United States Department of the Interior
Bureau of Land Management

Preliminary Environmental Assessment for the August 2012 Oil and Gas Lease Sale

---

Grand Junction Field Office
2815 H Road
Grand Junction, Colorado 81506

DOI-BLM-CO-130-2012-0011-EA

March 2012
Draft for public review

TABLE OF CONTENTS

CHAPTER 1 - INTRODUCTION 1
1.1 IDENTIFYING INFORMATION 1
1.2 PROJECT LOCATION AND LEGAL DESCRIPTION 2
Map 1 – Parcel 6204 Field Office View 2
1.3 PURPOSE AND NEED 3
1.4 PLAN CONFORMANCE REVIEW 3
1.5 LEASING REFORM & MASTER LEASING PLANS 3
1.6 SCOPING & PUBLIC PARTICIPATION 3
1.7 DECISION TO BE MADE 4
CHAPTER 2 - PROPOSED ACTION AND ALTERNATIVES 5
2.1 INTRODUCTION 5
2.2 ALTERNATIVES ANALYZED IN DETAIL 5
2.2.1 Proposed Action 5
Map 2 – Parcel 6204 Close Up view 6
2.2.2 No Action Alternative 7
2.3 ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL 7
CHAPTER 3 - AFFECTED ENVIRONMENT AND EFFECTS 8
3.1 INTRODUCTION 8
Map 3 – Parcel 6204 Mapped Stipulations 8
3.2 PHYSICAL RESOURCES 11
3.2.1 Air Quality and Climate 11
3.2.2 Fluid Mineral Resources 16
3.2.3 Soils 16
3.2.4 Water (surface and groundwater, floodplains) 20
3.3 BIOLOGICAL RESOURCES 26
3.3.1 Invasive, Non-native Species 26
3.3.2 Threatened, Endangered and Sensitive Species 27
3.3.3 Vegetation (grasslands, forest management) 30
3.3.4 Wetlands & Riparian Zones 32
3.3.5 Wildlife (includes fish, aquatic and terrestrial) 33
3.3.6 Migratory Birds 36
3.4 HERITAGE RESOURCES AND HUMAN ENVIRONMENT 37
3.4.1 Cultural Resources 37
3.4.2 Paleontological Resources 38
3.4.3 Tribal and Native American Religious Concerns 39
3.4.4 Visual Resources 40
3.4.5 Social and Economic 41
3.4.6 Environmental Justice 42
3.4.7 Transportation/Access 42
3.4.8 Wastes, Hazardous or Solid 43
3.5 LAND RESOURCES 44
3.5.1 Recreation 44
CHAPTER 4 - CONSULTATION AND COORDINATION 45
4.1 LIST OF PREPARERS AND PARTICIPANTS 45

4.2 TRIBES, INDIVIDUALS, ORGANIZATIONS, OR AGENCIES CONSULTED..... 46
CHAPTER 5 - REFERENCES 47
Preliminary FINDING OF NO SIGNIFICANT IMPACT i
Attachment A - Pre-EA Parcel Proposed for Lease iv
Attachment B - Parcel Recommended for Deferral from Leasing v
Attachment C - Parcel Available for Lease with Applied Stipulations vi
Attachment D - Exhibits Description vii
Attachment E - Public Comment Review x

CHAPTER 1 - INTRODUCTION

1.1 IDENTIFYING INFORMATION

BACKGROUND: It is the policy of the Bureau of Land Management (BLM) as derived from various laws, including the Mineral Leasing Act of 1920 and the Federal Land Policy and Management Act of 1976, to make mineral resources available for disposal and to encourage development of mineral resources to meet national, regional, and local needs. Production of oil and gas resources on public lands contributes to decreasing the dependence of the United States on foreign energy sources, which is a BLM policy that complies with the Mining and Minerals Policy Act of 1970; and helps to meet the "present and future [energy] needs of the American people" 43 U.S.C. § 1702 (c). Continued leasing is necessary to maintain options for production as oil and gas companies seek new areas for production or attempt to develop previously inaccessible or uneconomical reserves.

The BLM's Colorado State Office conducts quarterly competitive lease sales to sell available oil and gas lease parcels. A Notice of Competitive Lease Sale, which lists lease parcels to be offered at the auction, is published by the Colorado State Office at least 45 days before the auction is held. Lease stipulations applicable to each parcel are specified in the Sale Notice. The decision as to which public lands and minerals are open for leasing and what leasing stipulations may be necessary, based on information available at the time, is made during the land use planning process. Constraints on leasing and any future development of split estate parcels are determined by the BLM in consultation with the appropriate surface management agency or the private surface owner.

In the process of preparing a lease sale the Colorado State Office sends a draft parcel list to each field office where the parcels are located. Field Office staff then review the legal descriptions of the parcels to determine if they are in areas open to leasing; if appropriate stipulations have been included; if new information has become available which might change any analysis conducted during the planning process; if appropriate consultations have been conducted, and if there are special resource conditions of which potential bidders should be made aware. Once the draft parcel review is completed and returned to the State Office, a list of available lease parcels and stipulations is made available to the public through a Notice of Competitive Lease Sale (NCLS). Lease sale notices are posted on the Colorado BLM website at:
http://www.blm.gov/nm/st/en/prog/energy/oil_and_gas/lease_sale_notices.html.
On rare occasions, additional information obtained after the publication of the NCLS may result in withdrawal of certain parcels prior to the day of the lease sale.

The inclusion of a parcel listed in the lease sale notice may be protested. A protest must be received at the BLM's Colorado State Office no later than close of business on the 30th calendar day after the posting of the notice of the lease sale. Nominated parcels that receive no bids during the November lease sale become available for noncompetitive sale beginning the day after the lease sale. Parcels offered noncompetitively remain available on a first-come, first-served basis for a two-year period beginning the day after the sale.

Industry has nominated one parcel within the Grand Junction Field Office (number 6204) to be offered at public auction in the August 2012 Colorado Competitive Oil and Gas Lease Sale. The parcel nominated for lease is a total of approximately 921 acres of federal mineral estate underlying privately owned surface (split estate). The lease would be issued subject to stipulations identified in the 1987 Grand Junction Resource Management Plan (BLM).

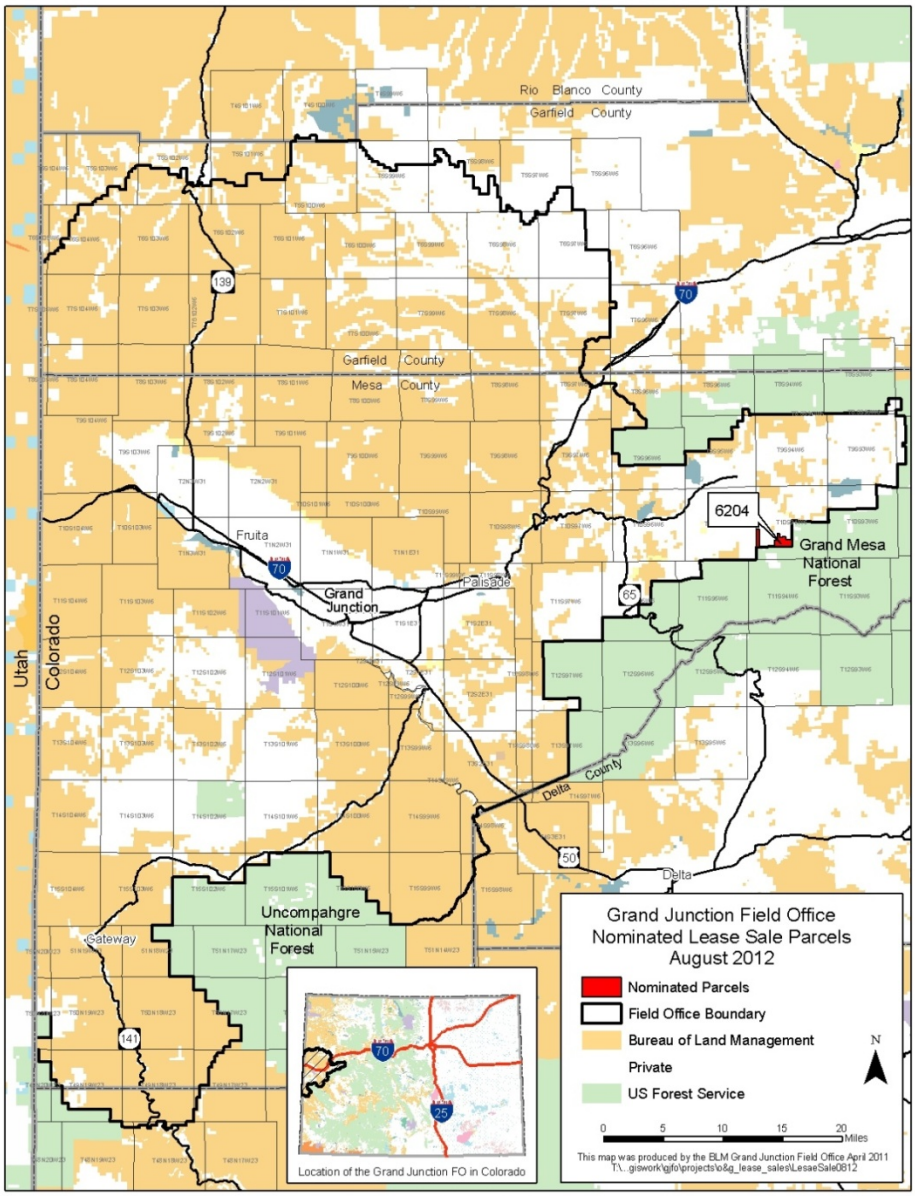
The legal description of the nominated parcel and proposed leasing stipulations are in Attachment A.

PROJECT NAME: August 2012 Oil and Gas Lease Sale
PLANNING UNIT: Grand Junction Field Office

1.2 PROJECT LOCATION AND LEGAL DESCRIPTION

LEGAL DESCRIPTION: Please see Attachments A, B, and C and Maps 1, 2 and 3 enclosed.

Map 1 – Parcel 6204 Field Office View



1.3 PURPOSE AND NEED

The purpose is to make parcels available for competitive oil and gas leasing, to allow private individuals or companies to lease and subsequently explore and develop oil and gas resources for sale on public markets. The need is to meet BLM's obligations under the Mineral Leasing Act of 1920 to respond to industry nominations of parcels for lease sale.

1.4 PLAN CONFORMANCE REVIEW

PLAN CONFORMANCE REVIEW: The Proposed Action is subject to and has been reviewed for conformance with the following plan (43 CFR 1610.5, BLM 1617.3):

Name of Plan: GRAND JUNCTION Resource Management Plan

Date Approved: JANUARY, 1987

The Grand Junction RMP of 1987 identified areas open for oil and gas leasing, and specified stipulations that would apply to leases (pages 2-7 through 2-10 and Table 6). The proposed lease sales are within the areas identified as open to leasing. Based on the RMP, specific stipulations are attached to each lease parcel.

In January 1997, the Colorado State Office of the BLM approved the Standards for Public Land Health and amended all RMPs in the State. The BLM maintains an inventory of land health conditions on public lands and makes findings for all actions impacting public land health. While the BLM will generally apply the same measures to protect land health on split estate lands, since this action is solely on private surface lands, no findings on public land health will be made in this document.

1.5 LEASING REFORM & MASTER LEASING PLANS

Colorado Bureau of Land Management (BLM) Instruction Memorandum (IM) No. CO-2010-027 provided guidance and direction for implementing Washington Office (WO) IM 2010-117, Oil and Gas Leasing Reform-Land Use Planning and Parcel Review, and WO IM 2010-118, Energy Policy Act Section 390 Categorical Exclusion (CX) Policy Revision. That IM requires the field office to complete an environmental assessment and provide a 30 day public review and comment period for lease sales. It also provides guidance for parcel review, timeframes, leasing recommendations and attachments to be included with the Environmental Assessment (EA) as well as guidance for use of Master Leasing Plans. This EA has been prepared in accordance with IM CO-2010-027 by the BLM GJFO to analyze leasing of 1 parcel nominated.

The GJFO has considered whether to develop a master leasing plan for all or part of the field office and determined that a master leasing plan is not necessary in light of the criteria in IM 2010-117.

1.6 SCOPING & PUBLIC PARTICIPATION

1.6.1 Public Scoping Initial public involvement took place with a press release and mailing to interested and affected parties (including Colorado Parks and Wildlife (CPW), Native American

Tribes, surface owners, and local governments). The project summary was also posted on the NEPA register on the Grand Junction Field Office NEPA website http://www.blm.gov/co/st/en/fo/gjfo.html. Comments were received from 6 organizations and individuals. Comments and comment responses are included in Attachment E.

The BLM is also coordinating with US Fish and Wildlife Service (FWS) regarding impacts to species listed under the Endangered Species Act (ESA), specifically Canada Lynx.

1.6.1.1 Public Comment Period:
The preliminary draft of this EA will be posted to the GJFO website http://www.blm.gov/co/st/en/fo/gjfo.html and announced by press release for a 30 day comment period starting March 1, 2012. Interested parties will be notified by mail of the availability of the EA.

1.6.2 Internal Scoping: Maps of the parcel and description of the proposed action were distributed to the GJFO Interdisciplinary Team (IDT) and discussed at IDT meetings. Two IDT members and a USFWS employee visited the parcel with three split estate surface owners. Documentation of which resources would be impacted based on internal scoping and site visits is included in Table 3.1.

1.6.3 Issues Identified: Issues identified through scoping are addressed in Chapter 3. Issues identified by the public can be found in Attachment E.

1.7 DECISION TO BE MADE

The BLM Grand Junction Field Office (GJFO) prepared this EA. Based on the analysis, the BLM Deputy State Director may choose to: a) offer all of the nominated parcel for lease sale, b) offer a subset of the parcel for lease sale, or c) not lease the parcel at this time. The finding associated with this EA may not constitute the final approval for the proposed action. The final decision on whether the parcel will be sold will be made by the State Director.

CHAPTER 2 - PROPOSED ACTION AND ALTERNATIVES

2.1 INTRODUCTION

The purpose of this chapter is to provide information on the Proposed Action and Alternatives. Alternatives considered but not analyzed in detail are also discussed.

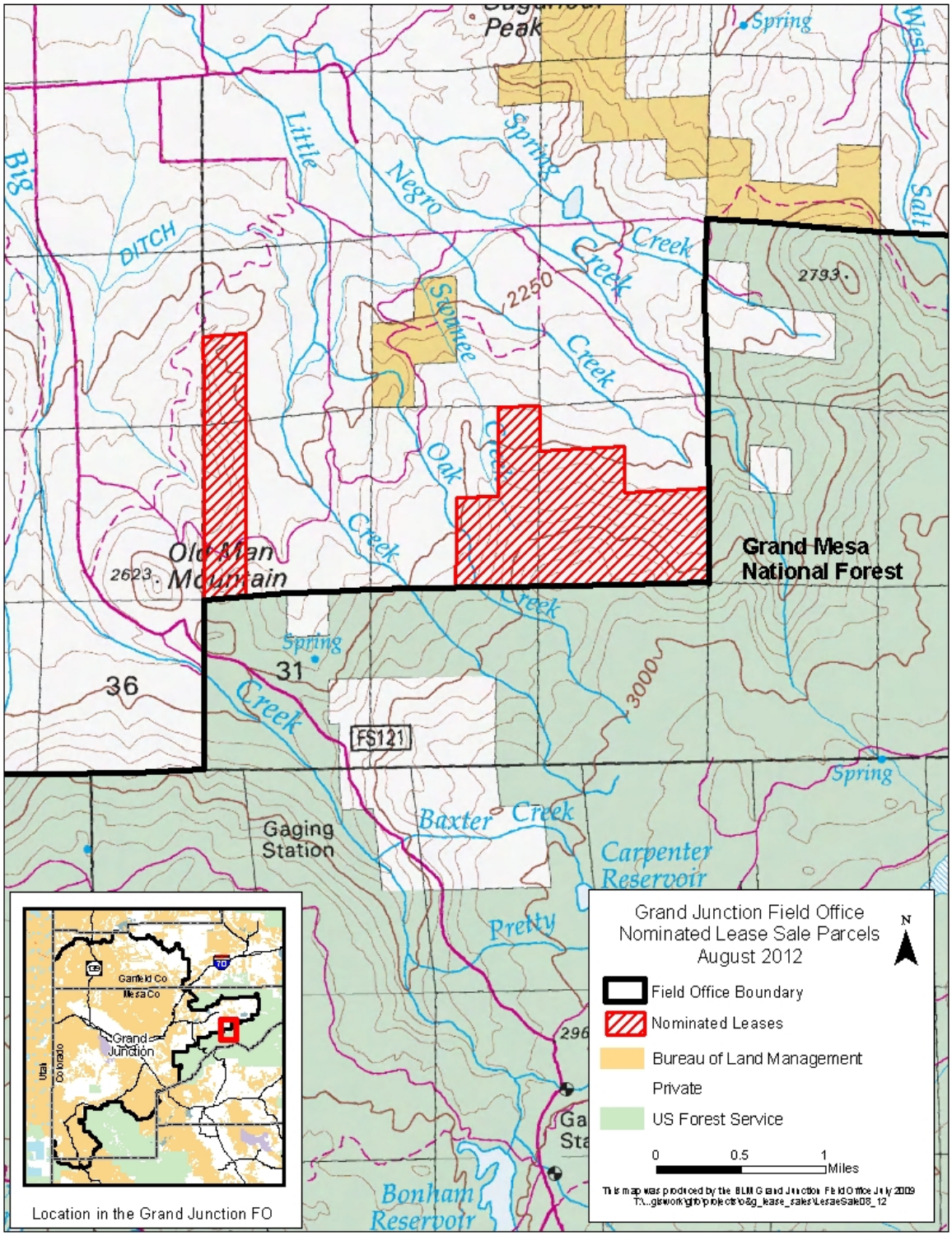
2.2 ALTERNATIVES ANALYZED IN DETAIL

2.2.1 Proposed Action

Industry has nominated one parcel within the Grand Junction Field Office (number 6204) to be offered at public auction in the BLM August 2012 Colorado Competitive Oil and Gas Lease Sale. The parcel nominated for lease is a total of approximately 921 acres of federal mineral estate underlying privately owned surface (split estate) south of the Town of Collbran, in Mesa County, Colorado . The lease would be issued subject to stipulations identified in the 1987 Grand Junction Resource Management Plan (BLM).

The stipulations are specified in the attached parcel listing (Attachment E). Additional site specific analyses would take place upon submission of individual Applications for Permits to Drill (APD).

Map 2 – Parcel 6204 Close Up view



2.2.2 No Action Alternative

The BLM NEPA Handbook (H-1790-1) states that for EAs on externally initiated proposed actions, the No Action Alternative generally means that the proposed action would not take place. In the case of a lease sale, this would mean that an expression of interest to lease (parcel nomination) would be denied or rejected.

The No Action Alternative would withdraw the lease parcel from the August 2012 lease sale. The parcel would remain available for inclusion in future lease sales. Surface management would remain the same and ongoing oil and gas development would continue on surrounding private, State, and Federal leases.

No mitigation measures would be required as no new oil and gas development would occur on the unleased lands. No rental or royalty payments would be made to the Federal government. It is not expected that demand would decrease. It is likely that continuing demand would be addressed through production elsewhere.

It is an assumption that the No Action Alternative (no lease option) may result in a slight reduction in domestic production of oil and gas. This would likely result in reduced Federal and State royalty income. Oil and gas consumption is driven by a variety of complex interacting factors including energy costs, energy efficiency, availability of other energy sources, economics, demographics, and weather or climate. If the BLM were to forego its leasing decisions and potential development of those minerals, the assumption is that the public's demand for the resource would not be expected to change. Instead, the resource foregone would be replaced by other sources that may include a combination of imports, fuel switching, alternative fuels, and other domestic production.

2.3 ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL

Originally, the nominated parcel was 2,308 acres and included 1,387 acres of federal surface managed by the Grand Mesa, Uncompahgre and Gunnison National Forests. The Forest Service portion of the parcel has been removed from this analysis, and is awaiting a review by the Forest Service. That portion of the parcel may be leased at a later date pending further review by the Forest Service and the BLM.

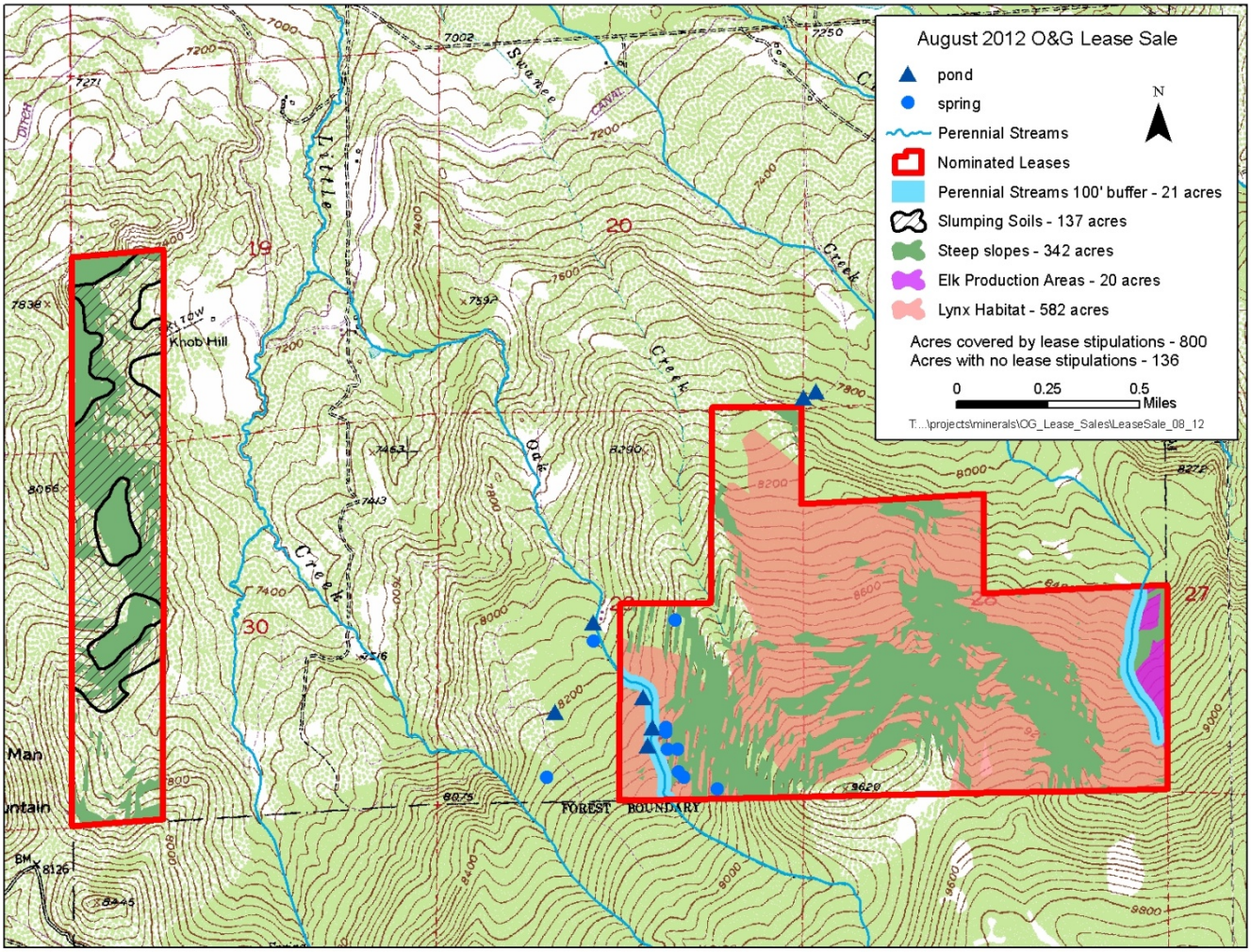
CHAPTER 3 - AFFECTED ENVIRONMENT AND EFFECTS

3.1 INTRODUCTION

This section provides a description of the human and natural environmental resources that could be affected by the Proposed Action and No Action alternatives and presents comparative analyses of the direct, indirect and cumulative effects on the affected environment stemming from the implementation of the actions under the Proposed Action and other alternatives analyzed.

This EA draws upon information compiled in the Grand Junction Resource Area RMP (BLM 1987) and the Grand Resource Area RMP (BLM 1985).

Map 3 – Parcel 6204 Mapped Stipulations



3.1.1 Elements Not Affected

The following elements, identified as not being present or not affected will not be brought forward for additional analysis:

Lands Tenure and Right-of-Way (ROW) – this parcel is not on public land so it has no FLPMA land tenure or ROW issues

Public Land Health Standards – Since this action is solely on privately owned surface, no public land health findings are included in this document.

Farmlands, Prime and Unique – There are no identified Prime or Unique Farmlands in the affected area

Range Management – This parcel is not on public land, therefore the BLMs range management is not affected. The private land is seldom used for livestock grazing.

Special Designations – there are no Special Designations in the affected area

Wilderness, Wild and Scenic Rivers – There are no designated wilderness areas or wild and scenic rivers, wilderness study areas, or lands with wilderness characteristics in the area, or directly adjacent to the area that are affected by the alternatives analyzed in detail

Wild Horses– there are no herd management areas in the area affected by the alternatives analyzed in detail

Table 3.1– Potentially Impacted Resources

Resources	Not Present On Location	No Impact	Potentially Impacted	Mitigation necessary	BLM Evaluator Initial & Date	Comments
PHYSICAL RESOURCES						
Air and Climate	☐	☐	☒	☒	ND 12/5/11	
Water (surface & subsurface, floodplains)	☐	☐	☒	☒	ND 12/5/11	
Soils	☐	☐	☒	☒	ND 12/5/11	
Geological/Mineral Resources	☐	☐	☒	☐	DSG 12/1/11	
BIOLOGICAL RESOURCES						
Special Status Plants	☐	☐	☒	☐	CE 1/3/12	
Special Status Wildlife	☐	☐	☒	☐	CE 1/3/12	
Migratory Birds	☐	☐	☒	☐	CE 1/3/12	
Other Important Wildlife Habitat	☐	☐	☒	☐	CE 1/3/12	
Vegetation, Forestry	☐	☒	☐	☐	SC 12/7/11	
Invasive, Non-native Species	☐	☒	☐	☐	MT 11/22/11	
Wetlands/Riparian Zones	☐	☐	☒	☐	CARS 12/7/11	
HERITAGE RESOURCES AND HUMAN ENV.						
Cultural or Historical	☐	☒	☐	☐	AIL 11/22/11	
Paleontological	☐	☐	☒	☐	DSG 12/1/11	
Tribal& American Indian Religious Concerns	☐	☒	☐	☐	AIL 11/22/11	Consultation letters sent 11/17
Visual Resources	☐	☐	☒	☐	CPP 12/5/2011	
Social/Economic	☐	☒	☐	☐	CE 1/3/12	
Transportation and Access	☐	☐	☒	☐	CPP 12/5/2011	
Wastes, Hazardous or Solid	☐	☐	☒	☐	CE 1/3/12	
LAND RESOURCES						
Recreation	☐	☐	☒	☐	CPP 12/5/2011	
Special Designations (ACEC, SMAs, WSR)	☒	☐	☐	☐	CPP 12/5/2011	
Wilderness & Wilderness Characteristics	☒	☐	☐	☐	CPP 12/5/2011	
Range Management	☐	☒	☐	☐	SC 12/7/11	
Wild Horse and Burros	☐	☒	☐	☐	CE 1/3/12	
Land Tenure, ROW, Other Uses	☐	☒	☐	☐	CE 1/3/12	
Fire/Fuels	☐	☒	☐	☐	CE 1/3/12	

3.1.2 Past, Present, Reasonably Foreseeable Actions

NEPA requires federal agencies to consider the cumulative effects of proposals under their review. Cumulative effects are defined in 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 actions regardless of what agency…or person undertakes such other actions." The CEQ states that the "cumulative effects analyses should be conducted on the scale of human communities, landscapes, watersheds, or airsheds" using the concept of "project impact zone" or more simply put, the area that might be affected by the proposed action. The area that may be affected by this project includes the Plateau Valley watershed To assess past, present and reasonably foreseeable actions that may occur within the affected area a review of GJFO NEPA log and our field office GIS data was completed. The following list includes all past, present and reasonably foreseeable actions known to the BLM that may occur within the affected area:

Oil and gas development – much of the Plateau Valley is currently leased for oil and gas development, and considerable drilling and related road and pipeline construction has occurred on public and private lands. Past, present and reasonably foreseeable development would require continued pipeline and road construction as well as the use of existing or new water disposal facilities.

Other past or existing actions near the project area that have an influence on the landscape are water diversion and irrigation, reservoir construction, wildfire, recreation, hunting, livestock grazing, residential development, highway construction, noxious weed infestations, gravel mining and utility lines.

All of these actions have occurred in the past, and are expected to continue to occur into the future.

This list of past, present and reasonably foreseeable actions was considered when analyzing cumulative effects in sections 3.2, 3.3, 3.4, and 3.5 below.

3.2 PHYSICAL RESOURCES

3.2.1 Air Quality and Climate

Since the Grand Junction Field Office ROD/RMP was signed in 1987, new information about GHGs and their effects on national and global climate conditions has emerged. On-going scientific research has identified the potential impacts of greenhouse gas (GHG) emissions such as carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), water vapor; and several trace gases on global climate. Through complex interactions on a global scale, GHG emissions cause a net warming effect of the atmosphere, primarily by decreasing the amount of heat energy radiated by the earth back into space. Although GHG levels have varied for millennia (along with corresponding variations in climatic conditions), industrialization and burning of fossil carbon resources have caused GHG concentrations to increase measurably and may contribute to overall climatic changes.

This EA incorporates an analysis of the contributions of the proposed action to GHG emissions and a general discussion of potential impacts to climate. Air quality and climate are the components of air resources, which include applications, activities, and management of the air resource. Therefore, the BLM must consider and analyze the potential effects of BLM and BLM-authorized activities on air resources as part of the planning and decision making process.

Air Quality

The U.S. Environmental Protection Agency (EPA) established national air quality standards (NAAQS) for criteria pollutants. Criteria pollutants include carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM_{10} and $PM_{2.5}$), sulfur dioxide (SO_2), and lead (Pb). Air pollutant concentrations greater than the NAAQS represent a risk to human health. The EPA has delegated regulation of air quality to the State of Colorado where air quality is administered by the Colorado Department of Public Health and Environment (CDPHE). Colorado Ambient Air Quality Standards (CAAQS) and NAAQS identify maximum limits for concentrations of criteria air pollutants at all locations to which the public has access. The CAAQS and NAAQS are legally enforceable standards. Concentrations above the CAAQS and NAAQS represent a risk to human health that, by law, require public safeguards be implemented. State standards must be at least as protective of human health as Federal standards, and may be more restrictive than Federal standards, as allowed by the Clean Air Act.

Visibility can be expressed in terms of deciviews (dv), a measure for describing perceived changes in visibility. One dv is defined as a change in visibility that is just perceptible to an average person which is approximately a 10 percent change in light extinction. To estimate potential visibility impairment, monitored aerosol concentrations are used to reconstruct visibility conditions for each day monitored. These daily values are then ranked from clearest to haziest and divided into three categories to indicate the mean visibility for all days (average), the 20 percent of days with the clearest visibility (20 percent clearest), and the 20 percent of days with the worst visibility (20 percent haziest). Visibility can also be defined by standard visual range (SVR), measured in miles, and is the farthest distance at which an observer can see a black object viewed against the sky above the horizon; the larger the SVR, the cleaner the air.
Since 1980 the Interagency Monitoring of Protected Visual Environments (IMPROVE) network has measured visibility in national parks and wilderness areas. These are managed as high visual quality Class I and II areas by the Federal visual resource management (VRM) program. There are IMPROVE stations in Colorado, including two located within the Mount Zirkel and Flat Tops National Wilderness areas and one in the White River National Forest at Aspen Mountain Ski Resort.

Atmospheric Deposition

Atmospheric deposition refers to processes in which air pollutants are removed from the atmosphere and deposited into terrestrial and aquatic ecosystems. Air pollutants can be deposited by either wet (precipitation via rain or snow) or dry (gravitational) settling of particles and adherence of gaseous pollutants to soil, water, and vegetation. Much of the concern about deposition is due to secondary formation of acids and other compounds from emitted nitrogen and sulfur species such as nitrogen oxides (NOx) and sulfur dioxide (SO_2), which may contribute

to acidification of lakes, streams, and soils and affect other ecosystem characteristics, including nutrient cycling and biological diversity.
Substances deposited include:

- Acids, such as sulfuric (H_2SO_4) and nitric (HNO_3), sometimes referred to as acid rain
- Air toxics, such as pesticides, herbicides, and volatile organic compounds (VOCs)
- Heavy metals, such as mercury
- Nutrients, such as nitrates (NO_{3-}) and ammonium (NH_{4+})

The accurate measurement of atmospheric deposition is complicated by contributions to deposition by several components: rain, snow, cloud water, particle settling, and gaseous pollutants. Deposition varies with precipitation and other meteorological variables (e.g., temperature, humidity, winds, atmospheric stability, etc.), which in turn, vary with elevation and time.
In the Rocky Mountain Region, BLM uses level of concern (LOC) considered to be unlikely to harm terrestrial or aquatic ecosystems for total nitrogen deposition of 3.0 kilograms per hectare per year or less. For total sulfur deposition, the LOC is 5.0 kilograms per hectare per year.

Affected Environment: The proposed lease parcel is located in rural northwest Colorado in the Colorado River Basin, more than thirty miles from designated air quality management areas (including PSD Class I or non-attainment areas). Such designated areas may require special consideration from the air quality regulatory agencies of CDPHE and EPA. Industrial facilities in the Colorado River Basin include coal mines, natural gas processing plants, and power plants. Due to these industrial uses, increased local population, and oil and gas development, emissions of air pollutants in the Colorado River Basin (primarily due to engine exhaust and dust from roads and exposed areas) are likely to increase into the future. Despite increases in emissions, overall air quality conditions in the Colorado River Basin are likely to continue to be good due to effective emission controls and strong atmospheric dispersion conditions.

The cities of Grand Junction, Steamboat Springs, Rifle, and Parachute all host air quality monitoring stations. Available monitoring data at these stations indicate that the ambient concentrations of criteria pollutants are less (better) than the applicable air quality standards (NAAQS and CAAQS). However it should be noted, there is not continuous monitoring of all criteria pollutants at any of the stations. Also, differences in the atmospheric conditions, proximity to emissions, and climate at any of these monitoring sites may not represent specific conditions at individual parcel locations.

The Colorado River Basin has been classified as either attainment or unclassified for all air pollutants (NAAQS and CAAQS standards), and most of the area has been designated as Clean Air Act Prevention of Significant Deterioration (PSD) Class II. There are two Class I areas in proximity of the Field Office boundary, including both the Maroon Bells-Snowmass, and Raggeds Wilderness Areas. Because the historic air quality in the Colorado River Basin has been good, small changes in air quality may have noticeable localized effects, especially on visibility.

Environmental Consequences of the No Action Alternative: There would be no impacts to air quality from the No Action Alternative.

Environmental Consequences of the Proposed Action: The decision to sell the lease would not result in any direct criteria pollutants, hazardous pollutants, and greenhouse gas emissions. However, the future development of this lease would emit these pollutants. The assessment of GHG emissions and climate change are in a formative phase. While it is not possible to accurately quantify potential GHG emissions in the affected areas as a result of making the proposed tracts available for leasing, some general assumptions however can be made (e.g., the selling the proposed tracts may contribute to drilling new wells). Subsequent development of any leases sold would contribute an incremental increase in overall hydrocarbon emissions, including GHGs.

While the act of leasing the parcel would produce no significant air quality impacts, potential future development of the lease could lead to surface disturbance from the construction of well pads, access roads, pipelines, and power lines, as well as associated air pollutant emissions from vehicle use, windblown dust, and engine exhausts. Since it is unknown if the parcel would be developed, or the extent of the development, it is not possible to reasonably quantify potential air quality impacts through dispersion modeling at this time. At the APD stage additional air analysis will be completed to evaluate the site specific issues of development proposed in the APD. The site-specific proposal will identify reasonably foreseeable activities, equipment, and locations. All proposed activities including, but not limited to, exploratory drilling activities would be subject to applicable local, State, and Federal air quality laws and regulations. Before the lease can be developed or explored, the impacts from the proposed actions will be evaluated as required by Council on Environmental Quality (CEQ) regulations.

Lease development at the APD stage may result in emissions of particulate matter, mainly dust, becoming airborne when drill rigs and other vehicles travel on existing dirt roads to drilling locations. Air quality would also be affected by engine exhaust emissions.

Wells may be drilled during exploration. If the area is developed for natural gas, gas may be flared and/or vented to evaluate the characteristics and potential of the resource available. The development stage is likely to include the installation of pipelines for transportation of raw product, as well as possible new gas processing facilities. During this period volatile organic compounds (VOCs) would be released from the reserve pit, water disposal facilities, and/or tanks and during completion activities.

Soil disturbance resulting from construction of pads and roads, pipeline construction, and drilling is expected to cause increases in fugitive dust and inhalable particulate matter (specifically PM_{10} and $PM_{2.5}$) in the project area and immediate vicinity. In addition, increases in the following criteria pollutants: carbon monoxide, ozone (a secondary pollutant, formed photochemically by combining VOC and NOx emissions), nitrogen dioxide, and sulfur dioxide would also occur due to combustion of fossil fuels during exploration and development activities. Non-criteria pollutants such as carbon dioxide, methane and nitrous oxide (GHGs), air toxics (e.g., benzene),

total suspended particulates (TSP), increased impacts to visibility, and atmospheric deposition may also increase as a result of exploration and development (no national ambient air quality standards have been set for non-criteria pollutants). Additional low, short-term impacts to air quality may occur due to venting of gas from the wells during exploration. Even with these increased pollutants, development of only the offered lease parcel is unlikely to result in an exceedance of NAAQ and CAAQ standards, and is likely to comply with applicable PSD increments and other significant impact thresholds. As described above, exploration and development would release VOCs from pits and tanks and from venting and flaring. Engines used for drilling, transportation, gas processing, compressing gas for pipelines, and other uses would contribute to associated air pollutant emissions.

EPA Region 8 has reported that "In the coming decades, scientists project that climate change will lead to significant changes in the Mountain West and Great Plains" including several specific impacts. The BLM will continue to evaluate the impacts of oil and gas exploration and development in terms on the global climate, and apply appropriate management techniques and BMPs to address changing conditions. Research has identified the general potential impacts of anthropogenic greenhouse gas emissions and their effects on global climatic conditions. These anthropogenic GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and several trace gases which differentially absorb and emit thermal radiation in the atmosphere and therefore may contribute to climate change. However, current research on climate change impacts is an emerging and rapidly evolving area of science, and given the lack of adequate analysis methods, it is not possible to identify reasonably foreseeable local, regional, or global climate change impacts based on assumed potential GHG emissions. Changes in global temperatures and climate vary significantly with time, and are subject to a wide range of driving factors and complex interrelationships, the level of GHG emissions can generally be quantified and compared to overall estimates to provide some measures of the level and significance of any potential impacts.

Oil and or gas may be developed and produced as a result of the proposed lease sale and subsequent analyses, and utilized to produce energy. The potential GHG impacts associated with the development of the oil and gas resources would be addressed in a subsequent environmental analysis.

Substantial air pollutant (including GHG) emission generating activities cannot occur without further BLM analysis and approval. Based on proposals for exploration and development operations, approval of these activities would be made subject to conditions of approval addressing air pollutant emissions as appropriate.

Cumulative Effects: This lease sale, when combined with the past, present and reasonably foreseeable actions (including increased traffic and the need for water disposal facilities) will elevate *potential* for the deterioration of air quality in the Plateau Valley. Increased development of fluid minerals will result in a cumulative increase in surface and subsurface disturbances as well as increase emissions during drilling and completion activities. The type of impacts will be the same as described under environmental impacts associated with the proposed action.

However, the severity of the impacts will be elevated with increased development in the watershed.

Mitigation: No additional mitigation measures beyond those required by applicable local, State and Federal air quality laws and regulations would be required for leasing. However, additional requirements could be imposed based on site-specific proposals during later approval of exploration and development activities.

3.2.2 Fluid Mineral Resources

Affected Environment: The parcel is located in the Piceance Basin in an area identified as having moderate to high potential for oil and gas development. Surficial geology of the parcel ranges from the Quaternary deposits to the Wasatch Formation. Site specific geologic formations would be analyzed during the APD NEPA process. Portions of the sale parcel have been previously leased for federal oil and gas minerals. Surrounding private lands are also leased for oil and gas development, and may provide pads from which this lease could be directionally drilled.

Environmental Consequences of the No Action Alternative: Recoverable natural gas and oil resources in the oil and gas bearing formations would not be developed at this time.

Environmental Consequences of the Proposed Action: Sale of the parcel would allow development and recovery of oil and natural gas resources in the underlying oil and gas bearing formations. The GJFO ensures the APD submitted casing and cementing program is adequate to protect all of the resources, minerals, and fresh water zones, 43 CFR §3162.5-2(d).

Cumulative Effects: As of November 2011, approximately 690,087 acres of BLM-administered Federal oil and gas mineral estate within the GJFO is leased. Of this leased acreage approximately 15 percent is split estate. As of November 2011, there were 820 authorized oil and gas leases administered by BLM within the GJFO.

Since 1989 approximately 270 wells have been drilled in the GJFO. On average 14 wells have been drilled annually over the last 10 years.

Development of this parcel and other public and private minerals in the area would necessitate identification of disposal facilities for produced water. Facilities are available in Mesa county and adjacent counties, and others are in the process of being permitted

3.2.3 Soils

Affected Environment: The magnitude and location of direct and indirect effects on soil resources cannot be predicted until site-specific proposals are made for exploration and development. Soil classifications for the proposed lease parcel are shown in Table 3.

Table 3: Soil Classifications for Lease Area

Soil Classification	Acres
Cochetopa-Clayburn Complex, 12-40 % slopes	585
Fughes-Hesperus complex, 12-40 % slopes	9
Hesperus-Empedrado, moist Pagoda complex 5-35 % slopes	133
Pagoda-Hesperus complex, 12-40% slopes	4
Parachute-Irigul-Rhone association, 25-50 % slopes	147
Torriorthents, cool-rock outcrop complex, 35-90% slopes	43

A cursory review of soil mapping units on in the proposed lease area and identified slumping soils on BLM lands within the lease areas indicated slumping soils vulnerable to landslides are likely to occur on private lands as well. Onsite evaluation of the parcel confirms this assumption as slumping was observed on steep slopes.

Environmental Consequences of the No Action Alternative: There would be no impacts to the soils from the No Action Alternative.

Environmental Consequences of the Proposed Action: The proposed action allows the subsequent exploration and development of the lease. Exploration and development includes activities which would physically disturb soils (e.g., building well pads, access roads, installation of pipelines, etc.). The size of well pads will depend on the number of wells and the type of drilling that is being done. Access roads, pipelines and other infrastructure would be developed during both exploration and development activities.

Direct impacts resulting from the construction of well pads, access roads, pipelines and reserve pits would include removal of vegetation, exposure of the soil, mixing of horizons, compaction, loss of topsoil productivity, susceptibility to wind and water erosion, and possible contamination of soils with petroleum constituents. These impacts would likely result in increased indirect impacts such as runoff, erosion, and off-site sedimentation. This increased surface run-off could be expected in areas downstream of surface disturbance and could cause increased sheet, rill, and gully erosion in some areas.

Decreased soil productivity as a result of the loss of topsoil has the potential to hinder revegetation efforts and leave soils further exposed to erosion. Grading, trenching, and backfilling activities may cause mixing of the soil horizons which could diminish soil fertility and reduce the potential for successful revegetation. Segregation and reapplication of surface soils would result in the mixing of shallow soil horizons, resulting in a blending of soil characteristics and types. This blending would modify physical characteristics of the soils, including structure, texture, and rock content, which could lead to reduced permeability and increased runoff from these areas.

The erosion potential for the soil types likely to be disturbed ranges from slight to very high. Impacts are directly related to the erosion potential of soils and the steepness of the slopes in the proposed lease area. In areas prone to slumping (both mapped BLM surface and unmapped private surface), surface disturbance would exacerbate potential for slope failure if developed.

Contamination of surface and subsurface soils can occur from leaks or spills of oil, produced water, and condensate liquids from wellheads, produced water sumps, and condensate storage tanks. Leaks or spills of drilling and hydraulic fracturing chemicals, fuels, and lubricants could also result in soil contamination. Such leaks or spills could compromise the productivity of the affected soils. Of these materials, leaks or spills of condensate would have the greatest potential environmental impact. Depending on the size and type of spill, the impact to soils would primarily consist of the loss of soil productivity. Typically, contaminated soils would be removed and disposed of in a permitted facility or would be bioremediated in place using techniques such as excavating and mulching to increase biotic activities that would break down petrochemicals into inert and/or common organic compounds.

The Grand Junction ROD/RMP has lease stipulations for the protection of soils occurring on slopes 40% or greater (NSO-3) and soils with landslide potential (NSO-1). These lease stipulations were reviewed and applied based on data from the USDA Soil Surveys for Mesa County.

Based on 10 meter DEM data, much of the proposed lease parcel has areas with slopes that are greater than 40 percent. These soils are unstable and unusable from the standpoint of building roads, infrastructure, and drill pad locations and construction in these areas could increase the risk of landslides and accelerate erosion rates. Landslides are the rapid downhill movement of a mass of soil and loose rock, generally when wet and saturated. The 1987 Grand Junction Field Office ROD/RMP applies an NSO in areas that are considered unstable and subject to slumping and mass movement. Approximately 137 acres (Hesperus-Empedrado, moist Pagoda complex) within the lease parcel is identified as having slump/landslide potential. Short sections of roads and linear features such as pipelines could still be constructed in areas depending on construction techniques and will be allowed based on a site specific analysis. It is important to note that landslide potential areas are not mapped on private surface but it is reasonable to assume these areas exist on private lands as well. Furthermore, onsite evaluation of private surface identified landslide areas on un-mapped private surface.

Construction and use of roads, structures, and drill pad locations in areas with slopes that are greater than 40 percent would likely destabilize soils, would result in severe cut and fill slopes, and would be extremely difficult to reclaim. These direct impacts would result in increased potential to make these areas unstable and subject to slumping and mass movement even after reclamation. The proposed lease parcel has approximately 342 acres of mapped steep slopes (roughly 37% of the proposed lease area). Applying an NSO-3 in these areas would still leave these areas available for development by locating infrastructure on suitable slopes and utilizing directional drilling practices. Therefore this NSO application is unlikely to impede the development of the mineral resources, but will protect areas that have higher erosive potential.

Cumulative Effects: This lease sale, when combined with the past, present and reasonably foreseeable actions will elevate *potential* for the deterioration of soil health. Increased development of fluid minerals will result in a cumulative increase in surface disturbances as well as increase potential for leaks or spills during drilling and completion activities. The type of impacts will be the same as described under environmental impacts associated with the proposed action. However, the severity of the impacts will be elevated with increased development in the watershed.

Mitigation: For the purpose of protecting areas from slumping and mass movement of soils or landslides, GJFO-NSO-01 lease stipulation should be applied on all appropriate locations within lease areas. For the purpose of minimizing erosion and sediment transport from slopes equal to or greater than 40 percent, GJFO-NSO-03 lease stipulation should be applied on all appropriate locations within the lease areas. Specific locations having slopes steeper than 40 percent would be identified during site specific proposals for exploration and development.

At the development phase, measures such as the following are likely to be implemented:

- When saturated soil conditions exist on or along the right-of-way, construction shall be halted until soil material dries out sufficiently for construction to proceed without undue damage and erosion to the right-of way.

- The grant holder shall provide satisfactory reclamation of all sites disturbed by their activity. This may include installation of additional erosion control devices and seeding at the discretion of the BLM Authorized Officer.

- Topsoil shall be conserved during excavation and reused as cover on disturbed areas to facilitate re-growth of vegetation. Topsoil shall only be used for reclamation and shall not be used to bed or pad the pipe during backfilling.

- To control erosion and sediment transport, roads shall be crowned or sloped, ditched, surfaced, drained with culverts and/or water dips, and constructed to BLM Gold Book standards. Culvert outlets shall incorporate controls such as rip-rap, sediment catchments, and anchored straw bales, to slow water velocity and prevent erosion and soil transport. Initial gravel application shall be a minimum of four inches.

- The operator shall provide timely year-round road maintenance and cleanup on roads. A regular schedule for maintenance shall include, but not be limited to, crown or slope reconstruction, blading, ditch, culvert and catchment cleaning, road surface replacement, and dust abatement. When rutting within the traveled way becomes greater than three inches, blading, and/or gravelling shall be conducted as approved by the BLM Authorized Officer.

- Top soil segregation will not occur when soils are saturated or frozen unless special authorization is granted by the BLM Authorized Officer.

- A Winter Construction 1 Plan will be submitted and approved by the BLM Authorized Officer before a Notice to Proceed will be authorized for construction activities in frozen soils.

- All erosion and sediment control practices and measures shall be constructed, applied, and maintained in accordance with the approved erosion and sediment control plan.

- Topsoil stripping shall be confined to the immediate construction areas. A 4 to 6-inch stripping depth is common, but depth may vary depending on the particular soil. All perimeter dikes, basins, and other sediment controls shall be in place prior to stripping.

- After the areas to be topsoiled have been brought to grade, and immediately prior to spreading the topsoil, the subgrade shall be loosened by disking or scarifying to a depth of at least two inches (or as site specific analysis determines 1 appropriate for soil type) to ensure bonding with subsoil.

- Topsoil shall not be placed while in a frozen or muddy condition, when the subgrade is excessively wet, or in a condition that may otherwise be detrimental to proper grading or proposed sodding or seeding.

3.2.4 Water (surface and groundwater, floodplains)

Affected Environment: Surface Water: The proposed Lease parcel is located within water quality control stream segment 15 of the Lower Colorado River Basin. Stream segment 15 of the Lower Colorado River Basin is defined as the "Mainstem of Plateau Creek including all tributaries and wetlands, from its source to the HWY 330 bridge in Collbran. Kimball Creek, Grove Creek, Big Creek, Cottonwood Creek, Bull Creek, Spring Creek, Coon Creek, and Mesa Creek, including all wetlands and tributaries, from their sources to their confluences with Plateau Creek. The proposed lease parcel is within the Grove Creek watershed and has potential to directly impact surface water in Oak and Swanee Creeks. Oak Creek is a perennial tributary to Grove Creek while Swanee Creek is a perennial tributary to Negro Creek which is a perennial tributary to Spring Creek. Spring Creek is a perennial tributary to Grove Creek. Grove Creek is a perennial tributary to Plateau Creek. Plateau Creek is a perennial tributary to the Colorado River near Cameo, Colorado. Table 1 identifies stream classifications and water quality standards for segment 15.

Table 1 identifies stream classifications and water quality standards for Lower Colorado River Basin stream segment 15 as outlined in CDPHE, Regulation No. 37.

Stream Segment	Classifications	Numeric Standards					
		Physical and Biological	Inorganic (mg/l)		Metals (ug/l)		
COLCLC15	Aq Life Cold 1 Recreation E Water Supply Agriculture	T=TVS(CS-I) oC D.O.=6.0 mg/l D.O.(sp)= 7.0 mg/l pH=6.5-9.0 E.Coli=126/100ml	NH3(ac/ch)=TVS Cl2(ac)=0.019 Cl2(ch)=0.011 CN=0.005	S=0.002 B=0.75 NO2=0.05 NO3=10 Cl=250 SO4=WS	As(ac)=340 As(ch)=0.02(Trec) Cd(ac)=TVS(tr) Cd(ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS	Fe(ch)=WS(dis) Fe(ch)=1000(Trec) Pb(ac/ch)=TVS Mn(ch)=WS(dis) Mn(ac/ch)=TVS Hg(ch)=0.01(tot)	Ni(ac/ch)=TVS Se(ac/ch)=TVS Ag(ac)=TVS Ag(ch)=TVS(tr) Zn(ac)=TVS Zn(ch)=TVS(sc)

CDPHE–WQCC. 2010a

The CDPHE ―Integrated Water Quality Monitoring and Assessment Report-2010 update to the 2008 305(b) Report (CDPHE-WQCC. 2010c) was reviewed to determine the current status of assessment and determination of water quality within the proposed project area. The Colorado Integrated Reporting Category (IR) value assigned to the assessment units in the ―Status of Water Quality in Colorado – 2010 document was IR=2. Stream segment 15 is described as fully supporting agriculture, water supply, and primary contact recreation. Insufficient information was available to adequately assess aquatic life cold 1 as potential water quality impairments from selenium and iron (unknown sources) were identified. In Colorado, the majority of the assessed surface water bodies fall into IR Categories 1, 2, and 3. Category 1 indicates waters attaining water quality standards. Colorado has elected to place segments where not all uses have been assessed in IR Category 2. In some cases, a complete assessment of all uses cannot be completed do to the lack of data, but the data that is available indicates that at least some of the uses that were assessed are fully supporting. IR Category 3 indicates that insufficient data is available to determine whether or not the classified uses are being attained. Category 4 indicates waters which are not supporting a standard for 1 or more classified uses, but a TMDL is not needed. IR Category 5 indicates that available data and/or information indicate that at least one classified use is not being supported or is threatened, and a TMDL is needed. Segments must be placed in Category 5 when, based on existing and readily available data and/or information, technology-based effluent limitations required by the Clean Water Act (CWA), more stringent effluent limitations, and other pollution control requirements are not sufficient to implement an applicable water quality standard and a TMDL is needed. This category constitutes the Section 303(d) list of waters impaired by a pollutant (CDPHE-WQCC. 20010c).

The 2010 CDPHE-WQCC Regulation No. 93 Section 303d List of Impaired Waters and Monitoring and Evaluation List, was reviewed to determine if Lower Colorado River stream segment 15 was listed. Stream segment 15 is identified on the Monitoring and Evaluation List for potential selenium and iron impairments (CDPHE-WQCC. 2010b).

Groundwater: The proposed action is situated within Piceance Structural Basin located in western Colorado. The Piceance Basin is an elongated structural depression trending northwest - southeast. The basin is more than 100 miles long and has an average width of over 60 miles,

encompassing an area of approximately 7,110 square miles. The Piceance structural basin encompasses varying portions of Moffat, Rio Blanco, Garfield, Mesa, Pitkin, Delta, Gunnison, and Montrose counties (Topper et. al. 2003).

Being part of the Colorado Plateau physiographic province, the Piceance Basin is characterized by a series of high plateaus and deep valleys. Down-cutting of the Colorado River has divided the Piceance Basin into a northern and southern province. The proposed action is located in the southern province. The southern province is marked by two significant erosional remnants, Grand Mesa and Battlement Mesa (Topper et. al. 2003). The principal bedrock aquifers south of the Colorado River; the upper Tertiary-age aquifers have largely been eroded off, exposing a thick basal confining unit of the lower Green River and Wasatch Formations. As such, most water supply wells in the southern portion of the Piceance Basin are completed in the alluvial aquifers associated with the Colorado and Gunnison River tributaries (Topper et. al. 2003). Within the Plateau Valley, the dominant source of ground water is located within shallow to deep alluvial and glacial till deposits. These alluvial and glacial till aquifers are primarily recharged by high elevation snowmelt/precipitation and contribute to base flows in perennial streams and springs in the Plateau Valley.

Water Rights:

Numerous water rights and permitted groundwater wells exist within the Plateau Valley. Use types for these sources include: municipal, domestic, household use only, irrigation, stock, other, and commercial. The proposed lease parcel is situated within the Mesa/Powderhorn Source Water Protection Area (as defined by BLM in the ongoing GJFO RMP revision). It is important to note that these source water boundaries were developed using information from the local water conservancy district, State of Colorado, GIS coverage of water well distribution in the Plateau Valley, 1:250k geologic mapping, and basic principals in groundwater hydrology. Watershed boundaries were developed to protect private water outtakes as well as municipal sources. BLM Colorado has committed to addressing environmental concerns associated with fluid mineral development in source water protection areas in the GJFO Resource Management Plan revision. This analysis will include analyzing whether or not leasing in source water protection areas is appropriate. As part of this plan, BLM is analyzing one or more alternatives that would not allow additional fluid mineral leasing in municipal watersheds or source water protection areas. It is important to note that development of fluid minerals (private and federal minerals) in the Plateau Valley has been heavy in the past. Development of valid existing federal leases as well as non-federal minerals will continue to be developed in the future regardless of BLM's decision on future leasing in these areas.

Surface geology in the western portion of the proposed lease parcel is dominantly Tertiary aged Wasatch and Ohio Creek Formation as well as Tertiary aged Parachute Creek member of the Green River formation. The Wasatch Formation is comprised of interbeded shale and lenticular sandstone. The Wasatch formation is generally thought of as a confining unit however, field observation of sandstone intervals reveal these deposits can produce limited quantities of water. The Parachute Creek member of the Green River formation is comprised largely of marlstone

and shale. This formation is generally thought of as an important groundwater aquifer in the northern part of the Piceance basin where this formation is largely intact. However, in the southern portion of the basin the Parachute Creek member of the Green River formation tends to be discontinuous and thinner than observed in the northern part of the basin. Thus, its reliability as an aquifer is limited in the proposed lease area. Quaternary aged eolian, gravels and alluvial deposits are located downgradient of this lease parcel and are in part, recharged by precipitation and snowmelt runoff originating at higher elevations.

Surface geology in eastern portion of the proposed lease parcel is dominantly Quaternary aged gravels, landslides and colluvial deposits. Permeable glacial and alluvial deposits make up the most substantial water bearing units in the Plateau Valley. A query of the CDSS well database and the 1:250k surface geology mapping within the Mesa/Powderhorn Source-water Protection Area was done to identify the primary water bearing units within each of the source water protection areas. From this query it was determined that 415 of the 556 completed wells within the Mesa/Powderhorn Source-water Protection Area were constructed in Quaternary deposits (glacial tills, alluvium, colluvium, eolian, terrace gravels, landslides, and colluvial deposits). Of these 415 constructed wells, 249 were reported to have domestic uses, 124 were reported to have household only uses, and 6 were reported as having municipal uses. Three constructed wells are located on private lands within one mile of the proposed lease parcel. These wells are identified as having domestic uses and depths range from 6-135 feet below ground surface. No water wells were identified on any of the proposed lease tracts. However, many wells are situated downgradient from the proposed lease tracts. Well depths range from less than 6 feet (outtakes near perennial surface water) to 765 feet below ground surface.

A Review of the GJFO springs database indicated no springs or seeps within any of the identified lease parcel. However, the lease parcel is located on split estate and BLM policy dictates that private point sources will not be inventoried of filed on for water rights. Onsite evaluation of the proposed parcel combined with personal communication with land owners indicate numerous springs situated on private lands within the parcel. Source water for these springs is snowmelt and runoff from higher elevations on the Grand Mesa which recharge colluvium and glacial till deposits which comprise much of the northern Grand Mesa slopes.

The Colorado Division of Water Resources (DWR) has jurisdiction over the production of groundwater that is put to beneficial use. However, groundwater produced from conventional oil and gas wells (and CBM wells) within the basin typically is of poor water quality and defined as oil field waste. Fresh water utilized for drilling and dust suppression would be acquired from private sources with valid existing rights.

Environmental Consequences of the No Action Alternative:
There would be no impacts from the No Action Alternative.

Environmental Consequences of the Proposed Action:

Surface Water: Clearing, grading, and soil stockpiling activities associated with exploration and development actions would alter overland flow and natural groundwater recharge patterns. Potential impacts include surface soil compaction caused by construction equipment and vehicles, which would likely reduce the soil's ability to absorb water, increasing the volume and rate of surface runoff. New oil and gas roads and pads could intersect shallow groundwater along cut slopes and alter channel and floodplain characteristics at drainage crossings. The combination of increased surface runoff, decreased infiltration, and changes in drainage features would likely result in increased peak flows and an increase in the frequency and extent of flooding for downstream streams in proportion to the amount of area in a watershed that is impacted by oil and gas development activity. Likewise, surface disturbance associated with oil and gas development in the lease parcel could impair the productivity of springs situated on private surface as well as degrade water quality from these point sources.

The success or failure of BMPs designed to manage stormwater and reduce erosion during construction and operation of oil and gas facilities will determine much of the impact with regard to surface waters. Runoff associated with storm events would likely increase sediment/salt loads in surface waters down gradient of the disturbed areas. Sediment may be deposited and stored in minor drainages where it would be readily moved downstream during heavy convection storms. Some sediment from future development activity may eventually be carried into perennial tributaries to Plateau Creek and eventually the Colorado River where water quality classifications would limit the amount of sediment and salts that could be present and meet standards. The distance to impacted surface waters would have an attenuating effect on the amount of sediment contributed by lease exploration and development activities. Surface erosion would be greatest during construction and would be controlled using BMPs for storm water.

The magnitude of the impacts to surface water resources from future development activities depends on the proximity of disturbances to drainage channels, slope aspect and gradient, degree and area of soil disturbance, soil character, duration of construction activities, and the timely implementation and success/failure of mitigation measures. Natural factors which attenuate the transport of sediment into creeks include water available for overland flow; the texture of the eroded material; the amount and kind of ground cover; the slope shape, gradient, and length; and surface roughness. Impacts would likely be greatest shortly after the start of construction activities and would likely decrease in time due to stabilization, reclamation, and revegetation efforts.

Groundwater: Impacts to groundwater resources could occur due to failure of well integrity, surface spills, or the loss of drilling, completion, and hydraulic fracturing fluids into groundwater. Chemical additives used in completion activities would be introduced into the producing formations. Loss of drilling fluids may occur at any time in the drilling process due to changes in porosity or other properties of the rock being drilled through. When this occurs, drilling fluids may be introduced into groundwater. Site specific conditions and drilling practices determine the probability of this occurrence and determine the groundwater resources that could

be impacted. In addition to changing the producing formations' physical properties by increasing the flow of water, gas, and/or oil around the well bore, hydraulic fracturing can also introduce chemical additives into the producing formations. Types of chemical additives used in drilling activities may include acids, hydrocarbons, thickening agents, lubricants, and other additives that are operator and location specific. These additives are not always used in these drilling activities and some are likely to be benign such as bentonite clay and sand. Concentrations of these additives also vary considerably and are not always known since different mixtures can be used for different purposes in the same oil and gas development and even in the same well bore.

If contamination of aquifers from oil and gas development occurs, changes in groundwater quality could impact downstream users diverting water from groundwater sources (e.g. domestic wells, springs, and surface water diversions). All of the identified parcel has the potential to impact groundwater resources in and/or adjacent to proposed lease areas which includes domestic wells, springs, and surface water resources in the Plateau Valley. The severity of water quality impacts to downstream users would be subject to the type and volume of contaminant introduced. The timing of these impacts would vary based in aquifer properties.

Fluid minerals in the Plateau Valley have been highly developed on both private and public lands and contamination of groundwater resources associated with this past/current development has not yet been documented. Known water bearing zones in the project area are protected by drilling requirements, regulations, and industry practice. With proper drilling and completion practices, potential contamination of groundwater resources is minimized.

Stream segment 15 of the Lower Colorado River Basin currently meets water quality standards. Leasing of the proposed parcel is likely to contribute incrementally to water quality degradation in this stream segment.

Cumulative Effects: This lease sale, when combined with the past, present and reasonably foreseeable actions will elevate *potential* for the deterioration of surface and groundwater quality in the Plateau Valley. Increased development of fluid minerals will result in a cumulative increase in surface and subsurface disturbances as well as increase potential for leaks or spills during drilling and completion activities. The type of impacts will be the same as described under environmental impacts associated with the proposed action. However, the severity of the impacts will be elevated with increased development in the watershed.

Mitigation - For the purpose of minimizing impacts to perennial streams and water quality, GJFO-NSO-07 and Exhibit CO-28 (CSU) lease stipulations would be applied on all appropriate locations within the lease areas.

The following are common measures required at the APD stage:

- See Soils mitigation.
- Oil and gas drilling operations within municipal watersheds and/or source water protection areas should utilize methods and materials that would prevent degradation of the underlying groundwater. This may include practices such as surface casing through

potential fresh water zones, green completions, green frac fluids, and pitless drilling - closed loop drilling.

- Within portions of municipal watersheds available for fluid minerals development, the operator should develop and implement a watershed protection plan. This plan would include characterization and monitoring of hydrologic/hydrogeologic conditions such as but not limited to: water quality, water quantity, groundwater flow patterns, connectivity between geologic formations, and communication between surface and groundwater. The operator should collaborate with all watershed stakeholders in development and implementation of the watershed protection plan.

- Protection of drinking water supply sources within surface water supply areas (leased or made available for leasing) should (at minimum) concur with Colorado Oil and Gas Conservation Commission rule 317B and subsequent updates.

- Collbran has town ordinance pursuant to C.R.S 31-15-707(1)(b) for the purpose of maintaining and protecting the Town's waterworks from injury and to protect the water from pollution in lands and territory occupied by such waterworks and over the streams or sources, including groundwater, from which the water is taken for five (5) miles above the point from which it is taken. The town should require the lessee to obtain a watershed protection permit prior to development.

- Additional site-specific mitigation measures would be implemented at the APD stage based on the submitted Surface Use and Drilling Plans.

- Springs and perennially saturated areas should not be disturbed. Adequate buffers to springs and perennially saturated areas should be implemented based on site specific conditions.

3.3 BIOLOGICAL RESOURCES

3.3.1 Invasive, Non-native Species#

Affected Environment: Invasive species and noxious weeds occur within the affected area. Downy brome (cheatgrass) and other annual weeds are common along roadsides and on other disturbed areas. Houndstongue, Canada thistle, Scotch thistle, musk thistle, and hoary cress are also known to occur in these areas. Other species of noxious weeds can be introduced by vehicle traffic, livestock, and wildlife, and can be readily spread into newly disturbed areas. The BLM, USFS, Mesa County, and oil and gas operators collaborate in their efforts to find the best integrated approaches to manage weeds through the *Oil and Gas Weed Management Plan for Oil and Gas Operators*, which has been in place since 2007.

Environmental Consequences of the No Action Alternative: There would be no impacts from the No Action Alternative.

Environmental Consequences of the Proposed Action: If drilling were to occur on this parcel, subsequent activities would create an environment for, and provide a mode of transport for invasive species and other noxious weeds to become established. Construction equipment and any other vehicles or equipment brought onto the site can introduce weed species. Wind, water, recreation vehicles, livestock and wildlife would also assist with the distribution of weed seed into the newly disturbed areas. The annual invasive weed species (downy brome and other annual weeds) that occur on adjacent rangelands would occupy the disturbed areas; the bare soils and the lack of competition from a perennial plant community would allow these weed species to grow unchecked and can affect the establishment of seeded plant species. Establishment of perennial grasses and other seeded plants as part of interim reclamation is expected to reduce the presence of invasive annual weeds within two or three years.

The perennial and biennial noxious weeds in the area are less frequently established on the uplands but some potential exists for their establishment in draws and swales or areas that would collect additional water. The largest concern in the project area would be for these species to become established and not be detected, providing seed which can move onto adjacent rangelands. At the APD stage, the operator would be required to adhere to the *Oil and Gas Weed Management Plan* and continue weed management actions throughout the life of the project.

Cumulative Effects: Development of this lease parcel, when combined with the past, present and reasonably foreseeable actions would potentially add new sites requiring on-going weed management. Additional roads, pads, and pipelines will add to the areas requiring regular maintenance unless abandonment and final reclamation efforts exceed development.

3.3.2 Threatened, Endangered and Sensitive Species

Affected Environment: Habitat for the Federally Threatened Canada Lynx occurs on this parcel. Parcel 6204 is within the Cottonwood Lakes Lynx Analysis Unit, as mapped in 2003. Within the lease parcel only the eastern portion was mapped as lynx habitat in mapping conducted with the USFS, the BLM, and USFWS in 2003. In 2010 the USFS, in coordination with the BLM and USFWS re-mapped lynx habitat and the area within parcel 6204 is no longer mapped as being within a Lynx analysis unit (USFS, 2010). However, the Forest Service lands adjacent to the eastern side of the lease parcel are identified as suitable habitat. The same habitat type continues onto the lease parcel, and lynx have been recorded in the lease parcel through CDOW telemetry data (Shenk, 2005). Therefore, the eastern portion of the lease parcel will be considered occupied Lynx habitat for the purposes of this analysis.

The parcel occurs within the Colorado River Basin and development on this parcel is expected to result in water depletions to the Colorado River Basin which will indirectly affect the critical habitat of the four endangered Colorado River Fishes (bonytail, humpback chub, Colorado pikeminnow and razorback sucker).

Other BLM sensitive animal species that are known to inhabit or may be indirectly influenced from development of the proposed lease parcel include the northern goshawk. This lease parcel is located within mapped historic habitat for the Gunnison and Greater Sage grouse but do not currently support the species nor do these areas support potential habitat for sage grouse.

The parcel drains into Plateau Creek which contains rountail chub, bluehead sucker and flannelmouth sucker. Creeks within the lease parcel are not known to contain these fish, however, not all areas have been surveyed.

Environmental Consequences, No Action Alternative: There would be no impacts to special status species or their habitat from the No Action Alternative.

Environmental Consequences, Proposed Action:

Bonytail, Humback Chub, Razorback sucker, and Colorado Pikeminnow: Cumulative water depletions from the Colorado River Basin are considered likely to jeopardize the continued existence of the Colorado pikeminnow, humpback chub, bonytail, and razorback sucker and result in the destruction or adverse modification of their critical habitat. In 2008, the BLM prepared a Programmatic Biological Assessment (PBA) that addressed water depleting activities associated with the BLM's fluid minerals program in the Colorado River Basin in Colorado, including water used for well drilling, hydrostatic testing of pipelines, and dust abatement on roads. In response, the U.S. Fish and Wildlife Service (USFWS) prepared a Programmatic Biological Opinion (PBO) that addressed water depletions associated with fluid minerals development on BLM lands. The PBO included reasonable and prudent alternatives which allowed the BLM to authorize oil and gas wells that result in water depletion while avoiding the likelihood of jeopardy to the endangered fishes and avoiding destruction or adverse modification of their critical habitat. The reasonable and prudent alternative authorized the BLM to solicit a one-time contribution to the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin (Recovery Program) in an amount based on the average annual acre-feet depleted by fluid minerals activities on BLM lands. This contribution was ultimately provided to the Recovery Program through an oil and natural gas development trade association. Development associated with this lease sale would be covered by this agreement and water-use values associated with this project would be entered into the GJFO fluid minerals water depletion log that is submitted to the Colorado State Office at the end of each fiscal year. Leasing of this parcel would be expected to result in water depletions that would fall under the existing Programmatic Biological Opinion. Water depletions beyond those previously consulted on with the USFWS would require additional consultation at the time of development and would require additional conservation measures to minimize impacts to listed fish species.

Implementation of State and federally-imposed design measures to control erosion and spills would limit the risk of contaminants migrating off-site and degrading water quality in the Colorado River.

Canada Lynx: Portions of this lease parcel contain habitat for the species. Based on a site visit on December 19, 2011 with USFWS personnel, impacts to this species are expected to be minimal as the parcel is on the very edge of suitable habitat and the majority of the parcel is not believed to be suitable for the species. Exhibit GJ-13EE allows for No Surface Occupancy if sufficient minimization measures cannot be developed. Informal consultation with the USFWS on leasing of this parcel will be conducted in the spring of 2012 and any mitigation measures will be incorporated into the development of this lease parcel under Exhibit GJ-13EE to protect threatened and endangered species habitat. Currently the BLM expects the parcel can be developed without the need for take under the Endangered Species Act.

Greater and Gunnison sage-grouse: The proposed lease parcel is within the historic range of Gunnison and Greater sage-grouse. However the historic distribution was coarsely mapped (at a scale of 1:2,000,000) and site specific analysis reveals that the areas to be leased are not within an area that historically supported sage brush. The proposed lease parcel is dominated by pinion juniper, aspen, and oak, and is therefore not likely to support sage grouse or sagebrush habitats and is not mapped as potential habitat for either species.

Northern goshawk: There are no known goshawk nests within the proposed lease parcel, although potential exists for the parcel to contain nests. Raptor nest surveys are required prior to project implementation in those areas potentially influenced by proposed development activities. Information on functional nest sites found in the course of surveys are used as the basis for developing siting alternatives or applying timing limitations that reduce the risk of nest activity disruptions that could result in reproductive failure or compromising the long-term utility of nest habitat. The parcel in the proposed action provides for special status species, allowing for the application of raptor timing limitations as needed to protect nesting activities, therefore it is expected any direct impacts to nesting birds could be mitigated at the time of development.

BLM sensitive fish: Presence of fish in tributary streams and creeks within the parcel is largely unknown at this time. Application of GJFO-NSO-07 is expected to limit surface occupancy adjacent to surface water; however it is likely that stream crossings would be needed to develop this parcel if drilling occurs on the surface of the parcel. At the time of development surveys of streams would be required to determine potential impacts and appropriate COA's and BMP's would be applied to limit impacts.

Cumulative Effects: Development this lease parcel would contribute to activity simultaneous with and in addition to ongoing natural gas and mineral development and recreation use in the GJFO. Initial disturbance to TES species (e.g., construction, drilling, and completion activities), as conditioned by timing limitations, CSU and COAs would be relatively localized and temporary. After these initial activities have subsided, human activity and effects of habitat fragmentation would continue throughout the production phase and persist for the life of well or field. The consequences of these influences on TES species would vary according to species-specific response through time as modified by habituation or circumstance, such as the use of access restrictions or BMPs that reduce the frequency and duration of well visitation. Development would result in further unavoidable modifications and reductions in habitat

communities. Roads and working surfaces of pads represent incremental accumulation of acreage removed from habitat base for the life of the well or field.

Leasing and subsequent development of this lease parcel in combination with the past, present, and reasonably foreseeable actions is likely to contribute to a sustained reduction in the overall abundance of most affected species through direct and indirect impacts, but it would not be expected to elevate cumulative effects to levels that would compromise the viability of any wildlife population or the utility of broader landscapes as habitat. The size and distribution of habitat patches ultimately created through lease development (instigating species-area effects) or whether barriers persist long enough to manifest inbreeding depression (reduced fitness of individuals and isolated populations) is subject to much speculation, but considering only the parcel recommended for leasing, in combination with the past, present, and reasonably foreseeable actions; these principles of fragmentation are not known to be operating at a level that prompts imminent concern.

The combination of CSU and TL lease stipulations and complementing sighting criteria that attempts to minimize or avoid adverse modification of raptor nest habitat character have been effective in preventing reproductive failures and maintaining the integrity of the nest substrate or woodland stand for subsequent nest attempts. Raptor nest surveys are required prior to project implementation in those areas potentially influenced by proposed development activities. Information on functional nest sites found in the course of survey are used as the basis for developing siting alternatives or applying timing limitations that reduce the risk of nest activity disruptions that could result in reproductive failure or compromising the long-term utility of nest habitat.

Mitigation: Mitigation that is used to reduce the duration or severity of impacts to special status species is presented integral with the discussions above. Potential mitigation applied to subsequent lease development includes RMP-derived Controlled Surface Use (CSU), and Timing Limitation (TL) stipulations (see Attachment A). Additional mitigation will be developed and applied through consultation with the USFWS. This parcel is also subject to Exhibit CO-34 to alert lessee of potential habitat for a threatened, endangered, candidate, or other special status plant or animal.

3.3.3 Vegetation (grasslands, forest management)

Affected Environment: The exact impacts to vegetation cannot be determined until site specific proposals have been submitted to GJFO for analysis.

Aspen/forb, aspen/chokecherry, aspen/mountain maple, Aspen snowberry, Gambles's oak/snowberry, Gamble's oak /elk sedge, Gamble's oak/serviceberry, mountain sagebrush, spruce fir, pinyon/juniper and riparian communities exist on the parcel (Wenger 2007). The GJFO does not have Land Health data for this site because it is private land. The aspen/mountain maple community, a plant community considered rare by Nature Serve is found on the parcel,

associated with surface water. This community has a G2, S2 designation (globally and statewide imperiled because of its rarity) (Wenger 2007). If the parcel is leased vegetation conditions would be evaluated during the onsite inspections for individual oil and gas activities as they are proposed.

Environmental Consequences of the No Action Alternative: There would be no impacts to vegetation under the No Action Alternative.

Environmental Consequences of the Proposed Action: Because of the abundance of sensitive resources on this parcel, much of the parcel is protected by stipulations that do not allow surface occupancy. Therefore it is likely that most development would happen off of the parcel, affecting plant communities on private or national forest lands. If directional drilling was anticipated from the existing well pad or a new one on any new lease that might be issued adjacent to the lease parcel the BLM is considering, the lessee would be expected to comply with all Forest Service rules, regulations and permitting procedures for activities occurring on NFS lands, and effects to vegetation would take place at that time.

Specific impacts associated with vegetation cannot be predicted at the leasing stage, however management direction in the Grand Junction ROD/RMP allows for the site-specific development of COAs at the APD stage, including facility relocations and providing for rapid stabilization and restoration. Generally oil and gas development involves complete removal of vegetation and at times re-contouring of the landscape to allow for resources to be retrieved. Vegetation is removed in an amount commensurate with the level of oil and gas development. Conditions of Approval, including reclamation/restoration procedures, are developed at the approval stage and are followed throughout the life of the development. These COAs generally include plans for interim reclamation, re-seeding, re-contouring, and soil stabilization on the site. With appropriate COAs all developed land ultimately will be reclaimed and restored, albeit in some instances up to 30 years after initial disturbance. The type of ground activity associated with oil and gas development does result in increased susceptibility to adverse impacts such as weed infestations and erosion (See Soils and Invasive, Non-Native Species sections).

The aspen/mountain maple community should be sufficiently protected by stipulations protecting perennial streams, as well as stipulations protecting Canada lynx and steep slopes. At the development stage, any occurrences of this community found not protected by stipulations would likely be protected through site specific COAs.

Cumulative Effects: Cumulative impacts to the plant communities within the lease and adjacent areas include an incremental reduction of continuity in the plant communities in terms of acreages that remain undisturbed. Those affects are unknown now, but would be analyzed at the development stage. Loss of continuity results in smaller and smaller areas of undisturbed native vegetation and the potential for loss of integrity within the larger plant community. The increased disturbance also makes native plant communities more susceptible to invasion by annual weeds as vectors for increasing weeds. Even with weed control measures applied, the potential for weeds to move further into undisturbed remnant areas increases as these remnants

become smaller and more isolated from larger undisturbed areas. These cumulative impacts would be minimized over time with successful reclamation.

3.3.4 Wetlands & Riparian Zones

Affected Environment: The lease parcel encompasses perennial or intermittent channel systems that support riparian communities (see Table 5).

Table 5: Parcel Riparian Communities

Parcel number	Approx. channel length involved (meters)	Channel Name
6204	700	Oak Creek
6204	35	Swanee Creek

Lease number 5921 contains riparian habitat located on a portion of Oak Creek and Swanee Creek. The riparian zone located within parcel number 6204 on Oak Creek is approximately 700 meters and approximately 35 meters on Swanee Creek. These portions of Oak Creek and Swanee Creek are located on private property and therefore the condition of the riparian community has not been assessed. The portions of Oak Creek and Swanee Creek that cross a small isolated block of public land have not yet been assessed or Proper Functioning Condition (PFC) rating. Management of the private land may vary from that on the public land and the rating may not be the same. The west edge of this parcel is located approximately 500 to 2,000 meters east of Little Creek and 200 to 800 meters south or upslope of Negro Creek.

The Land Health assessment completed on the parcel of public land located to the south of the proposed lease parcel was found to be meeting land health standards which indicates that Standard 2 for Riparian Systems is also being met on public land and likely on the upstream private land.

Environmental Consequences of the No Action Alternative:
There would be no action authorized that would have potential to influence riparian zones and wetlands.

Under the No Action Alternative there would be no new impacts to riparian habitat as a result of oil and gas activity. A rating for Standard 2 for Riparian Systems cannot be made because the potentially affected riparian zones are located on private property. Under this alternative there would be no leasing of federal minerals or associated development associated with gas extraction at this time.

Environmental Consequences of the Proposed Action: Although specific influences associated with lease development cannot be predicted at the leasing stage, management direction in the Grand Junction ROD/RMP requires that land use activity that maintain existing riparian acreage and diversity in plant height. BLM policy and current Grand Junction ROD/RMP decisions allow

for the site-specific development of COAs at the APD stage that are effective in substantially reducing direct involvement and indirect influences on riparian vegetation and channel function, including facility relocations of up to 200 meters and providing for rapid stabilization and restoration in the event of unavoidable involvement (e.g., typically linear alignments).

Special circumstances are associated with lease parcel 6204 as it encompasses Oak Creek and Swanee Creek which are perennial streams. Lease stipulations were developed in the Grand Junction ROD/RMP to protect perennial streams and water quality. The Perennial Stream Water Quality Stipulation limits surface disturbance within 100 feet of streams to essential crossings of roads and utilities. Colorado BLM statewide Controlled Surface Use stipulations were developed to protect perennial streams and riparian vegetation (CO-28). Under CO-28 oil and gas exploration and development facilities can be moved beyond the riparian vegetation zone. Approximately 700 meters of Oak Creek and 35 meters of Swanee Creek cross through parcel number 6204 and would be subject to this stipulation, which would help to protect the riparian community from future surface disturbing activities.

Cumulative Effects:
Leasing the proposed parcel, in combination with the past, present and reasonably foreseeable actions would not have any cumulative effects on riparian zones. Effects on riparian zones should be limited due to existing lease stipulations and CSU restrictions that provide protection to these areas. Some impacts could occur if creek crossings cannot be avoided during oil and gas exploration and development activities. Placement of facilities away from riparian areas located in or adjacent to the proposed lease parcel would reduce or eliminate direct impacts.

Mitigation:
Where potential effects are identified, the preferred mitigation is to relocate the proposed well pad(s) or infrastructure to avoid riparian areas by more than 100 meters, or relocation such that the action has a minimal impact on riparian areas. If development in riparian areas cannot be avoided then design, construction, and reclamation activities should be professionally engineered. Site-specific mitigation is developed during the NEPA review of APDs.

3.3.5 Wildlife (includes fish, aquatic and terrestrial)

Affected Environment:
Habitat types across this parcel include Pinion Juniper, Gambel Oak, Mountain Shrub, Aspen, and Spruce/Fir.

The proposed lease parcel includes portions of Swanee and Oak Creeks in addition to a number of springs and seeps. These areas are not known to support fish species.

The lease parcel includes some portion of big game (deer, elk, and moose) ranges. The extreme eastern portion of section 28 includes approximately 20 acres of mapped elk production area and the land owner in this area noted that elk breeding occurs in this area. Elk summer concentration and overall summer range occurs within the parcel as well as 20 acres of elk

production area (calving). Mule Deer summer range occurs on the parcel as well as moose overall range. The parcel also contains migration pattern areas for deer and elk.

Other terrestrial wildlife likely to occur on the parcel include Turkey, Black Bear, Mountain Lion and various small mammals, reptiles and resident birds that are likely to inhabit the lease parcel and display broad ecological tolerance and are widely distributed throughout the region in suitable habitats. No narrowly-distributed or highly-specialized species or sub-species of fish or wildlife populations are known to inhabit this parcel (other than those discussed under threatened, endangered and sensitive species).

Environmental Consequences of the No Action Alternative: There would be no impacts to aquatic and terrestrial wildlife species or their habitat from the No Action Alternative.

Environmental Consequences of the Proposed Action: Although specific influences associated with lease development cannot be predicted at the leasing stage, BLM policy and current Grand Junction ROD/RMP decisions allow for the site-specific development of COAs at the APD stage that are effective in substantially reducing direct and indirect effects on aquatic and terrestrial wildlife including facility relocations of up to 200 meters. Implementation of State and federally-imposed design measures to control erosion and spills also work to limit the risk of contaminants migrating off-site and degrading water quality in these systems. Also see discussions in the TES Animal and Riparian/Wetland sections.

Traditional timing limitations continue to be applied to these important summer and winter (i.e., severe winter and critical winter) ranges by the State and BLM, although these measures were not designed or intended to deal effectively with new drilling and completion technologies (e.g., deep directional, multi-well pads) and the disposal of large quantities of produced fluids. Sawyer (2006) demonstrated strong avoidance response of natural gas development activity in Wyoming deer and the pronounced influence of residual activity associated with maintenance/production phases and subsequent recreational use of well access roads. Later, Sawyer (2009) acknowledged that avoidance response in deer could be substantially reduced (40-60 percent) in these fields by employing technologies that reduce the truck transport of produced fluids (i.e., fluid transport via pipeline). These studies provide compelling evidence that behavioral impacts (habitat disuse from avoidance, elevated energetic demands) associated with human and vehicular activity attributable to oil and gas development are the primary impact imposed on big game and are, in these circumstances, more expansive and deleterious than direct habitat loss associated with longer term infrastructure occupation and shorter term vegetation modifications.

Industry is actively planning or implementing fluids gathering systems that would drastically reduce the frequency of vehicle activity on affected big game ranges. Complementary actions that are being employed to further reduce direct or indirect impacts include pooled employee transport, on-site employee housing, adjusting lease requirements or offering year-round development incentives to promote clustered development, increasing the number of wells sequentially drilled at each location, and phased reclamation instituted soon after the pad is

constructed. Site-specific conditions and opportunities are also reflected in COAs developed at the APD stage, including restricting public access on well access roads and pipeline rights-of-way and siting facilities and infrastructure in a manner that balances the interspersion of cover and forage compatible with the behavioral traits of deer and elk. Although the proposed lease parcel may not be developed in this manner, more advanced objectives and principles are likely to be universally promoted and applied where practical BLM believes serious impacts to big game abundance and distribution can be largely averted.

Approximately 20 acres of the lease would be protected by stipulation GJ-4, to protect elk calving sites.

Lease development's influence on small mammal populations, at least in the short term, is likely primarily confined to on-site mortality and direct habitat loss attributable to facility occupation and vegetation clearing. These assumptions are tempered by the possibility that certain species may rarely, if ever, cross barren roadbeds. The expanse of continuous habitat usually available on either side of a ridge (typical pattern of development) and its present ability to support robust populations of small mammals would likely mask declining population fitness for long periods of time.

Cumulative Effects: Development of this lease parcel would contribute to activity simultaneous with and in addition to ongoing natural gas and mineral development and recreation use in the GJFO. Initial disturbance to wildlife (e.g., construction, drilling, and completion activities), as conditioned by timing limitations, would be relatively localized and temporary. After these initial activities have subsided, human activity and effects of habitat fragmentation would continue throughout the production phase and persist for the life of well or field. The consequences of these behavioral influences on wildlife would vary according to species-specific response through time as modified by habituation or circumstance, such as the use of access restrictions or BMPs that reduce the frequency and duration of well visitation.

Development would result in further unavoidable modifications and reductions in, particularly, pinyon-juniper woodland communities as wildlife forage and cover. Roads and working surfaces of pads represent incremental accumulation of acreage removed from cover and forage base for the life of the well or field.

Leasing and subsequent development of this lease parcel is likely to contribute to a sustained reduction in the overall abundance of most affected species through direct and indirect impacts, but it would not be expected to elevate cumulative effects to levels that would compromise the viability of any wildlife population or the utility of broader landscapes as habitat. The size and distribution of habitat patches ultimately created through lease development (instigating species-area effects) or whether barriers persist long enough to manifest inbreeding depression (reduced fitness of individuals and isolated populations) is subject to much speculation, but considering only the parcel recommended for leasing, these principles of fragmentation are not known to be operating at a level that prompts imminent concern.

Mitigation: Site specific COAs and BMPs will be applied as appropriate at the time of APD application.

3.3.6 Migratory Birds

Affected Environment: BLM IM No. 2008-050 provides guidance towards meeting the BLM's responsibilities under the Migratory Bird Treaty Act (MBTA) and Executive Order (EO) 13186. The guidance emphasizes management of habitat for species of conservation concern by avoiding or minimizing negative impacts and restoring and enhancing habitat quality, and suggests use of a timing limitation to avoid the direct take of migratory bird nests.

The proposed lease parcel encompasses a wide variety of habitats, but is largely dominated by aspen and Gambel Oak, Mountain Shrub with lesser representation or scattered inclusions of spruce/fir and pinion/juniper. These habitats support a large array of migratory birds during the breeding season (generally May through July).

The BLM lends increased management attention to migratory birds listed by the USFWS as Birds of Conservation Concern (BOCC). These are bird populations that monitoring suggests are undergoing range-wide declining trends and are considered at risk for becoming candidates for listing under the ESA if not given due consideration in land use decisions. Those species associated with the Southern Rockies/Colorado Plateau region (FWS 2008a) and the proposed lease parcel is likely to support the following BOCC species: Cassin's finch, flammulated owl, and Lewis's woodpecker (USFWS, 2008)

More generally, birds associated with this lease parcel are well distributed in extensive suitable habitats throughout the GJFO and northwest Colorado and habitat-specific bird assemblages appear to be composed and distributed appropriately to the normal range of habitat variability.

Environmental Consequences of the No Action Alternative: There would be no impacts to migratory bird species or their habitat from the No Action Alternative.

Environmental Consequences of the Proposed Action: The actual lease sale would not impact any migratory bird species or their habitat, however, potential future development of the proposed leased parcel would influence both localized populations and their associated habitats. The GJFO typically applies a 60 day COA to lease to avoid taking of individual nests of migratory birds, however the larger effects of habitat loss and habitat fragmentation are not addressed through this COA.

Cumulative Effects: Development of the lease parcel would contribute to activity simultaneous with and in addition to ongoing natural gas and mineral development and recreation use in the GJFO. Initial disturbance to migratory birds(e.g., construction, drilling, and completion activities), as conditioned by COAs to avoid peak breeding season, would be relatively localized and temporary. After these initial activities have subsided, human activity

and effects of habitat fragmentation would continue throughout the production phase and persist for the life of well or field. The consequences of these behavioral influences on migratory birds would vary according to species-specific response through time as modified by habituation or circumstance.

Leasing and subsequent development of the lease parcel is likely to contribute to a sustained reduction in the overall abundance of most affected species through direct and indirect impacts, but it would not be expected to elevate cumulative effects to levels that would compromise the viability of any migratory bird population or the utility of broader landscapes as habitat.

Mitigation: Upon APD application restrictions on vegetation disturbance during the peak breeding season will be applied to avoid impacts to individual nests.

3.4 HERITAGE RESOURCES AND HUMAN ENVIRONMENT

3.4.1 Cultural Resources

Affected Environment: The parcel proposed for the August 2012 Oil and Gas Lease Sale is located in the Plateau Valley Unit of the GJFO and was analyzed by the Class I Overview for the GJFO (Conner et al 2011:9-54). The cultural history of the area is incorporated by this reference. Seventy three acres in the parcel had a cultural inventory completed in 1978 for a proposed land sale. This survey had negative results but was not conducted to current standards. No other cultural inventory survey has occurred in the parcel. Typically this environment has low potential for cultural resources in part because of the north slope aspect and the elevation. Dense vegetation often precludes systematic survey but well pad locations would be, by their setting needs of flat areas in otherwise steep terrain, located in areas where the likelihood of cultural resources would be higher. Often well pads are first developed drilling to private minerals, and later federal wells are added. This precludes the identification of cultural resources impacted by a federally authorized decision and no further work is required unless the well pad needs to be enlarged.

Environmental Consequences of the No Action Alternative: There would be no impacts to cultural resources.

Environmental Consequences of the Proposed Action:
The GJFO requires a minimum 40-acre inventory block around proposed well locations to allow for the relocation of proposed well pads to avoid newly discovered sites potentially Eligible for NRHP listing. Surveys are also required for corridors of associated roads and pipelines and may require redesign to avoid cultural resources. Reevaluation of previously recorded sites will be required for final determinations of eligibility. Law and regulation require the BLM to ensure that Bureau-initiated or Bureau-authorized actions do not inadvertently harm or destroy cultural resource values. Coordination with private landowners will ensure consideration of the effect of

future federal decisions on cultural resources. Because most cultural resources are unidentified, irreplaceable, and highly sensitive to ground disturbance, it is necessary that the resources are properly identified, evaluated, and reported prior to any future activity that may affect their integrity y or condition. Before any APDs are approved for exploration or drilling, a Class III cultural resource survey would be undertaken to comply with Section 106 of the National Historic Preservation Act.

Cumulative Effects: This lease sale, when combined with the past, present and reasonably foreseeable actions has the potential to identify previously unrecorded cultural resources by increasing the acres of documented survey. Sites that could not be avoided may require excavation, which would add to the regional information about prehistory. Construction and the infrastructure of the industry detract from the visual setting and can impair the integrity of criteria considered in the evaluation of NRHP eligibility.

Standard Stipulations / Mitigation:
Where potential effects are identified, the preferred mitigation is to relocate the proposed well pad(s) or infrastructure to avoid potentially Eligible sites by more than 100 meters, or relocation such that the undertaking's APE does not affect potentially Eligible sites or the Allocation to Use Categories. Site-specific mitigation is developed during the NEPA review of APDs.

All lands are subject to Exhibit CO-39 to protect cultural resources.

3.4.2 Paleontological Resources

Affected Environment: The project area contains portions of geological formations known to produce few to several scientifically valuable fossils, resulting in Potential Fossil Yield Classifications (PFYCs) between 2 and 5. The formations affected, their known fossil types, and their PFYC values are as follows (Tweto 1979, Armstrong and Wolny 1989, BLM Colorado State Office PFYC chart):

Mesaverde Group or Formation, Upper part—PFYC 3—dinosaurs, reptiles (turtles & crocodilians), mammals, fish, ichnological traces, snails, and plants.

Modern Alluvium—PFYC 2—Holocene animals, including Bison and horses.

Green River Formation, Lower part—PFYC 3—fish and ostracoda.

Green River Formation, Parachute Creek Member—PFYC 3—fossil reptiles (lizards, crocodilians, turtles), bats, insects (including eggs & larvae, scorpion ants, beetles, gnats, and mosquitoes), and plants (including algae reefs, ferns, horse-tails (*Equisteum*), seeds, flowers, fruit, oaks, maples, sassafras, figs, magnolias, etc.).

Wasatch Formation—PFYC 4-5—Paleocene and Eocene mammals (including perissodactyls, tapiroids, condylarths, primates, insectivores, marsupials, creodonts,

carnivores, and multituberculates), reptiles (including crocodilians, turtles, and lizards), birds (including eggs), amphibians, fish, invertebrates (non-marine mollusks and ostracoda), and various florae.

Environmental Consequences of the No Action Alternative: There would be no impacts from the No Action Alternative.

Environmental Consequences of the Proposed Action: The August 2011 lease sale parcel contain areas mapped as PFYC 2 to PFYC 5 formations and have a moderate to likely potential to impact scientifically valuable fossil resources. Locations for proposed oil or gas well pads, pipelines, and associated infrastructure will be subject to further analysis for the protection of paleontological resources. Areas of new surface disturbance occurring on or adjacent to bedrock (native sedimentary stone) exposures within a PFYC 4-5 formation must be inventoried by a permitted paleontologist and approved by the appropriate GJFO specialist during each project's NEPA review. Surface disturbing activities in some areas will require monitoring by a permitted paleontologist.

Cumulative Effects: This lease sale, when combined with the past, present and reasonably foreseeable actions has the potential to identify previously unrecorded paleontological resources by increasing the surface and subsurface area documented by pre-construction paleontological surveys and construction monitoring. Sites that could not be avoided may require excavation and collection, which would add to existing regional paleontological knowledge.

Mitigation: Mitigation will be developed during the NEPA review of individual ground disturbing activities. Mitigation includes provisions for the monitoring of ground disturbance by a permitted paleontologist, if there are known paleontological sites nearby, or if the proposed surface disturbance will encounter bedrock within a PFYC 4-5 geologic unit. If a project would occur on a site with PFYC 4-5 formation bedrock exposures on the surface a pre-construction paleontological survey would be required. All projects would require the operator to inform all persons associated with the project of relevant Federal laws protecting fossil resources, and requirements regarding the disclosure of inadvertent fossil discoveries during construction or operation to the GJFO while operating on federally-managed surface. Other notification and reporting requirements may exist for split-estate parcel with privately-owned surface.

3.4.3 Tribal and Native American Religious Concerns

The BLM GJFO has consulted annually with the Southern Ute Tribe, the Ute Mountain Ute Tribe, and the Ute Tribe of the Uintah and Ouray Reservation regarding proposed GJFO Oil and Gas Lease Sale parcels since 2004. No comments specific to lease sales were brought to the BLM's attention in any consultation meetings. No Native American Religious Concerns or Traditional Cultural Properties (TCPs) are known in the area.

Native American Consultation letters were mailed to the three Ute Tribes on Nov. 17, 2011 with follow-up emails sent Nov 22, 2011. This north slope high elevation environment is usually not

conducive to finding archaeological sites. What the BLM has learned through past consultation is that the Ute have a generalized concept of spiritual significance that is not easily transferred to Western models or definitions. As such the BLM recognizes that the Ute have identified archaeological sites that are of concern because of their association with Ute occupation of the area as part of their traditional lands. This parcel is in an area used by the Ute into historical times. Tribal representatives have consulted with the BLM Field Office on previous projects in this general area and provided instructions for the protection of culturally sensitive sites, should any be discovered during inventory or proposed actions. In addition to the stipulations for the protection of Cultural Resources if new heritage site information is brought forward any site-specific Native American mitigation measures suggested during previous notification/ consultation would be considered during analysis of any future APDs. If new information is provided by Native Americans during future EA or permit processes, additional or edited terms and conditions for mitigation may have to be negotiated or enforced to protect resource values.

3.4.4 Visual Resources

Affected Environment: This parcel cannot be seen from Powderhorn Resort, but is visible from much of the Plateau Valley. Visual resource management (VRM) requirements are applied to projects to mitigate impacts to landscape character, comprised of form, color, texture, and line. Visual resource management has four management classes. The parcel nominated for leasing has no visual resource management classification because it is not public land. Based on site visits, the area appears natural.

Environmental Consequences of the No Action Alternative: There would be no impacts to visual resources from the No Action Alternative.

Environmental Consequences of the Proposed Action: The act of selling oil and gas leases would not create a visual impact. The subsequent development of a lease could affect landscape character. For example, temporary or permanent facilities that have height, such as produced water, condensate or oil storage tanks would provide a strong vertical and horizontal visual contrast in form and line to the characteristic landscape and vegetation, which may have flat, horizontal to slightly rolling form and line. Since oil and gas well locations cannot be accurately determined at the leasing stage, it is not possible to accurately predict the visual impacts. A single well pad screened by terrain in an area absent of visual receptors may have low to negligible impacts. Development would also be expected to favorably blend with the form, line, color and texture of the existing landscape.

Cumulative Effects: Development intensity, terrain, and proximity to visual receptors (e.g., main travel corridors, towns, recreation facilities, etc.) will greatly influence visual impacts. It is possible that post-lease industrial development could result in portions of or all of a VRM area to be affected.

Mitigation: As part of reviewing and approving APDs, visual impacts would be mitigated by applying COAs, which could include using special paint colors, hiding facilities with vegetation , or redesigning or relocating facilities. Development would be expected to favorably blend with the form, line, color and texture of the existing landscape.

3.4.5 Social and Economic

Affected Environment: Parcels nominated for leasing are offered for sale during an oral auction. The minimum acceptable bid for a parcel is $2.00 per acre. Because the sale is conducted as an auction, the minimum bid is often increased, sometimes substantially, until bidding ceases. The increased bid is called a bonus bid. The sum of the minimum bid and the bonus bid, if any, is collected the day of the sale. Additionally the first year's rental of $1.50 an acre or fraction of an acre must be paid at the time of the sale. Annual rental is $1.50 per acre or fraction of an acre for the first five years of the lease term, increasing to $2.00 per acre or fraction of an acre for any subsequent year. Because parcels are auctioned, there can be no guarantee that each parcel will be sold, and an estimate cannot be made in advance of the sale of the revenue produced from selling the parcel.

This parcel is in an area sparsely populated with humans. There are a few dwellings on the parcel, and springs used for drinking water. The surface owners that responded to BLM outreach have stated a desire for No Surface Occupancy or No Leasing.

Environmental Consequences of the No Action Alternative: In this alternative, all nominated lease would be removed from the November sale. Revenue at the time of the sale in the amount of approximately $4,000 would be lost. Any future social or economic impacts from possible development, including benefits to oil and gas corporations and the public, would not be realized.

Environmental Consequences of the Proposed Action Alternative: The leasing process provides no direct socio-economic benefit or detriment, except for the collection of bids, bonus bids, and rentals. The minimum income if all recommended parcel are sold at the November sale would be approximately $4,000. Income from the sale goes to the federal and Colorado treasuries. The federal and Colorado treasuries would receive revenue if leases unsold during the November sale are later purchased non-competitively. Economic and social impacts would result from development of leases, in the form of temporary or permanent employment, rental or purchase of equipment, and royalties paid to the federal and Colorado treasuries, and other expenditures related to development.

Oil and gas development is common in the region; human health impacts are not known to occur in the area. BLM has reviewed the Battlement Mesa Health Impact Assessment. If leased and developed, impacts could be expected to be similar, however this area is much more sparsely populated than the Town of Battlement Mesa. Development would likely cause some displacement of wildlife, possibly moving wildlife onto other private lands and causing game damage which CPW may be held liable for. These impacts would be more fully analyzed at the APD stage.

At the leasing stage, an estimate of economic impacts is not possible. Similarly, it is not possible to predict social impacts because development is not assured.

Cumulative Effects: This lease sale, when combined with the past, present and reasonably foreseeable actions, contributes slightly to the state and federal treasuries, and could contribute to continuation of an industry that provides substantial income and jobs to the community. It could also affect surface owners and neighbors impacted by operations and wildlife displacement.

3.4.6 Environmental Justice

Affected Environment: The requirements for environmental justice review were established by Executive Order 12898 (February 11, 1994). That order declared that each federal agency is to identify "disproportionately high and adverse human health or environment effects of its programs, policies, and activities on minority populations and low income populations."

According to Census 2010, the only minority population of note in the impact area is the Hispanic community of Mesa County. Persons describing themselves as Hispanic or Latino represented 13.3 percent of the population, considerably less than the Colorado state figure for the same group (20.7 percent). Blacks, American Indians, Asians and Pacific Islanders each accounted for around 1 percent of the population, below the comparable state figure in all cases. The census counted 11.8 percent of the Mesa County population as living in families with incomes below the poverty line, compared to 12.6 percent for the entire state.

Environmental Consequences of the No Action Alternative: There would be no impacts under the No Action alternative.

Environmental Consequences of the Proposed Action: Both minority and low income populations are dispersed throughout the county. Therefore, no minority or low-income populations would suffer disproportionately high and adverse effects as a result of implementation of the Proposed Action.

Cumulative Effects: Both minority and low income populations are dispersed throughout the county. Therefore, no minority or low-income populations would suffer disproportionately high and adverse effects as a result of any of the alternatives, even when combined with the past, present, and reasonably foreseeable actions.

3.4.7 Transportation/Access

Affected Environment: Proposed lease parcel 6204 does not occur on BLM-administered surface lands and there are no travel restrictions. BLM-administered lands adjacent to the nominated lease parcel are designated as "limited to existing routes".

Environmental Consequences of the No Action Alternative: Under the no action alternative there would be no impacts to transportation and access.

Environmental Consequences of the Proposed Action: The act of selling oil and gas leases would not impact transportation and access. The subsequent development of a lease could affect

transportation and access as routes would need to be developed or improved to access lease developments. According to Mesa County, the county roads accessing the parcel would be impacted by expected oil and gas exploration and production traffic. At the APD stage, further analysis will be conducted, including analysis of transportation/access. At that time it is likely that our analysis will lead us to encourage the lessee to coordinate necessary road maintenance or potential agreed upon improvements with Mesa County to address this issue. Operators will be encouraged to consult with Mesa County Public Works to designate and mark preferred routes to the active drilling operations

Cumulative Effects: This lease sale, when combined with the past, present and reasonably foreseeable actions could contribute to increased route density and vehicle traffic as oil and gas resources are developed in the area, however conditions of approval at the development phase would be expected to minimize these impacts.

3.4.8 Wastes, Hazardous or Solid

Affected Environment: There are no known hazardous or other solid wastes on the proposed lease sale parcel.

Environmental Consequences of the No Action Alternative: There would be no impacts from the No Action Alternative, as there would be no action authorizing the generation, use, or storage of hazardous materials.

Environmental Consequences of the Proposed Action: A determination will be made as to whether solid or hazardous wastes have been previously used, stored, or disposed of at proposed oil and gas construction sites at the time individual APDs are submitted. Substances emitted during and used in the exploration, development, and production of oil and gas reserves may pose a risk of harm to human health and the environment. Potential impacts will be analyzed in subsequent environmental analysis.

Cumulative Effects: This lease sale, when combined with the past, present and reasonably foreseeable actions could add hazardous wastes to the environment; however conditions of approval at the development phase are expected to minimize these impacts.

Mitigation: Oil and gas operations will, at a minimum, comply with the Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development "The Gold Book" (BLM 2007). In addition, management of waste in oil and gas operations will be managed in accordance with all Federal, State, and local regulations. At the time of APD approval, Conditions of Approval (COAs) will be attached to ensure compliance with environmental obligations, 43 CFR §3162.5.

3.5 LAND RESOURCES

3.5.1 Recreation

Affected Environment: The nominated lease parcel 6204 is within an area that is sparsely populated but utilized by wildlife, and people seeking dispersed recreational opportunities, primarily big game hunting, on adjacent public lands. Proposed lease parcel 6204 does not occur on BLM-administered surface lands.

Environmental Consequences of the No Action Alternative: Under the no action alternative there would be no impacts to recreation.

Environmental Consequences of the Proposed Action: The act of selling oil and gas leases would not impact recreation. The subsequent development of a lease could affect recreation as increased traffic could affect hunting opportunities. The landowners have expressed that they allow very little hunting on their property. Some of the landowners enjoy ATV and snowmobile riding on the parcel. Because of the abundance of sensitive resources on this parcel, much of the parcel is protected by stipulations that do not allow surface occupancy. Therefore it is likely that most development would happen off of the parcel, so recreation impacts may occur on private or national forest lands. At the APD stage, further analysis would be conducted, including analysis of recreation impacts and recommended mitigation measures.

Cumulative Effects: This lease sale, when combined with the past, present and reasonably foreseeable actions could contribute to increased route density and vehicle traffic as oil and gas resources are developed in the area, however conditions of approval at the development phase would be expected to minimize these impacts.

CHAPTER 4 - CONSULTATION AND COORDINATION

4.1 LIST OF PREPARERS AND PARTICIPANTS

INTERDISCIPLINARY REVIEW

NAME	TITLE	AREA OF RESPONSIBILITY
Christina Stark	Natural Resource Specialist	Riparian, Wetland, Floodplains
Julia Christiansen	Natural Resource Specialist	Oil and Gas
Aline LaForge	Archaeologist	Cultural Resources, Native American Religious Concerns
Michelle Bailey	Outdoor Recreation Supervisor	Access, Transportation, Recreation, VRM
Chris Pipkin	Outdoor Recreation Planner	Wilderness, ACECs, Wild and Scenic Rivers
Matt McGrath	Interpretive Specialist	Wild & Scenic Rivers, NCA
Scott Clarke	Range Management Specialist	Range, Wild Horse & Burro Act
Scott Gerwe	Geologist	Minerals, Geology, Paleontology
Alan Kraus	Hazard Materials Specialist	Hazardous Materials
Robin Lacy	Realty Specialist	Land Status/Reality Authorizations
Heidi Plank	Wildlife Biologist	Migratory Bird Treaty Act, T&E Species, Terrestrial & Aquatic Wildlife
Anna Lincoln	Ecologist	Range, Land Health Assessment, T&E Plant Species
Bob Fowler	Range Management Specialist	Vegetation, Range, Riparian, Floodplains
Collin Ewing	Environmental Coordinator	Environmental Justice, Prime & Unique Farmlands, Environmental Coordinator
Nate Dieterich	Hydrologist	Air Quality Water Quality, Hydrology, Water Rights, soils
Jacob Martin	Range Management Specialist	Range, Forestry
Mark Taber	Range Management Specialist	Invasive, Non-Native Species (Weeds)
Lathan Johnson	Fire Ecologist Natural Resource Specialist	Fire Ecology, Fuels Management

4.2 TRIBES, INDIVIDUALS, ORGANIZATIONS, OR AGENCIES CONSULTED

Colorado Parks and Wildlife

U.S. Fish and Wildlife Service

Grand Mesa, Uncompahgre and Gunnison National Forests, Grand Valley Ranger District

Town of Collbran

Mesa County

Ute Indian Tribe (Uintah and Ouray Reservations) Fort Duchesne, UT

Southern Ute Indian Tribe, Ignacio, CO

Ute Mountain Ute Tribe, Towaoc, CO

CHAPTER 5 - REFERENCES

Bureau of Land Management (BLM). 1985. Draft Resource Management Plan and Environmental Impact Statement. Grand Junction Field Office. Grand Junction, Colorado.

Bureau of Land Management. 1987. Grand Junction Resource Area Resource Management Plan and Record of Decision. Grand Junction District. Grand Junction, Colorado.

Bureau of Land Management. 1988. H-1790-1 National Environmental Policy Handbook. Washington, D.C.

Bureau of Land Management. 2004. Resource Management Plan and Record of Decision for the Colorado Canyons National Conservation Area and Black Ridge Canyons Wilderness. Grand Junction Field Office. Grand Junction, Colorado.

CDPHE-WQCC. 2010a. Water Quality Control Commission, 5 CCR 1002-37, Regulation No. 37, Classifications and Numeric Standards for Lower Colorado River Basin, Amended: February 8, 2010, Effective: June 30, 2010.

CDPHE-WQCC. 2010b. Water Quality Control Commission, 5 CCR 1002-93, Regulation #93, Colorado's Section 303(D) List of Impaired Waters and Monitoring and Evaluation List, Adopted March 9, 2010, Effective April 30, 2010.

CDPHE-WQCC. 2010c. "Integrated Water Quality Monitoring and Assessment Report-State of Colorado" The Update to the 2008 305(b) Report," Colorado Department of Public Health and Environment -Water Quality Control Commission, Effective April 30, 2010.

Colorado Decision Support Systems (CDSS). Water Rights Database. 2011. Accessed February. http://cdss.state.co.us/DNN/WaterRights.

Conner, E. Carl, Nicole Darnell, Brian O'Neil, Richard Ott, Curtis Martin, Dakota Kramer, James C. Miller, and Barbara Davenport. 2011. Class I Cultural Resource Overview for the Grand Junction Field Office of the Bureau of Land Management. Edited by Michael S. Berry. Submitted to the BLM, Grand Junction Field Office.

Natural Resource Conservation Service (NRCS). Soil Data Viewer. 2011. Accessed February. http://soils.usda.gov/sdv/.

Sawyer, H. Nielson, R. M., Linzey, F., McDonald, L.L. 2006. Winter habitat selection of mule deer before and during development of a natural gas field. The Journal of Wildlife Management 70(2): 396-403.

Sawyer, H., Kauffman M. J., Nielson, R. M. 2009. Influence of well pad activity on winter habitat selection patterns of mule deer. The Journal of Wildlife Management 73(7): 1052-1061.

Shenk, Tanya. 2005. Lynx (Lynx canadensis) Reintroduced to Southwestern Colorado from February 4, 1999 through February 1, 2005. Report for the Colorado Division of Wildlife, Fort Collins, CO 13pp.

Topper, R., K.L. Spray, W. H. Bellis, J.L. Hamilton, and P.E. Barkmann. 2003. Ground Water Atlas of Colorado. Colo. Geol. Surv. Special Pub. 53.

U.S. Fish and Wildlife Service. 2008. Birds of Conservation Concern 2008. United States Department of Interior, Fish and Wildlife Service, Division of Migratory Bird Management, Arlington, Virginia. 85 pp. [Online version available at <http://www.fws.gov/migratorybirds/>]

United States Forest Service. 2010. Region 2 Lynx Habitat, Lynx Analysis Unit. Denver, CO.

Wenger, Stephen, R. 2007. Cougar Springs Ranch Baseline Inventory. Glade Park, CO.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
GRAND JUNCTION FIELD OFFICE

Preliminary FINDING OF NO SIGNIFICANT IMPACT

August 2012 Oil and Gas Lease Sale
DOI-BLM-CO-130-2012-0011-EA

Based on the analysis of potential environmental impacts contained in the attached environmental assessment, and considering the significance criteria in 40 CFR 1508.27, I have determined that the proposed lease sale or parcel 6204 will not have a significant effect on the human environment. An environmental impact statement is therefore not required.

BACKGROUND

It is the policy of the Bureau of Land Management (BLM) as derived from various laws, including the Mineral Leasing Act of 1920 and the Federal Land Policy and Management Act of 1976, to make mineral resources available for disposal and to encourage development of mineral resources to meet national, regional, and local needs.

The BLM's Colorado State Office conducts quarterly competitive lease sales to sell available oil and gas lease parcel. This EA was prepared to analyze the impacts of leasing parcel nominated with the Grand Junction Field Office in the August, 2012 lease sale.

The EA considered a range of alternatives from leasing all of the nominated parcel to leasing none of the parcel. The proposed action was to lease one parcel in the Plateau Valley area. The EA was made available for a 30-day public review on March 1, 2012 through March 30, 2012. X comment letters were received. X significant issues were identified as a result of these comments.

Intensity

I have considered the potential intensity/severity of the impacts anticipated from the August Lease sale relative to each of the ten areas suggested for consideration by the CEQ. With regard to each:

1. Impacts that may be both beneficial and adverse.

Future development of this parcel may have minor short term impacts to soils, vegetation, and wildlife; however these impacts are not expected to be significant and will be further analyzed in site specific NEPA documents at the development stage.

2. The degree to which the proposed action affects public health and safety.

The proposed action is not expected to significantly impact public health and safety. Oil and gas development is a common practice in the area and no significant impacts to health and safety are known.

3. Unique characteristics of the geographic area such as proximity of historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

There are no prime farmlands, wild and scenic rivers, or ecologically critical areas within the affected area. No significant impacts to riparian vegetation, parklands, wetlands, or municipal water supplies are expected and will be further analyzed and minimized in site specific NEPA documents at the development stage.

4. The degree to which the effects on the quality of the human environment are likely to be highly controversial.

Oil and gas development is a common practice in the area and the effects are generally well understood. NEPA documents at the development stage will incorporate all new information to analyze impacts.

5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

Oil and gas development is a common practice in the area and the effects are generally well understood. NEPA documents at the development stage will incorporate all new information to analyze impacts.

6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

This decision is like one of many that have previously been made and will continue to be made by the BLM responsible officials regarding leasing on public lands. The decision is within the scope of the Resource Management Plan and is not expected to establish a precedent for future actions.

It will allow for site specific development on the leases, however that development will be analyzed in future NEPA documents and is not expected to have significant impacts.

7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.

There are no significant cumulative effects on the environment, either when combined with the effects created by past and concurrent projects, or when combined with the effects from natural changes taking place in the environment or from reasonably foreseeable future projects.

Additional analysis will take place at the development stage to ensure cumulative impacts are

disclosed.

8. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historic resources.

There would be no adverse impacts to the above resources from leasing. Site specific surveys and consultation with SHPO will take place at the development stage and we expect to minimize impacts to these resources through that process.

9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.

The BLM is consulting with USFWS on impacts to Canada lynx. These impacts are expected to be insignificant or discountable, and not likely to adversely affect Canada lynx. Adverse effects to the 4 Endangered Colorado River fishes could occur as a result of water depletions at the development stage. These impacts have been previously analyzed in a programmatic consultation and will not result in a jeopardy determination.

10. Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

This leasing action complies with other Federal, State, or local laws and requirements imposed for the protection of the environment.

FINDING OF NO SIGNIFICANT IMPACT

On the basis of the information contained in the EA, and all other information available to me, it is my determination that: 1) the implementation of the proposed leasing action will not have significant environmental impacts beyond those already addressed in the “Record of Decision and Resource Management Plan," (January 1987) (2) the Proposed Action is in conformance with the Resource Management Plan; and (3) the Proposed Action does not constitute a major federal action having a significant effect on the human environment. Therefore, an environmental impact statement or a supplement to the existing environmental impact statement is not necessary and will not be prepared.

This finding is based on my consideration of the Council on Environmental Quality’s (CEQ) criteria for significance (40 CFR '1508.27), both with regard to the context and to the intensity of the impacts described in the EA.

Unsigned draft FONSI for public review _____

Lonny Bagley
Deputy State Director

Date

Attachment A - Pre-EA Parcel Proposed for Lease
August 2012 - Colorado Competitive Oil & Gas Lease Sale

PARCEL ID: 6204 SERIAL #:

T. 0100S., R 0940W., 6TH PM
Sec. 19: Lot 3,4;
Sec. 28: Lot 1-10;
Sec. 29: Lot 1-6;
Sec. 30: Lot 1-4;

Mesa County
Colorado 921.870 Acres

All lands are subject to Exhibit CO-28 to protect perennial streams and riparian/wetland zones:

All lands are subject to Exhibit CO-34 to alert lessee of potential habitat for a threatened, endangered, candidate, or other special status plant or animal.

All lands are subject to Exhibit CO-39 to protect cultural resources.

The following lands are subject to Exhibit GJ-3JA to protect steep slopes in excess of 40%:

T. 0100S., R 0940W., 6TH PM
Sec. 19: Lot 3,4;
Sec. 28: Lot 1-10;
Sec. 29: Lot 1-6;
Sec. 30: Lot 1-4;

The following lands are subject to Exhibit GJ-13EE to protect threatened and endangered species habitat:

T.0100S., R 00940W., 6TH PM
Sec. 19: Lot 3,4;
Sec. 30: Lot 1-4;

The following lands are subject to Exhibit GJ-7BE to protect perennial streams and water quality:
T. 0100S., R 0940W., 6TH PM
Sec. 28: Lot 3, 10;
Sec. 29: Lot 4, 5;

The following lands are subject to Exhibit GJ-1AA to protect soils in the Plateau Creek slump area:
T. 0100S., R 0940W., 6TH PM
Sec. 19: Lot 3,4;
Sec. 30: Lot 1-3;

The following lands are subject to Exhibit GJ-4 to protect elk calving areas:
T. 0100S., R 0940W., 6TH PM
Sec. 28: Lot 3, 10;

Attachment B - Parcel Recommended for Deferral from Leasing November 2011 - Colorado Competitive Oil & Gas Lease Sale

Available Portion of Parcel ID: 6204

T. 0100S., R 0940W., 6TH PM
Sec. 19: Lot 3,4;
Sec. 28: Lot 1-10;
Sec. 29: Lot 1-6;
Sec. 30: Lot 1-4;

Deferred Portion of Parcel ID: 6204

None

Attachment C - Parcel Available for Lease with Applied Stipulations
August 2012 - Colorado Competitive Oil & Gas Lease Sale

PARCEL ID: 6204

T. 0100S., R 0940W., 6TH PM
Sec. 19: Lot 3,4;
Sec. 28: Lot 1-10;
Sec. 29: Lot 1-6;
Sec. 30: Lot 1-4;

Attachment D - Exhibits Description

EXHIBIT CO-28

CONTROLLED SURFACE USE STIPULATION

Surface occupancy or use is subject to the following special operating constraints.
On the lands described below:

For the purpose of: To protect perennial water impoundments and streams, and/or riparian/wetland vegetation by moving oil and gas exploration and development beyond the riparian vegetation zone.

Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manual 1624 and 3101 or FS Manual 1950 and 2820. See also Geothermal PEIS ROD section 2.3.3 at page 2-6.)

Exception Criteria:
Exceptions may be granted only if an on-site impact analysis shows no degradation of the resource values.

EXHIBIT CO-34

ENDANGERED SPECIES ACT SECTION 7 CONSULTATION STIPULATION

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 will 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 that may affect any such species or critical habitat until it completes its obligations under applicable 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.

On the lands described below:

EXHIBIT CO-39

CONTROLLED SURFACE USE

This lease may be found to contain historic properties and/or resources protected under the National Historic Preservation Act (NHPA), 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.

Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manual 1624 and 3101 or FS Manual 1950 and 2820.)

On the lands described below:

EXHIBIT GJ-13EE

THREATENED AND ENDANGERED HABITAT STIPULATION

The following portions of this lease are within known threatened and endangered species habitat:

Threatened and endangered species:

Canada Lynx

The lessee/operator shall submit a plan for avoidance or mitigation of impacts on the identified species to the authorized officer. This may require completion of an intensive inventory by a qualified biologist. The plan must be approved prior to any surface disturbance. The authorized officer may require additional mitigation measures such as relocation of proposed roads, drilling sites, or other facilities. Where impacts cannot be mitigated to the satisfaction of the authorized officer, surface occupancy on that area must be prohibited.

EXHIBIT GJ-3JA

STEEP SLOPE STIPULATION

All or part of this lease may include land with greater than 40 percent slopes. In order to avoid or mitigate unacceptable impacts to soil, water, and vegetation resources on these lands, special design practices may be necessary and higher than normal costs may result. Where impacts cannot be mitigated to the satisfaction of the authorized officer, no surface-disturbing activities shall be allowed.

This stipulation may be waived or reduce in scope if circumstances change, or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts on the concern(s) identified.

On the lands described below:

EXHIBIT GJ-7BE

PERENNIAL STREAMS WATER QUALITY STIPULATION

In order to reduce impacts to water quality, surface-disturbing activities within 100 feet of perennial streams is limited to essential roads and utility crossings. The affected portions of this lease are:

This stipulation may be waived or reduced in scope if circumstances change, or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts on the concern(s) identified.

EXHIBIT GJ-1AA

NO SURFACE OCCUPANCY STIPULATION

No occupancy or other activity will be allowed on the following portions of this lease:

For the purpose of:
To protect soils in the Plateau Creek slump area.

This stipulation may be waived or reduced in scope if circumstances change, or if the lease can demonstrate that operations can be conducted without causing unacceptable impacts on the concern(s) identified. If this stipulation is waived or reduced in scope, any of the other attached stipulations (if any) may impact operations on this lease.

EXHIBIT GJ-4

ELK CALVING AREA STIPULATION

In order to protect important seasonal wildlife habitat, lease activities such as exploration, drilling, and other development will be allowed only during the period from June 15 to May 15 on the following portions of this lease: (legal description). This limitation does not apply to maintenance and operation of producing wells. In addition, no surface-disturbing activity will be allowed on elk calving sites.

This stipulation may be waived or reduced in scope if circumstances change or if the lessee can demonstrate that operations can be conducted without causing unacceptable impacts on the concern(s) identified.

Attachment E - Public Comment Review

COMMENT REVIEW DOI-BLM-CO-130-2012-0011 August Lease Sale EA

Comment	commentor	Category	Issue? Y/N	If No, why? If Yes, issue statement	Signficant Issue -or - Additional analysis necessary to make reasoned choice? If No, Why?
I do not object to the mineral rights underneath my surface ownership being leased, provided drilling can be accomplished with lateral drilling that does not disturb the surface. I believe that the surface acreage of my portion of the proposed lease does not lend itself to surface occupancy for the following reasons. (1) Most of the parcel I own is on a North and West facing mountainside that is too steep to be developed without significant damage to the property.	Larry Means	Request for No Surface occupancy (NSO)	Y	Steep Slopes could be affected by surface occupancy	Yes - The proposed action includes NSO on steep slopes, this will be analyzed in EA.
I believe that the surface acreage of my portion of the proposed lease does not lend itself to surface occupancy for the following reasons. (2) The part of my property that is relatively flat is on the Western end where Oak Creek crosses through the property, together with ponds and springs all of which are year around water features. Also in this area are improvements including a small cabin, garage, and outbuildings.	Larry Means	Request for No Surface occupancy (NSO)	Y	springs and ponds could be affected by surface occupancy	Yes - Water resources and NSO will be analyzed in EA.
I believe that the surface acreage of my portion of the proposed lease does not lend itself to surface occupancy for the following reasons. (3) This parcel, together with my adjoining property, has been a place of protection for wildlife ever since I acquired it in the 1970's. Wildlife that could be affected by surface disruption include deer, elk, bear, moose, mountain lion, and possibly lynx.	Larry Means	Request for No Surface occupancy (NSO)	Y	Wildlife could be affected by surface occupancy	Yes - Wildlife and NSO will be analyzed in EA
It is my contention that the oil or gas under my surface ownership, if it is to be leased at all, can be more appropriately accessed from horizontal drilling using well pads in an area up to a mile north of this property. I also own additional property adjacent to the nominated lease, together with 50% mineral rights. Laramie II has leased those mineral rights together with the type of no surface occupancy clause that I believe should be included in any lease of the nominated parcel because of the steep terrain, water resources, and wiildlife resources. (Laramie lease recorded Mesa County, BK 5238 PG 578, see clause 19)	Larry Means	Request for No Surface occupancy (NSO)	Y	Wildlife, Steep Slopes, and water resources could be affected by surface occupancy	Yes - Wildlife, Steep Slopes, water resources and NSO will be analyzed in EA
Mesa County is interested in the development of all forms of energy in a manner that will preserve our quality of life while minimizing impacts on the communities and environment.	Mesa County	general comment	N	general comment in support of responsible development	No - Not an issue
The parcel for lease in Mesa County (parcel 6204) is actually two separate tracts. The two tracts are served by the following County Roads: Grove Creek, OE Rd., 57 Rd., 58 Rd., ME Rd., 59 Rd., 58 ½ Rd. and 60 3/4 Rd. Roads may require upgrading to accommodate the traffic associated with Oil and Gas Exploration. Please contact Eric Bruton, Mesa County Road Supervisor to obtain detailed information concerning the adequacy of the Mesa County Roads. Eric can be contacted at (970) 244-1895 or email at Eric.Bruton@mesacounty.us	Mesa County	Roads	Y	Development of some of the lease parcels could negatively impact county roads	No - 7/8/11 C. Ewing Spoke with Randy Price and 7/13/11 with Eric Bruton from Mesa County. They said additional road work may be needed for development. Randy said the BLM does notify the county when APDs are proposed, and they can comment to BLM in instances where the roads need work for development to occur so that we can analyze that in EAs at the APD stage and possibly attach COAs requiring company to work with county to upgrade roads. Language to be added to EA: "According to Mesa County, the county roads accessing the parcels would be impacted by expected oil and gas exploration and production traffic. At the APD stage, further analysis will be conducted, including analysis of transportation/access. At that time it is likely that our analysis will lead us to encourage the lessee to coordinate necessary road maintenance or potential
The grid work of County roads leading to the lease areas may contribute to delivery trucks and vehicles getting lost. This leads to conflicts with surrounding landowners when vehicles must use private driveways to turn around. The operators, with consultation with Mesa County Public Works should designate and mark preferred routes to the active drilling operations.	Mesa County	Roads	Y	Road use could conflict with landowners	No - Issue will be addressed at the APD stage. Language to be added to EA: "At the APD stage, operators will be encouraged to consult with Mesa County Public Works to designate and mark preferred routes to the active drilling operations."
One residence is located within the lease parcel and one residence is located within 300 feet of the lease boundary, other residences are at least ½ mile away.	Mesa County	Residences	N	No statement of conflict, disagreement, dispute	No - Not an issue

A portion of the parcel is located within the 5 mile radius of the town of Collbran's Drinking Water Protection Area. In October of 2010, Collbran passed an ordinance that pursuant to C.R.S 31-15-707(1)(b) the town may enact ordinances and regulations for the purpose of maintaining and protecting the Town's waterworks from injury and to protect the water from pollution in lands and territory occupied by such waterworks and over the streams or sources, including groundwater, from which the water is taken for five (5) miles above the point from which it is taken, and the Town's jurisdiction shall extend over such territory. Collbran obtains the majority of their drinking water from springs located near the lower portion of Buzzard Creek Road. The town has instituted a permitting process to permit oil and gas drilling activities within a 5 mile radius of their spring water intake. The contact for the Town of Collbran drinking water protection area is Lance Stewart, Collbran Town Manager (970) 487-3751, townmanager@townofcollbran.us.	Mesa County	Water Resources	Y	operations could affect water resources	No 7/8/11 - C. Ewing spoke with L. Stewart of the Town of Collbran. (**Followup email sent 1/19/12 - Stewart confirmed**). He asked that we add language to the EA disclosing prior to development the company would need to get a permit from the town of Collbran. additional language to be added to EA - " Collbran has town ordinance pursuant to C.R.S 31-15-707(1)(b) for the purpose of maintaining and protecting the Town's waterworks from injury and to protect the water from pollution in lands and territory occupied by such waterworks and over the streams or sources, including groundwater, from which the water is taken for five (5) miles above the point from which it is taken. The Town will require the lessee to obtain a watershed protection permit prior to development."
The terrain in the proposed are has a very steep slope rising in elevation from approximately 8200-feet to 9200-feet in elevation. Approximately two-miles of the south and southeast boundary of the ranch is shared with the United States Forest Service. Vegetation is heavy evergreen pine trees, Aspen Trees, Meadow areas, and numerous understory vegetation	Cougar Springs Ranch	Informational comment	N	No statement of conflict, disagreement, dispute	No - Not an issue
Cougar Springs Ranch LLC has placed 400-acres of this area under conservation easement because of its rare environmental setting. A biology baseline report was completed in November of 2007 to support the conservation easement. The easement is held by the Colorado	Cougar Springs Ranch	Informational comment	N	No statement of conflict, disagreement, dispute	No - Not an issue
The biology report supports the belief that the surface of this area should not be disturbed for oil and gas drilling purposes. Many animal species use this area as their home. It is an elk breeding ground as well as year around range for them. Deer use the area extensively in the summer. The habitat is perfect for black bear, mountain lion and bobcat to name a few of the animals on the property. Moose roam the property. Grove creek and other tributary creeks are considered endangered habitat waterways because their water flows into Plateau Creek and from there into the Colorado River. The biology report shows that there are over 162 plant species on the property.	Cougar Springs Ranch	Request for No Leasing or No Surface occupancy (NSO)	Y	Wildlife, vegetation, and water resources could be affected by surface occupancy	Yes - Wildlife, vegetation, water resources and NSO will be analyzed in EA
A rare plant community was found on the property. The rare plant is the Aspen/Mountain Maple (please read the biology inventory report beginning at page 10 for specific). The "Baseline Inventory Report", dated November 1, 2007 states that the Colorado National Heritage Program (CNHP) designates the Aspen/Mountain Maple tree as G2 and S2. "CNHP believes this plant community to be globally imperiled because of its rarity and imperiled within the Sate of Colorado because of its rarity (CNHP, 2003). There are fewer than ten (10) locations in Colorado	Cougar Springs Ranch	Request for No Leasing or No Surface occupancy (NSO)	Y	A Rare Plant community could be affected by surface occupancy	Yes - The Rare Plant community will be analyzed in EA
The proposed lease area is also in a view shed area that can be seen for many miles and can even be seen from Vega Reservoir over 6-miles away. Any surface disturbance, because of the steepness of the slopes, will impact an extremely large area.	Cougar Springs Ranch	Request for No Leasing or No Surface occupancy (NSO)	Y	Visual Resource could be affected by surface occupancy	Yes - Visual Resources will be analyzed in the EA
An additional area to review, touched on above, is the watershed area involoved. This property has many springs that feed Grove Creek and the tributary creeks such as Negro and Swanee Creek. The meltwater from the Grand Mesa constantly supplies water to Grove Creek and the aquifer layers that feed the spring system on the property. Drilling disturbances will feed directly into the water system because of the steepness of the slopes and the physical drainage shape. Supposedly fracking does not harm the aquifers but there are many lawsuits in the works, including the EPA, that believe that fracking can harm the aquifers.	Cougar Springs Ranch	Request for No Leasing or No Surface occupancy (NSO)	Y	water resources could be affected by surface occupancy	Yes - water resources and NSO will be analyzed in EA
This property does hold many animal and plant species. There truly are rare and endangered species on the property. The best outcome would be to leave this area of minerals as non-	Cougar Springs Ranch	Request for No Leasing	Y	Wildlife could be affected by surface occupancy	Yes - Wildlife and No leasing will be analyzed in EA
The size of this area as non-leased will not affect the overall gas production of the area and actually any gas in this small area will migrate to where gas wells have been drilled or will be drilled around the property.	Cougar Springs Ranch	Drainage	Y	Leaving Unleased would not affect development in area	Yes - No Lease alternative will be analyzed
If the State of Colorado and the Federal Government want to protect an environmentally sensitive area then this is an area that is worth preserving. The owner of the property has placed the surface under conservation easement and in this case the governmental entities should back up the easement by not leasing the minerals.	Cougar Springs Ranch	Request for No Leasing	N	No statement of conflict, disagreement, dispute	Considered in EA, much of the parcel is covered by No Surface Occupancy Stipulations. Not an issue as defined by BLM handbook.

If drilling is allowed then realize that the surface owner has no desire for any type of access to the 400-plus acres and any drilling should be directional from pads that are located ouside of the lease acreage. The Old Man Mountain Well #1, Encana, is located approximately ¾-mile south of the Cougar Springs Ranch south property boundary. The Forest Service can allow any potentail drilling activity to be consducted via an access from that site if drilling is desired.	Cougar Springs Ranch	Request for No Leasing or No Surface occupancy (NSO)	N	No statement of conflict, disagreement, dispute -	A statement that surface owner does not desire surface occupancy. This will be considered in EA.
TMT Ranch is predominately steep mountain slopes, vegetated with gambel oak, aspen, pine and spruce. The only surface areas considered moderately sloped are occupied by a cabin or two future cabin sites.	TMT Ranch	Request for No Surface occupancy (NSO)	Y	Steep Slopes could be affected by surface occupancy	Yes - The proposed action includes NSO on steep slopes, this will be analyzed in EA.
This acreage encompasses numerous fresh water springs & ponds along the Oak Creek drainage (see Exhibit A).	TMT Ranch	Request for No Surface occupancy (NSO)	Y	springs and ponds could be affected by surface occupancy	Yes - Water resources and NSO will be analyzed in EA.
Abundant wildlife lives on the TMT Ranch property (you witnessed evidence ofthe wildlife during your recent site visit).	TMT Ranch	Request for No Surface occupancy (NSO)	Y	Wildlife could be affected by surface occupancy	Yes - Wildlife and NSO will be analyzed in EA
Recently signed, private land pool, oil/gas leases are in place down hill, northwest ofTMT Ranch (Exhibit B pink & green pools). The pink pool negotiated one drill pad site identified as 'DXS'. The green pool negotiated two more drill pad sites (also identified on Exhibit B is an abandoned drill pad {ADXS} - one mile southeast ofTMT Ranch within the Grand Mesa National Forest). The pink pool lease agreement stipulates no surface disturbance south ofthe identified drill pad site. Horizontal drilling is acceptable to both the pink & green pools. It is our understanding that three wells per site have been applied for by Laramie Energy (probably the same company requesting the leasing ofparcel #6204).	TMT Ranch	Request for No Surface occupancy (NSO)	N	No statement of conflict, disagreement, dispute -	Information to help BLM understand development occuring around ranch and potential for drilling from off site to access minerals
TMT Ranch asks the BLM to strongly consider placing restrictions on this -105 acre portion ofparcel #6204 due to steep slopes, numerous springs, Oak Creek drainage, wildlife habitat and cabin locations. TMT Ranch is not opposed to the leasing of mineral rights but believes drilling is not an appropriate surface use in this case. Horizontal drilling, similar to that approved by the pink pool, restricting all on, over & across surface usage would be TMT Ranch's preference.	TMT Ranch	Request for No Surface occupancy (NSO)	Y	Wildlife, Steep Slopes, dwellings and water resources could be affected by surface occupancy	Yes - Wildlife, Steep Slopes, dwellings, water resources and NSO will be analyzed in EA
The undersigned organizations support Alternative C, which defers leasing for Parcel #6204 within the Grand Junction Field Office (GJFO).	WCC & CEC	Request for No Leasing	N	No statement of conflict, disagreement, dispute -	No - not an issue, just a statement of support for No Leasing Alternative.
We encourage BLM to defer any leasing decisions until its GJFO Resource Management Plan (RMP) is revised. Within such future considerations, BLM is further encouraged to analyze reasonably foreseeable build-out scenarios for the area in question, and cumulative impacts from nearby future fossil fuel development. The agency is also encouraged to ensure continuity with 2010 Department of Interior Leasing Reforms, and BLM is challenged to manage land for the highest and best use of a particular landscape.	WCC & CEC	Request for No Leasing	N	No statement of conflict, disagreement, dispute -	No - not an issue, just a statement of support for No Leasing Alternative. All NEPA and BLM policy will be followed in the Leasing EA process, including cumulative effects analysis and Leasing Reform. This EA is being conducted to determine whether the decision that this area should be available for leasing in the 1987 RMP is still valid in light of new information
Local activity has the chance to boom, and BLM should consider large-scale build-out scenarios in eastern Mesa County. Eastern Mesa County currently enjoys robust industry activity that is impacting local natural and community resources. There is reason to believe that future development, and impacts, will markedly increase. Mesa County ranks among the top five counties in Colorado for drilling activity. In 2011, the Colorado Oil & Gas Conservation Commission (COGCC) approved 125 new wells in Mesa County (COGCC Staff Report; 12/12/11). BLM should consider two additional factors in its scenario planning for reasonably foreseeable future development: Experimental horizontal techniques in eastern Mesa County may prove to be increasingly profitable; and Mesa County resources range from oil to natural gas to various liquids associated with “wet” gas production. If market conditions align, industry could expand to large-scale development. The area in question is just 5miles from Collbran, and BLM is encouraged to consider the reasonably foreseeable future industry activity in the area to estimate public health risk. The rural, agricultural community would likely experience increased traffic, increased noise, and potentially degraded air & water quality.	WCC & CEC	Cumulative Effects	N	No statement of conflict, disagreement, dispute -	No - not an issue, just a statement of support for No Leasing Alternative. All NEPA and BLM policy will be followed in the Leasing EA process, including cumulative effects.

The Department of Interior made a series of guidance statements to BLM in 2010. The GJFO is strongly encouraged to incorporate these instructions into its leasing decisions. The leasing guidance memorandum includes increased public participation in leasing decisions, consideration of Master Leasing and Development Plans in areas where intensive oil & gas extraction is anticipated, and recognition that oil & gas development potentially creates "irreversible commitment to develop an area." Other importance natural resource values need to be fully considered prior to making a decision. The new leasing guidance from DOI also includes confirmation of Resource Management Plan conformance. We encourage BLM to make public any such documents or correspondence related to conformance with the RMP. The current RMP guiding leasing decisions is outdated, but ensuring conformance to previous analyses and recommendations is crucial, nonetheless.	WCC & CEC	Leasing Reform	N	No statement of conflict, disagreement, dispute -	No - not an issue, just a statement of support for No Leasing Alternative. All NEPA and BLM policy will be followed in the Leasing EA process, including Leasing Reform.
The 2010 guidance encourages Field Managers to emphasize leasing in already-developed areas. It was difficult to ascertain whether the proposed 921 acres are within an area of industrial activity, since BLM's provided maps did not illustrate existing oil & gas wells in the area. It is our understanding that the area has not yet seen the drill bit, and we would encourage BLM to not lease the parcel at this time.	WCC & CEC	Request for No Leasing	N	No statement of conflict, disagreement, dispute -	No - not an issue, just a statement of support for No Leasing Alternative. As illustrated by Means and TMT ranch comments, the surrounding area is being developed.
Lastly, the DOI guidance ensures Field Offices will better analyze the impacts of leasing and development in the proposed area. We ask BLM to explicitly provide, and identify, such additional information within any potential Environmental Assessment pertaining to this particular proposed leasing decision	WCC & CEC	Leasing Reform	N	No statement of conflict, disagreement, dispute -	No - not an issue, just a statement of support for No Leasing Alternative. All NEPA and BLM policy will be followed in the Leasing EA process, including Leasing Reform.
Oil & Gas development poses substantial risk to local and regional air quality, and BLM should be mindful of leasing's seminal involvement in future emissions. Toxic gases and climate change-contributors are off-gassed at multiple stages of development. In addition to volatile organic compounds, carcinogens like Benzene are emitted. Within its Environmental Assessment, BLM should consider potential emissions from future exploration, production, processing and transportation of hydrocarbons. Also, BLM should consider cumulative impacts from nearby oil & gas activity, Delta County coal activities, and nearby oil & gas leasing proposals within the Uncompahgre Field Office.	WCC & CEC	Air Quality/Climate	N	Just a request for analysis, does not point to a dispute, debate or disagreement surrounding an anticipated effect	Analysis and disclosure of possible air quality impacts will be included in the EA. Additional analysis will take place at the APD stage. It is impossible for the BLM to predict the exact air quality impacts of development of these leases at this time because we do not know the precise locations or extent of development to take place and we do not know under what construction, production and emmissions controls technologies the development will take place. Development will take place under laws and regulations that protect air quality, this lease sale does not exempt the lessee from air quality regulations. If needed to attain AQ standards, we can attach COAs at the APD stage.
The proposed leasing has the potential to negatively impact the greater Plateau Valley's water quality and quantity. It is suggested that BLM strive, within its Environmental Assessment, to proactively protect local water resources. Moreover, BLM should honor existing Source Water Protection Plans adopted by Collbran, Colorado. Also, BLM's leasing considerations should include water source identification and waste fluid disposal plans. Water is in short supply in Colorado, and the state saw 457 oil & gas-related spills in 2011, according to the COGCC (Staff Report; 12/12/2011). Vega, Michaelson, Bonham, and Carpenter Reservoirs could serve as possible water sources for future development. Other streams potentially threatened include Big and Little Creeks, as well as the larger Plateau Creek. Streams such as Little Creek flow through the proposed lease area on its way to Collbran. Oak, Swanee and Big Creeks could be affected by future oil & gas development subsequent to leasing. Lastly, there may be irrigation ditches which would merit identification and protection.	WCC & CEC	Water Resources	Y	operations could affect water resources	Yes 7/8/11 - C. Ewing spoke with L. Stewart of the Town of Collbran. (**Followup email sent 1/19/12 - Stewart confirmed**). He asked that we add language to the EA disclosing prior to development the company would need to get a permit from the town of Collbran. additional language to be added to EA - " Collbran has town ordinance pursuant to C.R.S 31-15-707(1)(b) for the purpose of maintaining and protecting the Town's waterworks from injury and to protect the water from pollution in lands and territory occupied by such waterworks and over the streams or sources, including groundwater, from which the water is taken for five (5) miles above the point from which it is taken. The Town will require the lessee to obtain a watershed protection permit prior to development." Effects to water will be analyzed, but specific sources and disposal are not known at this time, they will be analyzed at the APD stage if the leases are issued and developed. Likewise with specific ditches to be protected, that analysis would take place when an APD is submitted
Disposal of flowback fluids and/or produced water is often troublesome, and BLM should consider in its leasing decision where such produced fluids would be managed. For instance, Black Mountain disposal facility is not equipped to accept wastes; the local commercial evaporative waste-pit facility has repeatedly been in violation of numerous state laws. BLM planners are encouraged to explore, then, likely industry alternatives to waste management and their respective potential impacts (eg. Underground injection, hauling offsite to other locations).	WCC & CEC	Waste Disposal	Y	Waste Disposal could have adverse effects	No - The need for waste disposal will be considered in the EA, however specifics are not known at this time. That analysis will take place at the APD stage

Additionally, the proposed lease parcel near Old Man Mountain is along a distinct topographical ridge, making it an area prone to heavy erosion during storm water run-off events.	WCC & CEC	Steep Slopes	Y	Steep Slopes could be affected by surface occupancy	Yes - The proposed action includes NSO on steep slopes, this will be analyzed in EA.
The Grand Mesa serves as home to a diversity of species, including some which require special management regimes. BLM should consider the latest biological information including but not limited to CDOW inventories from 2010 and previous Citizen Wilderness Proposals. Based on a screen based on 2010 CDOW, and Citizens Proposed Wilderness data, we found Gunnison Sage Grouse historical habitat; Elk habitat for summer and winter range; and Mule deer overall and summer range in the potential parcel. Moose, lynx, mountain lion, Colorado River cutthroat trout, marten, northern goshawk, turkey were also found in our biological screen.	WCC & CEC	Wildlife	Y	No statement of conflict, disagreement, dispute -	No - not an issue, just a request for analysis.
The Debeque phacelia has also been documented by the USFS and/or USFWS within the greater Grand Mesa-Uncompahgre-Gunnison National Forests. BLM is encouraged to consider presence of such flora within its leasing decision. Attached to this comment is an addendum which contains a list of species and associated management strategies.	WCC & CEC	Rare Plants	Y	No statement of conflict, disagreement, dispute -	No - not an issue, just a request for analysis. DeBeque phacelia habitat is not present on the parcel.
Public health impacts associated with oil & gas development are not fully understood, but citizens living and working in producing areas often experience various symptoms and ailments. Within its EA, BLM is encouraged to consider the Battlement Mesa Health Impact Assessment, something specifically written for a nearby rural community.	WCC & CEC	Public Health	Y	Oil and Gas Development can impact public health	Yes, this issue will be analyzed in this EA, and in more detail at the APD stage if the leases are issued.
Oil & gas development poses risk to communities, ecosystems and people, warranting proactive mitigation strategies. Oil& Gas development may not be the highest or best use for these public minerals. Agriculture and recreation are two key Mesa County industries that could be impacted negatively by future build-out scenarios and associated cumulative impacts. Each industry, moreover, provides sustainable forms of economic development for rural Colorado.	WCC & CEC	Other Land Uses	N	No statement of conflict, disagreement, dispute -	Opinion statement that other uses are better than O&G
Grazing on public lands could be impacted in the area, for instance. Oil & Gas development generally provides opportunity for invasive plant species to become established, reducing the amount of palatable species for grazing cattle. Also, industrial traffic spooks or kills livestock, and chemicals can be ingested by domesticated stock. Powderhorn Ski Resort is nearby, and their business depends on healthy land, clean water and aesthetic value. World-class hunting opportunities could be degraded, as well.	WCC & CEC	Other Land Uses	N	No statement of conflict, disagreement, dispute -	Opinion statement that other uses are better than O&G. Grazing on public land is not an issue because there is no public land involved in this lease sale. Effects to the Ski Area and hunting will be analyzed in this lease sale EA, and further analyzed if we reach the APD stage.
Future development subsequent to any BLM leasing would likely impact local roads. BLM is encouraged to consider which roads would be used in future development in order to proactively confront impacts, reduce accidents and limit traffic. Colorado Highway 330, for instance, would likely see increased heavy truck traffic, and it serves as the primary artery for commerce, freight, passenger vehicles and emergency responders. Hwy 65, a scenic byway, would see increased heavy truck traffic that often hauls hazardous materials.Rural and Forest Service Roads like FS-121, also, could see increased potholes and require additional management to ensure structural integrity. FS121, moreover, serves as a primary route to access Bonham Reservoir and nearby water Gauging Stations. Also, Little Creek Road and 60 ¾ Road could serve as the route to access the lease area. Additional infrastructure may be necessary, or alternate access routes may be warranted.	WCC & CEC	Roads	Y	Development of some of the lease parcels could negatively impact county roads	see response to Mesa County's road comment
BLM is encouraged to solicit comment from USFS, and defer any leasing decision until the agency has provided comment on the proposal. The U.S. Forest Service Grand Mesa Ranger District is adjacent to the two parcels and BLM mineral leasing actions could interfere with USFS' mandate of providing quality timber and water resources to the American public.	WCC & CEC	Other Land Management Jurisdictions	N	No statement of conflict, disagreement, dispute -	An adjacent FS parcel was also nominated as a part of this parcel. BLM will wait for FS to recommend whether to lease it. FS commented and said no issues, and that the EA should state : " If directional drilling was anticipated from the existing wellpad or a new one on any new lease that might be issued adjacent to the lease parcel the BLM is considering, the lessee would be expected to comply with all Forest Service rules, regulations and permitting procedures for activities occurring on NFS lands. "
The leasing location is very far from the offices of both the GFJO and the UFO, yet both jurisdictions potentially have an interest in leasing decisions. The two Field Offices are encouraged to collaborate closely and perform periodic site visits.	WCC & CEC	Other Land Management Jurisdictions	N	No statement of conflict, disagreement, dispute -	This parcel has no connection to UFO. It is not adjacent to their Field Office.
In summary, the undersigned groups are asking BLM to defer its leasing decision until after the GJFO has finalized its new RMP. There are myriad of issues surrounding oil & gas development on public lands, and BLM has the opportunity to ensure responsible energy development through diligent consideration of the newest information.	WCC & CEC	Request for No Leasing	N	No statement of conflict, disagreement, dispute -	No - not an issue, just a statement of support for No Leasing Alternative.

The parcel does not have wildlife concerns that would call for stipulations and it is not mapped with habitat types that would trigger wildlife stipulations; however with that said, oil and gas development activity in this location will likely move animals off of the property and onto adjacent private property which may result in game damage claims for CPW.	CPW	Wildlife	N	No statement of conflict, disagreement, dispute -	Will disclose wildlife impacts in EA