.8°F) from 1890 to 2006 [NASA 2007]. In 2001, the IPCC (2007) indicated that by the year 2100, global average surface temperatures would increase 1.4 to 5.8°C (2.5 to 10.4°F) above 1990 levels. The National Academy of Sciences [Hansen et al., 2006] has confirmed these findings, but also indicated that

there are uncertainties regarding how climate change may affect different regions. Observations and predictive models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Data indicate that northern latitudes (above 24° N) have exhibited temperature increases of nearly 1.2°C (2.1°F) since 1900, with nearly a 1.0°C (1.8°F) increase since 1970 alone. It also shows temperature and precipitation trends for the conterminous United States. For both parameters we see varying rates of change, but overall increases in both temperature and precipitation.

The effects of climate change observed to date and projected to occur in the future include more frequent and intense heat waves, longer fire seasons and more severe wildfires, degraded air quality, more heavy downpours and flooding, increased drought, greater sea-level rise, more intense storms, harm to water resources, harm to agriculture, ocean acidification, and harm to wildlife and ecosystems.

In recent years, many states, tribes, and other organizations have initiated GHG inventories, tallying GHG emissions by economic sector. The U.S. EPA provides links to statewide GHG emissions inventories [EPA, 2015]. Guidelines for estimating project-specific GHG emissions are available [URSC, 2010], but some additional data, including the projected volume of oil or natural gas produced for an average well, number of wells (as well as other factors described in Section 4.2.1.1 Air Quality) were used to provide GHG estimates.

3.3.2 Migratory Birds

A variety of migratory songbird species use habitats within the parcels for breeding, nesting, foraging, and migratory habitats. Migratory birds are protected under the Migratory Bird Treaty Act of 1918 (MBTA). The MBTA makes it unlawful to pursue, hunt, kill, capture, possess, buy, sell, purchase, or barter any migratory bird, including the feathers or other parts, nests, eggs, or migratory bird products unless it is a permitted action. The Executive Order 13186 sets forth the responsibilities of Federal agencies to further implement provisions of the MBTA by integrating bird conservation principles and practices into agency activities and by ensuring that Federal actions evaluate the effects of proposed actions and agency plans on migratory birds. BLM's role under the Migratory Bird Treaty Act (MBTA) is to adequately manage migratory birds and their habitats, and to reduce the likelihood of a sensitive bird species from being listed under the Endangered Species Act.

In addition, a Memorandum of Understanding (MOU) between the BLM and United States Fish and Wildlife Service (USFWS) (BLM MOU WO-230-2010-04) provides BLM further direction for project-level NEPA guidance for meeting MBTA conservation and compliance. The emphasis is on identifying sensitive bird species and habitats through the USFWS 2008 Birds of Conservation Concern (BCC) Species List, the Utah Partners in Flight (UPIF) Species List (IM 2008-050), and BLM Sensitive Species List. The MOU direction includes evaluating the effects of BLM's actions on these species during the NEPA process; including effects on bird population and habitat. The BLM is to implement approaches to lessen the likelihood of impacts by having project alternatives that avoid, minimize and mitigate adverse impacts for migratory birds and the habitats they depend upon that are most likely to be present in the Project Area.

The Project Area is within the USFWS Bird Conservation Region 9, Great Basin (USFWS 2008), which is a large and complex region that includes the Northern Basin and Range, Columbia Plateau, and eastern slope of the Cascade Range. Dominant vegetation communities

include grasslands, sagebrush and xeric shrubs in the low elevation valleys, with pinyon pine-juniper woodlands and ponderosa pine forests in the higher elevations. Large lowland wetlands are important within this region such as the Great Salt Lake and associated marshes. The Project Area is also within the 2005 Intermountain West Joint Venture (IWJV 2005) Sevier Bridge/Chicken Creek Bird Habitat Conservation Area (BHCA). The Sevier Bridge/Chicken Creek BHCA management importance includes protection, restoration, and enhancement of wetlands associated with Chicken Creek Reservoir, the Sevier River, and Sevier Bridge Reservoir for waterfowl, migratory birds and resident birds.

Migratory birds that could be found in this portion of Juab County that could potentially utilize the environment within the vicinity of the proposed oil and gas lease parcels include, but are not limited to: golden eagle (*Aquila chrysaetos*), bald eagle (*Haliaeetus leucocephalus*), burrowing owl (*Athene cunicularia*), Ferruginous hawk (*Buteo regalis*), black-throated gray warbler (*dendroica nigrescens*), Brewer's sparrow (*Spizella breweri*), broad-tailed hummingbird (*selasphorus platycercus*), loggerhead shrike (*Lanius ludovicianus*) northern harrier (*Circus cyaneus*), pinyon jay (*Gymnorhinus cyanocephalus*), prairie falcon (*Falco mexicanus*), and sage sparrow (*amphispiza belli*).

The migratory bird primary nesting period occurs from March 1 through July 15. Any exploration drilling, or development during this period would require that nest surveys be conducted by a qualified biologist and appropriate spatial and temporal buffers applied to mitigate any nest destruction or abandonment.

All of the parcels lie within habitat used by a variety of raptors. The default raptor spatial and temporal nest buffers and timeframes are species specific and are defined by the Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances (USFWS 2002). Prior to any exploration, drilling, and other development, nest occupancy surveys by a qualified biologist would need to be conducted and the appropriate spatial and temporal buffers applied.

All the proposed parcels lie within golden eagle habitat that may be suitable for nesting and foraging. Default nest spatial and temporal conservation measures are in effect from January 1 through September 31 and require a 0.5-mile buffer. Prior to any exploration, drilling, and other development, nest occupancy surveys by a qualified biologist will need to be conducted and the appropriate spatial and temporal buffers applied.

All the proposed parcels also lie within the seasonal range of bald eagles. Bald eagles are not known to nest in this area but are known to visit during the winter months from November 1 through February. There are no known winter roosts in close proximity to the parcels; however, any exploration, drilling, or other development activities within 0.5-miles of any potential roosting habitat would be required to confirm if bald eagles are roosting within the vicinity of the development site. Appropriate spatial and daily timing measures may need to be applied accordingly.

3.3.3 Wildlife – Special Status Species (Threatened, Endangered, Proposed, Candidate and BLM Sensitive)

Section 7 of the Endangered Species Act (ESA) requires BLM land managers to ensure that any action authorized, funded or carried out by the BLM is not likely to jeopardize the continued existence of any threatened or endangered species. Consultation with USFWS is required on any

action proposed by the BLM or another Federal agency that affects a listed species or that jeopardizes or modifies critical habitat.

The management of special status species is guided by the BLM 6840 Manual, Special Status Species Management (2008). The objective of the 6840 Manual is to: 1) To conserve and/or recover ESA-listed species and the ecosystems on which they depend so that ESA protections are no longer needed for these species and 2) To initiate proactive conservation measures that reduce or eliminate threats to Bureau sensitive species to minimize the likelihood of and need for listing of these species under the ESA.

At this time, there are no federally listed threatened, endangered, or candidate species or critical habitat known to occur within or reasonably near the proposed oil and gas lease parcels.

Special status species as identified by the BLM Utah Special Status Species 2010 list (Instruction Memorandum 2011-037, Threatened, endangered, and sensitive plant and animal species management) that have the potential to occur within or reasonably near the proposed oil and gas lease parcels include, but not limited to, bald eagle (*Haliaeetus leucocephalus*), burrowing owl (*Athene cunicularia*), dark kangaroo mouse (*Microdipodops megacephalus*), ferruginous hawk (*Buteo regalis*), golden eagle (*Aquila chrysaetos*), greater sage-grouse (*Centrocercus urophasianus*), kit fox (*Vulpes macrotis*), long-billed curlew (*Numenius Americana*), pygmy rabbit (*Brachylagus idahoensis*), short-eared owl (*Asio flammeus*), and Townsend's big-eared bat (*Corynorhinus townsendii*) (Table 4).

Table 4. Special Status Species Status and Potential Occurrence

Species	Status	Potential Occurrence and Habitat Type
Bald Eagle	Bald and Golden Eagle Protection Act, BLM Sensitive	Refer to Section 3.3.2.
Burrowing Owl	BLM Sensitive	Burrowing owls can be found throughout open landscapes including the Project Area. Preferred habitat is grasslands, rangelands, agricultural areas, deserts, or any other open dry area with low vegetation. They nest and roost in burrows, such as those excavated by prairie dogs.
Dark Kanagaroo Mouse	BLM Sensitive	In Utah, dark kangaroo mouse primarily occurs in sagebrush areas with sandy soils.
Ferruginous Hawk	BLM Sensitive	Preferred habitat is the arid and semiarid grassland regions of North America, including the Project Area. The countryside is open, level, or rolling prairies; foothills or middle elevation plateaus largely devoid of trees; and cultivated shelterbelts or riparian corridors. Rock outcrops, shallow canyons, and gullies may characterize some habitats. These hawks

		avoid high elevations, forest interiors, narrow canyons, and cliff areas. Nesting has been documented within approximately 2 miles of Parcel 007.
Golden Eagle	Bald and Golden Eagle Protection Act	Refer to Section 3.3.2.
Greater Sage-grouse	BLM Sensitive	Refer to greater sage-grouse discussion below.
Kit Fox	BLM Sensitive	Kit fox are most often associated with open shrubland/salt desert shrub habitat.
Long-billed Curlew	BLM Sensitive	Long-billed curlew are fairly common summer residents and migrants in Utah and are primarily found in grassland and meadowland type habitats using higher and drier meadows than any other shorebird species. Curlews are likely widely distributed in appropriate habitats within the Project Area.
Pygmy Rabbit	BLM Sensitive	Pygmy rabbits are found primarily in big sagebrush and rabbitbrush dominated communities. Pygmy rabbits are also found in areas where greasewood is abundant.
Short-eared Owl	BLM Sensitive	Short-eared owls are usually found in grasslands, shrublands and open habitats.
Townsend's Big-eared Bat	BLM Sensitive	Townsend's big-eared bat occurs in a variety of habitat types in Utah often near forested areas. Caves, mines, and buildings are used for day roosting and winter hibernation.

Greater Sage-grouse

Greater sage-grouse was a candidate for listing under provisions of the ESA as determined by the USFWS and documented in a March 2010 Federal Register Notice declaring that listing was warranted but precluded by higher priorities. On October 2, 2015, the USFWS determined the greater sage-grouse was not warranted for protection under ESA (80 FR 59857) following an unprecedented planning effort completed by the BLM and U.S. Forest Service.

Within the Sheeprock Mountain Population Area, Priority Habitat and General Habitat Management Areas (PHMA and GHMA) have been delineated by the *Utah Greater Sage-grouse Approved Resource Management Plan Amendment* (ARMPA; BLM 2015). Management of the species is guided by the ARMPA and fluid mineral leasing in GRSG is also guided by Instruction Memorandum #2016-143, *Implementation of Greater Sage-grouse Resource Management Plan Revisions or Amendments – Oil & Gas Leasing and Development Sequential Prioritization*. The Sheeprocks sage-grouse population area is within Western Association of Fish and Wildlife Agencies (WAFWA) Southern Great Basin Management Zone III. PHMA are lands identified as having the highest value in order to maintain suitable GRSG populations. GHMA are lands occupied seasonal or year-round habitat but outside of PHMA. These two habitat delineations include breeding, late brood-rearing, winter concentration areas, and known migration or connectivity corridors.

In 2015, active male lek counts within the Sheepricks Population Area were much reduced compared to 2006 active male lek counts. Because of a long-term downward population trend in this population, a *hard trigger* has been met. Hard trigger thresholds were identified in Appendix I (Adaptive Management) of the ARMPA (BLM 2015). Portions of the population that were identified in the ARMPA (BLM 2015) as GHMA have recently been changed to PHMA with corresponding changes in management to reflect the higher prioritization and habitat management emphasis has been amplified accordingly (e.g., no surface occupancy, disturbance cap, parcel prioritization). The West Desert Adaptive Resource Management Local Working Group provided recommendations to initiate a translocation program, which was initiated in 2016 (Chelak and Messmer 2016). The program also incorporates GPS transmitters and VHF radio-collars. General locations of translocated and resident sage-grouse in the Sheepricks Population Area in 2016 is available in the 2016 Annual Report for this study (Chelak and Messmer 2016).

There are four 2017 Oil and Gas Parcels (parcels 001, 002, 003, and 007) being offered that occur within PHMA (see map-Appendix E). The parcels 001, 002, 003, and 007 are located in eastern Juab County approximately 7.0-miles west and south of Nephi, Utah on the eastern edge of the Sheeprick Mountain Population Area. This landscape is generally rolling/low mountain topography with higher amounts of sagebrush at lower elevation within broader valleys/basins and juniper dominated communities on steeper slopes and ridgelines. Elevation from valley to ridgelines is about 200-500 feet. The ridgelines and juniper communities generally run north and south. Sagebrush does occur within juniper stands although scattered and at reduced densities. It is likely the juniper community had a substantial sagebrush component historically under a more natural disturbance regime, but over the years, the vegetation community has been altered by juniper encroachment, range vegetation type conversions, wildfire, and wildfire rehabilitation. This has resulted in decreased quality/quantity of sagebrush habitat and increased sagebrush community fragmentation and reduced connectivity; substantially reducing the quality and quantity of habitat available for sage-grouse.

The greater sage-grouse habitat within the parcels has been identified as brood-rearing and winter habitat by UDWR (UDWR 2012 GIS Data). Information about sage-grouse use of the PHMA within or near parcels 001, 002, 003, and 007 is limited however, the UDWR indicated there were multiple sage-grouse sightings in the 1990s within one mile of Parcels 001 and 002.

An assessment to characterize the habitat composition and management potential was conducted on portions of Parcels 001, 002, 003, and 007 that lie within PHMA and along the eastern boundary of the mapped habitat and the results are summarized below:

Sage-grouse habitat (i.e. as evidenced by mapping, the delineation of PHMA, and presence of sagebrush) does exist within the four parcels. Across the landscape (i.e. includes public, State, and private lands) the habitat has been altered by the impacts identified above. Parcels 001 (25.5 acres), 002 (631.6 acres), 003 (292.4 acres) and 007 (958.7 acres) (see Table 5 below) have portions within PHMA near Dog Valley. These parcels are 5.0 miles or further from the Furner Valley lek and 2.0 miles from the edge of the 3.1 mile lek buffer established by the ARMPA (2015n, Appendix G). Sage-grouse habitat in this area of PHMA is identified as brood-rearing and winter ranges.

A majority of Dog Valley is private property and has been altered (e.g. crested wheatgrass seeding) to rehabilitate wildfire or enhance livestock forage and patches of remnant sagebrush do also occur. The portions of parcel 002, 003 and 007 that are within areas now identified by the ARMPA as PHMA appear that they could be restored to greater sage-grouse habitat by juniper/vegetation treatments (observation by Jim Priest, field visit 5/27/17). A portion of Parcel 001 is also within the identified PHMA however, wildfires and subsequent rehabilitation have reduced the diversity and structure of the sagebrush, grass, and forb community but is not occupied at this time.

In general, with the exception of Parcel 001, a sagebrush/grass community with encroaching juniper occupies Parcels 002, 003, and 007. Although the habitat use by sage-grouse in these parcels (002, 003, and 007) is unknown, the fundamental elements of sage-grouse habitat such as sagebrush, perennial grasses, and preferred forbs are present and may provide cover and forage for sage-grouse. The presence of juniper, nearby powerlines, and columnar sagebrush shape may also reduce habitat favorability in this area for sage-grouse. In Parcel 001, the composition and diversity of the sagebrush community has been reduced due to past wildfire and wildfire rehabilitation efforts, which has resulted in a vegetation community that is largely perennial (crested wheatgrass) and annual grasses with a reduced sagebrush component. Riparian habitat associated with meadows, wetlands, stream, seeps, and springs is absent from all the parcels, which limits the value of the habitat to provide for late brood-rearing activities. Sage-grouse habitat declines sharply at the eastern and southern PHMA habitat boundary of parcels 001, 002, 003, and 007 as the slopes increase and the juniper increases. Regarding parcels 004, 005, 006, 008, and 009, sage-grouse habitat quality/quantity substantially declines south of the PHMA boundary due to heavy juniper occurrence and the fragmentation and absence of remnant sagebrush communities.

The closest active sage-grouse lek is in Furner Valley, which is approximately 5.0-miles from the nearest Parcel (007). Furner is the next valley to the west of Dog Valley separated by a low divide of juniper where the BLM and private landowners are currently conducting juniper reduction treatments to improve the sagebrush community, reduce habitat fragmentation, and improve habitat connectivity to benefit sage-grouse. There is sufficient sagebrush habitat currently within or near the parcels, although fragmented and of variable quality quantity, for sage-grouse use.

Table 5. Acres of PHMA and SGMA Habitat Values, and Leks within 3.1 Miles of Lease Parcels

Parcel #	Total Parcel Acres	Priority Habitat Management Area (Acres)	Percent of Parcel in PHMA	Leks within 3.1 miles of Parcel	Seasonal Habitat Values		
					Brood-rearing (Acres)	Winter (Acres)	Nesting* (Acres)
001	162.98	25.5	16%	0	25.5	25.5	0
002	840	631.6	75%	0	631.6	631.6	0
003	1,680	292.4	17%	0	292.4	292.4	0
007	1,008.70	958.7	95%	0	958.7	958.7	0

* Nesting habitat was defined as habitat within 3.1 miles of leks.

4.0 ENVIRONMENTAL IMPACTS

4.1 Introduction

This chapter discusses the environmental consequences of implementing the alternatives described in Chapter 2. Under NEPA, actions with the potential to affect the quality of the human environment must be disclosed and analyzed in terms of direct and indirect effects (whether beneficial or adverse and short or long term) as well as cumulative effects. Direct effects are caused by an action and occur at the same time and place as the action. Indirect effects are caused by an action and occur later or farther away from the resource but are still reasonably foreseeable. Beneficial effects are those that involve a positive change in the condition or appearance of a resource or a change that moves the resource toward a desired condition. Adverse effects involve a change that moves the resource away from a desired condition or detracts from its appearance or condition. Cumulative effects are the effects on the environment that result from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions.

The No Action alternative (offer none of the nominated parcels for sale), serves as a baseline against which to evaluate the environmental consequences of the Proposed Action alternative (offer nine (9) nominated parcels for lease sale with additional resource protective measures). For each alternative, the environmental effects are analyzed for the resource topics that were carried forward for analysis in Chapter 3.

4.2 Direct and Indirect Impacts

4.2.1 Alternative A – Proposed Action

4.2.1.1 Air Quality and Greenhouse Gas Emissions

The act of leasing would not result in changes to air quality. However, should the leases be issued, development of those leases could impact air quality conditions.

At the leasing stage, specific information regarding the location, extent, and the operating procedures and technologies that might be utilized for oil and/or gas development operations on the subject lease parcels does not exist. As such, it is not possible to accurately estimate potential air quality impacts with computer modeling for the lease sale project due to the variation in emission control technologies as well as construction, drilling, and production technologies applicable to oil versus gas production and utilized by various operators, so this discussion remains qualitative.

Prior to authorizing specific proposed projects on the subject lease parcels, quantitative computer modeling using project specific emission factors and planned development parameters (including specific emission source locations) may be conducted to adequately analyze direct and indirect potential air quality impacts. In conducting subsequent project specific analysis BLM will follow the policy and procedures of the National Interagency MOU Regarding Air Quality Analysis and Mitigation for Federal Oil and Gas Decisions through NEPA, and the FLAG 2010 air quality guidance document. Air quality dispersion modeling which may be required includes impact analysis for demonstrating compliance with the NAAQS, plus analysis of impacts to Air Quality Related Values (i.e. deposition, visibility), particularly as they might affect regional Class 1 areas (national parks and wilderness areas).

An oil or gas well, including the act of drilling, is considered to be a minor source under the Clean Air Act. Minor sources are not controlled by regulatory agencies responsible for implementing the Clean Air Act. In addition, control technology is not required by regulatory agencies at this point, since all of the parcels occur in NAAQS attainment areas. Different emission sources would result from the two site specific lease development phases: well development and well production.

Well development includes emissions from earth-moving equipment, vehicle traffic, drilling, and completion activities. NO_x, SO₂, and CO would be emitted from vehicle tailpipes. Fugitive dust concentrations would increase with additional vehicle traffic on unpaved roads and from wind erosion in areas of soil disturbance. Drill rig and fracturing engine operations would result mainly in NO_x and CO emissions, with lesser amounts of SO₂. These temporary emissions would be short-term during the drilling and completion times.

During well production there are continuous emissions from separators, condensate storage tanks, and daily tailpipe and fugitive dust emissions from operations traffic. During the operational phase of the Proposed Action, NO_x, CO, VOC, and HAP emissions would result from the long-term operation of condensate storage tank vents, and well pad separators. Additionally, road dust (PM₁₀ and PM_{2.5}) would be produced by vehicles servicing the wells.

Project emissions of ozone precursors, whether generated by construction and drilling operations, or by production operations, would be dispersed and/ or diluted to the extent where any local ozone impacts from the Proposed Action would be indistinguishable from background or cumulative conditions. The primary sources of hazardous air pollutants (HAPs) are from oil storage tanks and smaller amounts from other production equipment. Small amounts of HAPs are emitted by construction equipment. However, these emissions are estimated to be less than 1 ton per year. Based on the negligible amount of project-specific emissions, the Proposed Action is not likely to violate, or otherwise contribute to any violation of any applicable air quality standard, and may only contribute a small amount to any projected future potential exceedance of any applicable air quality standards.

The construction, drilling, completion, testing, and production of an oil and gas well could result in various emissions that affect air quality. Construction activities result in emissions of PM₁₀. Well drilling activities result in engine exhaust emissions of NO_x, CO, and VOC. Completion and testing of the well result in emissions of VOC, NO_x, and CO. Ongoing production results in the emission of NO_x, CO, VOC, and PM₁₀.

Due to the very small level of anticipated development, an emissions inventory (EI) has not been conducted for the September 2015 Oil and Gas Lease Sale. A typical oil and gas well EI is estimated for the purpose of this analysis and is based on the following assumptions:

- Each oil and gas well would cause 6 acres of surface disturbance. This acreage includes access.
- Construction activity for each well is assumed to be 10 days. It is further assumed that, based on the acreage disturbed, 4.5 days would be spent in well pad construction and 5.5 days would be spent in road and pipeline construction.
- Control efficiency of 25% for dust suppression would be achieved as a result of compliance with Utah Air Quality regulation R307-205.
- Post construction particulate matter (dust) emissions are likely to occur on a short term basis due to loss of vegetation within the construction and staging areas. Assuming

appropriate interim reclamation, these emissions are likely to be minimal to negligible and will not be considered in this EA.

- Drilling operations would require 14 days.
- Completions and testing operations would require 3 days.
- Off road mobile exhaust emissions from heavy equipment during construction activities and on road mobile emissions would not be considered as they are dispersed, sporadic, temporary, and not likely to cause or contribute to exceedance of the NAAQS.

If exploration occurs, short-term impacts would be stabilized or managed rapidly (within two to five years), and long-term impacts are those that would substantially remain for more than five years.

An air quality best management practice (BMP) which discusses the amounts of NO_x emission per horse-power hour based on internal combustion engine size, would be attached to all parcels. A lease notice (UT-LN-101) would be attached to all leases and would consist of the following provisions:

- All new and replacement internal combustion gas field engines of less than or equal to 300 design-rated horsepower must not emit more than 2 grams of NO_x per horsepower-hour. This requirement does not apply to gas field engines of less than or equal to 40 design-rated horsepower.
- All new and replacement internal combustion gas field engines of greater than 300 design rated horsepower must not emit more than 1.0 gram of NO_x per horsepower-hour. Emission factors for activities of the Proposed Action were based on information contained in the EPA’s Emission Factors & AP 42, Volume I, Fifth Edition (EPA.1995), available at: <http://www.epa.gov/ttn/chief/ap42/index.html>. The production emissions from oil storage tanks was estimated based on the emission factor contained in the Colorado Department of Public Health and Environment PS Memo 05-01, Oil & Gas Atmospheric Condensate Storage Tank Batteries Regulatory Definitions and Permitting Guidance (CDPHE 2009), available at: <http://www.cdphe.state.co.us/ap/down/ps05-01.pdf>.

Table 6: Emissions Estimate

	Construction Emissions (Tons)	Drilling Emissions (Tons)			Completions Emissions (Tons)				Ongoing Production Emissions (Tons/year)			
	PM ₁₀	NO _x	CO	VOC	VOC	NO _x	CO	PM ₁₀	NO _x	CO	VOC	PM ₁₀
Typical Well	0.34	13.31	1.83	0.23	0.85	0.07	0.07	0.00	0.01	0.01	6.44	0.00000
Sub Total	0.34	13.31	1.83	0.23	0.85	0.07	0.07	0.00	0.01	0.01	6.44	0.00000
					PM ₁₀	NO _x	CO	VOC				

Activity Emissions (Total emissions for drilling and completion the well)	0.34	13.37	1.89	1.08	Tons			
Production Emissions (Ongoing annual emissions for the well)	0.00000	0.01	0.01	6.44	tpy			

Based on the emissions estimates contained in Table 6 substantial air resource impacts are not anticipated as a result of this leasing action, and no further analysis or modeling is warranted. Emissions resulting from the September 2017 Oil and Gas Lease Sale are not likely to result in major impacts to air quality nor are they likely to cause a violation of the NAAQS.

Best management practices (BMP) would be developed to address oil and gas development emissions that may have an effect on regional ozone formation and these BMP would be required at the time of development on any of the leases (UT-LN-96). The regional ozone formation BMPs are:

- All internal combustion equipment would be kept in good working order.
- Water or other approved dust suppressants would be used at construction sites and along roads, as determined appropriate by the Authorized Officer.
- Open burning of garbage or refuse would not occur at well sites or other facilities.
- Drill rigs would be equipped with Tier II or better diesel engines.
- Vent emissions from stock tanks and natural gas TEG dehydrators would be controlled by routing the emissions to a flare or similar control device which would reduce emissions by 95% or greater.
- Low bleed or no bleed pneumatics would be installed on separator dump valves and other controllers.
- During completion, flaring would be limited as much as possible. Production equipment and gathering lines would be installed as soon as possible.
- Well site telemetry would be utilized as feasible for production operations.
- Stationary internal combustion engine would comply with the following standards: 2g NOx/bhp-hr for engines <300HP; and 1g NOx/bhp-hr for engines >300HP.

Additional air quality control measures may be warranted and imposed at the APD stage (e.g. UT-LN-102). These control measures are dependent on future regional modeling studies, other analysis or changes in regulatory standards.

Green House Gas

Greenhouse Gas (GHG) emissions calculations are partially based on production, and production from the two wildcat wells anticipated in the RFD is not likely to occur due to the low development potential and exploratory nature of the area. However, in anticipation that there may eventually be a second strike in western Utah, it will be assumed for this EA that production from each well is equivalent to the longest producing well in the Wolverine field. By doing so, should a discovery occur somewhere in western Utah, the collective calculations from the all the EAs prepared for lease sales within the region will have disclosed a reasonable projection of the emissions from the initial development of the field. More refined NEPA analysis and emissions calculations would occur should development warrant submission and analysis of a Master Development or Field Development Plan.

PIM 2017-003 cautions against using a comparison of global GHG emissions to project-specific GHG emissions as a stand-alone reason for no detailed analysis. In light of the difficulties in attributing specific climate impacts to individual projects, PIM 2017-003 recommends agencies use the projected GHG emissions as a proxy for assessing a Proposed Action's potential climate change impacts.

Direct Greenhouse Gas Emissions

Total Greenhouse Gas Warming Potential (GWP), which includes direct emissions of carbon dioxide, methane, and nitrous oxide from an oil or gas producing well is estimated based on using a generic emissions calculator available on the BLM Utah Air Quality webpage (http://www.blm.gov/ut/st/en/prog/more/air_quality/airprojs.html) which shows emissions of 1,192 tons per year CO₂-e for a single operational well, and 2,305 tons per year CO₂-e for a single drill rig.

Indirect (Downstream) Greenhouse Gas Emissions

Indirect GHG emissions are estimated based on an average cumulative production rate of 2,109,876 barrels of oil over the life of a well, based on the production history for the oldest producing well in the Wolverine field [Utah DOGM, 2016]. Only oil production is estimated, as it is not anticipated any gas production will occur on these parcels. Indirect GHG emissions are also only calculated for carbon dioxide based on combustion of the product.

Using an RFD of two wells for the lease sale and an EPA emissions factor of 0.43 Metric tons of CO₂ per Barrel, [EPA, 2016a] indirect GHG emissions can be estimated at 1,814,493 metric tons per parcel. Actual GHG emissions may range from zero (assuming no lease parcels sold or developed) to an indeterminate upper range based on realized production rates, control technology, and physical characteristics of any oil produced.

Uncertainties of GHG Calculations

Although this EA presents a quantified estimate of potential GHG emissions associated with reasonably foreseeable oil and gas development, there is significant uncertainty in GHG emission estimates due to uncertainties with regard to eventual production volumes and variability in flaring, construction, and transportation.

End Uses

The estimates above provide a complete GHG lifecycle of a well from site inspection to possible indirect emissions through combustion. A rough estimate was possible using publicly available information and using estimates from future production for reasonably foreseeable development. With respect to the rough estimates of indirect CO₂ emissions, it should be noted that it is difficult to discern with certainty what end uses for the fuels extracted from a particular leasehold might be reasonably foreseeable. For instance, some end uses of fossil fuels extracted from Federal leases include: combustion of transportation fuels, fuel oils for heating and electricity generation, as well as production of asphalt and road oil, and the feedstocks used to make chemicals, plastics, and synthetic materials. At this time, there is some uncertainty with regard to the actual development that may occur.

It is important to note that the BLM does not exercise control over the specific end use of the oil and gas produced from any individual federal lease. The BLM has no authority to direct or regulate the end use of the produced oil and/or gas. As a result, the BLM can only provide an

estimate of potential GHG emissions using national approximations of where or how the end use may occur because oil, condensate, and natural gas could be used for combustion of transportation fuels, fuel oils for heating and electricity generation, as well as production of asphalt and road oil, and the feedstocks used to make chemicals, plastics, and synthetic materials.

Availability of Input Data

In light of the difficulties in attributing specific climate impacts to individual projects, PIM 2017-003 recommends agencies use the projected GHG emissions as a proxy for assessing a Proposed Action's potential climate change impacts. Estimates were made based on readily available data and reasonable assumptions about potential future development. There are many factors that affect the potential for GHG emissions estimates at the leasing stage: a lease may not be purchased, so no GHG emissions would be expected; a lease may be purchased but never explored, so again there would be no GHG emissions; a lease may be purchased and an exploratory well drilled that showed no development potential, so minimal GHG emissions would occur; or a lease may be purchased, explored, and developed. If developed there are notable differences in the potential for emissions related to a wide variety of variables, including the production potential of the well, economic considerations, regulatory considerations, and operator dynamics, to name a few. Further NEPA analysis would be conducted at the APD stage, when specific development details with which to analyze potential GHG emissions are likely to be known.

Monetizing Costs and Benefits: Social Cost of Greenhouse Gases

PIM 2017-003 guidance states that "NEPA does not require monetizing costs and benefits" and allows for agency discretion in including monetized assessment of the impacts of GHGs in NEPA documents. The BLM finds that including monetary estimates of the social cost of GHGs (SC GHG) in its NEPA analysis for this Proposed Action would not be useful. Since the BLM is not doing a cost-benefit analysis in this NEPA document, we do not believe monetizing only SCC would be instructive.

Possible Future Best Management Practices, Standard Operating Procedures, and/or Mitigation Measures

The BLM holds regulatory jurisdiction over portions of natural gas and petroleum systems, identified in the USEPA *Inventory of U.S. Greenhouse Gas Emissions and Sinks* [EPA, 2016d]. Exercise of this regulatory jurisdiction has led to development of Best Management Practices (BMPs), which are state-of-the-art mitigation measures applied to oil and natural gas drilling and production to help ensure that energy development is conducted in an environmentally responsible manner. The BLM encourages industry to incorporate and implement BMPs to reduce impacts to air quality through reduction of emissions, surface disturbances, and dust from field production and operations. Typical measures are mentioned below.

- Open burning of garbage or refuse would not occur at well sites or other facilities;
- Drill rigs would be equipped with Tier II or better diesel engines;
- Vent emissions from stock tanks and natural gas TEG dehydrators would be controlled by routing the emissions to a flare or similar control device which would reduce emissions by 95% or greater;
- All internal combustion equipment would be kept in good working order;

- Flared hydrocarbon gases at high temperatures in order to reduce emissions of incomplete combustion through the use of multi-chamber combustors;
- Watering dirt roads during periods of high use to reduce fugitive dust emissions;
- Co-location wells and production facilities to reduce new surface disturbances;
- Use of natural gas fired or electric drill rig engines;
- The use of selective catalytic reducers and low-sulfur fuel for diesel-fired drill rig engines;
- Protecting frac sand from wind erosion;
- Implementation of directional drilling and horizontal completion technologies whereby one well provides access to petroleum resources that would normally require the drilling of several vertical wellbores;
- Requiring that vapor recovery systems be maintained and functional in areas where petroleum liquids are stored; and
- Performing interim reclamation to reclaim areas of the pad not required for production facilities and to reduce the amount of dust from the pads.

Additionally, the BLM encourages oil and natural gas companies to adopt proven, cost-effective technologies and practices that improve operational efficiency and reduce natural gas emissions. In October 2012, USEPA promulgated air quality regulations for completion of hydraulically fractured gas wells [EPA, 2015]. These rules required air pollution mitigation measures that reduced the emissions of volatile organic compounds during gas well completions. Mitigation included utilizing a process known as a “green” completion in which natural gas brought up during flow back is captured in tanks rather than in open fluid pits. Among other measures to reduce emissions include the USEPA’s Natural Gas STAR program. The USEPA U.S. inventory data shows that industry’s implementation of BMPs proposed by the program has reduced emissions from oil and gas exploration and development [EPA, 2016b].

4.2.1.2 Migratory Birds

Section 3.3.2, Migratory Birds, identifies the migratory birds that are most likely to inhabit the parcels based on known occurrence and available habitats. As discussed previously, migratory birds receive protections from “take” under the Migratory Bird Treaty Act and Executive Order (EO) 13186.

The subject leasing action in itself would not impact any of the migratory bird species potentially present in the project area; however, oil and gas construction and development activities that may follow lease issuance could affect migratory birds nesting success. Direct and indirect impacts include nest destruction, nest abandonment, nest failure and chick mortality. Other impacts include breeding or wintering habitat loss and fragmentation from development and human disturbance through noise, dust and construction.

Construction and development activities proposed during the migratory bird nesting season (March 1 through July 15) can impact migratory birds by disrupting breeding behavior and breeding success. Examples of impacts to nesting migratory birds include nest abandonment,

nest failure and chick mortality. Other impacts include breeding or wintering habitat loss and fragmentation from development and human disturbance through noise, dust and construction.

The Proposed Action Alternative includes an additional lease notice to inform the lessee that surveys for nesting migratory birds may be required during the primary migratory bird breeding season (March 1 through July 15) whenever surface disturbances and/or occupancy is proposed on any of the lease parcels. Surveys are to be conducted by qualified biologists and appropriate spatial and temporal buffers applied accordingly.

This Proposed Action Alternative also would include adding a lease notice for the protection of raptors wherein surveys would be required whenever disturbances and/or occupancy are proposed in association with oil and gas exploration and development within potential raptor protection buffer areas. Prior to any surface disturbing activities, raptor nest surveys are required to be conducted by a qualified biologist. If any active nests are confirmed, appropriate default buffers and timing limitations would be applied as determined based on the *Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances* (USFWS 2002).

Lease Notices and stipulations that would be applied to the subject lease parcels include: UT-LN-36 (Bald Eagle Habitat), UT-LN-37 (Bald Eagle Habitat), UT-LN-40 (Golden Eagle Habitat), UT-LN-44 (Raptors), UT-LN-45 (Migratory Birds), and UT-S-325 (Timing Limitation – Raptor Nest Sites).

4.2.1.3 Wildlife – Special Status Species (Threatened, Endangered, Proposed, Candidate, and BLM Sensitive)

The issuance of leases would not directly impact special status species or habitat; however, issuance of a lease does convey an expectation that oil and gas development could occur as presented in Section 2.1. Additional analysis of impacts from development activities, including Section 7 consultation under ESA would occur as appropriate at the APD stage.

There are currently no Federally (ESA) listed wildlife species or critical habitat designations that occur within the lease parcel area; therefore, the subject leasing action would not impact any ESA listed species.

The following Endangered Species Act (ESA) related stipulation (in accordance with H-3120-1 p. 35) would be applied to all parcels:

The lease may now and hereafter contain plants, animals, and their habitats determined to be special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objectives to avoid BLM approved activity that will contribute to a need to list such a species or their habitat. BLM may require modification to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligation under requirements of the Endangered Species Act as amended, 16 U. S. C. § 1531 *et seq.* including completion of any required procedure for conference or consultation.

Special status species that may be impacted by oil and gas activities are largely raptors and migratory birds that are identified on the Utah BLM Special Status Species 2010 list and are also discussed in the Migratory Bird Section; therefore, the impact analysis discussed under the section for Migratory Birds and the Applicable Lease Notices are applicable to this section.

Impacts associated with oil and gas development to mammal species such as pygmy rabbit, kit fox, and dark kangaroo mouse may include direct loss and fragmentation of habitat resulting from well, road, and pipeline construction; increases in human activity and noise causing avoidance and displacement, and increase predation from installation of infrastructure (i.e. storage tanks, power lines, etc.) that may provide perching/hunting opportunities for birds of prey.

Additional Applicable Lease Notice that would apply to these parcels would include: Utah Sensitive Species lease notice UT-LN-49.

Greater Sage-grouse

The leasing action in and of its self would not impact any sage-grouse potentially present in the Project Area; however, oil and gas construction, development, and reclamation activities that may follow lease issuance could affect sage-grouse movements, breeding, nesting and brood-rearing success. Oil and gas exploration and development within PHMA, could potentially impact sage-grouse individuals, their behavior, and habitat. It can be anticipated that increased human activity, noise, disturbance, and habitat alteration can modify sage-grouse behavior, movements, and habitat quality/quantity; further potentially impacting successful breeding, nesting, brood-rearing and use of winter range.

The concern of any development in Parcel 001 is the impact to sage-grouse use that may occur in adjacent sagebrush habitat on private property in Dog Valley. However, although sagebrush habitat quality is much reduced in parcels 002, 003, and 007, fundamental sage-grouse habitat elements such as sagebrush, perennial grasses and preferred forbs do occur suggesting that there is a potential for sage-grouse to use these parcels and that these parcels could be improved by removing encroaching juniper and improving the community composition and reducing fragmentation. Because of No Surface Occupancy stipulation that has been attached to the portions of parcels 001, 002, 003, and 007 that are within PHMA there would be no direct impacts to sage-grouse or sage-grouse PHMA under the RFD Scenario. Indirect impacts to sage-grouse could result should human activity within and in proximity to PHMA increase (i.e. noise and building tall structures) which could result in sage-grouse avoidance or displacement of suitable habitat near the parcels. Increased predation from installation of infrastructure (i.e. storage tanks, power lines, pipelines, roads) in proximity to PHMA may impact sage-grouse populations and may influence sage-grouse use.

Parcels 004, 005, 006 and 009 are at least one-half mile or greater from the outside boundary of the mapped PHMA therefore, no direct or indirect impacts are anticipated to occur to greater sage-grouse from the RFD. However, parcel 008 is adjacent to the identified PHMA and therefore there could potentially be some indirect impacts as described above to sage-grouse from activity on the northern portion of this parcel near the PHMA boundary and within one-half mile.

Applicable Lease Notices that would apply to these parcels include: Utah Sensitive Species lease notice UT-LN-49, UT-LN-129 (Greater Sage-Grouse – Disturbance Cap), UT-LN-130 (Greater

Sage-Grouse – Density Limitations), UT-LN-131 (Greater Sage-Grouse – Net Conservation Gain), UT-LN-132 (Greater Sage-Grouse – Required Design Features), UT-LN-133 (Greater Sage-Grouse – Buffer).

4.2.2 Alternative B – No Action

This alternative (not to offer any of the nominated parcels for sale) may not meet the purpose and need for agency action. All parcels may be subject to drainage of Federal reserves by development on adjacent state or private leases.

Although drilling and production activities on federal land surfaces are restricted to leased parcels, oil and gas exploration may also be authorized on unleased public lands, on a case-by-case basis, pursuant to 43 CFR 3150.0-1. Accordingly, this alternative would not prevent direct, indirect or cumulative environmental impacts relating to oil and gas geo-physical exploration activities through denial of the proposed action. Additionally, this alternative would not prevent indirect impacts relating to rights of way authorizations to support oil and gas operations on adjacent leased lands.

4.2.2.1 Air Quality and Greenhouse Gas Emissions

The No Action alternative would prevent future potential impacts relating to lease operations. Although drilling and production activities on federal land surfaces are restricted to leased parcels, oil and gas exploration may also be authorized on unleased public lands, on a case-by-case basis, pursuant to 43 CFR 3150.0-1. Accordingly, this alternative would not prevent direct, indirect or cumulative environmental impacts relating to oil and gas exploration activities through denial of the proposed action. Additionally, this alternative would not prevent indirect impacts relating to rights of way authorizations to support oil and gas operations on adjacent leased parcels. Lease notices would not be required for the No Action alternative.

Under the No Action alternative no direct or indirect GHG emissions would occur from any potential future production from these lease parcels. Whether this would result in an actual reduction in future GHG emissions is unknowable, as this production could be made up from production from other oil and gas production fields.

4.2.2.2 Migratory Birds

The No Action alternative would prevent future potential impacts relating to lease operations at this time. Although drilling and production activities on federal land surfaces are restricted to leased parcels, oil and gas exploration may also be authorized on public lands that are not leased, on a case-by-case basis, pursuant to 43 CFR 3150.0-1. Accordingly, no direct, indirect or cumulative environmental impacts relating to oil and gas exploration would occur by denying the proposed action. Additionally, this alternative would not prevent indirect impacts relating to rights of way authorizations to support oil and gas operations on adjacent leased parcels. However, both of these other actions would be analyzed in a separate document. Stipulations or lease notices would not be required for the No Action alternative.

4.2.2.3 Wildlife – Special Status Species (Threatened, Endangered, Proposed, Candidate, and BLM Sensitive)

The No Action alternative would prevent future potential impacts relating to lease operations at this time. Although drilling and production activities on federal land surfaces are restricted to leased parcels, oil and gas exploration may also be authorized on public lands that are not leased,

on a case-by-case basis, pursuant to 43 CFR 3150.0-1. Accordingly, no direct, indirect or cumulative environmental impacts relating to oil and gas exploration would occur by denying the proposed action. Additionally, this alternative would not prevent indirect impacts relating to rights of way authorizations to support oil and gas operations on adjacent leased parcels. However, both of these other actions would be analyzed in a separate document but would be analyzed in a separate document. Stipulations or lease notices would not be required for the No Action alternative.

Greater Sage-grouse

The No Action alternative would prevent future potential impacts relating to lease operations at this time. Although drilling and production activities on federal land surfaces are restricted to leased parcels, oil and gas exploration may also be authorized on public lands that are not leased, on a case-by-case basis, pursuant to 43 CFR 3150.0-1. Accordingly, no direct, indirect or cumulative environmental impacts relating to oil and gas exploration would occur by denying the Proposed Action. Additionally, this alternative would not prevent indirect impacts relating to rights of way authorizations to support oil and gas operations on adjacent leased parcels. However, both of these other actions would be analyzed in a separate document. Stipulations or lease notices would not be required for the No Action alternative.

4.3 Cumulative Impacts

A cumulative impact (effect) is defined by the Council on Environmental Quality (CEQ) regulations (40 CFR §1508.7) as —the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively major actions taking place over a period of time. Past and present actions and reasonably foreseeable future actions with the potential to contribute to cumulative effects are discussed below followed by an analysis of cumulative effects. All resource values addressed in Chapter 3 and Appendix C have been evaluated for cumulative effects. If, through the implementation of mitigation measures or project design features, no net effect to a particular resource results from an action, then no cumulative effects result.

A variety of activities, such as sightseeing, camping, and hunting, have occurred and are likely to continue to occur near or within some or all of the nominated parcels; these activities likely result in negligible impacts to resources because of their dispersed nature. Other activities, such as, livestock grazing, vegetation projects and wildland fire, have also occurred within some or all of the nominated parcels and are likely to occur in the future. These types of activities are likely to have a greater impact on resources in the project area because of their more concentrated nature. Because these activities are occurring within the nominated parcel boundaries, they have the potential to contribute to cumulative effects.

The cumulative impacts as described in the HRRR RMP/ROD and HRRR O&G Leasing Implementation EA are incorporated by reference here. The proposed action would contribute to these cumulative impacts by making nine (9) parcels available for oil and gas leasing, which could result in future surface disturbance should the leases be utilized for future oil and gas development activities. It is assumed that the proposed action would add one well pad with road on each lease. The No Action alternative would not contribute any cumulative impacts. The past, present, and foreseeable future actions with the potential to contribute to surface disturbance

include development of new and existing mineral rights or realty actions (for example, pipeline or road rights of way) or the continuation of agricultural activities.

4.3.1 Air Quality and Greenhouse Gas Emissions

The Cumulative Impact Analysis Area (CIAA) for air quality is central Utah. Based upon the relatively minor levels of oil and gas development and emissions anticipated for the proposed action, and the application of BMPs as previously discussed, it is unlikely that emissions from any subsequent development of the proposed leases would contribute to regional ozone formation in the project area, nor is it likely to contribute or cause exceedances of any NAAQS, including those exceedances already occurring within the adjacent ozone non-attainment area of Utah County. Other emission contributors would continue at present rates such as construction, urban development, and personal vehicle use along the Wasatch Front

Even though the Proposed Action of leasing would not contribute to cumulative effects on air resources, future foreseeable development could contribute to cumulative GHG emissions. The primary sources of emissions include the following:

- Fossil fuel combustion for construction and operation of oil and gas facilities – vehicles driving to and from production sites, engines that drive drill rigs, etc. These produce CO₂ in quantities that vary depending on the age, types, and conditions of the equipment as well as the targeted formation, locations of wells with respect to processing facilities and pipelines, and other site-specific factors.
- Fugitive CH₄ – CH₄ that escapes from wells (both gas and oil), oil storage, and various types of processing equipment. This is a major source of global CH₄ emissions. These emissions have been estimated for various aspects of the energy sector, and starting in 2011, producers are required under 40 C.F.R. §98, to estimate and report their CH₄ emissions to the EPA.
- Combustion of produced oil and gas – it is expected that operations will produce marketable quantities of oil and/or gas. Combustion of the oil and/or gas would release CO₂ into the atmosphere. Fossil fuel combustion is the largest source of global CO₂.

Since climate change and global warming are global phenomena, for purposes of this NEPA analysis, the analysis presented above about the direct and indirect effects of GHG emissions from the proposed actions is also an analysis of the cumulative effects of the proposed actions. Consistent with PIM 2017-003, the BLM has determined that this analysis “adequately addresses the cumulative impacts for climate change from the proposed action and its alternatives, and therefore a separate cumulative effects analysis for GHG emissions is not needed.

4.3.2 Migratory Birds

General cumulative impacts may include loss of habitat, habitat fragmentation, and disruption or alteration of seasonal migration routes.

The CIAA includes eastern portion of Juab County. Impacts in this area that are occurring and will continue to occur, such as dispersed recreational use, motorized vehicles, fire and invasive plant species, are the major threats to wildlife caused by human disturbance and habitat fragmentation. The proposed action would have very minimal impacts to migratory birds cumulatively in this area because of the very small RFD. There could potentially be additional disturbance to habitat yet not enough to effect the population of any migratory bird species.

4.3.3 Wildlife – Special Status Species (Threatened, Endangered, Proposed, Candidate, and BLM Sensitive)

The CIAA is generally the lease parcel and lands reasonable adjacent. General cumulative impacts may include loss of habitat, habitat fragmentation, and disruption or alteration of seasonal migration routes.

The CIAA includes the eastern portion of Juab County. Impacts in this area that are occurring and will continue to occur, such as dispersed recreational use, motorized vehicles, fire and invasive plant species, are the major threats to wildlife caused by human disturbance and habitat fragmentation. The proposed action would contribute to impacts resulting from past, presently occurring and future activities in the CIAA. There could potentially be additional disturbance to habitat yet not enough to effect the population of local deer and elk populations.

Greater Sage-grouse

The CIAA area for sage-grouse is generally the Sheeprocks population area and lands within a reasonable distance that may provide habitat for sage-grouse or may incur activities that have potential to impact sage-grouse individuals and their habitat. General cumulative impacts may include loss of habitat, habitat fragmentation, and disruption or alteration of seasonal movements.

The CIAA includes the eastern portion of Juab County. Impacts in this area that are presently occurring and would continue to occur in the future, such as dispersed recreational use, motorized vehicles, grazing, fire, and invasive plant species are the major threats to sage-grouse caused by human disturbance and habitat fragmentation. Oil and gas activities when combined with past, present and future activities will contribute to reduced habitat quantity/quality, habitat fragmentation, and reduced connectivity as well as may alter seasonal movements and habitat use. Because this population of sage-grouse is small and in a critical population decline, the resistance and resiliency of this population to recovery from incremental increased human pressure, noise and disturbance, sage-grouse populations within the area could be further imperiled.

5.0 CONSULTATION AND COORDINATION

5.1 Introduction

The issue identification section of Chapter 1 identifies those issues analyzed in detail in Chapter 4. The Interdisciplinary Team Checklist (Appendix D) provides the rationale for issues that were considered but determined not to require detailed discussion in Chapter 4. The issues were identified through the public and agency involvement process described in sections 5.2 and 5.3 below.

5.2 Persons, Groups, and Agencies Consulted

Table 7: List of all Persons, Agencies and Organizations Consulted for Purposes of this EA.

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
National Park Service	Coordinated with as leasing program partner.	Letter transmitting the preliminary list of parcels was sent on October 26, 2016.
United States Fish and Wildlife Service	Coordinated with as leasing program partner.	Letter transmitting the preliminary list of parcels was sent on October 26, 2016. Consultation is ongoing.
United States Forest Service	Coordinated with as leasing program partner.	Letter transmitting the preliminary list of parcels was sent on October 26, 2016.
Public Lands Policy Coordination Office	Coordinated with as leasing program partner.	Letter transmitting the preliminary list of parcels was sent on October 26, 2016.
Utah Division of Wildlife Resources	Coordinated with as leasing program partner.	Letter transmitting the preliminary list of parcels was sent on October 26, 2016. In addition, on November 22, 2016, GIS data depicting the preliminary parcels was sent to the Utah DWR via electronic mail in order to further facilitate the reviews by that organization. BLM received an email with information from Utah DWR on December 6, 2016. . Bill James of the UDWR responded by email on December 6, 2016 with an overview of wildlife facts regarding sage-grouse, burrowing owls, and ferruginous hawks
State Institutional Trust Lands Administration	Coordinated with as leasing program partner.	Letter transmitting the preliminary parcel list was sent on October 26, 2016.
State Historic Preservation Office	Consultation as required by NHPA (16 USC 1531)	Consultation is on-going.
Hopi Tribe, Skull Valley Goshute Tribe, Kanosh Band of Paiutes, the Paiute Tribe of Utah, the Ute Indian Tribe, the Goshute Tribe, The Navajo Tribe, and the Kaibab Band of Paiute Indians	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	Consultation was initiated on February 27, 2017. In a letter received on March 20, 2017, the Hopi requested additional information. No other Tribes have responded; however, consultation remains on-going.

5.3 Summary of Public Participation

The BLM consulted with Indian tribes on a government-to-government basis in accordance with Executive Order 13175 and other policies. Tribal concerns, including impacts on Indian trust assets and potential impacts to cultural resources, were given due consideration. Federal, State, and local agencies, along with tribes and other stakeholders that may be interested in or affected by the proposed project/action/approval were invited to participate in the scoping process. A 30-day public comment period was also provided for the draft EA. The comments and responses from the comment period can be found in Appendix F.

5.4 Modifications Based Upon Public Comments and Internal Review

The BLM received two letters from the public during the comment periods. Letters received were from the Utah Division of Wildlife Resources and a group letter submitted by Western Watersheds Project, Center for Biodiversity, American Bird Conservancy, WildEarth Guardians, and Wild Utah Project. The public and internal review identified necessary corrections or clarifications to this EA. These modifications include:

1. Corrections to grammar, sentence structure, and formatting were made throughout the EA to add clarity. In general, these changes were made without further clarification. Examples of changes included updating Appendix letters and Table of Contents
2. Section 3.3.4, sub-section Sage-grouse, discussion modified from April version to: 1) include language shared by UDWR that sage-grouse had occurred in the 1990s north of Parcels 001 and 002, and 2) include language to better inform current condition of habitat assessment information regarding portions of Parcels 001, 002, 003, and 007 within PHMA.
3. Section 4.2.1.4, sub-section Sage-grouse, discussion was updated to include summary of habitat assessment information collected regarding portions of Parcels 001, 002, 003, and 007 that occur within PHMA.
4. Appendix A, Stipulations and Lease Notices: UT-S-238: Timing Limitation - Critical Deer Winter Range, UT-S-245: Timing Limitation – Critical Elk and Calving Summer Range, UT-LN-02 Crucial Winter Mule Deer and Elk Habitat, UT-LN-06 – Crucial Elk Calving and Deer Fawning Habitat, removed to reflect updated UDWR big game range classifications.
5. Appendix B, Stipulations and Lease Notice Table, Definitions of UT-S-238: Timing Limitation - Critical Deer Winter Range, UT-S-245: Timing Limitation – Critical Elk and Calving Summer Range, UT-LN-02 Crucial Winter Mule Deer and Elk Habitat, UT-LN-06 – Crucial Elk Calving and Deer, removed to reflect updated UDWR big game range classifications.
6. Appendix D, Interdisciplinary Team Checklist, Wildlife biologist modified discussion to reflect updated UDWR information regarding mule deer and elk habitat classifications. Removed language referencing “crucial” and “critical” and changed to “general.” Date of entry was updated as well.

5.5 Response to Public Comment

The BLM acknowledges the concerns expressed by the public regarding the leasing of oil and gas resources on the public lands within FFO. Only one letter was received from Western Watersheds Project, Center for Biodiversity, American Bird Conservancy, WildEarth Guardians, and Wild Utah Project. Information within the letter that is background or general in nature was

reviewed; however, responses to these items are not necessary. Likewise, expressions of position or opinion are acknowledged but did not necessitate a change in the analysis. As identified in the NEPA Handbook (H-1790-1), BLM looked for modifications to alternatives, factual corrections, and modifications to the analysis while reviewing public comments. The responses can be found in Appendix E.

5.6 List of Preparers

Table 8: The Preparers of This Environmental Analysis.

Name	Title	Responsible for the Following Section(s) of this Document
Cheryl LaRoque	Natural Resource Specialist	Project Lead, NEPA Compliance, Environmental Justice, Socio-Economics.
Jessica Montcalm	Archaeologist	Cultural Resources; Native American Religious Concerns, National Historical Trails.
Jim Priest	Wildlife Biologist	Fish and Wildlife, Threatened, Endangered, Candidate and Sensitive Species; Migratory Birds/Special Status Species. Greater Sage – Grouse
Teresa Frampton	Recreation Specialist	Areas of Critical Environmental Concern, Recreation, Wilderness/WSA, Visual Resources, and Lands with Wilderness Characteristics.
Bill Thompson	Rangeland Specialist	Farmlands (Prime or Unique), Wetlands/Riparian Zones
Tom Gibbons	Hydrologist	Floodplains, Water Resources Quality/drinking/surface/ground, and Water Rights.
Nate Hunter	Fuels Specialist	Fire/Fuels Management
Todd Leeds	Geologist	Mineral Resources/Energy Production, Paleontology, Wastes (hazardous or solid).
R.B. Probert	Weeds Specialist	Invasive Species/Noxious Weeds (EO 13112).
Fred Braun	Realty Specialist	Lands/Access
Brian Taylor	Range Management Specialist	Livestock Grazing, Rangeland Health Standards, Vegetation Excluding Designated/Special Status Species.
Kyle Monroe	Engineering Tech.	Property Boundary Evaluation
Paul Caso	Range Specialist	Soils

Name	Title	Responsible for the Following Section(s) of this Document
Dave Whitaker	ESR Coordinator	Threatened, Endangered, Candidate or Special Status Plant Species.
Eric Reid	AFM Renewables	Woodland Forestry, Wild Horses and Burros.

Refer also to the interdisciplinary team members identified on the checklist (Appendix D).

6.0 REFERENCES, ACRONYMS AND APPENDICES

6.1 References Cited

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- BLM. 1986. Proposed House Range Resource Management Plan and Final Environmental Impact Statement. Richfield District. Bureau of Land Management.
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6.2 LIST OF ACRONYMS

APD	Application for Permit to Drill	NRHP	National Register of Historic Places
ARMPA	Utah Greater Sage-Grouse Approved Resource Management Plan	NSO	No Surface Occupancy
BLM	Bureau of Land Management		
BMP	Best Management Practice	OSHA	Occupational Safety and Health Act
BCR	Bird Conservation Region	ROD	Record of Decision
CFR	Code of Federal Regulations	ROW	Right of Way
CIAA	Cumulative Impact Analysis Area	RMP	Resource Management Plan
COA	Condition of Approval	S	Stipulation
CWCS	Comprehensive Wildlife Conservation Strategy	SHPO	State Historic Preservation Office
DR	Decision Record	SITLA	State Institutional Trust Lands Administration
EA	Environmental Assessment	SLFO	Salt Lake Field Office
EAR	Environmental Analysis Record	SUPO	Surface Use Plan of Operations
EIS	Environmental Impact Statement	TCP	Traditional Cultural Property
ENBB	Environmental Notification Bulletin Board	UDAQ	Utah Division of Air Quality
EOI	Expression of Interest	UDWR	Utah Division of Wildlife Resources
EPA	Environmental Protection Agency	USFS	United States Forest Service
ESA	Endangered Species Act	USFWS	United States Fish & Wildlife Service
FLPMA	Federal Land Policy and Management Act	USC	United States Code
FONSI	Finding of No Significant Impact	UTSO	Utah State Office
GHMA	General Habitat Management Area	WO	Washington Office
GIS	Geographic Information Systems		
IDPR	Interdisciplinary Parcel Review		
IM	Instruction Memorandum	FFO	Fillmore Field Office
LN	Lease Notice	SLFO	Salt Lake Field Office
LWC	Lands with Wilderness Characteristics		
MS	Mineral Survey	WDD	West Desert District
MBTA	Migratory Bird Treaty Act		
MMRP	Military Munitions Response Program		
MOU	Memorandum of Understanding		
NCLS	Notice of Competitive Lease Sale		
NEPA	National Environmental Policy Act		
NHPA	National Historic Preservation Act		
NHT	National Historic Trail		
NRHP	National Register of Historic Places		
NSO	No Surface Occupancy		

6.3 APPENDICES

APPENDIX A – PRELIMINARY FFO OIL AND GAS LEASE SALE LIST

The Stipulations and Lease Notices listed below would be applied to all parcels, unless noted otherwise:

Stipulations	Notices
H – 3120 -1 (Cultural Resources)	UT-LN-34 Bald Eagle Winter Roost Sites
H - 3120 - 1 (Endangered Species Act)	UT-LN-36 Bald Eagle Habitat
	UT-LN-37 Bald Eagle Habitat
	UT-LN-38 Ferruginous Hawk Nest Site
	UT-LN-39 Golden Eagle Nest Sites
	UT-LN-40 Golden Eagle Habitat
	UT-LN-42 Burrowing Owl Habitat
	UT-LN-44 Raptors
	UT-LN-45 Migratory Birds
	UT-LN-49 Utah Sensitive Species
	UT-LN-52 Noxious Weed
	UT-LN-60 Steep Slopes – all except Parcel UT0815-009
	UT-LN-96 Air Quality Mitigation Measures
	UT-LN-101 Air Quality
	UT-LN-102 Air Quality Analysis
	UT-LN-107 Bald Eagle

UT0817 – 001

T. 13 S., R. 1 W., SLM

Sec. 3: Lots 2-4, SWNE, S2NW, SW;

Sec. 4: All;

Sec. 8: E2E2;

Sec. 9: All;

Sec. 10: S2NW, SW, SWSE.

2,145.10 Acres

Juab County, Utah

Fillmore Field Office

Stipulations	Notices
UT-S-347 GRSG: NO SURFACE OCCUPANCY - GREATER SAGE-GROUSE PRIORITY HABITAT MANAGEMENT AREAS*	UT-LN-129 (Greater Sage-Grouse – Disturbance Cap),
UT-S-348 GRSG: CONTROLLED SURFACE USE/NO SURFACE OCCUPANCY – DISTURBANCE CAP	UT-LN-130 (Greater Sage-Grouse – Density Limitations)
UT-S-349 GRSG: CONTROLLED SURFACE USE/NO SURFACE OCCUPANCY – DENSITY LIMITATION	UT-LN-131 (Greater Sage-Grouse – Net Conservation Gain)
UT-S-350 GRSG: TIMING LIMITATION/CONTROLLED SURFACE USE – BREEDING SEASON NOISE LIMITATIONS	UT-LN-132 (Greater Sage-Grouse – Required Design Features)
UT-S-352 GRSG: CONTROLLED SURFACE USE – TALL STRUCTURES*	UT-LN-133 (Greater Sage-Grouse – Buffer)
UT-S-353 GRSG: TIMING LIMITATION – GREATER SAGE-GROUSE BREEDING, NESTING AND EARLY BROOD REARING*	
UT-S-354 GRSG: TIMING LIMITATION – GREATER SAGE-GROUSE BROOD-REARING	
UT-S-355 GRSG: TIMING LIMITATION – GREATER SAGE-GROUSE WINTER HABITAT	
UT-S-356 GRSG: CONTROLLED SURFACE USE – INDIRECT IMPACTS FROM NOISE	
UT-S-357 GRSG: CONTROLLED SURFACE USE – INDIRECT IMPACTS FROM TALL STRUCTURES	

UT0817 – 002

T. 13 S., R. 1 W., SLM

Sec. 7: Lots 3, 4, E2SW, W2SE;

Sec. 15: E2, E2NENW;

Sec. 17: NENE, S2NE, S2SW, SE;

Sec. 18: Lots 5-10, E2SW, W2SE.

1,299.34 Acres

Juab County, Utah

Fillmore Field Office

Stipulations	Notices
UT-S-347 GRSG: NO SURFACE OCCUPANCY - GREATER SAGE-GROUSE PRIORITY HABITAT MANAGEMENT AREAS*	UT-LN-129 (Greater Sage-Grouse – Disturbance Cap),
UT-S-348 GRSG: CONTROLLED SURFACE USE/NO SURFACE OCCUPANCY – DISTURBANCE CAP	UT-LN-130 (Greater Sage-Grouse – Density Limitations)
UT-S-349 GRSG: CONTROLLED SURFACE USE/NO SURFACE OCCUPANCY – DENSITY LIMITATION	UT-LN-131 (Greater Sage-Grouse – Net Conservation Gain)
UT-S-350 GRSG: TIMING LIMITATION/CONTROLLED SURFACE USE – BREEDING SEASON NOISE LIMITATIONS	UT-LN-132 (Greater Sage-Grouse – Required Design Features)
UT-S-352 GRSG: CONTROLLED SURFACE USE – TALL STRUCTURES*	UT-LN-133 (Greater Sage-Grouse – Buffer)
UT-S-353 GRSG: TIMING LIMITATION – GREATER SAGE-GROUSE BREEDING, NESTING AND EARLY BROOD REARING*	
UT-S-354 GRSG: TIMING LIMITATION – GREATER SAGE-GROUSE BROOD-REARING	
UT-S-355 GRSG: TIMING LIMITATION – GREATER SAGE-GROUSE WINTER HABITAT	
UT-S-356 GRSG: CONTROLLED SURFACE USE – INDIRECT IMPACTS FROM NOISE	
UT-S-357 GRSG: CONTROLLED SURFACE USE – INDIRECT IMPACTS FROM TALL STRUCTURES	

UT0817 – 003

T. 13 S., R. 1 W., SLM

Sec. 19: All;

Sec. 20: W2;

Sec. 29: W2;

Sec. 30: All;

Sec. 31: Lots 5, 6, NE, NESE.

2,169.83 Acres

Juab County, Utah

Fillmore Field Office

Stipulations	Notices
UT-S-347 GRSG: NO SURFACE OCCUPANCY - GREATER SAGE-GROUSE PRIORITY HABITAT MANAGEMENT AREAS*	UT-LN-129 (Greater Sage-Grouse – Disturbance Cap),
UT-S-348 GRSG: CONTROLLED SURFACE USE/NO SURFACE OCCUPANCY – DISTURBANCE CAP	UT-LN-130 (Greater Sage-Grouse – Density Limitations)
UT-S-349 GRSG: CONTROLLED SURFACE USE/NO SURFACE OCCUPANCY – DENSITY LIMITATION	UT-LN-131 (Greater Sage-Grouse – Net Conservation Gain)
UT-S-350 GRSG: TIMING LIMITATION/CONTROLLED SURFACE USE – BREEDING SEASON NOISE LIMITATIONS	UT-LN-132 (Greater Sage-Grouse – Required Design Features)
UT-S-352 GRSG: CONTROLLED SURFACE USE – TALL STRUCTURES*	UT-LN-133 (Greater Sage-Grouse – Buffer)
UT-S-353 GRSG: TIMING LIMITATION – GREATER SAGE-GROUSE BREEDING, NESTING AND EARLY BROOD REARING*	
UT-S-354 GRSG: TIMING LIMITATION – GREATER SAGE-GROUSE BROOD-REARING	
UT-S-355 GRSG: TIMING LIMITATION – GREATER SAGE-GROUSE WINTER HABITAT	
UT-S-356 GRSG: CONTROLLED SURFACE USE – INDIRECT IMPACTS FROM NOISE	
UT-S-357 GRSG: CONTROLLED SURFACE USE – INDIRECT IMPACTS FROM TALL STRUCTURES	

UT0817 – 004

T. 14 S., R. 1 W., SLM

Sec. 6: Lots 24-26, 41-44, NWSE;

Sec. 7: Lots 12-15, 22-26, 28-32;

Sec. 18: Lots 6-13, 24-29;

Sec. 19: Lots 4-6, 13-15, 22-24, 30-33;

Sec. 30: Lots 4-14, 24-27.

2,316.94 Acres

Juab County, Utah

Fillmore Field Office

UT0817 – 005

T. 14 S., R. 1 W., SLM
 Sec. 30: Lot 33;
 Sec. 31: Lots 1-4, 15-22, 32-36, E2.
 1,040.00 Acres
 Juab County, Utah
 Fillmore Field Office

UT0817 – 006

T. 15 S., R. 1 W., SLM
 Sec. 7: All;
 Sec. 8: Lot 1, NENW, S2NW, NESW, SWSW.
 891.88 Acres
 Juab County, Utah
 Fillmore Field Office

UT0817 – 007

T. 13 S., R. 2 W., SLM
 Sec. 13: NWSE, S2SE;
 Sec. 24: E2, E2SW;
 Sec. 25: NE, E2NW, S2.
 1,080.00 Acres
 Juab County, Utah
 Fillmore Field Office

Stipulations	Notices
UT-S-347 GRSG: NO SURFACE OCCUPANCY - GREATER SAGE-GROUSE PRIORITY HABITAT MANAGEMENT AREAS*	UT-LN-129 (Greater Sage-Grouse – Disturbance Cap),
UT-S-348 GRSG: CONTROLLED SURFACE USE/NO SURFACE OCCUPANCY – DISTURBANCE CAP	UT-LN-130 (Greater Sage-Grouse – Density Limitations)
UT-S-349 GRSG: CONTROLLED SURFACE USE/NO SURFACE OCCUPANCY – DENSITY LIMITATION	UT-LN-131 (Greater Sage-Grouse – Net Conservation Gain)
UT-S-350 GRSG: TIMING LIMITATION/CONTROLLED SURFACE USE – BREEDING SEASON NOISE LIMITATIONS	UT-LN-132 (Greater Sage-Grouse – Required Design Features)
UT-S-352 GRSG: CONTROLLED SURFACE USE – TALL STRUCTURES*	UT-LN-133 (Greater Sage-Grouse – Buffer)
UT-S-353 GRSG: TIMING LIMITATION – GREATER SAGE-GROUSE BREEDING, NESTING AND EARLY BROOD REARING*	
UT-S-354 GRSG: TIMING LIMITATION – GREATER SAGE-GROUSE	

Stipulations	Notices
BROOD-REARING	
UT-S-355 GRSG: TIMING LIMITATION – GREATER SAGE-GROUSE WINTER HABITAT	
UT-S-356 GRSG: CONTROLLED SURFACE USE – INDIRECT IMPACTS FROM NOISE	
UT-S-357 GRSG: CONTROLLED SURFACE USE – INDIRECT IMPACTS FROM TALL STRUCTURES	

UT0817 – 008

T. 14 S., R. 2 W., SLM
 Sec. 1: S2SW;
 Sec. 11: NE, S2;
 Sec. 12: SWNE, W2, W2SE, SESE;
 Secs. 13 and 14: All.
 2,320.00 Acres
 Juab County, Utah
 Fillmore Field Office

UT0817 – 009

T. 14 S., R. 2 W., SLM
 Sec. 23: NE, N2NW, E2SE;
 Secs. 24 and 25: All;
 Sec. 35: E2NE.
 1,680.00 Acres
 Juab County, Utah
 Fillmore Field Office

APPENDIX B - STIPULATION AND LEASE NOTICE SUMMARY TABLES

Stipulations and Lease Notices

NUMBER	UTAH STIPULATIONS
<p style="text-align: center;">UT-S-347</p>	<p>NO SURFACE OCCUPANCY - GREATER SAGE-GROUSE PRIORITY HABITAT MANAGEMENT AREAS*</p> <p>No surface occupancy within Greater Sage-Grouse Priority Habitat Management Areas (PHMA).</p> <p>Exception: The Authorized Officer with concurrence with the State Director, may grant an exception only where the proposed action:</p> <ul style="list-style-type: none"> i. Would not have direct, indirect, or cumulative effects on GRSG or its habitat; OR, ii. Is proposed to be undertaken as an alternative to a similar action occurring on a nearby parcel, and would provide a clear conservation gain to GRSG. The conservation gain must include measures, such as enforceable institutional controls and buffers, sufficient to allow the BLM to conclude that such benefits will endure for the duration of the proposed action’s impacts. <p>The Authorized Officer may not grant an exception unless the applicable state wildlife agency, the USFWS, and the BLM unanimously find that the proposed action satisfies (i) or (ii). Such finding shall initially be made by a team of one field biologist or other GRSG expert from each respective agency. In the event the initial finding is not unanimous, the finding may be elevated to the appropriate BLM State Director, USFWS State Ecological Services Director, and state wildlife agency head for final resolution. In the event their finding is not unanimous, the exception will not be granted. Approved exceptions will be made publically available at least quarterly.</p> <p>Modification: None</p> <p>Waiver: None</p>
<p style="text-align: center;">UT-S-348</p>	<p>CONTROLLED SURFACE USE/NO SURFACE OCCUPANCY – DISTURBANCE CAP</p> <p>Manage discrete anthropogenic disturbances, whether temporary or permanent, so they cover less than 3 percent on all lands (regardless of land ownership) at each level: 1) PHMA associated with a GRSG population area (referred to as biologically significant units {BSU} when coordinating across state lines) and 2) within the proposed project analysis area to protect PHMA and the life-history needs of GRSG from habitat</p>

NUMBER	UTAH STIPULATIONS
	<p>loss and GRSG populations from disturbance and limit fragmentation in PHMA. This would only be applicable to new fluid minerals leases if the exception criteria identified for the NSO stipulation above (UT-S-347 GRSG) were granted. See Appendix E of the GRSG Approved RMP Amendment for disturbance calculation instructions.</p> <p>Exception: None Modification: None Waiver: None</p> <p>*This would only be applicable to new fluid minerals leases if the exception criteria identified for the NSO stipulation above were granted.</p>
<p>UT-S-349</p>	<p>CONTROLLED SURFACE USE/NO SURFACE OCCUPANCY – DENSITY LIMITATION</p> <p>Limit the density of energy and mining facilities within Priority Habitat Management Areas (PHMA) during project authorization to an average of one energy/mineral facility per 640 acres on all lands (regardless of land ownership) in PHMA within a proposed project analysis area to protect PHMA and the life-history needs of GRSG from habitat loss and limit fragmentation in PHMA. This would only be applicable to new fluid minerals leases if the exception criteria identified for the NSO stipulation above (UT-S-347 GRSG) were granted. See Appendix E of the GRSG Approved RMP Amendment for calculation details.</p> <p>Exception: None Modification: None Waiver: None</p> <p>*This would only be applicable to new fluid minerals leases if the exception criteria identified for the NSO stipulation above were granted.</p>
<p>UT-S-350</p>	<p>TIMING LIMITATION/CONTROLLED SURFACE USE – BREEDING SEASON NOISE LIMITATIONS</p> <p>Limit noise from discrete anthropogenic disturbances within Priority Habitat Management Areas (PHMA), including activities from construction, operation and maintenance, to below 10 decibels above ambient sound levels (baseline as available at the signing of the GRSG RMP Amendment ROD or as <u>first</u> measured thereafter) at occupied leks from 2 hours before to 2 hours after official sunrise and sunset during breeding season to protect strutting Greater Sage-Grouse from auditory</p>

NUMBER	UTAH STIPULATIONS
	<p>disturbance associated with development during the breeding season.</p> <p>AND</p> <p>Limit project related noise in other PHMA habitats and seasons where it would be expected to reduce functionality of habitats that support associated GRSG populations in order to protect GRSG from direct disturbance near leks within PHMA.</p> <p>Exception: None</p> <p>Modification: As additional research and information emerges, specific new limitations appropriate to the type of projects being considered would be evaluated and appropriate measures would be implemented where necessary to minimize potential for noise impacts on PHMA GRSG population behavioral cycles.</p> <p>Waiver: None</p> <p>*This would only be applicable to new fluid minerals leases if the exception criteria identified for the NSO stipulation above were granted.</p>
<p style="text-align: center;">UT-S-352</p>	<p style="text-align: center;">CONTROLLED SURFACE USE – TALL STRUCTURES*</p> <p>Limit the placement of permanent tall structures** within Priority Habitat Management Areas (PHMA) breeding and nesting habitats to minimize placement of structures that introduction of e new perching and/or nesting opportunities for avian predators.</p> <p>Exception: None</p> <p>Modification: None</p> <p>Waiver: None</p> <p>*This would only be applicable to new fluid minerals leases if the exception criteria identified for the NSO stipulation above were granted.</p> <p>**For the purposes of this restriction, a tall structure is any man-made structure that provides for perching/nesting opportunities for predators (e.g., raptors and ravens) that are naturally absent, or that decreases the use of an area by GRSG. A determination as to whether something is considered a tall structure will be made based on local conditions such as existing vegetation or topography.</p>
<p style="text-align: center;">UT-S-353</p>	<p style="text-align: center;">TIMING LIMITATION – GREATER SAGE-GROUSE BREEDING, NESTING AND EARLY BROOD REARING*</p> <p>Manage uses to prevent disturbance to GRSG populations and habitat by applying seasonal restrictions (e.g., no surface disturbance) between Feb 15 – June 15,</p>

NUMBER	UTAH STIPULATIONS
	<p>in Greater Sage-Grouse Priority Habitat Management Areas (PHMA) breeding, nesting, and early brood-rearing habitat to seasonally protect those habitats from disruptive activity.</p> <p>Exception: None</p> <p>Modification: Specific time and distance determinations would be based on site-specific conditions and may be modified due to documented local variations (e.g., higher/lower elevations) or annual climactic fluctuations (e.g., early/late spring, long and/or heavy winter) in order to better protect GRSG, in coordination with the appropriate State of Utah agency.</p> <p>Waiver: None</p> <p>*This would only be applicable to new fluid minerals leases if the exception criteria identified for the NSO stipulation above were granted.</p>
<p>UT-S-354</p>	<p>TIMING LIMITATION – GREATER SAGE-GROUSE BROOD-REARING</p> <p>Manage uses to prevent disturbance to GRSG populations and habitat by applying seasonal restrictions (e.g., no surface disturbance) between April 15 – August 15 in the Greater Sage-Grouse (GRSG) Priority Habitat Management Areas (PHMA) brood-rearing habitat to seasonally protect that habitat from disruptive activity.</p> <p>Exception: None</p> <p>Modification: Specific time and distance determinations would be based on site-specific conditions and may be modified due to documented local variations (e.g., higher/lower elevations) or annual climactic fluctuations (e.g., early/late spring, long and/or heavy winter) in order to better protect GRSG, in coordination with the appropriate State of Utah agency.</p> <p>Waiver: None</p> <p>*This would only be applicable to new fluid minerals leases if the exception criteria identified for the NSO stipulation above were granted.</p>
<p>UT-S-355</p>	<p>TIMING LIMITATION – GREATER SAGE-GROUSE WINTER HABITAT</p> <p>Manage uses to prevent disturbance to GRSG populations and habitat by applying seasonal restrictions (e.g., no surface disturbance) between Nov 15 – March 15 in Priority Habitat Management Areas (PHMA) for Greater Sage-Grouse (GRSG) winter habitat to protect</p>

NUMBER	UTAH STIPULATIONS
	<p>GRSG within PHMA from disruptive activity during the winter season.</p> <p>Exception: None</p> <p>Modification: Specific time and distance determinations would be based on site-specific conditions and may be modified due to documented local variations (e.g., higher/lower elevations) or annual climactic fluctuations (e.g., early/late spring, long and/or heavy winter) in order to better protect GRSG, in coordination with the appropriate State of Utah agency.</p> <p>Waiver: None</p> <p>*This would only be applicable to new fluid minerals leases if the exception criteria identified for the NSO stipulation above were granted.</p>
<p>UT-S-356</p>	<p style="text-align: center;">CONTROLLED SURFACE USE – INDIRECT IMPACTS FROM NOISE</p> <p>Areas outside of Priority Habitat Management Areas (PHMA), portions of the State of Utah’s opportunity areas within 4 miles of a lek that is located within PHMA will be subject to the following constraints:</p> <p>Limit noise from discrete anthropogenic disturbances (during construction, operation, or maintenance) so it will not exceed 10 decibels above ambient sound levels (baseline as available at the signing of the GRSG RMP Amendment ROD or as first measured thereafter) at occupied leks within PHMA from 2 hours before to 2 hours after official sunrise and sunset during breeding season (e.g., while males are strutting);</p> <p>AND</p> <p>Limit project related noise in other PHMA habitats and seasons where it would be expected to reduce functionality of habitats that support associated GRSG populations in order to protect GRSG from indirect disturbance near leks within PHMA.</p> <p>Exception: None</p> <p>Modification: As additional research and information emerges, specific new limitations appropriate to the type of projects being considered would be evaluated and appropriate measures would be implemented where necessary to minimize potential for noise impacts on PHMA GRSG population behavioral cycles.</p> <p>Waiver: None</p>
<p>UT-S-357</p>	<p style="text-align: center;">CONTROLLED SURFACE USE – INDIRECT IMPACTS FROM TALL STRUCTURES</p>

NUMBER	UTAH STIPULATIONS
	<p>Areas outside of Priority Habitat Management Areas (PHMA), portions of the State of Utah's opportunity areas within 4 miles of a lek that is located within PHMA will be subject to the following constraints:</p> <p>Limit the placement of permanent tall structures** adjacent to breeding and nesting habitats to minimize placement of structures that introduce new perching and/or nesting opportunities for avian predators.</p> <p>Exception: None Modification: None Waiver: None</p> <p>**For the purposes of this restriction, a tall structure is any man-made structure that provides for perching/nesting opportunities for predators (e.g., raptors and ravens) that are naturally absent, or that decreases the use of an area by GRSG. A determination as to whether something is considered a tall structure will be made based on local conditions such as existing vegetation or topography.</p>

NUMBER	UTAH LEASE NOTICES
<p>UT-LN-34</p>	<p align="center">BALD EAGLE WINTER ROOST SITES</p> <p>The lessee/operator is given notice that this lease has been identified as containing bald eagle winter roost sites. No surface use or otherwise disruptive activity allowed from November 1 through March 31 which would disrupt bald eagle roosting activities within 0.5 mile of known roosts, unless the area has been surveyed according to protocol and determined to be unoccupied. No surface use or otherwise disruptive activity would be allowed which would result in an aboveground facility within 0.5 mile of known bald eagle winter roost areas. Modifications to the Surface Use Plan of Operations may be required in accordance with section 6 of the lease terms and 43CFR3101.1-2</p>
<p>UT-LN-36</p>	<p align="center">BALD EAGLE HABITAT</p> <p>The Lessee/Operator is given notice that the lands in this parcel contains nesting/winter roost habitat for the bald eagle. Avoidance or use restrictions may be placed on all or portions of the lease. Application of appropriate measures will depend on whether the action is temporary or permanent, and whether it occurs within or outside the bald eagle breeding or roosting season. A <u>temporary</u> action is completed prior to the following breeding or roosting season leaving no permanent structures and resulting in no permanent habitat loss. A <u>permanent</u> action continues for more than one breeding or roosting season and/or causes a loss of eagle habitat or displaces eagles through disturbances, i.e. creation of a permanent structure.</p>
<p>UT-LN-37</p>	<p align="center">BALD EAGLE HABITAT</p> <p>The lessee/operator is given notice that lands in this lease have been identified as containing Bald Eagle Habitat. Modifications to the Surface Use Plan of Operations may be required in order to protect the Bald Eagle and/or habitat from surface disturbing activities in accordance with Section 6 of the lease terms, Endangered Species Act, and 43 CFR 3101.1-2.</p>

NUMBER	UTAH LEASE NOTICES
UT-LN-38	<p style="text-align: center;">FERRUGINOUS HAWK NEST SITES</p> <p>The lessee/operator is given notice that this lease has been identified as containing ferruginous hawk nest sites. No surface use or otherwise disruptive activity allowed from March 1 through August 1 which would disrupt ferruginous hawk breeding activities within 0.5 mile of an occupied nest. No surface use or otherwise disruptive activity would be allowed which would result in an aboveground facility within 0.5 mile of known ferruginous hawk nests, which have been active within the past 3 years. Modifications to the Surface Use Plan of Operations may be required in accordance with section 6 of the lease terms and 43CFR3101.1-2.</p>
UT-LN-39	<p style="text-align: center;">GOLDEN EAGLE NEST SITES</p> <p>The lessee/operator is given notice that this lease has been identified as containing golden eagle nest sites. No surface use or otherwise disruptive activity allowed from January 1 through August 31 which would disrupt golden eagle breeding activities within 0.5 mile of an occupied nest. No surface use or otherwise disruptive activity would be allowed which would result in an aboveground facility within 0.5 mile of known golden eagle nests, which have been active within the past 3 years. Modifications to the Surface Use Plan of Operations may be required in accordance with section 6 of the lease terms and 43CFR3101.1-2.</p>
UT-LN-40	<p style="text-align: center;">GOLDEN EAGLE HABITAT</p> <p>The lessee/operator is given notice that lands in this lease have been identified as containing Golden Eagle Habitat. Modifications to the Surface Use Plan of Operations may be required in order to protect the Golden Eagle and/or habitat from surface disturbing activities in accordance with Section 6 of the lease terms, Endangered Species Act, and 43 CFR 3101.1-2.</p>
UT-LN-42	<p style="text-align: center;">BURROWING OWL HABITAT</p> <p>The lessee/operator is given notice that this lease has been identified as containing burrowing owl habitat. No surface use or otherwise disruptive activity allowed from March 1 through August 31 which would disrupt burrowing owl breeding activities within 0.25 mile of an occupied nest. No surface use or otherwise disruptive activity would be allowed which would result in an aboveground facility within 0.25 mile of known burrowing owl nests, which have been active within the past 3 years. Modifications to the Surface Use Plan of Operations may be required in accordance with section 6 of the lease terms and 43CFR3101.1-2.</p>
UT-LN-44	<p style="text-align: center;">RAPTORS</p> <p>Appropriate seasonal and spatial buffers shall be placed on all known raptor nests in accordance with Utah Field Office Guidelines for Raptor Protection from Human and Land use Disturbances (USFWS 2002) and Best Management Practices for Raptors and their Associated Habitats in Utah (BLM 2006). All construction related activities will not occur within these buffers if pre-construction monitoring indicates the nests are active, unless a site-specific evaluation for active nests is completed prior to construction and if a BLM wildlife biologist, in consultation with USFWS and UDWR, recommends that activities may be permitted within the buffer. The BLM will coordinate with the USFWS and UDWR and have a recommendation within 3-5 days of notification. Any construction activities authorized within a protective (spatial and seasonal) buffer for raptors will require an on-site monitor. Any indication that activities are adversely affecting the raptor and/or its' young the on-site monitor will suspend activities and contact the BLM Authorized Officer immediately. Construction may occur within the buffers of inactive nests. Construction activities may commence once monitoring of the active nest site determines that fledglings have left the nest and are no longer dependent on the nest site. Modifications to the Surface Use Plan of Operations may be required in accordance with section 6 of the lease terms and 43CFR3101.1-2.</p>

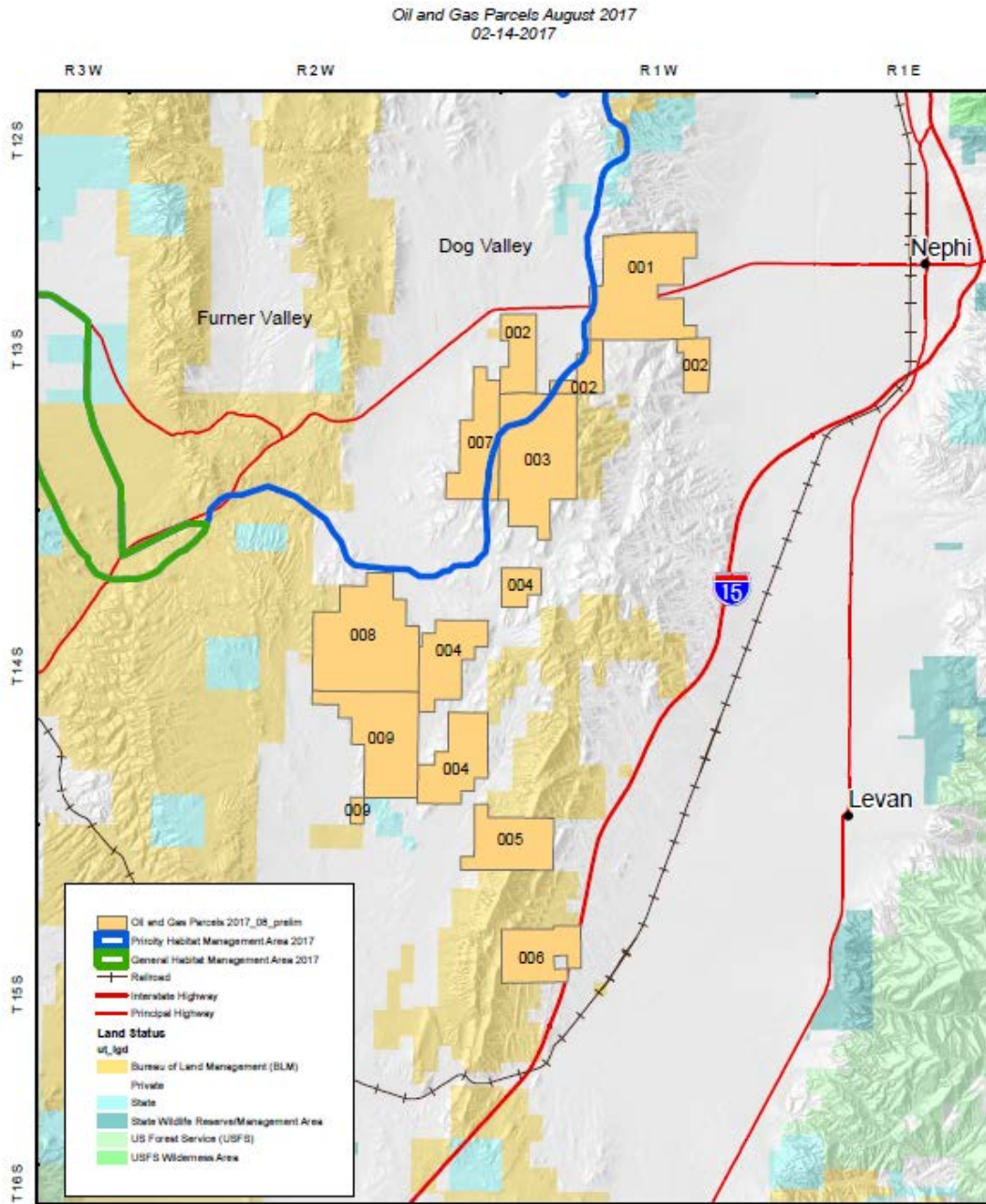
NUMBER	UTAH LEASE NOTICES
UT-LN-45	<p style="text-align: center;">MIGRATORY BIRD</p> <p>The lessee/operator is given notice that surveys for nesting migratory birds may be required during migratory bird breeding season whenever surface disturbances and/or occupancy is proposed in association with fluid mineral exploration and development within priority habitats. Surveys should focus on identified priority bird species in Utah. Field surveys will be conducted as determined by the authorized officer of the Bureau of Land Management. Based on the result of the field survey, the authorized officer will determine appropriate buffers and timing limitations.</p>
UT-LN-49	<p style="text-align: center;">UTAH SENSITIVE SPECIES</p> <p>The lessee/operator is given notice that no surface use or otherwise disruptive activity would be allowed that would result in direct disturbance to populations or individual special status plant and animal species, including those listed on the BLM sensitive species list and the Utah sensitive species list. The lessee/operator is also given notice that lands in this parcel have been identified as containing potential habitat for species on the Utah Sensitive Species List. Modifications to the Surface Use Plan of Operations may be required in order to protect these resources from surface disturbing activities in accordance with Section 6 of the lease terms, Endangered Species Act, Migratory Bird Treaty Act and 43 CFR 3101.1-2.</p>
UT-LN-52	<p style="text-align: center;">NOXIOUS WEEDS</p> <p>The lessee/operator is given notice that lands in this lease have been identified as containing or is near areas containing noxious weeds. Best management practices to prevent or control noxious weeds may be required for operations on the lease.</p>
UT-LN-60	<p style="text-align: center;">STEEP SLOPES</p> <p>The lessee/operator is given notice that this lease has been identified as containing steep slopes. No surface use or otherwise disruptive activity allowed on slopes in excess of 30 percent without written permission from the Authorized Officer. Modifications to the Surface Use Plan of Operations may be required in accordance with section 6 of the lease terms and 43CFR3101.1-2.</p>

NUMBER	UTAH LEASE NOTICES
UT-LN-96	<p style="text-align: center;">AIR QUALITY MITIGATION MEASURES</p> <p>The lessee is given notice that the Bureau of Land Management (BLM) in coordination with the U.S. Environmental Protection Agency and the Utah Department of Air Quality, among others, has developed the following air quality mitigation measures that may be applied to any development proposed on this lease. Integration of and adherence to these measures may help minimize adverse local or regional air quality impacts from oil and gas development (including but not limited to construction, drilling, and production) on regional ozone formation.</p> <ul style="list-style-type: none"> • All internal combustion equipment would be kept in good working order. • Water or other approved dust suppressants would be used at construction sites and along roads, as determined appropriate by the Authorized Officer. • Open burning of garbage or refuse would not occur at well sites or other facilities. • Drill rigs would be equipped with Tier II or better diesel engines. • Vent emissions from stock tanks and natural gas TEG dehydrators would be controlled by routing the emissions to a flare or similar control device which would reduce emissions by 95% or greater. • Low bleed or no bleed pneumatics would be installed on separator dump valves and other controllers. • During completion, flaring would be limited as much as possible. Production equipment and gathering lines would be installed as soon as possible. • Well site telemetry would be utilized as feasible for production operations. • Stationary internal combustion engine would comply with the following standards: 2g NOx/bhp-hr for engines <300HP; and 1g NOx/bhp-hr for engines >300HP. <p>Additional site-specific measures may also be employed to avoid or minimize effects to local or regional air quality. These additional measures will be developed and implemented in coordination with the U.S. Environmental Protection Agency, the Utah Department of Air Quality, and other agencies with expertise or jurisdiction as appropriate based on the size of the project and magnitude of emissions.</p>
UT-LN-101	<p style="text-align: center;">AIR QUALITY</p> <p>All new and replacement internal combustion gas field engines of less than or equal to 300 design-rated horsepower must not emit more than 2 grams of NOx per horsepower-hour. This requirement does not apply to gas field engines of less than or equal to 40 design-rated horsepower. AND All new and replacement internal combustion gas field engines of greater than 300 design rated horsepower must not emit more than 1.0 grams of NOx per horsepower-hour. Modifications to the Surface Use Plan of Operations may be required in accordance with section 6 of the lease terms and 43CFR3101.1-2.</p>
UT-LN-102	<p style="text-align: center;">AIR QUALITY ANALYSIS</p> <p>The lessee/operator is given notice that prior to project-specific approval, additional air quality analyses may be required to comply with the National Environmental Policy Act, Federal Land Policy Management Act, and/or other applicable laws and regulations. Analyses may include dispersion modeling and/or photochemical modeling for deposition and visibility impacts analysis, control equipment determinations, and/or emission inventory development. These analyses may result in the imposition of additional project-specific air quality control measures.</p>
UT-LN-107	<p style="text-align: center;">BALD EAGLE</p> <p>The Lessee/Operator is given notice that the lands in this parcel contains nesting/winter roost habitat for the bald eagle. The bald eagle was de-listed in 2007; however, it is still afforded protection under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c, 1940). Therefore, avoidance or use restrictions may be placed on portions of the lease. Application of appropriate measures will depend on whether the action is temporary or permanent, and whether it occurs within or outside the bald eagle breeding or roosting season. A <u>temporary</u> action is completed prior to the following breeding or roosting season leaving no permanent structures and resulting in no permanent habitat loss. A <u>permanent</u> action continues for more than one breeding</p>

NUMBER	UTAH LEASE NOTICES
	<p>or roosting season and/or causes a loss of eagle habitat or displaces eagles through disturbances, i.e. creation of a permanent structure. The following avoidance and minimization measures have been designed to ensure activities carried out on the lease will not lead to the need to consider listing the eagle as threatened or endangered. Integration of, and adherence to the following measures will facilitate review and analysis of any submitted permits under the authority of this lease.</p> <p>Current avoidance and minimization measures include the following:</p> <ol style="list-style-type: none"> 1. Surveys will be required prior to operations unless species occupancy and distribution information is complete and available. All Surveys must be conducted by qualified individual(s), and be conducted according to protocol. 2. Lease activities will require monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures will be evaluated. 3. Water production will be managed to ensure maintenance or enhancement of riparian habitat. 4. Temporary activities within 1.0 mile of nest sites will not occur during the breeding season of January 1 to August 31, unless the area has been surveyed according to protocol and determined to be unoccupied. 5. Temporary activities within 0.5 miles of winter roost areas, e.g., cottonwood galleries, will not occur during the winter roost season of November 1 to March 31, unless the area has been surveyed according to protocol and determined to be unoccupied. 6. No permanent infrastructure will be placed within 1.0 mile of nest sites. 7. No permanent infrastructure will be placed within 0.5 miles of winter roost areas. 8. Remove big game carrion from within 100 feet of lease roadways occurring within bald eagle foraging range. 9. Avoid loss or disturbance to large cottonwood gallery riparian habitats. 10. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in suitable habitat. Utilize directional drilling to avoid direct impacts to large cottonwood gallery riparian habitats. Ensure that such directional drilling does not intercept or degrade alluvial aquifers. 11. All areas of surface disturbance within riparian areas and/or adjacent uplands should be re-vegetated with native species. <p>Additional measures may also be employed to avoid or minimize effects to the species between the lease sale stage and lease development stage. These additional measures will be developed and implemented in coordination with the U.S. Fish and Wildlife Service.</p>
UT-LN-129	<p style="text-align: center;">GREATER SAGE-GROUSE – DISTURBANCE CAP</p> <p>Manage discrete anthropogenic disturbances, whether temporary or permanent, so they cover less than 3 percent of 1) PHMA associated with a GRSG population area (referred to as biologically significant units {BSU} when coordinating across state lines) and 2) within the proposed project analysis area, on all lands (regardless of ownership) at each level. (See Appendix E of the GRSG Approved RMP Amendment for disturbance calculation instructions)</p>
UT-LN-130	<p style="text-align: center;">GREATER SAGE-GROUSE – DENSITY LIMITATION</p> <p>Limit the density of energy and mining facilities within Priority Habitat Management Areas (PHMA) during project authorization to an average of one energy/mineral facility per 640 acres on all lands (regardless of land ownership) in PHMA within a proposed project analysis area to protect PHMA and the life-history needs of GRSG from habitat loss and GRSG populations from disturbance and limit fragmentation in PHMA.</p>
UT-LN-131	<p style="text-align: center;">GREATER SAGE-GROUSE – NET CONSERVATION GAIN</p> <p>In Priority and General Habitat Management Areas (PHMA and GHMA) all actions that result in habitat loss and degradation will require mitigation that provides a net conservation gain to</p>

NUMBER	UTAH LEASE NOTICES
	the Greater Sage-Grouse (GRSG). Mitigation must account for any uncertainty associated with the effectiveness of the mitigation and will be achieved through avoiding, minimizing and compensating for impacts. Mitigation will be conducted according to the mitigation framework found in Appendix F in the Utah Approved Management Plan Amendment.
UT-LN-132	<p style="text-align: center;">GREATER SAGE-GROUSE – REQUIRED DESIGN FEATURES</p> <p>Apply the Required Design Features (RDF)* in Appendix C of the Utah Approved Management Plan Amendment when leasing within Priority and General Habitat Management Areas (PHMA and GHMA).</p> <p>*RDFs may not be required if it is demonstrated through the NEPA analysis that the RDF associated project/activity is:</p> <ul style="list-style-type: none"> • Documented to not be applicable to the site-specific conditions of the project/activity (e.g. due to site limitations or engineering considerations). Economic considerations, such as increased costs, do not necessarily require that an RDF be varied or rendered inapplicable; • An alternative RDF, state-implemented conservation measure, or plan-level protection is determined to provide equal or better protection for GRSG or its habitat; • Provide no additional protection to GRSG or its habitat.
UT-LN-133	<p style="text-align: center;">GREATER SAGE-GROUSE - BUFFER</p> <p>In Priority and General Habitat Management Areas (PHMA and GHMA), the BLM will apply the lek buffer-distances identified in the USGS Report Conservation Buffer Distance Estimates for Greater Sage-Grouse – A Review (Open File Report 2014-1239) in accordance with Appendix B, Applying Lek-Buffer Distances, consistent with valid and existing rights and applicable law in authorizing management actions.</p>

APPENDIX C – MAP OF PARCELS



BUREAU OF LAND MANAGEMENT
FILLMORE FIELD OFFICE
WEST DESERT DISTRICT

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

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APPENDIX D – INTERDISCIPLINARY TEAM CHECKLIST**INTERDISCIPLINARY TEAM CHECKLIST****Project Title:** September 2017 Oil and Gas Lease Sale**NEPA Log Number:** DOI-BLM-UT-W020-2017-0001-EA**File/Serial Number:****Project Leader:** Cheryl LaRoque**DETERMINATION OF STAFF: (Choose one of the following abbreviated options for the left column)**

NP = not present in the area impacted by the proposed or alternative actions

NI = present, but not affected to a degree that detailed analysis is required

PI = present with potential for relevant impact that need to be analyzed in detail in the EA

Determination	Resource	Rationale for Determination	Signature	Date
RESOURCES AND ISSUES CONSIDERED (INCLUDES SUPPLEMENTAL AUTHORITIES APPENDIX 1 H-1790-1)				
PI	Air Quality	Air Quality in the region is good. Oil and Gas Development on the lease parcels would not be expected to cause impacts to impair air quality, but a qualitative analysis of	Leonard Herr	03/29/17
NP	Areas of Critical Environmental Concern	There are no ACEC's located within the project area.	/s/ Teresa Frampton	11/22/16
NI	Cultural Resources	Based on the assessment of expected site density and location, anticipated size of development, and topographic complexity of the proposed lease parcels, BLM determines that reasonable development of six acres of disturbance associated with a single well pad could occur within the parcels with no adverse effect to historic properties. Effects to historic properties from a single well pad can be avoided through the judicious placement of that well within the lease areas. Similarly, the topographic complexity of the parcels will allow for the avoidance of indirect and/or cumulative effects through the judicious placement of disturbances. Any development must take into account the eligible sites within the parcels; through judicious placement of planned development, these locations can be avoided and development will have no adverse effect to the sites (see BLM-Utah's Lease Notice 68 – <i>Notifications and Consultation Regarding Cultural Resources</i> {UT-LN-68}, which will be included for all parcels). The BLM makes a determination of No Adverse Effect to Historic Properties consistent with 36CRF800.5(b) for the FFO August 2017 Oil and Gas Lease Sale.	/s/Jessica F. Montcalm	03/07/17
PI	Greenhouse Gas Emissions	Greenhouse gases may be impacted by the proposed action.	Leonard Herr	03/29/17
NI	Environmental Justice	As defined in EO 12898, minority, low income populations and disadvantaged groups may be present within the counties involved in this lease sale. However, all citizens can file an expression of interest	/s/ Cheryl LaRoque	11/16/16

Determination	Resource	Rationale for Determination	Signature	Date
		or participate in the bidding process (43 CFR §3120.3-2). The stipulations and notices applied to the subject parcels do not place an undue burden on these groups. Leasing the nominated parcels would not cause any disproportionately high and adverse effects on minority or low income populations.		
NI	Farmlands (Prime or Unique)	<p>I checked a list of the soil map units in the Fairfield-Nephi Soil Survey that qualify as prime & Unique farmlands if irrigated and/or other farmlands of statewide importance (this list was obtained from the NRCS), and I looked at the soil survey and found that most of the soil mapping units that are within these nine lease parcels do not match those on the above mentioned list. However, some small areas within the 9 oil and gas lease parcels are mapped in the soil survey as being soils which are on the list (the mapping units within the parcels are JbA, JbB, JcB, JcC and GbB) as being prime and unique farmlands if irrigated. Leasing these parcels would not impact or affect negatively prime or unique farmlands.</p> <p>However, there is an inherent expectation to conduct operations on each leased parcel. Any activity that involves surface disturbance would have to be authorized at the APD stage. At that stage, impacts to soils, prime and unique farmlands and other resources would need to be assessed and mitigated to ensure that soils would not be impacted in a manner that would result in soil degradation to a point that the soil would no longer qualify as prime or unique farmlands. It would be expected that reclamation procedures would be required to ensure impacts to prime and unique farmlands would be minimized.</p>	/s/ Bill Thompson	11/17/16
NP	Floodplains	No Floodplains are on site.	/s/ Tom Gibbons	2/7/17
NI	Fire/Fuels Management	The implementation of appropriate reclamation standards at the APD stage would prevent an increase of hazardous fuels. Fuels and fire management would not be impacted by the lease process.	/s/ Nate Hunter	11/16/16
NI	Geology / Mineral Resources/Energy Production	<p>The proposed action would not affect any mineral resources within the proposed areas. There are no geothermal leases, locatable minerals cases, or mineral materials sites which overlap the boundaries of the proposed leases.</p> <p>Depending on the success of oil and gas well drilling, non-renewable natural gas and/or oil would be extracted and delivered to market. Production of oil and/or gas would result in the irretrievable loss of these resources. A RFD was prepared. Environmental impacts of the RFD were analyzed and are documented in the EA. The proposed action would not exceed the level of activity predicted in the RFD.</p> <p>While conflicts could arise between oil and gas operations and other mineral operations, these could generally be mitigated under the regulations 3101.1-2,</p>	/s/ Todd Leeds	11/16/16

Determination	Resource	Rationale for Determination	Signature	Date
		where proposed oil and gas operations may be moved up to 200 meters or delayed by 60 days and also under the standard lease terms (Sec. 6) where sitting and design of facilities may be modified to protect other resources.		
NI	Invasive Species/Noxious Weeds (EO 13112)	Issuing a lease has no impact on noxious and invasive weeds.	/s/R.B. Probert	1/17/17
NI	Lands/Access	<p>The governing land use plan (as amended) allows for oil and gas development with the associated infrastructure. Oil and gas leasing is not expected to affect access to public lands. Leasing would be subject to all valid pre-existing rights.</p> <p>Any proposals for future projects within the oil and gas lease area would be reviewed on a site-specific basis and other right-of-way (ROW) holders in the area would also be notified, as per regulations, when an application for a ROW is received by this office.</p> <p>Off-lease ancillary facilities that cross public land, if any, may require separate authorizations. Coordination with the existing ROW holders and application of SOPs, BMPs and design features at the APD stage, would ensure protection of existing rights.</p> <p>The House Range Resource Management Plan, Master Title Plats for the lease area, and a Geo Report have all been reviewed and it has been determined that there are no withdrawals, right-of-way avoidance, or right-of-way exclusions within the oil and gas lease area.</p>	/s/ Frederick G. Braun	12/8/16
NI	Livestock Grazing	<p>Leasing parcels would not impact livestock grazing. However, there is an inherent expectation to conduct operations on each leased parcel. Any activity that involves surface disturbance or direct resource impacts would have to be authorized as a lease operation through future NEPA analysis, on a case-by-case basis, at the APD stage. Impacts to livestock grazing may occur as a result of subsequent actions including exploration development, production, etc. Therefore, reclamation provisions/procedures including re-vegetation (utilizing appropriate seed mix based on the ecological site, elevation and topography), road reclamation, range improvement project replacement/restoration (e.g., fences, troughs and cattle guards), noxious weed control, would be identified in future NEPA/decision documents on a case-by-case basis (at the APD stage). In addition, if any range improvement projects could be impacted by wells or associated infrastructure, well pads could be moved 200 meters to avoid rangeland improvements 43 CFR 3101.1-2.</p>	/s/ Brian Taylor	11/29/16
PI	Migratory Birds	<p>All of the parcels are located in habitats used by migratory birds at some degree or another throughout the year.</p> <p>The leasing action in its self would not impact migratory birds. However, future oil and gas exploration may</p>	/s/ Christine Fletcher	1/28/17

Determination	Resource	Rationale for Determination	Signature	Date
		<p>impact migratory birds and their seasonal habitats through development, operation and maintenance activities. This stage occurs when a lessee files an APD, outlining in detail the scope of the proposed action. At that time, impacts to migratory birds would be fully analyzed in additional environmental documents through the NEPA process. Conditions of Approval (COAs) would be placed on the APD to reduce impacts to migratory birds to the extent feasible when necessary.</p> <p>Applicable Lease Notices that would apply to these parcels would include: UT-LN-34 (Bald Eagle Winter Roost Sites), UT-LN-36 (Bald Eagle Habitat), UT-LN-37 (Bald Eagle Habitat), UT-LN-38 (Ferruginous Hawk Nest Sites), UT-LN-39 (Golden Eagle Nest Sites), UT-LN-40 (Golden Eagle Habitat), UT-LN-44 (Raptors), UT-LN-45 (Migratory Birds), UT-LN-49 (Utah Sensitive Species), and UT-S-263 (Crucial Raptor Nesting Area).</p>		
NP	National Historic Trails	A cultural resource file search conducted by Whitman Moore on 11/22/2016 indicates that there are no National Historic Trails within the project area.	/s/Stacey Whitman Moore	11/22/16
NI	Native American Religious Concerns	BLM initiated consultation via certified letter on 2/28/2017 to the following tribes: Hopi Tribe, Skull Valley Goshute Tribe, Kanosh Band of Paiutes, the Paiute Tribe of Utah, the Ute Indian Tribe, the Goshute Tribe, the Navajo Tribe, the Kaibab Band of Paiute Indians, and the Pueblo of Jemez. A response letter was received on March 20, 2017 from the Hopi Tribe. No objection was identified. No other tribes responded.	/s/Jessica F. Montcalm	03/7/17
NI	Paleontology	There are no known paleontological resources within the parcel boundaries. If an APD is filed, specific clearances would be conducted and incorporated into that NEPA process. As a COA, if paleontological resources are located, the AO would be contacted	/s/ Todd Leeds	11/16/16
NI	Property Boundary Evaluation	Property boundary markers are present throughout the lease parcels, however there should not be any impacts to any of the property boundary monuments.	/s/ Kyle Montoe	2/14/2017
NI	Rangeland Health Standards	Leasing parcels would not impact Rangeland Health Standards nor would it affect wetlands /riparian areas, water quality, desirable species or soil productivity. However, there is an inherent expectation to conduct operations on each leased parcel. Any activity that involves surface disturbance or resource impacts would have to be authorized at the APD stage. At that stage impacts to soils, vegetation, water quality and wetlands/riparian areas would need to be assessed and mitigated to maintain rangeland health in accordance with the standards. It would be expected that reclamation procedures identified in the livestock grazing section would be required to ensure impacts to Rangeland Health Standards are minimized. The Gold	/s/ Brian Taylor	11/29/16

Determination	Resource	Rationale for Determination	Signature	Date
		<p>Book standards also provide mechanisms to achieve Rangeland Health. These include weed control, siting considerations (e.g. well pad, contouring, road alignment), and re-vegetation. It is anticipated that standard operating procedures, Best management practices, and operator design features would be implemented to mitigate possible impacts to those resources for which the rangeland health standards were written. If this is so then it is concluded that rangeland health standards would be met.</p>		
NI	Recreation	<p>There would be no impacts to casual recreation use around the project area because of limited access due to private land surrounding the parcels.</p>	/s/ Teresa Frampton	11/22/16
PI	Greater Sage-grouse	<p>Portions of lease parcels 001, 002, 003 and 007 occur within the Priority Habitat Management Area for the Sheeprock Mountains Greater Sage-grouse Population Area as identified by the Utah Greater Sage-grouse Approved Resource Management Plan 2015.</p> <p>The leasing action in its self would not impact greater sage-grouse. Because of No Surface Occupancy stipulation that has been attached to the portions of parcels 001, 002, 003, and 007 that are within PHMA there would be no direct impacts to sage-grouse or sage-grouse PHMA under the RFD Scenario. Indirect impacts to sage-grouse could result should human activity within and in proximity to PHMA increase (i.e. noise and building tall structures) which could result in sage-grouse avoidance or displacement of suitable habitat near the parcels.</p> <p>Parcels 004, 005, 006 and 009 are at least one-half mile or greater from the outside boundary of the mapped PHMA therefore, no direct or indirect impacts are anticipated to occur to greater sage-grouse from the RFD. However, parcel 008 is adjacent to the identified PHMA and therefore there could potentially be some indirect impacts on the northern portion of this parcel near the PHMA boundary and within one-half mile.</p> <p>Applicable Lease stipulations and notices that would apply to these parcels would include: UT-S-347 - No Surface Occupancy - Greater Sage-Grouse Priority Habitat Management Areas* and other appropriate stipulations that would only be applicable if this stipulations were to be excepted (UT-S-348, UT-S-349, UT-S-350, UT-S-351, UT-S-352, UT-S-353, UT-S-354, UT-S-355, UT-S-356 and UT-S-357)</p> <p>Utah Sensitive Species lease notice UT-LN-49 (Utah Sensitive Species), UT-LN-129 (Greater Sage-Grouse – Disturbance Cap), UT-LN-130 (Greater Sage-Grouse – Density Limitations), UT-LN-131 (Greater Sage-Grouse – Net Conservation Gain), UT-LN-132 (Greater Sage-Grouse – Required Design Features), UT-LN-133 (Greater Sage-Grouse – Buffer)</p>	/s/ Christine Fletcher	5/31/17

Determination	Resource	Rationale for Determination	Signature	Date
NI	Socio-Economics	No quantifiable additional or decreased economic impact to the local area (Juab County) would be caused by the proposed action.	Cheryl LaRoque	11/16/16
NI	Soils	Leasing activity would not affect soils. However, there is some expectation that drilling and development could occur, at which time additional NEPA would be conducted should an APD be filed. If additional site specific resource protection measures are needed to prevent unnecessary or undue degradation, these would be developed at the time of the site specific NEPA. The application of specific stipulations is not warranted, UT-LN-60 (Steep Slopes) applies to all parcels.	/s/ Paul Caso	11/30/16
NP	Threatened, Endangered, Candidate or Special Status Plant Species	There are no known federally-listed or other special status rare plant species on the nine proposed 2017 lease sale parcels within the Fillmore Field Office.	/s/ DWhitaker	11/17/16
PI	Threatened, Endangered, Candidate or Special Status Animal Species	There are no Federally listed threatened, endangered, or candidate species or critical habitat known to occur within or reasonably near the proposed oil and gas lease parcels. However, other Utah special status species may be found on all leases. The leasing action in its self would not impact any of the special status species identified. However, future oil and gas exploration may impact sensitive species and their seasonal habitats through development, operation and maintenance activities. This stage occurs when a lessee files an APD, outlining in detail the scope of the proposed action. At that time, impacts to special status species would be fully analyzed in additional environmental documents through the NEPA process. Appropriate Conditions of Approval (COAs) would be placed on the APD to reduce impacts to special status species to the extent feasible when necessary. Applicable Lease Notice that would apply to all parcels would include: Utah Sensitive Species lease notice UT-LN-49.	/s/Christine Fletcher	1/28/17
PI	Wastes (hazardous or solid)	The leasing action in its self would not generate solid or hazardous waste. However, future oil and gas exploration will have to include mitigation to manage both solid and hazardous wastes.	/s/ Todd Leeds	3/7/2017
	Water Resources/Quality (drinking/surface/ground)	Discharges of drilling fluids and water to intermittent streams and near BLM water wells and springs with water rights to required design features/mitigation. No drinking water source protection zone in lease areas.	/s/ Tom Gibbons	2/7/17
NI	Water Rights	Parcels 001 and 002 contain surface water (point to point livestock watering) water rights and another point to point water right is located just east of Parcel 003. A well is located on the middle (from south to north) of the three parcels numbered 004, and a spring (Sage Grouse	/s/ Tom Gibbons	2/7/17

Determination	Resource	Rationale for Determination	Signature	Date
		<p>Spring) is located on the southern-most (from south to north) of the three parcels numbered 004.</p> <p>In general, activities should not affect, alter, or disturb the access and use of these water rights. It is anticipated that protective measures (design features) will need to be enacted for the well on the middle parcel 004, and mitigation design features/measures requested to protect Sage Grouse Spring on the southern Parcel 004.</p> <p>Drilling activities and discharges of drilling fluids and water to intermittent streams and near BLM water wells and springs with water rights will require design features/mitigation.</p>		
NI	Wetlands/Riparian Zones	<p>A review of riparian files at the Fillmore Field Office showed that riparian and/or wetland areas do not occur on public lands within any of the parcels. The Map of the parcels does show a spring on private land in parcel #001. Leasing the parcel would not affect any riparian vegetation at this spring.</p> <p>However, there is some (low) expectation that drilling and development could occur, at which time additional NEPA would be conducted at the APD stage at which time possible impacts to riparian vegetation at this spring would be analyzed. Impacts to any riparian vegetation could easily be avoided by keeping ground disturbing activities at least 100 meters from riparian vegetation which may be present at this spring.</p>	/s/ Bill Thompson	11/17/16
NP	Wilderness/WSA	There are no WSA's within the project area.	/s/ Teresa Frampton	11/22/16
NI	Wildlife and Fish Excluding Designated/Special Status Species	<p>All of the proposed oil and gas lease parcels lie within substantial mule deer range and elk habitat. At the time of the approval of the 1987 House Range Resource Area RMP, the habitat was considered "critical" which today would be considered "crucial". However, since then, the Utah Division of Wildlife Resources has reclassified the habitat in the vicinity of the lease sale as "substantial winter/spring" for mule deer and "substantial year-long" for elk. The Fillmore Field Office has completed maintenance on the HRRR RMP to reclassify the habitat to make it consistent with that of the UDWR. The HRRR RMP does not have stipulations for any big game habitat that is not classified as crucial therefore; no stipulations or special protections are warranted for big game on these parcels.</p>	/s/ Christine Fletcher	5/29/17
NI	Woodland / Forestry	There would be no expected impacts to the woodland and forestry resources with the proposed project.	/s/ Eric Reid	1/28/17
NI	Vegetation Excluding Designated/Special Status Species	It is expected that reclamation procedures would be required to ensure long-term vegetation impacts are minimized. Reclamation provisions/procedures would include re-vegetation (utilizing appropriate seed mix based on the ecological site, elevation and topography), road reclamation, noxious weed controls, etc.	/s/ Brian Taylor	11/29/16

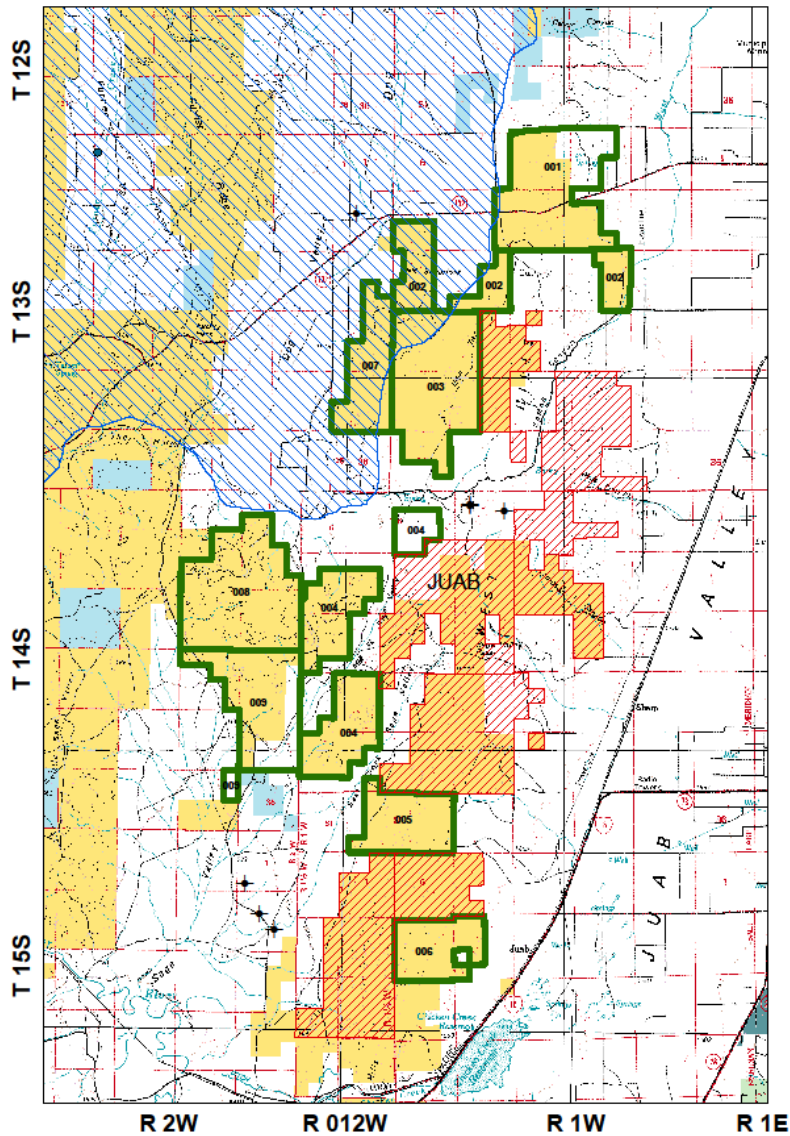
Determination	Resource	Rationale for Determination	Signature	Date
		At this stage (lease sale) there would be no impacts to vegetation resources. Impacts (both direct and indirect) would occur if a lease is developed in the future. Potential impacts would be analyzed and would be based on the details (specific site location and supporting infrastructure) contained in an APD. SOPs, BMPs and site specific design features applied at the APD stage including reclamation, would be applied as COAs. COAs would address soil resource issues not already analyzed in the Final EIS for the RMP.		
NI	Visual Resources	<p>The proposed parcels are located in areas managed as VRM Class II and IV under the current land use plan.</p> <p>Leasing of this area could result in oil and gas exploration. Impacts from exploratory drilling activities could result in short-term temporary impacts to the visual landscape including the introduction of vertical structures into a horizontal landscape.</p> <p>As seen from existing roads in the area, the short-term level of change to the characteristic landscape would be moderate to high; by employing best practices for oil & gas mitigation, the long-term contrast would be low to moderate, which is consistent with management objectives for the area.</p> <p>Leasing these parcels could impact visual resources and scenic quality for these units, but would be analyzed at the APD phase.</p>	/s/ Teresa Frampton	11/22/16
NP	Wild Horses and Burros	There are no Wild Horse Herd Management Areas within the proposed project area.	/s/ Eric Reid	1/28/17
NP	Lands with Wilderness Characteristics	<p>The proposed parcels are within Land With Wilderness Character (LWC) Unit #193 and Unit #202.</p> <p>In September 2014, a desk-top inventory was conducted on Unit 202. The unit was divided into sub-units A, B and C due to rights-of-ways dividing the unit. None of the units met the size criteria, so a full LWC inventory was not completed.</p> <p>In January 2015, a full LWC inventory was conducted on Unit 193. The unit was divided into Sub-Units A, B and C. Sub-Units A and B did not meet the size requirement due to rights-of-ways dividing the unit. Sub-Unit C met the size requirement and was field inventoried. The results of this inventory determined that the unit did not contain Wilderness Character.</p>	/s/ Teresa Frampton	12/6/2016

FINAL REVIEW:

Reviewer Title	Signature	Date	Comments
Environmental Coordinator			
Authorized Officer			

APPENDIX E- MAP OF PARCELS WITH PHMA AND EXISTING LEASES OVERLAY

September 2017 Oil and Gas Lease Sale



- Legend**
- September 2017 Parcels
 - Greater Sage-Grouse PHMA GHMA
 - Habitat_ID
 - PHMA
 - Greater Sage Grouse Utah Lek Locations
- Land Status**
- Bureau of Land Management (BLM)
 - Private
 - State Wildlife Reserve/Management Area
 - US Forest Service (USFS)

- Legend**
- Greater Sage Grouse Utah Lek Locations
 - Utah Oil & Gas Lease Parcels
 - Authorized
 - Oil & Gas Wells UDOGM
 - STATUS
 - + Plugged and Abandoned

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This product may not meet BLM standards for accuracy and content. Different data sources and input scales may cause some misalignment of data layers.



BLM

APPENDIX F – PUBLIC COMMENT LETTER RESPONSES

Comment Responses for September 2017 Oil & Gas Lease Sale

Fillmore Field Office

(Comment letter received from Western Watersheds, et al., dated May 1, 2017)

Comment	Comment Summary	Response
01	<p>Parcels 001, 002, 003, and 007 should be withdrawn from the lease sale because they contain PHMA for a population of sage-grouse that the BLM itself has declared is “in jeopardy” based on declining population trends over the previous eight years. . . . Without recent surveys for sage-grouse use throughout all of the proposed lease parcels, the BLM simply does not have the information needed to safely offer this area for lease.</p>	<p>Best available information was used in consideration of the lease parcels, including professional communications, incidental sightings and mapping of the Sheeprocks Sage-grouse Population Area within the ARMPA 2015, and translocation/telemetry based research within this area. The recommendation to withdraw these parcels has been taken into consideration. The BLM conducted a field review of these parcels along the PHMA boundary. The BLM is confident that the stipulations provided in these leases would adequately protect the acreage described in the EA as PHMA. This would be accomplished by implementing a No Surface Occupancy stipulation on the portions of these parcels in PHMA.</p>
02	<p>The BLM should withdraw Parcels 001, 002, 003, and 007 from this lease sale because they include Priority Habitat Management Area (PHMA) that has not been assessed adequately under Instruction Memorandum 2016-143’s prioritization requirements.</p>	<p>IM 2016-143 notes that the BLM will use the specified “Prioritization Sequence, parcel-specific factors, and the BLM’s workload capacity and other workload priorities as they determine work Plans for the oil and gas leasing program.” The IM emphasizes that it “does not prohibit leasing or development in General</p>

Comment	Comment Summary	Response
		<p>Habitat Management Areas (GHMA) or PHMA as the GRSG Plans will allow for leasing and development by applying prioritizing sequencing, stipulations, required design features, and other management measures to achieve the conservation objectives and provisions in the GRSG Plans.”</p> <p>The IM further clarifies by noting that the “guidance is not intended to direct the Authorized Officer to wait for all lands outside GRSG habitat areas to be leased or developed before allowing leasing within GHMAs, and then to wait for all lands within GHMAs to be leased before allowing leasing or development within the next habitat area (PHMA, for example).”</p> <p>The FFO staff had sufficient resources to process and analyze all parcels within PHMA within the given time frame. An assessment to characterize sage-grouse habitat potential in areas that lie within PHMA was conducted on May 26-27, 2017. It was determined that the habitat declines sharply at the boundary of PHMA in this area; however, habitat of varying quality and quantity is available for sage-grouse use within the parcels that overlap with PHMA. A No Surface Occupancy stipulation applies to the parcels, which would adequately protect the portions of PHMA habitat in these parcels.</p>
04	<p>Importantly, the EA does not include any maps or other documents that identify the locations of winter range or brood-rearing habitat for greater sage-grouse throughout all of the parcel acreage. These must be included in the analysis in order to assess adequately</p>	<p>The EA has been updated to reflect sage-grouse brood-rearing and winter habitat.</p>

Comment	Comment Summary	Response
	<p>the potential impacts to sage-grouse of this irreplaceable resource commitment.</p> <p>Leasing these parcels without fully delineating the sage-grouse winter habitat on them could have serious consequences for this imperiled population of sage-grouse.</p>	
05	<p>If the BLM proceeds to offer these parcels for lease, the BLM should include as a provision of the lease that there will be no exceptions or waivers to NSO stipulations in PHMA. If the BLM is unwilling to take even that extremely modest step, then if a lessee requests exceptions or waivers to NSO stipulations, the BLM should conduct a public comment period as is allowed per 43 CFR §3101.1-4.</p>	<p>43 CFR §3101.1-4 states: “If the authorized officer has determined, prior to leasing, that a stipulation involves an issue of major concern to the public, modification or waiver of the stipulation shall be subject to public review for at least a 30-day period. In such cases, the stipulation shall indicate that public review is required before modification or waiver.”</p> <p>The NSO stipulation in question has no provisions for modification or waiver. Therefore, 43 CFR §3101.1-4 is not applicable.</p>
06	<p>The proposed lease sale parcels overlap mule deer and elk crucial winter ranges. EA at 32. The EA acknowledges that disturbance to mule deer habitat from energy development can pose significant adverse effects on habitat use, survival, and recruitment. Id. The EA, however, then goes on to dismiss these impacts by stating, wholly without support, that BLM’s lease stipulations “would protect these resources by limiting disturbance within this habitat during the time period when it would have the most detrimental impact.” EA at 32. . . . These conclusory and unsupported assertions ignore significant new and additional research showing adverse effects to mule deer migrations and population from energy development, including in Colorado’s</p>	<p>The EA has been updated with the most recent Utah Division of Wildlife Resources (DWR) habitat GIS layers for mule deer and elk.</p> <p>Review of the updated big game DWR GIS layers identified this area as substantial winter/spring mule deer and substantial yearlong elk range. The DWR GIS layers for mule deer and elk resulted in different considerations from the level of range/habitat specificity that was presented in the EAs discussion released in April and the associated stipulations and lease notices have been removed because they were applicable to crucial habitat. Impacts to mule deer and elk may further be considered through steps to mitigate</p>

Comment	Comment Summary	Response
	<p>Piceance Basin. It further fails to justify BLM's refusal to engage in actual site-specific assessment of effects on particular deer subpopulations, winter use areas, and/or migration corridors. Merely describing the "the category of impacts anticipated from oil and gas development" fails to meet NEPA's hard look requirement when it is reasonable for BLM to do more.</p>	<p>oil and gas activities to avoid and minimize loss of habitat, noise, traffic collisions and restore and/or enhance impacted habitats if any exploration and development are pursued.</p>
07	<p>Despite the substantial evidence and concern regarding development effects on mule deer migration and behavior, the EA fails to provide any disclosure or analysis whatsoever of migration routes that may be affected by development on the proposed leases. Moreover, none of the proposed lease parcel stipulations for protecting big game habitat, however, limit the density of development or obstruction of migration routes, but only limit timing. See EA at 32.</p>	<p>See response to comment 06 above.</p> <p>Comment noted, habitat values for mule deer were updated to reflect the most current DWR GIS data, which has classified it as substantial winter/spring. These are resident/transient herds and individuals that move with the general season and with the availability of forage and water. Within PHMA, big game will benefit with improved land management practices for sage-grouse such as no surface occupancy, disturbance cap, and parcel prioritization.</p>
08	<p>Finally, the BLM should take into account new information indicating that sagebrush—which wintering mule deer are highly dependent on—is nearly impossible to restore, such that fragmentation of sagebrush communities from oil and gas development is likely to be permanent and reclamation ineffective. . . . There is no evidence, however, that any measures required by the RMP-EISs here ensure attainment of these conditions. Thus, oil and gas development could have more significant effects on mule deer and other big game than previously anticipated in the RMP-EISs, but those</p>	<p>Healthy and sustainable mule deer and elk herds and the habitat they depend on are a management emphasis for the BLM. A project/site reclamation plan will be developed to restore impacted landscape to their original forms as possible.</p>

Comment	Comment Summary	Response
	<p>impacts have not been analyzed in the EA. See IM 2010-117 (directing site-specific analysis of whether “[t]he topographic, soils, and hydrologic properties of the surface will not allow successful final landform restoration and revegetation in conformance with the standards found in Chapter 6 of the Gold Book, as revised”).</p>	
<p>09</p>	<p>In the EA, BLM asserts that there is little difference between leasing and no-leasing alternatives, contending that “[a]lthough drilling and production activities on federal land surfaces are restricted to leased parcels, oil and gas exploration may also be authorized on unleased public lands, on a case-by-case basis, pursuant to 43 CFR 3150.0-1.” EA at 34. . . . BLM is misleading insofar as it suggests that because 43 CFR 3150.0-1 allows operators to do exploratory drilling even on leased lands, then leasing does not matter because drilling is inevitable. Thus, under BLM’s own statutes and rules, exploration without a lease excludes all subsurface drilling. Therefore, BLM’s suggestion that leasing and no-leasing alternatives are indistinguishable, because “exploration” will occur with or without leasing, is improper and contrary to its own rules.</p>	<p>The section referenced in the EA has been modified to emphasize that exploration activities on-unleased lands would be confined to geophysical activities. Exploratory drilling activities would require a lease.</p>