Analysis of the Management Situation

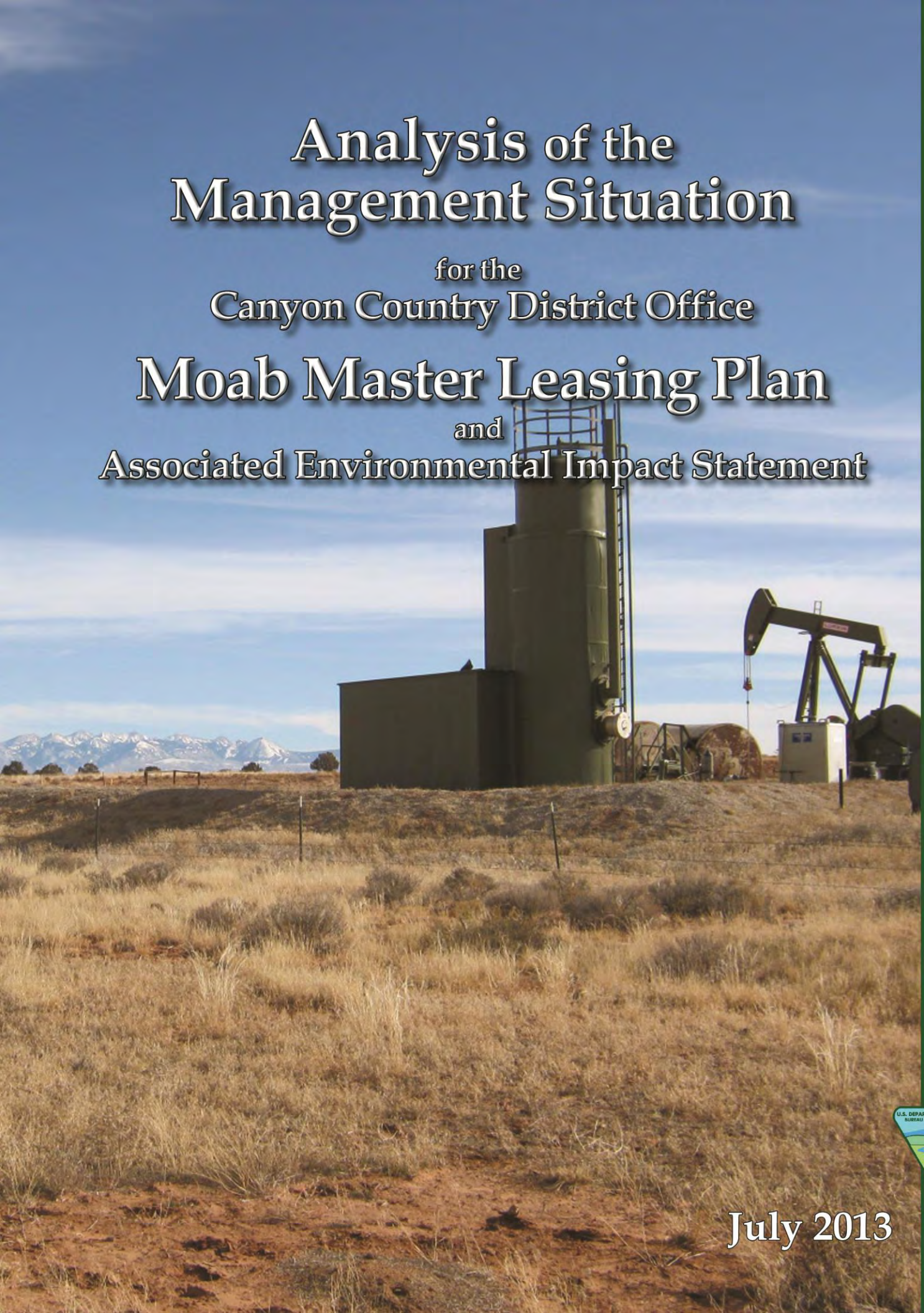
for the

Canyon Country District Office

Moab Master Leasing Plan

and

Associated Environmental Impact Statement



BLM

CANYON COUNTRY DISTRICT OFFICE

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

July 2013

BLM Mission

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

Analysis of the Management Situation

for the

Canyon Country District Office

Moab Master Leasing Plan

and Associated

Environmental Impact Statement

Prepared by
United States Department of the Interior
Bureau of Land Management
Canyon Country District Office

July 2013

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CHAPTER 1—INTRODUCTION

1.1 INTRODUCTION

The Bureau of Land Management (BLM) Canyon Country District Office has initiated the planning process to comply with BLM Washington Office Instruction Memorandum (IM) No. 2010-117. The IM outlines the Master Leasing Plan (MLP) process. The planning effort is to prepare the Moab MLP, amendments to the Moab and Monticello Resource Management Plans (RMPs), and a single Environmental Impact Statement (EIS). The scope of the decisions in the MLP is limited to oil and gas and potash leasing within the Planning Area. This planning effort does not entail a full RMP revision, but rather maintains a limited focus on the issues of oil and gas and potash leasing in a portion of the Moab and Monticello Field Offices. Due to the limited focus of this planning effort, decisions that would normally be considered in a full RMP revision will not be considered.

The MLP process will provide additional planning and analysis prior to new leasing of oil and gas and potash within the Planning Area. The MLP will enable the Moab and Monticello Field Offices to evaluate in-field considerations such as optimal parcel configurations and potential development scenarios, identify and address potential resource conflicts and environmental impacts from development, develop mitigation strategies, and consider a range of new constraints. The outcome of the MLP process may result in new mineral leasing stipulations and development constraints accomplished through amendments to the land use plans (Moab and Monticello RMPs). The EIS will analyze likely development scenarios and land use plan alternatives with varying mitigation levels for mineral leasing.

1.2 PURPOSE OF THE ANALYSIS OF THE MANAGEMENT SITUATION

The BLM prepares an Analysis of the Management Situation (AMS) to analyze available inventory data and other information to characterize a particular resource, portray its existing management situation, and identify management opportunities to respond to identified issues. The AMS details the current management situation, affected resources, and the conditions of resources in the Planning Area. The AMS provides, consistent with multiple use principles, the basis for formulating reasonable alternatives, including the types of resources for development or protection (43 Code of Federal Regulations [CFR] 1610.4-4).

The AMS is intended to describe the current conditions and trends of the resources and the uses/activities in the Planning Area in sufficient detail to create a framework from which to resolve planning issues through the development of alternatives. This analysis describes the status, or present characteristics and condition of the public land; the status of physical and biological processes that affect ecosystem function; the condition of individual components such as soil, water, vegetation and wildlife habitat; and the relative values and scarcity of the resources. The AMS also addresses social and economic conditions that influence how people, communities, and economies interact with the ecosystem.

The AMS focuses only on the issues relevant to the MLP. It is not intended to be an exhaustive review of everything known about the resources and resource uses. Parts of the AMS will be incorporated into the subsequent MLP and EIS as part of the no-action and action alternatives and in the discussion of the affected environment. Alternatives presented in the MLP and EIS will draw on the management opportunities identified in this document.

1.3 GENERAL DESCRIPTION OF THE PLANNING AREA, GEOGRAPHIC SCOPE, AND RESOURCE/PROGRAMS

The geographic area being considered in this planning process includes a portion of BLM-administered public lands and federal mineral estates managed by the BLM's Moab Field Office in Grand County and San Juan County, and a smaller area of BLM-administered public lands managed by the Monticello Field Office in San Juan County (Map 1). The Planning Area includes about 946,469 acres of land in east-central Utah south of Interstate 70. The area surrounds the town of Moab and wraps around Arches National Park. The western boundary is the Green River and the northeastern boundary of Canyonlands National Park. To the south of Moab, the eastern boundary is U.S. Highway 191. This area encompasses a mix of land use including developed and dispersed recreation, limited oil and gas development, and a potash facility. Interest in potash exploration and development is peaking in the area. Table 1-1 shows the total acreage within the Planning Area including private, state, and other federal ownership.

The Planning Area includes about 783,000 acres of public lands. The majority of the public lands within the Planning Area are managed by the Moab Field Office. Approximately 579,438 acres (61 percent of the Planning Area) are managed by the Moab Field Office and 203,943 acres (22 percent of the planning area) are managed by the Monticello Field Office. An additional 13 percent of land in the Planning Area is State Trust Lands, administered by the Utah School and Institutional Trust Lands Administration (SITLA). Land ownership in the Planning Area is depicted in Table 1-1. The Planning Area surrounds Arches National Park, with the exception of the southeast side of the park, and also borders Canyonlands National Park to the north and east. Privately-owned lands are concentrated primarily around the major transportation routes, river corridors, and areas suitable for agricultural development.

The Planning Area has a high potential for the development of oil, gas, and potash. Interest in oil, gas, and potash leasing is also high. The BLM has received recent Expressions of Interest to lease over 120,000 acres for oil and gas. Additionally, the BLM has received 170 potash prospecting permit applications covering 350,000 acres.

The Planning Area also has some of the most iconic scenery on the Colorado Plateau. The Planning Area is immediately adjacent to Arches and Canyonlands National Parks. More than two million visitors a year enjoy a wide variety of recreational experiences within the Planning Area. The Planning Area contains lands identified by the BLM as having outstanding visual resources, high value recreation areas, lands with wilderness characteristics, and high quality air resources. The Planning Area also includes six Areas of Critical Environmental Concern (ACECs), six Special Recreation Management Areas (SRMAs), portions of the Old Spanish Trail, and two suitable Wild and Scenic Rivers (the Colorado River and the Green River).

Table 1-1. Federal Surface Lands and Federal Mineral Estate within the Planning Area

Land status	Moab FO Acres	Monticello FO Acres	MMLPA Total Acres
BLM	579,438	203,943	783,381
State	93,971	32,310	126,281
State Parks	4,337	40	4,377
Private	17,873	14,557	32,430
Split Estate*	9,599	5,281	14,880
Total	**695,619**	**250,850**	**946,469**

*Acreage not Additive
Source: BLM Canyon Country District

The following resources and resource uses are discussed in the AMS:

- Air Resources
- Cultural Resources
- Lands with Wilderness Characteristics
- Minerals – Oil and Gas
- Minerals – Potash
- Paleontological Resources
- Recreation
- Riparian
- Soil and Water
- Special Designations: Areas of Critical Environmental Concern
- Special Designations: National Historic Trails and Backways and Byways
- Special Designations: Wild and Scenic Rivers
- Special Status Species
- Social and Economic Conditions
- Vegetation
- Visual Resource Management
- Wildlife and Fisheries

1.4 KEY FINDINGS

This section of the AMS presents key findings identified during the development of the document. Many of these findings were issues and concerns expressed by the public during public scoping and/or identified by the BLM and cooperating agencies. The Planning Area has high potential for the development of oil and gas and potash. Industry has expressed interest in the development of these resources. The Planning Area also has some of the most iconic scenery of the Colorado Plateau and is adjacent to two National Parks. Approximately 1.6 million visitors enjoy a wide variety of recreational experiences within the Planning Area. This visitation is a major contributor to local economies. In addition, the Planning Area contains important natural and cultural resources as well as lands with wilderness characteristics. The key findings of the AMS are that this area contains an abundant amount of sensitive resources that could be adversely affected by mineral development without additional stipulations. The AMS indicates that the current leasing stipulations in the 2008 Moab and Moab Resource Management Plans are insufficient in many cases to prevent adverse effects to these resources.

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CHAPTER 2—AREA PROFILE

This chapter of the Analysis of the Management Situation (AMS) provides an overview of the resources, resource uses, special designations, and social and economic features that will be addressed in the Master Leasing Plan (MLP). For each resource, this chapter characterizes the resource in terms of indications (used to assess the condition of the resource): current conditions (which describes the existing conditions of the resource); trends (which describes the direction of change in the resource between the present and some point in the past); and key features (which describes features that guide allocations and/or management direction). Resource uses and social and economic features are characterized in terms of current conditions, trends, and forecasts. Special designations are characterized in terms of current conditions. This chapter provides the bases of the affected environment section of the Environmental Impact Statement (EIS) prepared in association with the MLP.

2.1 AIR RESOURCES

The Bureau of Land Management's (BLM) air resources program includes climate and air quality. Climate includes assessment of existing climate, a qualitative description of climate change, and analysis of potential effects of climate change on BLM resources. Air quality includes air quality management, inter-agency coordination, smoke abatement for prescribed fire, and air quality impact assessment. The BLM is responsible for considering and incorporating climate and air quality into multiple-use programs, for managing the public lands in a manner which will protect air quality, and complying with applicable laws, statutes, regulations, standards, and/or implementation plans.

2.1.1 Regional Context

The Planning Area is located in the Colorado Plateau physiographic province (BLM 2002a), which is located in southeastern Utah, and is bounded by the East Tavaputs Plateau and Book Cliffs to the north, the Colorado border to the east, Harts Draw and Lisbon Valley to the south, and the Green River to the west. Elevations within the Planning Area range from 3,871 near the confluence of the Green and Colorado Rivers to 12,721 feet at the summit of Mount Peale (located in the Manti LaSal National Forest).

Like most of the Planning Area, the southeastern section experiences wide temperature variations between seasons. The climate varies widely with altitude (World Climate 2003). The average annual precipitation is 13.9 inches with higher elevations receiving more precipitation. In the higher elevations, precipitation comes in the form of snow, with large accumulations in the late fall and winter. Snowmelt in the higher elevations is generally complete by mid-to-late June. Afternoon thunderstorms, often resulting in flash flooding, are common from late spring through early fall. Summer high temperatures in the upper elevations often reach 85 °F, with lows in the 50s. Lower elevation high temperatures can reach over 100 °F. Winters are cold, with highs averaging 30 °F to 50 °F, and lows averaging 0 °F to 20 °F.

The average annual precipitation of the northern section of the Planning Area is 9.0 inches, most of which comes in the form of late spring rains and fall thunderstorms. Dry air, high elevations (4,000 to 6,000 feet), and winter snowfall combine to create a cold desert climate. Maximum summer temperatures hover in the high 90s, cooling off to the low 60s at night. Winter high temperatures are generally in the high 30s, with nighttime temperatures dipping into the low teens.

The western section of the Planning Area receives an average of 9.0 inches of precipitation a year. Most of this moisture comes in the form of melting winter snows. Dry air, high elevations (4,000 to 6,000 feet)

and winter snowfall combine to create a cold desert climate. Most precipitation falls in late summer and early autumn thunderstorms. Maximum summer temperatures in the higher elevations range from 85 °F to 90 °F; low elevation maximum summer temperatures can reach over 100 °F. Winters are cold and relatively dry, with highs around 40 °F and lows in the low to mid-teens.

The middle section of the Planning Area (near Moab) receives an average of 9.0 inches of precipitation per year, most of which comes in the form of late spring rains and fall and winter snows (See Table 2-2, Table 2-3). Maximum summer temperatures average 95.3 °F. Winter high temperatures average 45.9 °F, and lows average 20.9 °F (See Table 2-1, Table 2-3).

The southern section of the Planning Area (near Monticello, just south of the Planning Area boundary) receives an average of 15.2 inches of precipitation annually; most of this comes in late summer thunderstorms and fall snows, which can leave heavy accumulations in the higher elevations. Maximum summer temperatures average in the high 81.5 °F during the day and low 50.0 °F at night. Winter high temperatures average 37.9 °F, with nighttime temperatures averaging 16.1 °F.

Across the Planning Area, summer precipitation is often in the form of short, intermittent thunderstorms, while winter precipitation results in accumulated snow pack that infiltrates the soil and recharges the aquifers. Air temperature and precipitation data collected from 1889 through 2003 for four locations in the Planning Area are displayed in Table 2-1 and Table 2-2, (WRCC 2004). Table 2-3 displays data for Moab and Natural Bridges National Monument up to 2005 for monthly averages on temperature, precipitation, snowfall, and snow depth. Table 2-4 contains average wind speed and prevailing wind direction by month for Moab Canyonlands and Bryce Canyon National Park. Peak elevation temperature and precipitation information was not available.

Table 2-1. Temperature Data for Four Locations in the Region

Station	General Location	Elevation (Feet)	Summer Means		Winter Means		Extremes	
			High	Low	High	Low	High	Low
Thompson	Northern	6,100	90.1	60.2	40.9	17.8	110.0	-25.0
Moab	Middle	4,025	95.3	59.9	45.9	20.9	114.0	-24.0
La Sal	Southern	6,990	80.7	51.9	37.6	14.7	91	-27
Monticello	Just South of Planning Area Boundary	6,105	81.5	50.0	37.9	16.1	101	-22.0

Note: Temperature in ºF.

Table 2-2. Precipitation Data for Four Locations in the Region

Station	Mean				Annual		
	Winter	Spring	Summer	Fall	Mean	High	Low
Thompson	2.0	2.3	2.2	2.7	9.2	19.96	2.0
Moab	2.0	2.4	2.1	2.6	9.0	16.4	4.3
La Sal	2.7	2.7	3.8	3.7	12.8	24.8	6.5
Monticello	3.9	2.9	4.0	4.4	15.2	23.1	6.6

Note: Precipitation in inches.

Table 2-3. Monthly Climate Summary for Moab* and Natural Bridges National Monument**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Moab													
Ave. Max. Temp. (F)	42.4	50.8	62.1	72.1	82.2	92.5	98.1	95.2	86.6	73.4	56.9	44.4	71.4
Ave. Min. Temp. (F)	18.2	24.6	32.8	40.8	48.5	56.0	62.8	61.0	51.5	39.5	28.2	20.3	40.3
Ave. Total Precip. (in.)	0.67	0.61	0.83	0.81	0.72	0.43	0.78	0.86	0.85	1.01	0.70	0.75	9.0
Ave. Total Snowfall (in.)	3.9	1.5	0.9	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.6	2.8	9.8
Ave. Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0
Natural Bridges National Monument													
Ave. Max. Temp. (F)	40.1	44.7	52.0	61.2	72.5	83.7	89.4	86.2	77.4	64.6	49.7	40.7	63.5
Ave. Min. Temp. (F)	18.8	22.9	28.5	34.0	43.4	52.5	59.2	57.3	49.8	38.8	28.0	19.6	37.7
Ave. Total Precip. (in.)	1.01	0.83	1.16	0.83	0.72	0.46	1.33	1.56	1.33	1.38	1.01	0.91	12.5
Ave. Total Snowfall (in.)	10.6	6.0	6.0	2.7	0.2	0.0	0.0	0.0	0.0	0.7	4.2	9.6	40.0
Ave. Snow Depth (in.)	4	3	1	0	0	0	0	0	0	0	0	2	1

From Western Regional Climate Center.
*Moab (425733) (1/1/1890 to 12/31/2005)
**Natural Bridges National Monument (426053) (6/17/1965 to 12/31/2005)

Table 2-4. Average Wind Speed and Prevailing Wind Direction

Station	Average Wind Speed (MPH)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Moab-Canyonlands AP ASOS (1998-2006)	4.0	5.2	6.9	9.2	8.9	8.7	7.2	6.8	6.3	5.4	4.4	3.7	6.3
Moab - Canyonlands AP	NW	W	W	W	W	SW	SE	E	W	W	W	NW	W
Bryce Canyon AP ASOS (2000-2006)	8.0	8.5	9.0	10.4	9.6	9.8	8.2	8.0	8.7	8.2	7.9	7.5	8.6
Bryce Canyon AP, UT	W	W	W	W	W	W	W	W	W	W	W	W	W

From Western Regional Climate Center.

2.1.2 Resource Characterization

Indicators

Air pollutants addressed in this document include criteria air pollutants, hazardous air pollutants (HAPs) and sulfur and nitrogen compounds, which could contribute to visibility impairment and atmospheric deposition. State and Federal Ambient Air Quality Standards set the maximum thresholds for criteria air pollutants and the Federal Prevention of Significant Deterioration (PSD) program establishes allowable increases in a given pollutant for a particular area; these are typically Class I or Sensitive Class II Wilderness Areas.

Criteria Air Pollutants

Air quality standards for criteria pollutants have been established by the United States Environmental Protection Agency (EPA) and are identified as the National Ambient Air Quality Standards (NAAQS). Concentrations of air pollutants greater than the national standards represent a risk to human health. Criteria pollutants include carbon monoxide, nitrogen dioxide, ozone, particulate matter, sulfur dioxide, and lead, and are discussed below.

Carbon Monoxide
Carbon monoxide (CO) is a colorless, odorless gas emitted from combustion processes. Nationally and, particularly in urban areas, the majority of CO emissions to ambient air come from mobile sources. CO can cause harmful health effects by reducing oxygen delivery to the body's organs (like the heart and brain) and tissues. At extremely high levels, CO can cause death (EPA 2012).

Nitrogen Oxides
Nitrogen dioxide (NO_2) is one of a group of highly reactive gasses known as "oxides of nitrogen," or "nitrogen oxides" (NOx). Other nitrogen oxides include nitrous acid and nitric acid. While EPA's National Ambient Air Quality Standard covers this entire group of NOx, NO_2 is the component of greatest interest and the indicator for the larger group of nitrogen oxides. NO_2 forms quickly from emissions from cars, trucks and buses, power plants, and off-road equipment. In addition to contributing to the formation of ground-level ozone, and fine particle pollution, NO_2 is linked with a number of adverse effects on the respiratory system (EPA 2012).

Ozone
Ground-level ozone is a secondary pollutant. It is formed by a chemical reaction between nitrogen oxides (NOx) and volatile organic compounds (VOCs) in the presence of sunlight (photochemical oxidation). Precursor sources of NOx and VOCs include motor vehicle exhaust, industrial emissions, gasoline vapors, vegetation emissions (i.e., terpenes), wood burning, and chemical solvents. The abundant sunlight during the summer months drives the photochemical process and creates ground-level ozone; therefore, ozone is generally considered a summertime air pollutant (BLM 2012).

Ozone is a regional air quality issue because, along with its precursors, it can transport hundreds of miles from its origins, and maximum ozone levels can occur at locations many miles downwind from the sources. Primary health effects from ozone exposure range from breathing difficulty to permanent lung damage. Significant ground-level ozone also contributes to plant and ecosystem damage (BLM 2012).

Particulate Matter (PM10 AND PM2.5)
Airborne particulate matter consists of tiny coarse-mode (PM10) or fine-mode (PM2.5) particles or aerosols combined with dust, dirt, smoke, and liquid droplets. PM2.5 is derived primarily from the incomplete combustion of fuel sources and secondarily formed aerosols. PM10 is derived primarily from crushing, grinding, or abrasion of surfaces. Sources of particulate matter include industrial processes,

power plants, mobile sources (vehicle exhaust and road dust), construction activities, home heating, and fires. Particulate matter causes a variety of health and environmental impacts. Many scientific studies have linked breathing particulate matter to serious health problems, including aggravated asthma, increased respiratory symptoms (e.g., coughing), difficult or painful breathing, chronic bronchitis, decreased lung function, and premature death. Particulate matter is the major cause of reduced visibility. It can stain and damage stone and other materials, including culturally important objects, such as monuments and statues (BLM 2012).

Sulfur Dioxide

Sulfur dioxide (SO_2) is one of a group of highly reactive gasses known as "oxides of sulfur." The largest sources of SO_2 emissions are from fossil fuel combustion at power plants (73 percent) and other industrial facilities (20 percent). Smaller sources of SO_2 emissions include industrial processes such as extracting metal from ore, and the burning of high sulfur containing fuels by locomotives, large ships, and non-road equipment. SO_2 is linked with a number of adverse effects on the respiratory system (EPA 2012).

Lead

Lead (Pb) is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been from fuels in on-road motor vehicles (such as cars and trucks) and industrial sources. As a result of EPA's regulatory efforts to remove lead from on-road motor vehicle gasoline, emissions of lead from the transportation sector dramatically declined by 95 percent between 1980 and 1999, and levels of lead in the air decreased by 94 percent between 1980 and 1999. Today, the highest levels of lead in air are usually found near lead smelters. The major sources of lead emissions to the air today are ore and metals processing and piston-engine aircraft operating on leaded aviation gasoline (EPA 2012).

National Ambient Air Quality Standards

EPA has set National Ambient Air Quality Standards for criteria pollutants, which are listed in Table 2-5 below, and include both Primary and Secondary Standards:

- Primary standards provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly.

- Secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

Units of measure for the standards are parts per million (ppm) by volume, parts per billion (ppb) by volume, and micrograms per cubic meter of air ($\mu g/m^3$).

Table 2-5. National Ambient Air Quality Standards (as of October 2011)

Pollutant [final rule cite]	Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide [76 FR 54294, Aug 31, 2011]	Primary	8-hour	9 ppm	Not to be exceeded more than once per year
		1-hour	35 ppm	
Lead [73 FR 66964, Nov 12, 2008]	Primary and secondary	Rolling 3 month average	0.15 $\mu g/m^3$ (1)	Not to be exceeded
Nitrogen Dioxide [75 FR 6474, Feb 9, 2010] [61 FR 52852, Oct 8, 1996]	Primary	1-hour	100 ppb	98th percentile, averaged over 3 years
	Primary and secondary	Annual	53 ppb (2)	Annual Mean

Pollutant [final rule cite]		Primary/ Secondary	Averaging Time	Level	Form
Ozone [73 FR 16436, Mar 27, 2008]		Primary and secondary	8-hour	0.075 ppm (3)	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle Pollution	$PM_{2.5}$	Primary and secondary	Annual	15 µg/m^3	Annual mean, averaged over 3 years
			24-hour	35 µg/m^3	98th percentile, averaged over 3 years
	PM_{10}	Primary and secondary	24-hour	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide [75 FR 35520, Jun 22, 2010] [38 FR 25678, Sept 14, 1973]		Primary	1-hour	75 ppb (4)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

[1] Final rule signed October 15, 2008. The 1978 lead standard (1.5 µg/m3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
[2] The official level of the annual NO2 standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard.
[3] Final Rule signed March 12, 2008. The 1997 ozone standard (0.08 ppm, annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years) and related implementation rules remain in place. In 1997, EPA revoked the 1-hour ozone standard (0.12 ppm, not to be exceeded more than once per year) in all areas, although some areas have continued obligations under that standard ("anti-backsliding"). The 1-hour ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is less than or equal to 1.
[4] Final Rule signed June 2, 2010. The 1971 annual and 24-hour SO2 standards were revoked in that same rulemaking. However, these standards remain in effect until one year after an area is designated for the 2010 standard, except in areas designated nonattainment for the 1971 standards, where the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standard are approved.

Hazardous Air Pollutants

HAPs are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental impacts. The EPA has classified 187 air pollutants as HAPs. Examples of listed HAPs associated with the oil and gas industry include formaldehyde, benzene, toluene, ethyl benzene, isomers of xylene (BTEX) compounds, and normal-hexane (n-hexane).

The CAA requires the EPA to regulate emissions of toxic air pollutants from a published list of industrial sources referred to as "source categories." The EPA has developed a list of source categories that must meet control technology requirements for these toxic air pollutants. Under Section 112(d) of the CAA, the EPA is required to develop regulations establishing national emission standards for hazardous air pollutants (NESHAP) for all industries that emit one or more of the pollutants in major source quantities. These standards are established to reflect the maximum degree of reduction in HAP emissions through application of maximum achievable control technology (MACT). Source categories for which MACT standards have been implemented include oil and natural gas production and natural gas transmission and storage.

Although HAPs do not have federal air quality standards (exposure thresholds do exist), some states have established "significance thresholds" to evaluate human exposure for potential chronic inhalation illness and cancer risks. There are no applicable federal or State of Utah ambient air quality standards for

assessing potential HAP impacts to human health, and monitored background concentrations are rarely available. Therefore, reference concentrations (RfC) for chronic inhalation exposures and reference exposure levels (REL) for acute inhalation exposures are applied as significance criteria. Table 2-6 below provides the RfCs and RELs. RfCs represent an estimate of the continuous (i.e., annual average) inhalation exposure rate to the human population (including sensitive subgroups such as children and the elderly) without an appreciable risk of harmful effects. The RELs represent the acute (i.e., 1-hour average) concentration at or below which no adverse health effects are expected. Both the RfC and REL guideline values are for non-cancer effects.

Table 2-6. HAP Reference Exposure Levels and Reference Concentrations (RfCs)

HAP	Reference Exposure Level (REL 1-hour Average) (µg/m^3)	Reference Concentration[a] (RfC Annual Average) (µg/m^3)
Benzene	1,300 [b, c]	30
	160,000 [d]	-
Toluene	37,000 [b]	5,000
Ethyl benzene	350,000 [d]	1,000
Xylenes	22,000 [b]	100
n-Hexane	390,000 [d]	700
Formaldehyde	94 [b]	9.8

[a] EPA Air Toxics Database, Table 1 (EPA 2007a)
[b] EPA Air Toxics Database, Table 2 (EPA 2007a) REL from California EPA (most conservative level in Table 2)
[c] REL for benzene is for a 6-hour average
[d] Immediately Dangerous to Life or Health/10, EPA Air Toxics Database, Table 2 (EPA 2007a) because no REL is available

Prevention of Significant Deterioration

The Prevention of Significant Deterioration (PSD) program of the Clean Air Act (CAA) ensures that air quality in areas with clean air does not significantly deteriorate, while maintaining an allowable margin for future industrial growth. Under the PSD provisions of the CAA, incremental increases of specific pollutant concentrations are limited above a legally defined baseline level (Table 2-7). Many national parks and wilderness areas are designated as PSD Class I. The PSD program protects air quality within Class I areas by allowing only slight incremental increases in pollutant concentrations. Areas of Utah not designated as PSD Class I are classified as Class II. For Class II areas, greater incremental increases in ambient pollutant concentrations are allowed as a result of controlled growth.

Table 2-7. PSD Classifications

Class	Maximum Allowable Increase (micrograms per cubic meter)*							
	Particulate matter				Sulfur dioxide			Nitrogen dioxide
	PM_{10} Annual Arithmetic Mean	PM_{10} 24-hour Maximum	$PM_{2.5}$ Annual Arithmetic Mean	$PM_{2.5}$ 24-hour Maximum	Annual Arithmetic Mean	24-hour maximum	3-hr maximum	Annual Arithmetic Mean
Class I	4	8	1	2	2	5	25	2.5
Class II	17	30	4	8	20	91	512	25

Class	Maximum Allowable Increase (micrograms per cubic meter)*							
	Particulate matter				Sulfur dioxide			Nitrogen dioxide
	PM_{10} Annual Arithmetic Mean	PM_{10} 24-hour Maximum	$PM_{2.5}$ Annual Arithmetic Mean	$PM_{2.5}$ 24-hour Maximum	Annual Arithmetic Mean	24-hour maximum	3-hr maximum	Annual Arithmetic Mean
Class III	34	60	8	18	40	182	700	50

*For any period other than an annual period, the applicable maximum allowable increase may be exceeded during one such period per year at any one location.

Visibility

Visibility is "the clarity with which distant objects are perceived" (EPA 2001) and is affected by pollutant concentrations, plume impairment, regional haze, relative humidity, sunlight, and cloud characteristics. Visibility can be expressed in terms of deciviews, a measure for describing perceived changes in visibility. One deciview is defined as a change in visibility that is just perceptible to an average person, about 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).

A typical visual range without any manmade air pollutants would be about 140 miles in the Western states (EPA 2001). Aerosols (small particles made of solid and/or liquid molecules dispersed in the air) are the pollutants that most often affect visibility in the Class I areas. Five key contributors to visibility impairments are sulfate, nitrate, organic carbon, elemental carbon, and crustal materials.

The 1977 CAA included legislation to prevent future and remedy existing visibility impairment in Class I areas. In 1985, the EPA established a collaborative monitoring program called the Interagency Monitoring of Protected Visual Environments (IMPROVE) to monitor visibility in Class I areas. The IMPROVE network has operated a monitor in the Canyonlands National Park, just west of the Planning Area boundary since 1988.

Atmospheric Deposition

Atmospheric deposition refers to the processes by which air pollutants are removed from the atmosphere and deposited on terrestrial and aquatic ecosystems, and is reported as the mass of material deposited on an area (kilogram per hectare) per year. Atmospheric deposition can cause acidification of lakes and streams. One expression of lake acidification is change in acid neutralizing capacity (ANC), the lake's capacity to resist acidification from atmospheric deposition. Acid neutralizing capacity is expressed in units of micro-equivalents per liter (μeq/l).

Wet deposition refers to air pollutants deposited by precipitation, such as rain and snow. One expression of wet deposition is precipitation pH, a measure of the acidity or alkalinity of the precipitation. There are five National Atmospheric Deposition Program (NADP) stations in Utah: Logan, Murphy Ridge, Green River, Bryce Canyon National Park and Canyonlands National Park. The NADP stations in Bryce Canyon National Park and Canyonlands National Park have assessed precipitation chemistry since 1985 and 1997.

Dry deposition refers to the transfer of airborne gaseous and particulate material from the atmosphere to the Earth's surface. The Clean Air Status and Trends network (CASTNet) has measured dry deposition of ozone (O_3), sulfur dioxide (SO_2), nitric acid (HNO_3), sulfate (SO_4), nitrate (NO_3), and ammonium (NH_4), in the United States since the late 1980s. There is one CASTNet station in Utah at Canyonlands National Park.

Current Condition

Climate

Prevailing wind speeds for the Planning Area rarely exceed 5 meters per second, and vary seasonally in direction. Wind direction closer towards Monticello is highly influenced by the local terrain; in the city of Monticello, located on the flanks of the Abajo Mountains, the winds predominately blow from the south or southwest. Wind patterns in the area vary widely by seasons and local terrain, therefore dispersion and transport of pollutants are also variable in this region, depending on the location.

Due to prevailing wind direction in the Planning Area, emission sources located in Price, Utah, represent a very minor potential for air quality impacts to the northern portion of the Planning Area in the spring only; emission sources in Page, Arizona, and Las Vegas, Nevada, represent essentially no potential for air quality impacts to the Planning Area as they are located downwind nearly year-round.

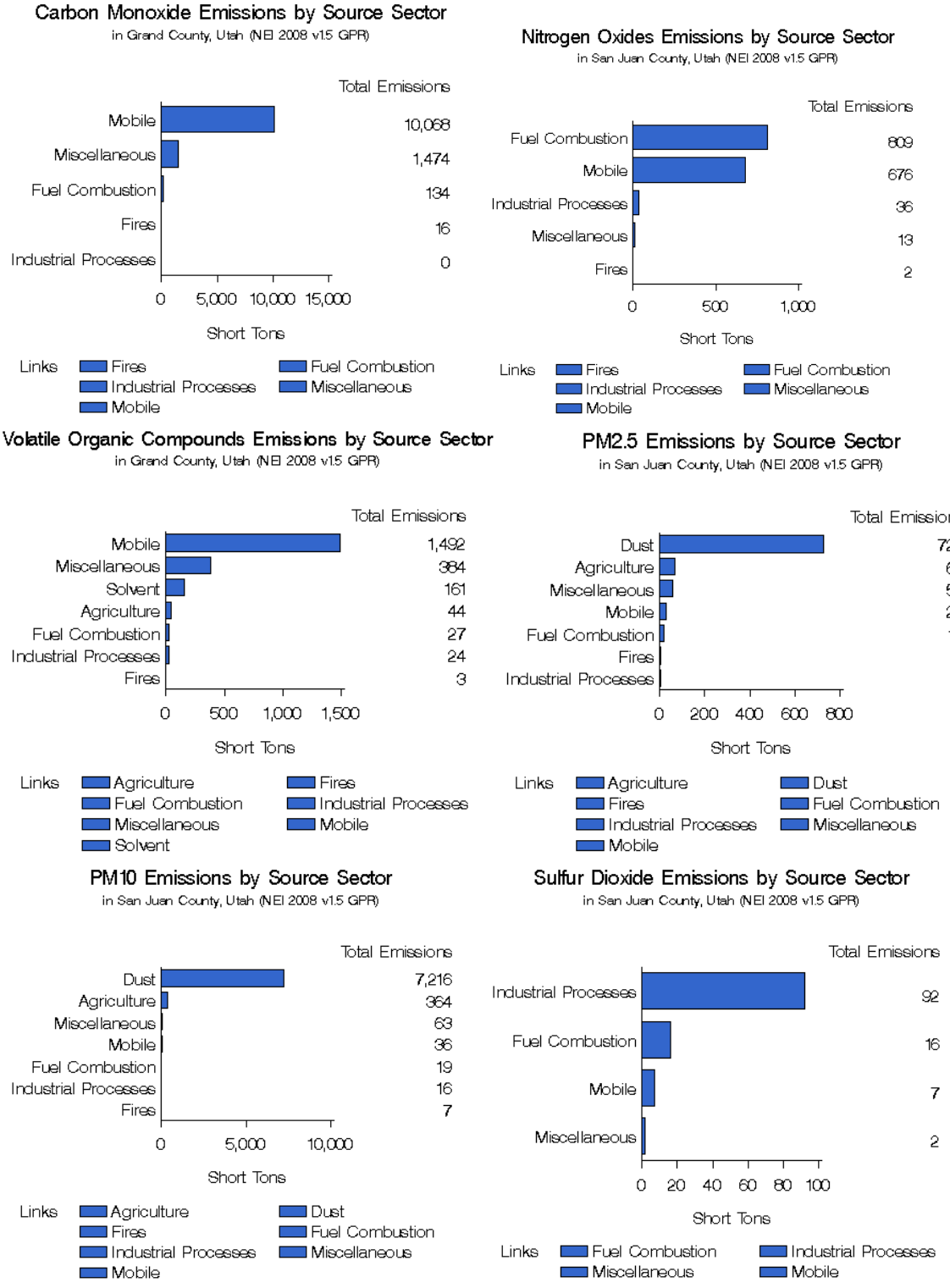
Current air quality in the Planning Area, with the exception of ozone, is consistently below the NAAQS. Observed ozone concentrations at Canyonlands National Park are less than, but near the NAAQS.

Air Quality

In 2005, Canyonlands National Park did not meet a National Park Service internal air quality goal (called Ia3), which incorporates visibility, atmospheric deposition, and ozone concentration targets.

Additional concerns focus on mobile source emissions specific to visitation and traffic within the Planning Area. Current Easter weekend visitation in the Moab area is greater than 20,000 visitors. Most recreational visitors engage in motorized activities that represent emission sources in addition to the highway vehicles utilized for transportation. There are more than two million visitors annually to the Planning Area.

Figure 2-1. Various Emissions by Source Sector



Prescribed fire and naturally caused fires also present a concern to air quality. Prescribed burning is a useful tool for resource management and may be used to achieve a variety of objectives such as restoring a fire-dependent ecosystem, enhancing forage for cattle, improving wildlife habitat, preparing sites for reforestation, or reducing hazardous fuel loads. Fire, for any of these reasons, will produce smoke and other air pollutants. Some short-term air pollutant releases are necessary to achieve the many benefits of prescribed burning. Short-term effects on air quality from prescribed burns include a general increase in particulate matter, CO_2, and ozone precursor emissions. Land managers recognize that smoke management is critical to avoid air quality intrusions over sensitive areas or visibility problems. Vegetation management is an active part of fire management techniques and long-term effects of prescribed burning include a reduction in particulate matter, CO_2 and ozone precursor emissions specific to wildfire in unmanaged areas. As a result of careful management, there is usually less smoke from a prescribed fire than from a wildfire burning over the same area.

Particulate Matter

The Planning Area has been experiencing drought for much of the last five years, with extreme low water conditions manifest during the summer of 2002, when the Palmer Drought Severity Index (PDSI) reached near-record severity based on the last 100 years of instrumental data (NCDC 2004). The low water conditions may increase of wind-blown fugitive dust and associated particulates in the Planning Area and adjacent areas.

Trends

Air Quality

Regional air quality is influenced by a combination of factors including climate, meteorology, the magnitude and spatial distribution of local and regional air pollution sources, and the chemical properties of emitted pollutants. Within the lower atmosphere, regional and local scale air masses interact with regional topography to influence atmospheric dispersion and transport of pollutants.

The BLM and other federal agencies have collected data near the Planning Area related to pollution concentrations, visibility, atmospheric deposition, and HAPs. Trends data is provided for each of these areas below.

Pollutants of Concern

The Canyon County District has existing sources of air pollution that emit ozone precursor gases and particulate matter; the two primary pollutants of concern in the Planning Area. Ozone is a regional problem typical in the western states as precursor gases (nitrogen oxides and volatile organic compounds) from forest fires, transport from shipping lanes, electric power generation, oil and gas production, and a conglomerate of other sources combine under certain meteorological conditions to form ozone. Particulate matter is another issue during dust storms or when kicked up from other activities in this dry region and is the major contributor to the Particulate Matter issue as shown in Figure 2-1.

Data collected from a recent assessment of air quality in National Parks around the country found that ozone concentrations have remained under the NAAQS and are similar across the entire western region. This data is presented in Table 2-8 and Table 2-9, below.

Table 2-8. Monitoring Locations with 3-Year Average 4th-Highest 8-Hour Ozone Concentration Greater Than or Equal to 60 ppb (2008)

Park	3-Year Average 4th-Highest 8-Hour Ozone Concentration (ppb)
Canyonlands National Park	71

Park	3-Year Average 4th-Highest 8-Hour Ozone Concentration (ppb)
Grand Canyon National Park	70
Great Basin National Park	72
Mesa Verde National Park	71
Yellowstone National Park	66
Zion National Park	71

National Park Service, Air Quality in National Parks, 2009 Annual Performance and Progress Report.

Table 2-9. Long-term Trends in Annual 4th-Highest 8-Hour Daily Maximum Ozone Concentration (2008)

Park	Slope (ppb/year)	P-value	Number of Valid Years	First Year of Data	Last Year of Data
Canyonlands National Park	0.32	0.18	16	1993	2008
Grand Canyon National Park	0.00	0.48	16	1993	2008
Great Basin National Park	0.17	0.22	15	1994	2008
Mesa Verde National Park	0.50	0.04[(a)]	14	1994	2008
Yellowstone National Park	-0.05	0.27	12	1997	2008

(a) Mesa Verde Degrading air quality trend, statistically significant ($p \leq 0.05$))
National Park Service, Air Quality in National Parks, 2009 Annual Performance and Progress Report.

The UDEQ has indicated that ozone concentrations in Class I areas of the western states have shown increases in the past decade and are approaching the NAAQS level (Personal communication between Brock LeBaron, UDEQ, and Trinity Consultants, August 8, 2003). Although the exact sources contributing to the high ozone concentrations have not been verified at this time, studies indicate that regional oil and gas development activities may contribute to the rise in ozone concentrations in production areas (Katzenstein et al. 2003).

Visibility

IMPROVE monitoring data indicates the most visibility-impaired days in Canyonlands National Park exhibit visual distances between 61 and 80 miles and show improvements over the decade of 1998 to 2008 of approximately 35 percent. The mid-range days have visual distances of 78 to 109 miles and show no significant change. The least-impaired days have visibility ranges from 107 to 144 and also demonstrate improvements over the decade of approximately 25 percent (EPA 2003c).

The visibility trend data from 1990 to 2008 are available from EPA for the Canyonlands National Park. A more recent assessment of visibility in the Canyonlands National Park indicates that the improvement trend in visibility has continued through 2008. While some visibility impairments are the result of natural sources such as windblown dust and soot from wildfires, which cannot be controlled; manmade sources of pollution can also impair visibility. These include motor vehicles (organic carbon), electric utility and industrial fuel burning (sulfates and particulate), and manufacturing operations (sulfates and fine particulate matter). Visibility in Canyonlands National Park is most influenced by sulfates, fine particulate matter (i.e., dust), and organic carbon. The visibility improvements seen over the past decade are the result of implementing state and federal stationary and mobile source regulations.

Table 2-10 below, provides long-term trends in annual deciview on clearest and haziest days. All parks indicated a statistically significant improving air quality trend on the clearest days (p </= 0.05), and Canyonlands also indicated an improving air quality trend on the haziest days.

Table 2-10. Long-term Trends in Annual Deciview (dv) on Clearest and Haziest Days

Park	Clearest Days		Haziest Days		Number of Valid Years	First Year of Data	Last Year of Data
	Slope (dv/year)	P-value	Slope (dv/year)	P-value			
Bryce Canyon National Park	-0.10	<0.01	0.03	0.11	18	1990	2008
Canyonlands National Park	-0.16	<0.01	-0.10	<0.01	19	1990	2008
Great Basin National Park	-0.15	<0.01	0.04	0.23	16	1993	2008
Mesa Verde National Park	-0.08	<0.01	0.02	0.44	18	1989	2008
Yellowstone National Park	-0.10	<0.01	0.16	0.22	11	1997	2008

National Park Service, Air Quality in National Parks, 2009 Annual Performance and Progress Report.

Atmospheric Deposition

Total deposition refers to the sum of airborne material transferred to the Earth's surface by both wet and dry deposition. Total nitrogen deposition is calculated by summing the nitrogen portion of wet and dry deposition of nitrogen compounds, and total sulfur deposition is calculated by summing the sulfur portion of wet and dry deposition of sulfur compounds. Total deposition has been measured at Canyonlands National Park from 1995 through 2009 (NPS 2010). Total nitrogen deposition has ranged from 1.7 to 2.2 kg/hectare-year since 1996. Total nitrogen deposition of 3 kg/hectare-year represents the total pollution loading where acidification is unlikely and "below which a land manager can recommend a permit be issued for a new source unless data are available to indicate otherwise" (Fox 1989).

Table 2-11 below provides long-term trends in wet-deposition concentration. Bryce Canyon and Canyonlands National Parks indicated a statistically significant degrading air quality trend for ammonium concentrations, while Bryce Canyon, Grand Canyon, Great Basin, and Mesa Verde all indicated a statistically significant improving air quality trend for sulfate concentrations.

Table 2-11. Long-term Trends in Wet-deposition Concentration

Park	Ammonium		Nitrate		Sulfate		Number of Valid Years	First Year of Data	Last Year of Data
	Slope (meq/ liter/yr)	P-value	Slope (meq/ liter/yr)	p-value	Slope (meq/ liter/yr)	P-value			
Bryce Canyon National Park	0.33	0.04	-0.13	0.14	-0.42	<0.01	14	1989	2008
Canyonlands National Park	0.64	0.02	0.05	0.43	-0.05	0.36	10	1998	2008
Grand Canyon National Park	0.15	0.10	-0.03	0.45	-0.18	0.05	16	1989	2008
Great Basin National Park	0.13	0.30	-0.24	0.08	-0.26	<0.01	13	1990	2008

Park	Ammonium		Nitrate		Sulfate		Number of Valid Years	First Year of Data	Last Year of Data
	Slope (meq/ liter/yr)	P-value	Slope (meq/ liter/yr)	p-value	Slope (meq/ liter/yr)	P-value			
Mesa Verde National Park	0.16	0.05	0.06	0.31	-0.58	<0.01	19	1990	2008
Yellowstone National Park	0.20	<0.01	-0.00	0.45	-0.12	0.07	19	1989	2008

National Park Service, Air Quality in National Parks, 2009 Annual Performance and Progress Report.

Hazardous Air Pollutants

Existing sources of HAPs within the Planning Area include (1) fossil fuel combustion that emits HAPs, such as formaldehyde, and (2) oil and gas operations that emit VOCs and may emit hydrogen sulfide (H_2S).

Climate

Ongoing scientific research has identified the potential impacts of Greenhouse Gas (GHG) emissions (including CO_2; methane [CH_4]; nitrous oxide [N_2O]; water vapor; and several trace gasses) on global climate. Through complex interactions at regional and global scales, these GHG emissions cause a net warming effect of the atmosphere (which makes surface temperatures suitable for life on Earth), 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), recent industrialization and burning of fossil carbon sources may have caused CO_2 concentrations to increase dramatically, and are likely to contribute to overall climatic changes, typically referred to as global warming. Increasing CO_2 concentrations may also lead to preferential fertilization and growth of specific plant species.

Several factors affect climate change, including but not limited to GHGs, land use management practices, and the albedo effect. GHGs are produced and emitted by various sources during phases of oil and gas exploration, well development, and production. The primary sources of GHGs associated with oil and gas exploration and production are CO_2, N_2O, and CH_4. In addition, VOCs are a typical source of emissions associated with oil and gas exploration and production. Under specific environmental conditions, N_2O and VOCs form ozone, which also is considered a GHG.

On October 30, 2009, the EPA issued the final mandatory reporting rule for major sources of GHG emissions. The rule requires a wide range of sources and source groups to record and report selected GHG emissions, including CO_2, CH_4, N_2O, and some halogenated compounds.

On December 31, 2010, a rule (Subpart W) went into effect to address natural gas systems and natural gas transmission source groups, among other things. The final amended rule (Subpart W) specifically identified monitoring and reporting requirements for oil and natural gas systems. The oil and natural gas source category includes on-shore natural gas processing facilities and on-shore natural gas transmission compression facilities, which are applicable components of the proposed project. Combustion units associated with these processes also are included as part of the separate final rule. The EPA final rule concerning mandatory reporting of GHGs does not require any controls or establish any standards related to GHG emissions or impacts.

Additionally, in June of 2010, the EPA finalized the Greenhouse Gas Tailoring Rule. The rule outlines the time frame and the applicability criteria that determine which stationary sources and modification projects

become subject to permitting requirements for GHG emissions under the CAA's PSD and Title V programs.

Global mean surface temperatures increased nearly 1.8 °F from 1890 to 2006. Models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Northern latitudes (above 24 °N) have exhibited temperature increases of nearly 2.1 °F since 1900, with a nearly 1.8 °F increase since 1970. Without additional meteorological monitoring systems, it is difficult to determine the spatial and temporal variability and change of climatic conditions, but increasing concentrations of GHGs are likely to accelerate the rate of climate change.

Ongoing scientific research has identified the potential impacts of anthropogenic (manmade) GHG emissions and changes in biological carbon sequestration due to land management activities for a global climate. Through complex interactions on a regional and global scale, these GHG emissions and net losses of biological carbon sinks 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, recent industrialization and burning of fossil carbon sources have caused CO_2(e) concentrations to increase dramatically, and are likely to contribute to overall global climatic changes. The Intergovernmental Panel on Climate Change (IPCC) recently concluded that warming of the climate system is unequivocal, and most of the observed increase in globally average temperatures since the mid-twentieth century is very likely due to the observed increase in anthropogenic GHG concentrations (IPCC 2007a).

In 2010, the Council on Environmental Quality (CEQ) released new draft guidance to outline considerations for federal agencies to evaluate climate GHG emissions and climate change issues under NEPA. Under this draft guidance, an agency should quantify and disclose its estimate of the expected, annual direct and indirect GHG emissions if the agency anticipates that a proposed federal action would be reasonably anticipated to emit greenhouse gases into the atmosphere in quantities that may be "meaningful." Specifically, where a proposed action is anticipated to cause direct, annual emissions of 25,000 metric tons or more of carbon dioxide (CO2)-equivalent GHG emissions, a quantitative and qualitative assessment is required together with the consideration of mitigation measures and reasonable alternatives to reduce greenhouse gas emissions.

Forecasts

Air Quality

Currently, air quality is good within the Planning Area; however, because the EPA and Utah DEQ are continually reassessing air quality standards, compliance may be harder to achieve in the future, thereby making constant and effective planning and management for the control of specific project pollutant emissions more challenging.

Climate

Potential impacts to air quality due to climate change, however, are likely to be varied. Several activities occur within the Planning Area that may generate GHG emissions. Oil and gas development, large fires, and recreation activities using combustion engines, can potentially generate CO2 and CH4. Per Secretarial Order No. 322, BLM is to "consider and analyze potential climate change impacts when undertaking long-range planning exercises, setting priorities for scientific research and investigations, and/or when making major decisions affecting United States Department of the Interior (DOI) resources."

In 2001, the IPCC projected that by the year 2100, global average surface temperatures could increase by 2.5 °F to 10.4 °F above 1990 levels. The National Academy of Sciences has confirmed these projections,

but also has indicated that there are uncertainties regarding how climate change may affect different regions. Computer model predictions indicate that increases in temperature would not be equally distributed, but are likely to be accentuated at higher latitudes. Warming during the winter months is expected to be greater than during the summer, and increases in daily minimum temperatures are more likely than increases in daily maximum temperatures. Although large-scale spatial shifts in precipitation distribution may occur, these changes are more uncertain and difficult to predict (National Academy of Sciences 2010).

An expert assessment included in the IPCC Fourth Assessment report, *Climate Change 2007*, based on the combination of available constraints from observations and the strength of known feedbacks simulated in the models used to produce the climate change projections, indicates that the equilibrium global mean surface air temperature (SAT) warming for a doubling of atmospheric carbon dioxide (CO_2), or equilibrium climate sensitivity, is *likely* to lie in the range 2 °C to 4.5 °C, with an expected value of about 3 °C (IPCC 2007b). Equilibrium climate sensitivity is *very likely* larger than 1.5 °C. For fundamental physical reasons, as well as data limitations, values substantially higher than 4.5 °C still cannot be excluded, but agreement with observations and proxy data is generally worse for those high values than for values in the 2 °C to 4.5 °C range. The transient climate response (TCR), defined as the globally averaged SAT change at the time of CO_2 doubling in the 1 percent yr^{-1}transient CO_2 increase experiment) is better constrained than equilibrium climate sensitivity. The TCR is *very likely* larger than 1 °C and *very unlikely* greater than 3°C based on climate models, in agreement with constraints from the observed surface warming. (http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch10s10-es-1-mean-temperature.html).

The analysis of the Regional Climate Impacts prepared by the United States Global Change Research Program (USGCRP 2009) suggests that recent warming in the region was among the most rapid nationally. The USGCRP concludes that this warming is causing decline in spring snowpack and reducing flow in the Colorado River. Its projections of future climate change indicate that further increased warming will reduce precipitation, which in turn will strain regional water supplies, increase the risk of wildfires and invasive species, and degrade recreational opportunities.

Past records and future projections predict an overall increase in regional temperatures that include the development area. As has been observed at many sites to date, the observed increase is largely the result of the warmer nights, and effectively higher average daily minimum temperatures at many of the sites in the region. The USGCRP (2009) projects a region-wide decrease in precipitation, although with substantial variability in inter-annual conditions. For eastern Utah, the projections range from an approximately 5 percent decrease in annual precipitation to decreases as high as 40 percent of annual precipitation.

Key Features

Key features for air quality are areas that have been designated as Class I or Class II under the PSD program. There are two areas that have been designated as PSD Class I areas; all are national parks and are under the administration of the National Park Service (NPS). These areas are Arches National Park, and Canyonlands National Park.

2.2 CULTURAL RESOURCES

Cultural resources are any prehistoric or historic district, site, building, structure, or object considered important to a culture, subculture, or community for scientific, traditional, religious, or other purposes. Cultural resources include archeological resources, historic architectural and engineering resources, and traditional resources. Archeological resources are areas where prehistoric or historic activity measurably

altered the earth or where deposits of physical remains (e.g., arrowheads, pottery, bottles) are discovered. Prehistoric cultural resources are those materials deposited or left behind prior to the entry of non-American Indian (i.e. European) explorers and settlers into an area. Historic cultural resources are those materials deposited or left behind after the European presence was permanently established. Architectural and engineering resources include standing buildings, districts, bridges, dams, and other structures of historic or aesthetic value. Traditional resources can include archeological resources, structures, topographic features, habitats, plants, wildlife, and minerals that Native Americans or other groups consider essential for the preservation of traditional culture.

Certain areas of the landscapes have particularly high densities of cultural resources and have been designated as Areas of Critical Environmental Concern (ACECs) with cultural values. Cultural resources also include places identified by traditional groups (e.g., Native American tribes) as sacred or otherwise important to the maintenance of group identity, even if no physical manifestations of past activities are present at that location. These are identified as Traditional Values, and include locations referred to as Traditional Cultural Properties (TCPs).

2.2.1 Regional Context

The region that encompasses the Planning Area has a wide variety of environmental settings and resources that have long been used by humans. The Planning Area encompasses a large and diverse assemblage of prehistoric archeological sites, historic archeological sites and localities, and locations of traditional religious and cultural importance to various Indian tribes. For BLM management purposes, these remains take the form of sites, artifacts, buildings, structures, ruins, features, and natural landscapes with particular cultural importance. With a few exceptions, these remains must be at least 50 years old. In the case of natural landscapes, the period of traditional use of that landscape also must be at least 50 years old to be considered significant or eligible for/listed on the National Register of Historic Places (NRHP).

Occupation of southeastern Utah is divided into several distinct and temporally bounded time periods. The creation of distinct time periods has, in large part, been driven by differences in artifact assemblages through time. In many instances, this type of fine-scale division is informative. As new sites and artifacts are routinely being discovered, however, these divisions are susceptible to significant revision. The dates provided here serve only as general timeframe markers; any new dating technology advances or new discoveries will likely alter these date ranges. Nevertheless, five broad time periods will serve as temporal foundations for explaining human behavior in this area. An outline of these five periods and their associated behavioral trends is detailed below. These periods are defined temporally, behaviorally, and technologically. For additional information, a detailed overview of the prehistory and history of the region included in the Planning Area is presented in *Grand Resource Area Class I Cultural Resource Inventory* (Horn et al. 1994).

The basic periods include the Paleoindian, Archaic, Formative, and Late Prehistoric Stages, and the Historic period. The Historic period includes a period of Euro-American expansion into the region and contact with, and conflict between, Native Americans and Euro-Americans, followed by development of the area, including farming, ranching, and mining.

Prehistoric Culture History

Paleoindian Stage

The Paleoindian Stage (ca. 10,000 to 7,800 B.C.) is the earliest stage of culture history evident in the region and represents the adaptation to late Pleistocene environments. It is characterized by small groups of relatively mobile hunting and gathering peoples who used most sites only briefly. The Paleoindian

toolkit typically included large, lanceolate (Clovis, Folsom, and Plano) projectile points (Schroedl 1991), spurred end scrapers, gravers and borers, and crescents (Frison 1978:78; Schroedl 1991). This stage is further split into three traditions including the Clovis (10,000 to 9,000 B.C.), Folsom (9,000 to 8,300 B.C.), and Plano (8,300 to 7,800 B.C.).

Archaic Stage

Late in the Pleistocene Epoch, the climate became warmer and drier which resulted in the expansion of desert vegetation zones and a concurrent retreat of cooler and moister vegetation zones to higher elevations. Changes in the climate caused a reduction in the distribution of Pleistocene wildlife, in some cases to the extinction of animals that were typically adapted to the cooler, moist climates. With changing climates came the expansion and modification of artifact assemblages as people adapted to a wider, more dispersed wildlife and plant resource base. The artifact assemblage associated with the Archaic Stage (7,800 B.C. to 500 B.C.) is typified as including large projectile points with side and corner notching and stemmed points, such as Humboldt Concave Base, Pinto series, McKean, Northern Side-notched, Sudden Side-notched, Mallory Side-notched, Gatecliff Contracting-stem, and possibly San Rafael Stemmed varieties (Holmer 1978), as well as basketry, cordage, netting, matting, fur clothing, tumplines as carrying devices, sandals, and atlatl darts.

Formative Stage

The Formative Stage (500 B.C. to ca. A.D. 1200) is characterized by the reliance on domesticated corn and squash, an increasing tendency for people to establish long-term village sites rather than continually moving about the landscape, substantial habitation structures, ceramics, and bow and arrow technology in the latter traditions. Two major traditions occur in the region: the Fremont tradition north of the Colorado River and the Anasazi tradition to the south of the Colorado River. A third, the Gateway Tradition, has been used by a few archeologists to identify archeological sites that contain both Fremont and Anasazi manifestations (Horn et al. 1994:123).

The Fremont adapted to the changing environment by using hunting and gathering subsistence styles of survival along with some horticultural farming. The variability of Fremont sites have caused archeologists to classify Fremont manifestations as regional variants characterized by differing settlement and subsistence strategies. Those variants associated with the Planning Area include the Uinta Basin and San Rafael. Generally, the artifact assemblage associated with the Fremont includes gray, coiled pottery types distinguished by specific temper materials and decorative styles (Madsen 1977); one-rod-and-bundle basketry; leather moccasins constructed from the hock of a deer or mountain sheep; and ornate clay figurines with trapezoidal bodies (Horn et al. 1994:213).

The Anasazi people, whose homeland centered in the Four Corners area of the American Southwest, have been identified as a sedentary, horticultural based group whose focus on corn, beans, and squash encompassed the later period. The Anasazi tradition has been subdivided into periods (from earliest to most recent): Basketmaker II, Basketmaker III, Pueblo I, Pueblo II, and Pueblo III. The Basketmaker II period marked the transition from a hunting and gathering lifestyle to a more sedentary occupation of regional areas. In the Planning Area, sites associated with the Basketmaker II tradition have been documented as well as sites linked to the Puebloan traditions. Numerous storage cists, masonry structures, pit structures with storage features, and lookout structures have been recorded in addition to a range of pottery types indicative of the Anasazi time period; however, the documented artifacts do not provide a continuous spectrum of use. The lack of artifact assemblage continuity and lack of documented kilns may be more indicative of trading networks than of actual occupation by Anasazi groups.

Late Prehistoric Stage

During the Late Prehistoric Stage, it is commonly believed that the Utes were the primary occupants of eastern Utah and western Colorado (Horn et al. 1994:130). Linguistic and archeological evidence (especially ceramics) indicate that the Utes immigrated to the region by approximately A.D. 1100. Other evidence characteristic of Ute occupation includes sparse lithic scatters with low quantities of crude brownware ceramics, rock art, and occasional wickiups. In addition to the fingertip-impressed brownware ceramics, other diagnostic artifacts include locally designated Uncompahgre Brown Water and Desert Side-notched and Cottonwood triangular projectile points (Buckles 1971). As Utes interacted more with local Europeans during the late seventeenth and eighteenth centuries, varying quantities of Euro-American artifacts, such as sheet metal cone tinklers, tin cans, metal and glass projectile points, weaponry, and equestrian tack became part of the artifact assemblage.

The Navajo homeland is located south of the Planning Area, in the southeastern corner of Utah, northeastern Arizona, and in northwestern New Mexico (Brugge 1983). Although the Navajo homeland lies south of the Planning Area, historic records mention Navajo inhabitants farming parts of Spanish Valley in 1855. Based on additional references, these farmers may have resided in Spanish Valley until the 1870s.

The Hopi Tribe also claims traditional affiliation with the Grand and San Juan County area. In addition to ceramics, Hopi elders have identified rock art panels that contain Puebloan motifs. Although there is a paucity of Hopi-related ceramics, the tribe maintains ancestral ties to the Planning Area.

Historic Cultural History to circa 1950

Historic cultural resources in the Grand and San Juan County area can be classified into one or more themes: Indian/White Interactions, Spanish Exploration, Fur Trade and Early Indian Themes, U.S. Government Exploration and Survey Expeditions, Initial Euro American Settlement, Ranching, Farming, Transportation/Railroads, Communication, Towns and Settlements, Mining, Mineral Exploration, Mineral Processing, Water Control, Speculative Ventures, Civilian Conservation Corps, Military, Federal Land Management, Antisocial Activities, and Ethnic Diversity (Horn et al. 1994). For a comprehensive discussion of the historic period in the region, see Horn et al. (1994).

Numic-speaking Utes primarily occupied the region during the time of European contact. Contacts with Spaniards increased during the late 1700s and the early 1800s. At this time, the Spanish established the Old Spanish Trail (described in Section 2.11, Special Designations), which passes through the Planning Area. Use of the Old Spanish Trail started decades before this as Indian thoroughfares and the Spanish capitalized on this existing route. The Old Spanish Trail connected missions in southern California to the New Mexico trade centers of Taos and Santa Fe on the east. As cultural interactions with traders and travelers increased, changes occurred with Native American populations. The influx of Euro-Americans into the region eventually fostered conflicts with long-time Indian inhabitants that resulted in the creation of reservations and the movement of traditional peoples off their ancestral lands. Nonetheless, seasonal aboriginal uses of what are now federal lands continued through the 1930s as groups continued to exploit resources in the canyons and adjacent mountains.

Exploration of the Grand and San Juan County area is first mentioned in the 1765 accounts of Juan Maria Antonio de Rivera who led an expedition through what is now Grand County. Traders and early travelers probably traversed through the Planning Area, very few left lasting records. Inscriptions remain the only lasting links between modern times and the fur trapper/trader era. U.S. government-sponsored exploration and survey expeditions in the middle to late nineteenth century and continued use of the Old Spanish Trail eventually resulted in Euro American settlement of the Grand and San Juan County area beginning in the 1850s. As population increased, homesteads occupied locations where perennial springs promised

consistent water for crops, livestock, and household uses. Camps, homestead remains, corrals, cellars, dugouts, privies, and transportation routes in the form of trails represent the early Euro-American occupation and use of the land encompassed by the Planning Area.

Euro-Americans, dependent upon ranching and farming, continued to expand and settle in various places in the Planning Area. Numerous towns sprang up throughout the Grand and San Juan County area. Physical remains dating from early town-building and isolated settlement activities dot the landscape and provide the Grand and San Juan County area with a rich historical archeological record.

The railroad provided improved access to the Grand and San Juan County area, which fostered development. The area was further connected to the greater west with the completion of the Denver and Rio Grande Western Railroad in 1883, a narrow-gauge rail line that was replaced in 1890 by a standard-gauge line. The narrow-gauge rail located along the foot of the Book Cliffs was abandoned in favor of keeping the track along the Colorado River until eventually leaving its banks near Westwater and returning to the course along the Book Cliffs.

The rail line changed the area significantly as many rail line construction workers stayed in the camps that were built to facilitate construction of the rail line. These include communities such as Westwater, Cisco, Thompson Springs, Acheron, Cottonwood Station, Whitehouse Station, Sagers Station, Crescent Station, and Little Grande Station. The rail line replaced the arduous process of getting goods to and from the area by wagon.

The economic backbone of the Planning Area in the mid-nineteenth century focused on livestock ranching with cattle dominating the industry until the 1890s when sheep became a viable option. The remains of sheep camps, line camps, and stock driveways all indicate the pervasiveness of the livestock industry in Grand and San Juan County.

Remnants of Civilian Conservation Corps (CCC) camps, dating from the 1930s to early 1940s, and numerous water control structures as well as farmer-constructed irrigation systems can be found throughout the Planning Area. In addition to ranching, mining has continued to have significant impacts to the region and its landscape, and as the twentieth century dawned, oil exploration created quite a stir. Likewise, the coal industry boomed briefly in the Book Cliffs region during the early 1900s, causing the construction of a narrow-gauge spur that connected the town and mill at Sego to the Denver and Rio Grande railroad at Thompson Springs.

The search for minerals has left a legacy of exploratory mines as well as two-tracks and roads. By the twenty-first century, mining generated routes added several thousand miles to the transportation network covering the Planning Area. In between the boom and bust cycles of the mining industry, ranching and farming sustained those who weathered the extractive industrial rollercoaster.

2.2.2 Resource Characterization

Indicators

The primary indicator of cultural resources as an issue is whether there is a potential loss of, or impact to, those characteristics that may qualify the property for listing on the National Register of Historic Places (NRHP) or would diminish the cultural value of areas important to Native American or other traditional communities.

Current Condition

Archeological Values

Potential Site Density

A limited percentage of lands within the Planning Area have been physically inspected for the presence of cultural resources, and such an effort is cost-prohibitive as part of preparing this plan. Therefore, the relative site density potential for areas within the Planning Area was estimated using environmental factors known to influence site location and type. Refer to the Proposed Resource Management Plan and Environmental Impact Statement for the Moab RMP in 2008 (Sections 3.3.2.5 and 4.3.2.1) for the details regarding the methodology applied to the Planning Area. All areas of the Planning Area were then ranked as having either high, medium, or low potential for containing cultural sites (Table 2-12 and Map 2).

Table 2-12. Potential for Containing Cultural Sites

Site Probability	Estimated Acreage	Percent of Lands in the Planning Area
High	157,911	17%
Medium	468,765	50%
Low	319,789	33%

Source BLM 2013

National Register of Historic Places

Of the known sites within the Planning Area, two are listed on the NRHP as individual sites, landmarks, or part of a larger archeological district. These include:

- Denis Julien Inscription, a site located in the vicinity of the Mouth of Hell Roaring Canyon
- Newspaper Rock Petroglyph Panel, a site located in San Juan County

The Moab Rock Art National Historic District has been nominated as a multiple-property listing, focusing on the large concentrations of rock art along Seven Mile Canyon, Kane Springs Canyon, Mill Creek Canyon, and the Colorado River. These areas provide a look into the cultural diversity and unique interactions among Native Americans, and Native Americans and Euro-Americans that likely took place in the Moab area over the past 2,500 years.

ACECs with Cultural Resource Values

The Shay Canyon ACEC contains cultural resource values, and is located within the Planning Area. This ACEC contains significant rock art associated with Archaic and Pueblo motifs.

The Behind the Rocks ACEC contains cultural resource values and is located within the Planning Area. This ACEC contains rock art and habitations sites associated with Archaic and Pueblo motifs.

The Highway 279/Long Canyon/Shafer Basin ACEC contains cultural resource values and is located within the Planning Area. Internationally known rock art is located within the ACEC.

The Ten Mile Wash ACEC contains cultural resource values and is located within the Planning Area. This ACEC contains significant cultural resources, including important habitation sites and unusual artifacts.

Traditional Values

Potential Traditional Cultural Properties
TCPs include, but are not limited to:

- locations associated with the traditional beliefs concerning tribal origins, cultural history, or the nature of the world;
- locations where religious practitioners go, either in the past or the present, to perform ceremonial activities based on traditional cultural rules of practice;
- ancestral habitation sites;
- trails;
- burial sites;
- springs, perennial water sources; and
- Places from which plants, animals, minerals, and waters possessing healing powers or used for other subsistence purposes, may be taken (Ferguson et al. 1993:30; Hopi Cultural Preservation Office 1995:2; Parker and King 1989:1).

No TCPs were identified during the scoping process.

Tribal Consultation
The Moab and Monticello FOs have historically consulted with Ute, Navajo, and Puebloan groups concerning cultural resource issues, including the identification of TCPs. The organizations contacted for the MLP scoping process include:

- Uintah and Ouray Ute Indian Tribe
- Southern Ute Tribe
- White Mesa Utes
- Pueblo of Acoma
- Ute Mountain Ute Tribe
- Navajo Nation
- Hopi Tribe
- Pueblo of Zuni
- Pueblo of Santa Clara
- Pueblo of Laguna
- Pueblo of Jemez
- Pueblo of Zia
- Paiute Indian Tribe of Utah

To date, only the Hopi Indian Tribe has responded to the consultation letter sent by BLM on January 19, 2012. The Hopi accepted BLM's invitation to become involved in the MLP process, and on April 18, 2012, a meeting between representatives of the Hopi Cultural Preservation Office and BLM staff was held at the Hopi Cultural Preservation Office in Kykotsmovi Village, Arizona, to discuss the MLP and any general issues and concerns.

Other non-tribal organizations historically consulted include:

- State Historic Preservation Office
- Utah Professional Archaeological Council
- Old Spanish Trail Association
- Canyonlands Natural History Association
- Utah Historic Trails Consortium
- Utah Rock Art Association

Some locations may be considered sacred (as opposed to "traditional") to particular Native American individuals or tribes. Under the auspices of the National Historic Preservation Act (NHPA) of 1966, as amended; American Indian Religious Freedom Act of 1978 (AIRFA); Executive Order 13007– Indian Sacred Sites, dated May 24, 1996; and the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA), as amended, the BLM must take into account the effects of federally linked projects or land uses on these types of locations.

There are several site types, both archeological and non-archeological, that potentially could be identified by Native American groups as TCPs. The following is a general discussion about some of the archeological and non-archeological site types that may be identified as TCPs on lands managed by BLM within the Planning Area.

Archeological Sites
Many Native American groups claim affiliation with prehistoric archeological sites such as rock art, burials, and village sites. The Hopi Tribe, for example, asserts that often the exact locations of some of these places, such as ancestral archeological sites and burials, are unknown to tribes until these sites are identified by Hopi cultural experts during ethnographic or ethnohistoric investigations, or by archeologists during archeological investigations of a given study area.

Not only do the Hopi consider these sites to be TCPs, they also believe that they are historic properties eligible to the National Register under Criteria A, B, C, and D for the following reasons (Ferguson 1997; Hopi Cultural Preservation Office 1995):

- Criterion A because they are associated with the Hopi clan migrations, which have made a significant contribution to the broad patterns of Hopi history.
- Criterion B because they are "associated directly with Ma'saw and the Hopi covenant to leave their footprints across the land."
- Criterion C because "ancestral archeological sites, that may be individually anonymous, are identified as part of the great clan migration that are central to all that is Hopi."
- Criterion D because they have yielded or have the potential to yield information important to Hopi prehistory.

Other tribes also consider ancient Native American archeological sites as places of traditional importance. For example, the Zuni have identified all "ancestral" archeological sites as places of traditional importance, as well as being eligible to the National Register (Anyon 1995; Hart 1993:40). Zuni state that these sites meet Criteria A and B (as outlined in National Register Bulletin 15) because of their association with the Zuni ancestors and their oral migration histories. The Utes also consider some of these sites to be culturally significant and sacred and maintain that the spirit of their ancestors dwell at archeological sites and will remain as long as the sites are not disturbed (Newton 1999; Perlman 1998). Recently, a spiritual leader of the Uintah and Ouray Ute Tribe stated that the disturbance of significant archeological sites is leading to the destruction of Ute religion and diminishing the power of the spirits that remain at these sites (Molenaar 2003a).

Rock Art Sites
Many tribes have strong spiritual convictions regarding petroglyphs and pictographs and usually request that these sites not be disturbed, especially if the site was created with the intention of connecting with a spiritual or natural power. Many Ute and Puebloan groups also believe that rock art created by their ancestors retains the spirits of their ancestors.

Rock art panels are also seen by tribes as physical evidence for Native American land use indicating territorial boundaries, hunting and camping sites, and trail or migration markers. Some panels depict tribal

stories and legends, but can only be interpreted by those with the specialized knowledge to understand their meaning. In the past, Utes have derived spiritual powers and authority from special petroglyph panels for their Bear Dances (Spangler 1995:775). The Uintah and Ouray Ute Tribes often request one-half mile buffers around rock art panels, if possible, during Section 106 consultations (Molenaar 2003b).

Rock Shelters

Rock shelters and cave sites located within the Planning Area can potentially be identified as TCPs. These locations include overhangs, crevices, and cave sites and are significant to Native Americans as ancestral dwellings. These site types are also potential ancestral grave sites for the Ute Tribe (Pettit 1990). These sites may also be identified as places where Native Americans communicated with the supernatural world by means of prayers, offerings, and vision quest sites (Molenaar 2003a).

Non-Archeological TCPs

Non-archeological site types are distinguished from archeological site types in order to discuss places that are not necessarily associated with prehistoric or historic artifact assemblages and collections. These sites are typically identified by tribal representatives during the government-to-government consultation process that is required of federal agencies. Some common site types are lakes and springs, land features, and traditional gathering or collection areas.

Lakes, Rivers, Perennial Streams, and Springs

Native Americans often claim places of water as places of traditional importance and have traditional stories about mythical beings, or water spirits that live in lakes, springs, and rivers. The Colorado River and its tributaries have sacred significance to the Navajo. According to the Navajo, when the Green River is impacted, the cultural integrity of the spring water is affected, which in turn affects traditional procurement use values (Molenaar 2003c). Perennial springs have been identified as sacred to the Navajo because they come from natural spring water.

Traditional Gathering or Collecting Areas

Traditional plant or other resource gathering areas may be places of traditional importance to Native American groups. These areas are generally places where Native Americans go to collect resources such as medicinal plants used and minerals to be used in ceremonies, and are often in current use when identified.

Land Features

Large geographic regions, such as deserts, mountain ranges, and valleys are often identified as TCPs but few have been formally documented as such. Examples in the vicinity of the Planning Area include the LaSal Mountains, as well as any natural arch or prominent buttes.

Trends

More cultural resource sites are being visited, due to increasing public interest. This has resulted in an increase in interpretation, interest in preservation, public value, and political support. More cultural sites are also being identified during projects. The BLM is focused on identifying cultural landscapes, instead of site-specific resources.

Forecasts

Impacts to archeological sites from increased visitors, recreational uses (especially off-road travel) and energy-related exploration and development activities have increased dramatically in the last ten years. Many cultural resource sites may be "at risk" and their NRHP eligibility threatened. An increase in inventory and evaluation will provide BLM with a better understanding about the extent of individual at

risk resources and their NRHP eligibility. Site monitoring will reveal changes to at-risk condition over time.

In order to protect the integrity of cultural resource sites, activities that contribute to site degradation may have to be limited. Limitations will diminish adverse effects to at-risk sites but will also curtail some peoples' recreational and transportation pursuits. Activities that would be restricted from locations of at-risk resources, on a case-by-case basis, may include, but not be limited to, use of mechanized and motorized vehicles, rock climbing, horseback riding, dispersed camping, target shooting, and livestock grazing.

Cultural resources are adversely impacted by various uses, ranging from recreational, energy-related exploration and development, and range-related activities. Quantification of these impacts from various uses will enable BLM to develop adequate mitigation measures that protect eligible cultural resource sites. Once the BLM has a better understanding of exactly what the cost of the various land uses is in terms of data loss or cultural distress (for Native American tribes and other heritage groups), it can better prevent adverse impacts or focus the extent of impacts to specific locations. As a result of these measurements, certain areas may be deemed too vulnerable to allow full access, although they may be appropriate for restricted use.

Key Features

Key features for cultural resources in the Planning Area include the following:

- Denis Julien Inscription
- Newspaper Rock Petroglyph Panel
- Old Spanish Trail National Historic Trail
- Shay Canyon Petroglyphs, within the Shay Canyon ACEC (part of the Indian Creek SRMA)
- Ten Mile ACEC
- Moab Rock Art National Historic District (nominated)
- Halfway Stage House & Dubinky Well Historical Sites
- Looking Glass Rock

2.3 LANDS WITH WILDERNESS CHARACTERISTICS

2.3.1 Regional Context

Since Wilderness Study Areas (WSAs) were established in the 1980s, designation and protection of wilderness in Utah has become a prominent national issue. For more than 40 years, the public has debated which lands have wilderness characteristics and should be considered by Congress for wilderness designation. As a result of the debate (and a significant passage of time since BLM's original inventories), in 1996 the Secretary of the Interior directed BLM to take another look at some of the lands in question. In response to the direction of the Secretary, BLM inventoried these lands and approximately 2.6 million acres of public land statewide (outside of existing WSAs) were found to have wilderness characteristics (1999 Utah Wilderness Inventory). Approximately 951,120 acres were located within the Moab and Monticello Field Offices. As part of the 2008 Moab and Monticello RMP processes BLM evaluated an additional 255,537 acres proposed by external groups as possessing wilderness characteristics. Additionally, BLM reexamined the 1999 findings. As a result of this process the Moab and Monticello BLM Field Offices identified a total of 179,369 acres as possessing wilderness characteristics.

Within the MLP Planning Area, there are a total of 190,470 acres that have been identified by the BLM as possessing wilderness characteristics.

Although the Glossary defines "wilderness characteristics" in detail for the purposes of inventory maintenance, for this plan, the BLM focused on the following criteria: 1) the appearance of naturalness; 2) outstanding opportunities for solitude or primitive or unconfined recreation; and 3) an area with a minimum of 5,000 acres in size (with some exceptions) so as to make practicable the management of wilderness characteristics. Lands with Wilderness Characteristics (LWWC) can be less than 5,000 acres if they are located adjacent to an area identified by BLM or other agencies as possessing wilderness characteristics.

Non-WSA lands with wilderness characteristics are areas having 5,000 acres, or areas less than 5,000 acres that are contiguous to designated wilderness, WSAs, or other administratively endorsed for wilderness management lands or, in accordance with the Wilderness Act's language, are areas "of sufficient size as to make practicable its preservation and use in an unimpaired condition." The BLM used the same criteria for determining wilderness characteristics as in the 1979 wilderness inventory. The 5,000 acre value was helpful to the BLM in making preliminary judgment, but it was not considered a limiting factor.

In September 2005, the BLM and the State of Utah, the Utah School and Institutional Trust Land Administration (SITLA), and the Utah Association of Counties (collectively "Utah") reached an agreement negotiated to settle a lawsuit originally brought in 1996 by Utah, challenging the BLM's authority to conduct new wilderness inventories. The settlement stipulated that the BLM's authority to designate new WSAs expired no later than October 21, 1993. The BLM, however, does have the authority to conduct inventories for characteristics associated with the concept of wilderness and to consider management of these values in its land-use planning process. BLMs policy and guidance has recently been updated by Manuals 6310 and 6320 issued in March 2012. In addition, the BLM's Land-use Planning Handbook (H-1601-1) states that decisions on whether or not to protect wilderness characteristics are to be considered during planning.

2.3.2 Resource Characterization

Indicators

Indicators of LWWC include: 1) the appearance of naturalness; 2) outstanding opportunities for solitude or primitive or unconfined recreation; and 3) an area with a minimum of 5,000 acres in size (with some exceptions) so as to make practicable the management of wilderness characteristics. LWWC can be less that 5,000 if they are located adjacent to area identified by BLM or other agencies as possessing wilderness characteristics.

Current Condition

There are 190,470 acres in the Planning Area that the BLM has determined to have the wilderness characteristics of size, naturalness, and outstanding opportunities for solitude or primitive recreation (Map 3). Management identified in the current RMPs does not manage these lands for their wilderness characteristics.

Trends

Interest in wilderness resources throughout the Planning Area has local, regional, and national significance. Public interest in these areas has increased dramatically in the past 15 years and is expected to increase in the future.

Forecasts

As areas that meet the definition of lands with wilderness characteristics found in BLM Manuals 6310 and 6320 become more limited, increased pressure on the lands that meet the definition is expected to increase. Conflict between development interests and preservation interests is expected to increase as well.

Key Features

- General appearance of naturalness
- Possess opportunities for solitude and/or primitive and unconfined recreation
- Possess adequate size

2.4 MINERALS – OIL AND GAS

The oil and gas reasonably foreseeable development scenario includes the current conditions, trends, and forecasts for oil and gas development. Refer to the oil and gas reasonably foreseeable development scenario for detailed information. The report is available from the Canyon Country District Office.

2.5 MINERALS – POTASH

The potash reasonably foreseeable development scenario includes the current conditions, trends, and forecasts for potash development. Refer to the potash reasonably foreseeable development scenario for detailed information. The report is available from the Canyon Country District Office.

2.6 PALEONTOLOGICAL RESOURCES

Paleontology is a biological and geological scientific discipline involving the study of fossil materials. Paleontological resources, or fossils, include the body remains, traces, or imprints of plants or animals that have been preserved in the earth's crust since some past geologic time. Among paleontologists, fossils are generally considered to be scientifically significant if they are unique, unusual, rare, diagnostically or stratigraphically important, or add to the existing body of knowledge in a specific area of the science. The BLM considers all vertebrate fossils to be scientifically significant. Invertebrate and plant fossils may be determined to be significant on a case-by-case basis. Petrified wood is treated as a mineral material and may be collected or purchased under the Material Sales Act of 1947 (as amended), but cannot be obtained under the General Mining Law of 1872.

The types of fossils preserved in a sedimentary rock sequence depend on the geologic age of the rocks in which they occur and the environment in which the sediments that comprise the rocks accumulated. The types of rocks that crop out (are exposed) at the surface of an area and can potentially yield fossils is the result of geologic (depositional, structural, and erosional) history.

2.6.1 Regional Context

Geologic formations and sediments exposed at the surface of the Planning Area range from Precambrian to recent. Fossil-bearing sedimentary rocks range in age from Pennsylvanian to Quaternary in age and include parts of the three great periods of earth history during the Phanerozoic (*phaneros,* meaning visible and *zoic,* meaning life), the Paleozoic, Mesozoic, and Cenozoic. Fossils preserved in these deposits include invertebrate, vertebrate, and plant fossils. Vertebrate fossils include the body remains of fish, amphibians, reptiles (including dinosaurs), mammals, and birds, as well as their tracks and traces. These fossils can occur in rocks of Pennsylvanian, Permian, Triassic, Jurassic, Cretaceous, Paleocene, Neogene, and Quaternary age and include specimens unique to this area.

2.6.2 Resource Characterization

Indicators

The primary resource indicator is whether there is a loss of those characteristics that make the fossil locality or feature important for scientific use or public education and enjoyment. Natural or accelerated erosion, decay, improper collection, and vandalism can remove, alter, or damage those characteristics that make the paleontological resource scientifically important or enjoyable to the public.

Current Condition

A search of the Utah Geological Survey (UGS) fossil database in Salt Lake City revealed a total of 357 fossil localities in the Planning Area (UGS Fossil Locality Database 2011). Of the 357 fossil localities identified, 135 are vertebrate localities; 62 are invertebrate localities; 53 are plant localities; and 145 are known to be trace fossil localities. Information from this database, supplemented by publications and personal experience, document that vertebrate fossils (which the BLM considers of scientific significance) are known from at least 14 formations that crop out in the Planning Area.

Additionally, a portion of the Dinosaur Diamond Prehistoric National Byway runs through the Planning Area. The Dinosaur Diamond Prehistoric Byway is a 512-mile driving route through Colorado and Utah that has educational kiosks and displays of dinosaur tracks and remains. Some sites have reconstructed skeletons and fleshed out recreations of dinosaurs. The portion in the Planning Area runs south from I-70 on Highway 191 to Moab and returns to I-70 via Highway 128. The BLM favors the development of museum exhibits and informational kiosks or similar developments at roadside turnouts over the interpretation of areas where fossils remain in the ground. These projects provide opportunities for learning and enjoyment. There may be substantial risk of damage or unauthorized collecting of fossils by the public in interpretive areas that are not staffed.

The BLM has identified four objectives for the management of fossil resources on lands it administers. They are: 1) locating, evaluating, managing, and protecting fossil resources; 2) facilitating appropriate scientific, educational, and recreational uses of fossils; 3) ensuring that proposed land uses do not inadvertently damage or destroy important fossil resources; and 4) fostering public awareness of the Nation's rich paleontological heritage (BLM 1998b:01). Uniform procedural guidance for management of paleontological resources on BLM lands is provided by *Paleontological Resources Handbook 8270-I*.

Collection of fossils from BLM lands in the Planning Area is allowed with some restrictions, depending on the significance of the fossils. Under existing regulations, hobby collection of common invertebrate or plant fossils by the public is allowed in reasonable quantities using hand tools. The public is also allowed to collect petrified wood without a permit for personal noncommercial purposes. People can collect up to

25 pounds plus one piece per person per day, with a maximum of 250 pounds in one calendar year. Current regulations do not allow any commercial collecting of paleontological resources, including petrified wood.

Significant fossils, which includes all vertebrate and any designated plant or invertebrate fossils, can only be collected by obtaining a permit that is issued to qualified researchers. Vertebrate fossils are the remains or traces of fish, turtles, dinosaurs, mammals, reptiles, and birds, and include material such as fossil bones, teeth, tracks, coprolites, and burrows. Significant plant and invertebrate fossils are determined on a case-by-case basis and must be identified in decision documents.

Three types of paleontological use permits are issued to certified paleontologists. The contract permit is associated with project work. The paleontologist has to be certified by the BLM, and affiliated with a museum. The survey permit is a limited collection permit issued for reconnaissance work and collection of surface finds, with a one square meter limit on surface disturbance. If disturbance during the paleontological work will exceed one square meter, or will require mechanized equipment, the researcher must apply for an excavation permit. Prior to authorization of an excavation permit, BLM must prepare an environmental assessment of the proposed location. All fossils collected under a permit remain public property, must be placed in an approved repository (e.g., a museum), and can never be sold. Annual reports of findings, including locality and specimen information, are required to be submitted to the BLM. Researchers may have multiple active permits.

Recreational fossil collecting of common invertebrates, plants, and petrified wood is appropriate on most lands administered by the BLM, except in developed recreation areas and other special management areas, such as Special Recreation Management Areas (SRMAs) or where otherwise posted. Recreational collecting of vertebrate fossils, as well as noteworthy fossil invertebrates and plants is prohibited on all BLM-administered lands.

Professional paleontologists conducting research or assessment and mitigation are regulated through the permit process. The BLM issues approximately ten excavation permits a year specifically for the Planning Area (personal communication with B. Doolittle 2012). There are also approximately 12 statewide research permits allowing surface collecting/reconnaissance that include the Planning Area. The BLM also issues approximately 10 consulting permits annually in Utah, all of which are statewide and thus include the Planning Area.

Trends

Fossil theft and vandalism, particularly vertebrate fossils collection, occur with some regularity throughout the Planning Area. Only a small number of these occurrences are ever prosecuted. Escalating commercial values of fossils also mean that fossils on federal lands are increasingly subject to theft and vandalism. These crimes reduce scientific and public access to scientifically significant and instructive fossils and destroy the contextual information critical for interpreting the fossils. Illegal casting of dinosaur tracks is particularly a problem within the Planning Area.

Increased activity in the Planning Area has resulted in the discovery and identification of new species. The growth of activity in the area can be attributed to increased Paleontological tourism, and the Paleontological Resources Protection Act of 2009 that has raised awareness about the implication of damage to the resources. This activity and awareness has led to the issuance of more survey and excavation permits, in addition to a greater number of contract permits associated with pipeline and well pad construction.

Forecasts

It may be possible for the rate of collection to exceed the rate of fossil exposure (i.e. the rate of erosion) by removing all known fossils from a localized area, but that would be a temporary situation when viewed in the time scale of natural erosion. However, some areas may undergo collection efforts that would remove all available fossils in the short-term. This would impact collecting opportunities for subsequent paleontologists, for a number of years. It is believed that this condition is not common in the Planning Area.

Occurrences of paleontological resources are closely related to the geologic units that contain them. The potential for finding important paleontological resources can be broadly predicted by the presence of the pertinent geologic units at or near the surface. Therefore, geologic mapping might be used as a proxy for assessing the potential for the occurrence of important paleontological resources. The Potential Fossil Yield Classification (PFYC) system was originally developed by the U.S. Forest Service's Paleontology Center of Excellence and the Region 2 (USFS) Paleo Initiative (1996). It is in the process of being formally adopted by the BLM to promote consistency between agencies and throughout the BLM. The PFYC is appropriate for land-use planning efforts and for the preliminary assessment of potential impacts and mitigation needs for specific projects, and allows BLM to forecast where high abundances of vertebrate fossils or uncommon invertebrate or plant fossils and their sensitivity to adverse impacts are likely to occur.

An additional subclassification system utilized by the BLM is the Paleontology Condition System, which classifies areas according to their potential to contain vertebrate fossils, or noteworthy occurrences of invertebrate or plant fossils, in accordance with the BLM Handbook 8270-1 (BLM 1998a, revised).

Key Features

Class 4 and 5 areas, as described below (Map 4), are the key features in the Planning Area. They are found primarily in the northeast part of the Planning Area.

- ***Class 4:*** These are *Class 5* geologic units (see below) that have lowered risks of human-caused adverse impacts and/or lowered risk of natural degradation. They include bedrock units with extensive soil or vegetative cover; bedrock exposures that are limited or not expected to be impacted; units with areas of exposed outcrop that are smaller than two contiguous acres; units in which outcrops form cliffs of sufficient height and slope so that impacts are minimized by topographic effects; and units where other characteristics are present that lower the vulnerability of both known and unidentified fossil localities.

  The potential for impacting significant fossils is moderate to high, and is dependent on the proposed action. The bedrock unit is *Class 5*, but a protective layer of soil, thin alluvial material, or other mitigating circumstances may lessen or prevent potential impacts to the bedrock resulting from the activity. Mitigation efforts must include assessment of the disturbance, such as removal or penetration of protective surface alluvium or soils, potential for future accelerated erosion, or increased ease of access resulting in greater looting potential. If impacts to significant fossils are anticipated, on-the-ground surveys prior to authorizing the surface-disturbing action will usually be necessary. On-site monitoring may also be necessary during construction activities. Management prescriptions for resource preservation and conservation through controlled access or special management designation should be considered. *Class 4* and *Class 5* units are often combined as *Class 5* for general application, such as planning efforts or preliminary assessments, as *Class 4* is determined from local mitigating conditions and the impacts of the planned action.

- ***Class 5:*** Highly fossiliferous geologic units that regularly and predictably produce vertebrate fossils or uncommon invertebrate or plant fossils, and that are at risk of human-caused adverse impacts or natural degradation. These include units in which vertebrate fossils or uncommon invertebrate or plant fossils are known and documented to occur consistently, predictably, or abundantly. *Class 5* pertains to highly sensitive units that are well exposed with little or no soil or vegetative cover, units in which outcrop areas are extensive, and exposed bedrock areas that are larger than two contiguous acres.

  Management concern for paleontological resources in *Class 5* units/areas is high, because the potential for impacting significant fossils is high. Vertebrate fossils or uncommon nonvertebrate fossils are known from the impacted area, or can reasonably be expected to occur in the impacted area. Assessment by a qualified paleontologist is required in advance of surface-disturbing activities or land tenure adjustments, and mitigation will often be necessary before and/or during surface-disturbing actions. Field surveys prior to authorizing any surface-disturbing activities will usually be necessary. On-site monitoring may also be necessary during construction activities. Designation of areas of special interest and concern may be appropriate.

Additionally, the following areas are key features for the Planning Area:

- Shay Canyon Track Site, within the Shay Canyon ACEC
- Klondike Bluff Dinosaur Track Site
- Poison Spider Dinosaur Track Site
- Mill Canyon Dinosaur Bone Site
- Copper Ridge Dinosaur Track Site
- Willow Springs Dinosaur Track Site

2.7 RECREATION

2.7.1 Regional Context

The Planning Area is an internationally recognized recreation destination. The proximity of Arches National Park and Canyonlands National Park, the extraordinarily scenic and diverse landscape, the accessibility of two major river systems (the Colorado and Green rivers), the presence of interesting cultural and paleontological resources, and the opportunities for a wide range of recreational activities have made the Planning Area very popular for those seeking outdoor experiences. Visitors to the Planning Area engage in a wide array of both motorized and non-motorized recreational activities, many of which conflict with each other. Recreational activities within the Planning Area include but are not limited to camping, scenic driving, enjoying natural and cultural features, hiking, backpacking, canyoneering, mountain biking, horseback riding, hunting, rock climbing, BASE jumping, boating (rafting, canoeing, and kayaking), and off-highway vehicle (OHV) use.

2.7.2 Resource Characterization

Indicators

Tracking visitor use is necessary for managing recreational use, identifying trends, projecting and prioritizing future recreation management, identifying natural resource recreation settings, and calculating carrying capacities. Visitor use is collected by means of traffic counters, visitor registrations, recreation use permits, and from outside sources.

Current Condition

In general, the Planning Area experiences a high number of seasonal visitors and an intense demand for recreational activities. Busy seasons include both spring and fall, with spring bringing the most visitors to the area. The estimated annual visitation to the Planning Area is at least 1.6 million visitors. Visitation occurs throughout the year, with the spring season beginning in February and lasting through May, and the fall season running from September through November. Spring and fall visitors engage in the full range of recreational activities, including scenic driving, camping, hiking, jeeping, mountain biking, canoeing and rafting, rock climbing, OHV, and horseback riding. Summer visitation is mainly associated with touring Arches and Canyonlands National Parks, and with river-related activities. The summer season also brings large numbers of visitors who engage in sightseeing activities, such as driving through the public lands and viewing the landscape from scenic overlooks, and some hiking and biking. In addition, organized group activities of many types also occur on public lands within the Planning Area.

The economy of the area is heavily dependent upon recreation-based businesses. One hundred and twenty six commercial outfitters are currently operating on BLM lands within the Planning Area. Based on 2011 numbers these outfitters have served approximately 43,700 clients and generated roughly $5,606,000 in revenues. These outfitters provide services for many activities including rafting, hiking, climbing, OHV use, photography tours, horseback riding, ballooning, hunting, canyoneering, and mountain biking.

In order to address the rapid growth in recreation opportunities and activities found within the Planning Area, and to ensure that sufficient and appropriate management is being applied in highly used areas, the BLM has developed specific Recreation Area Management Plans (RAMPs). To date, three RAMPs have been developed for public lands within the Planning Area, including the Colorado Riverway, South Moab and Canyon Rims areas.

Special Recreation Management Areas

Special Recreation Management Areas are the BLM's primary means of managing recreational use of the public lands. Public lands are designated as a Special Recreation Management Area (SRMA) or Extensive Recreation Management Area (ERMA). SRMAs require a recreation investment where more intensive recreation management is needed and where recreation is a principal management objective. These areas often have high levels of recreation activity, contain valuable natural resources, or require recreational settings that need special management. ERMAs constitute all public lands outside SRMAs and are areas where recreation is non-specialized, dispersed, and does not require intensive management. Recreation may not be the primary management objective in ERMAs: therefore recreational activities are subject to fewer restrictions in ERMAs.

High use recreation trails within SRMAs see the greatest concentration of visitors. These trails include designated non-motorized trails for mountain bikers, equestrian and hikers. While there are many miles of designated roads in the Planning Area available, Jeep Safari routes are those most heavily used by motorized recreationists. These popular non-motorized and motorized routes are shown on Maps 5 and 6, respectively. They include those routes that are authorized for both commercial and organized group permittees. These routes are listed under each SRMA below.

Six areas within the Planning Area have been established as SRMAs (Map 7). The Canyon Rims SRMA, Labyrinth/Gemini SRMA, and Indian Creek SRMA are located entirely within the Planning Area. The South Moab SRMA, Dolores River SRMA, and Colorado Riverway SRMA are partially located within the Planning Area.

To aid in the management of the diversity of recreational activities that occur in the Planning Area the BLM has identified Focus Areas or Recreation Management Zones (RMZs). Focus Areas are established

to emphasize a specific recreation use and provide a specific set of recreational opportunities and facilities. Focus Areas set visitor expectations for a specific type of recreation experience, thereby reducing potential conflicts. Map 8 identifies Focus Areas found within the Planning Area

Below is a description of the SRMAs and Focus Areas located within the Planning Area.

Canyon Rims SRMA (101,520 Acres)

The Canyon Rims SRMA is located west of U.S. Highway 191 and south of Moab. This SRMA is situated on a large plateau overlooking the Colorado River and is managed as a Destination SRMA. The SRMA has four developed overlooks of the Colorado River, two scenic byways, and two campgrounds, as well as the Trough Springs Hiking trailhead. The SRMA was established to protect, manage and improve the natural resources of the area while allowing for recreation activities such as developed camping, visiting scenic overlooks, auto touring on the primary road system, touring the secondary road system by motorized vehicle and mountain bike, and hiking and backpacking the canyons.

Focus areas located within the Canyon rims SRMA include:

- Hatch Wash Hiking and Backpacking Focus Area
- Needles and Anticline Roads Utah Scenic Backways Corridor

High use recreation routes within this SRMA include:

- Non-motorized: Trough Springs (hiking), Hatch Wash (hiking)
- Motorized: Anticline and Needles Overlooks Scenic Byways

Dolores River SRMA (2,329 Acres within the Planning Area)

The Dolores River Canyons SRMA is located about 25 miles east and south of Moab. This SRMA is managed as Undeveloped. The area has a limited number of roads, making motorized access difficult. Recreational use of this area is very light, with rafting and hiking being the most common activities. The only current infrastructure consists of directional signs.

Labyrinth/Gemini SRMA (275,269 acres)

The Labyrinth/Gemini SRMA encompasses a large portion of the western side of the Planning Area. It lies south of I-70, to the west of U.S. Highway 191, with the southern portion of the SRMA bordered by Highway 279. The area was designated as a Destination SRMA for a wide range of recreational activities. Both motorized and non-motorized recreational activities can be found within the SRMA. Areas within the SRMA that have been identified to accommodate specific recreational uses include scenic driving corridors, open OHV use, mountain biking, BASE jumping, and hiking and equestrian areas.

Focus Areas located within the Labyrinth/Gemini SRMA include:

- Scenic Driving Corridors:
  - Highway 313 and the Island in the Sky Road (Utah Scenic Byway) are managed for scenic driving enjoyment
- Non-Mechanized Recreation:
  - Goldbar/Corona Arch Hiking Focus Area (4,138 acres)
  - Spring Canyon Hiking Focus Area (455 acres)
  - Labyrinth Canyon Canoe Focus Area (6,812acres)
  - Seven Mile Canyons Equestrian Focus Area (1,028 acres)
- Mountain Bike Backcountry Touring:
  - Klondike Bluffs Mountain Biking Focus Area (14,597 acres) located between Arches National Park and U.S. Highway191

  - Bar M Mountain Biking Focus Area (2,906 acres) located between Arches National Park, U.S. Highway 191, and the Bar M area state lands
  - Tusher Slickrock Mountain Biking Focus Area (428 acres) located on Slickrock between Bartlett and Tusher Washes. The main access is from Bartlett Wash. The area is primarily managed for mountain bike and hiking use only. Cross-country mountain biking is allowed throughout the area.
  - Mill Canyon/Upper Courthouse Mountain Biking Focus Area (5,741 acres).
- Motorized Backcountry Touring:
  - Gemini Bridges/Poison Spider Mesa Focus Area (16,354 acres). This focus area is managed for multiple-use, including full-size OHV, ATV, and motorcycle use with consideration given to managing routes suitable for each vehicle type
- Specialized Sport Venue (non-motorized):
  - Mineral Canyon/Horsethief Point Competitive BASE Jumping Focus Area (762 acres)
  - Bartlett Slickrock Freeride Focus Area, mountain bike only (166 acres)
- Specialized Sport Venue (motorized):
  - Dee Pass Motorized Trail Focus Area (21,158 acres). This focus area is managed for motorcycle and ATV use, and has been established for competitive motorized events
  - Airport Hills Motocross Focus Area (290 acres). This focus area is managed for motocross use and is managed in partnership with local government under the Recreation and Public Purposes Act
- Managed OHV Area (cross country travel allowed):
  - White Wash Sand Dunes Open OHV Focus Area (1,944 acres)

High use recreation routes within this SRMA include:

- Non-motorized Bicycles:
  - Portal Bike Trail
  - Bar M Bike Trail System
  - Magnificent Seven Bike Trail System
  - Klondike Bluffs Bike Trail System
  - Klonzo Bike Trail
  - Bartlett Slickrock Bike Trail
  - Lower Monitor and Merrimac Bike Trail
  - Moab Canyon Paved Bike Path
- Non-motorized Hiking:
  - Corona Arch
  - Tibbetts Arch Trail
  - Goldbar Canyon systems
  - Spring Canyon
- Non-motorized Equestrian:
  - Seven Mile Canyon
  - Moab Endurance Ride System
- Motorized Jeep Safari Routes:
  - Crystal Geyser
  - Secret Spire
  - He Joe Canyon
  - Metal Masher
  - Copper Ride, 3-D
  - Wipeout Hill
  - Sevenmile Rim
  - Goldbar Rim

- Golden Spike
- Poison Spider Mesa
- Hellroaring Rim

Indian Creek SRMA (76,595 Acres)

The Indian Creek SRMA is completely located within the Planning Area along SR 211 and north of the town of Monticello, situated between the Needles district of Canyonlands National Park and the Abajo Mountains and Manti LaSal National Forest. Indian Creek SRMA is managed as a Destination SRMA and is considered the gateway to the Needles District of Canyonlands National Park. Indian Creek SRMA offers visitors the chance to experience a very unique remote landscape, which contains a world-renowned sandstone crack climbing area, a large number of cultural sites, a popular OHV access area, rare paleontological formations, and camping opportunities. This SRMA includes a wide range of recreational activities including sightseeing, camping, rock climbing, OHV use, cultural site visitation and photography.

South Moab SRMA (22,505 Acres within the MLP)

The South Moab SRMA is located south of Moab and to the west of the Manti-LaSal National Forest, with U.S.-191 being an approximate bisection. Only a portion of the SRMA (22,505 Acres) is located within the Planning Area. Most of the area is easily accessible from Moab, and receives moderate to heavy recreation use and accommodates both motorized and non-motorized use. Infrastructure ranges from developed campgrounds to directional signing only. The SRMA is managed as a Destination SRMA.

Focus Areas located within the South Moab SRMA include:

- Non-Mechanized Recreation:
  - Behind the Rock Hiking Focus Area (3,438 acres)
- Specialized Sport Venue (Non-motorized):
  - 24 Hour of Moab Focus Area (2,914 acres).

High use recreation routes within the portion of the SRMA in the Planning Area include:

- Non-motorized Bike:
  - Hunter Canyon Rim
- Motorized:
  - Kane Creek Canyon Flat Iron Mesa
  - Behind the Rocks

Colorado Riverway SRMA (31,131 Acres within the MLP)

The Colorado Riverway SRMA is partially located within the Planning Area and is managed as a Destination SRMA. The portion of the SRMA located within the Planning Area (31,131 acres) includes Shafer Basin, Kane Creek, Highway 279 and portions of Highway 128, Porcupine Rim and areas south of Dolores River. Major activities include scenic driving, hiking, mountain biking, boating and camping.

Focus Areas located within the Colorado Riverway SRMA include:

- Scenic Driving Corridors:
  - These corridors include portions of Highway 128 and the entire length of Highway 279 which are both designated as Utah Scenic Byways, as well as the Kane Creek/Hurrah Pass portion of the Lockhart Basin Scenic Backway.
- Specialized Sport Venue, Non-motorized:

  - Tombstone Competitive BASE jumping Focus Area
  - Wall Street Sport climbing Focus Area (44 acres)

High use recreation routes within that portion of the SRMA in the Planning Area include:

- Non-motorized Bike:
  - Porcupine Rim Singletrack Bike Trail
  - Amasa Back/Pothole/Rockstacker/ Ahab Bike Trails
  - Hunter Canon Rim
  - Jackson Trail
  - Kokopelli Trail
- Non-motorized Hiking:
  - Hunter Canyon
- Motorized:
  - Cliffhanger
  - Moab Rim
  - Chicken corners
  - Pritchett Canyon
  - Porcupine Rim
  - Top of the World

Off-Highway Vehicle

The management of OHV activities within the Planning Area includes monitoring and maintaining routes, installing fencing to protect natural and cultural resources on certain routes, coordination with local officials and other agencies, ongoing training on OHV related issues, and issuing citations and written warning for OHV violations.

It is important to note that many OHV users in the Planning Area are residents of Colorado. In addition, OHV users come from the Wasatch Front of Utah, other western states, and from all over the country to ride OHVs on public lands within the Planning Area. The Planning Area has been featured in national OHV publications (four-wheelers, dirt bike, and four-wheel driving), and has become nationally known as an OHV destination.

OHV demand is highest within the following areas:

- Near Dead Horse Point State Park including Gemini Bridges, Arth's Rim, Poison Spider Mesa, Gold Bar Rim, and Golden Spike;
- Near Kane Creek, including Cliff Hanger, Kane Creak Canyon Road, Moab Rim, Hurrah Pass, Pritchett Canyon, Behind the Rocks;
- Northwest of Arches National Park including Wipeout Hill, Seven Mile Rim, Hey Joe Canyon, White Wash, Ten Mile, Secret Spire, 3D; and
- Lower Indian Creek including Hamburger Rock, Indian Creek Falls.

Special Recreation Permits

Five types of uses requiring Special Recreation Permits (SRPs) are authorized by: commercial, competitive, vending, individual or group use in special areas, and organized group activity and event use. SRPs are issued to manage visitor use, protect natural and cultural resources, and accommodate commercial recreational uses, and may be issued for ten years or less, with annual renewal. Commercial SRPs are issued to outfitters, guides, vendors, recreation clubs, and commercial competitive event

organizers providing recreational opportunities or service. SRPs for competitive and organized group events are also included in this category.

In 2012, 342 SRPs were issued by the Monticello and Moab Field Offices. While it is not known how many of these SRPs were exclusively for use within the Planning Area, it is assumed that due to the recreation opportunities found in this area that a large percentage of them did utilize the Planning Area. In total, approximately 122,486 clients were served by the SRPs generating gross revenue of roughly $15,774,040.

Developed Recreation Sites

Developed recreation sites incorporate visitor use infrastructure such as roads, parking areas, and facilities to protect the resource and support recreational users in their pursuit of activities, experiences, and benefits. Visitor use infrastructure is provided to focus and facilitate recreational activities. Within the Planning Area there are 58 developed recreation sites and overlooks (Table 2-13). The majority of these developed sites are fee site areas and feature toilets, graveled roads, picnic tables, and fire grills.

Table 2-13. Developed Recreation Sites within the MLP

Type of Site	Visits (2012)	Visitor Days (2012)	Field Office
Developed Campgrounds			
Big Bend	12,798	24,423	Moab
Cowboy Camp	1,875	3,578	Moab
Cowskin	Unknown	Unknown	Moab
Creek Pasture	Unknown	Unknown	Monticello
Dewey Bridge	1,210	1,694	Moab
Drinks Canyon	5,410	10,324	Moab
Goldbar	10,113	19,299	Moab
Hal Canyon	3,657	6,979	Moab
Hatch	280	1,087	Moab
Hamburger Rock	2,028	4,056	Monticello
Horsethief	9,547	18,219	Moab
Hunter Canyon	2,325	4,437	Moab
Indian Creek	87,420	73,111	Monticello
Jaycee Park	1,310	2,500	Moab
Kings Bottom	3,040	5,810	Moab
Ledge A, B, C and D	New – unknown	New-unknown	Moab
Lone Mesa	2,634	5,027	Moab
Moab Skyway	0	0	Moab
Moonflower	2,167	4,135	Moab
Oak Grove	1,510	2,882	Moab
Spring Canyon	0	0	Moab
Superbowl	Unknown	Unknown	Monticello

Type of Site	Visits (2012)	Visitor Days (2012)	Field Office
Upper Big Bend	2,270	4,332	Moab
Williams Bottom	3,915	7,471	Moab
Windwhistle	1,911	5,215	Moab
Developed Trailheads			
Amasa Back Trailhead	Unknown	Unknown	Moab
Bar M Trailhead	Unknown	Unknown	Moab
Blue Hills Road Trailhead	Unknown	Unknown	Moab
Copper Ridge Sauropod Trackway Trailhead	5,400	1,323	Moab
Corona Arch Trailhead	31,645	7,911	Moab
Courthouse Rock Trailhead	Unknown	Unknown	Moab
Donnelly Canyon Climbing Parking Lot	Unknown	Unknown	Monticello
Dubinky Road Trailhead	Unknown	Unknown	Moab
Entrada Bluffs Trailhead	Unknown	Unknown	Moab
Hunter Canyon Trailhead	Unknown	Unknown	Moab
Kane Creek Canyon Trailhead	Unknown	Unknown	Moab
Klondike Bluffs Trailheads (2)	Unknown	Unknown	Moab
Kokopelli Trail Trailheads	Unknown	Unknown	Moab
Mill Canyon Dinosaur Trail Trailhead	10,124	3,147	Moab
Moab Rim Trailhead	Unknown	Unknown	Moab
Monitor and Merrimac Trailhead	Unknown	Unknown	Moab
Poison Spider Trailhead	Unknown	Unknown	Moab
Porcupine Rim Trailheads	28,000	9,110	Moab
Shay Canyon Loop Trail	Unknown	Unknown	Monticello
White Wash Sand Dunes Trailhead	Unknown	Unknown	Moab
Developed Sites and Overlooks			
Anticline Overlook	3,016	566	Moab
Canyonlands Overlook	Unknown	Unknown	Moab
Cliffline Interpretive Site	Unknown	Unknown	Moab
Mineral Bottom Boat Ramp	Unknown	Unknown	Moab
Minor Overlook	Unknown	Unknown	Moab
Monitor and Merrimac Interpretive Site	Unknown	Unknown	Moab
Needles Overlook	11,948	1,269	Moab
Newspaper Rock Petroglyph Site	70,713	7,149	Monticello
Sandy Beach Boat Ramp	Unknown	Unknown	Moab
Sevenmile Overlook	Unknown	Unknown	Moab

Type of Site	Visits (2012)	Visitor Days (2012)	Field Office
Take-out Beach Boat Ramp	Unknown	Unknown	Moab
The Knoll Overlook	Unknown	Unknown	Moab
The Meadow Overlook	Unknown	Unknown	Moab

Dispersed Recreation

A wide range of dispersed recreation occurs throughout the Planning Area and takes place essentially in areas that are not identified as developed recreation sites. The majority of recreationists in these areas are participating in activities that emphasize solitude and undisturbed night skies and landscapes. Activities generally occurring in dispersed recreation areas include, but are not limited to, OHV, mountain biking, rock climbing, automobile touring, hiking, horseback riding, and backpacking. Specific areas where dispersed recreation occurs within the Planning Area include Indian Creek Crossing, Lockhart Basin Road, rock art sites along Highway 211, Mill Canyon and Dubinky Well Road areas, Labyrinth Rims area, Labyrinth Canyon, and White Wash Sand Dunes. Popular bicycle and motorized vehicle routes include all Jeep Safari Routes, as well as single track bike trails in Bar M, Klondike and around Gemini Bridges.

The Planning Area receives a great deal of dispersed recreation use. In the past 15 years, the BLM has constructed and maintained a variety of recreation infrastructure within the MLP Planning Area. With visitation to BLM-administered public lands around Moab continuing to increase, additional facilities authorized in the 2008 RMPs will likely be developed. Even with continued recreation development, dispersed recreation is likely to increase throughout the Planning Area as more visitors are attracted to the region.

User Conflict and Displacement

Recreational use and development has increased throughout the Planning Area, along with dispersed recreation use. Many recreationists have begun to move into areas with high mineral interest. Some recreation users see their use of the public land as the highest and best use. When recreational use reaches a certain threshold, user groups start to resent the multi-use nature of public lands.

BLM Byways and Backways

The BLM Byway program was developed as a component of the National Scenic Byway Program. These Byways and Backways highlight the spectacular nature of the western landscapes and vary from narrow, graded roads, passable only a few months of the year, to two-lane, paved highways providing year-round access. BLM Scenic Byways complement the National Scenic Byway Program by focusing on scenic corridors along major primary and secondary highways. A scenic byway has roadside corridors of special aesthetic, cultural, or historic value. BLM Back Country Byways are also a component of the National Scenic Byway Program, focusing primarily on corridors along back country roads with high scenic, historic, archeological, or other public interest values. The road may vary from a single-track bike trail to a low speed, paved road that traverses back country areas.

Roads that are designated Backways rather than Byways are done for the primary reason of safety. These roads generally do not meet full federal safety standards, meaning they are not wide enough, or graded enough to be safe year-round for passenger cars. They do, however, meet the highest standard of scenic, recreational, and historical criteria (Map 9).

Byways:

- **Highway 211 (Indian Creek Corridor Scenic Byway):** This 18-mile Byway is located 14 miles north of Monticello at the junction of SR-211 with US-191. From US-191 the Byway passes Newspaper Rock Recreation site and terminates at the Needles District of the Canyonlands National Park. This Byway is entirely located within the MLP Planning Area.

- **Highway 279 (Potash-Lower Colorado River Scenic Byway):** Three miles north of Moab, US-191 junctions with SR-270. The Byway follows the Colorado River through a meandering canyon for 17 miles to Jug Handle Arch. This Byway is entirely located within the MLP Planning Area.

- **Highway 313 (Dead Horse Point Mesa Scenic Byway):** Located nine miles north of the town of Moab. This Byway includes incredible red rock canyon scenery, and pull-offs along the Byway provide interpretation of the geology, archeology, and scenery of the highway. This Byway is entirely located within the MLP Planning Area.

- **Highway 128 (Upper Colorado River Scenic Byway):** This byway travels northeast from the town of Moab through a red rock canyon following the Colorado River. The Byway is 44 miles long and in addition to unique scenery, it serves as a connecting route for motorists going to or from Moab and the nearby National Parks and BLM recreation sites. This Byway is partially located within the MLP Planning Area.

Backways

- **Lockhart Basin Road (includes Hurrah Pass and on into Moab on the Kane Creek Road):** This backway follows Kane Creek Blvd from its intersection with US-191 in Moab to the "Y" intersection with 5th West. The backway is located almost entirely on BLM lands. Views include the Colorado River, serpentine Kane Creek Canyon, Hurrah Pass and the canyon and cliff country adjacent to Canyonlands National Park. This backway is entirely located within the MLP Planning Area.

- **Needles/Anticline Overlooks Road:** This backway is located off of US-191, twelve miles south of the LaSal Junction. This backway travels across the Canyon Rims SRMA to access BLMs Needles and Anticline Overlooks. It is a total of 76 miles to access both overlooks and return to US-191. The roads to each overlook offer views of Canyonlands National Park to the west and the LaSal Mountains to the east. From the Needles Overlook an expansive view of BLM's Indian Creek Wilderness Study Area and the Needles District of Canyonlands National Park can be seen. The Anticline Overlook is situated on a narrow promontory, and views include the Colorado River, Dead Horse Pont State Park, Hurrah Pass and Kane Creek Canyon. This backway is entirely located within the MLP Planning Area.

Trends

Demand for recreation activities is expected to continue increasing in the Planning Area. This will place demands on the Moab and Monticello Field Office to provide and manage increased use. Within the Planning Area there has been an increase in the types and variety of recreation activities, such as ballooning, BASE jumping, skydiving, and canyoneering. Visitors engaging in these activities and existing activities are seeking a highly undisturbed and unique natural setting.

Forecasts

Current use levels continue to produce a demand for recreation resources, including highly undisturbed scenery. Current publications such as Frommer's Guides and National Geographic traveler have identified the Planning Area as a unique recreation area. This notoriety is expected to continue to contribute to the increase in recreation activities. In addition, the popularity of Moab as a second home and retirement destination, as well as a magnet for attracting entrepreneurs, the self-employed, and those relying on non-labor income, is largely due to the area's recreation opportunities.

Key Features

- Visual quality
- Undisturbed landscape
- Quality and diversity of recreation opportunities
- Potential conflict and displacement resulting from mineral development

2.8 RIPARIAN

2.8.1 Regional Context

Riparian and wetland areas are sensitive vegetative or physical ecosystems that develop in association with surface or subsurface water (Leonard et al. 1992). Riparian and wetland ecological systems comprise less than 1 percent of the 22 million acres of public lands administered by BLM in Utah, but are among the most important, productive, and diverse ecosystems on the landscape. Benefits from riparian/wetland ecosystems are essential to both human and wildlife values and include:

- Maintaining clean, renewable water supplies;
- Supporting various life stages for diverse flora and fauna, including special status species and fisheries;
- Importance in cultural and historic values;
- Economic value derived from sustainable uses (open space, hunting, livestock grazing; commercial recreation);
- Greenbelt associated recreation and scenic values;
- Thermal/shade protection for both humans and wildlife, which is especially important within the arid Southwest; and
- Flood attenuation.

Riparian and wetland areas include, but are not limited to, areas adjacent to waterways (whether waters are surface, subsurface, or ephemeral), springs, potholes, wet meadows, sloughs, marshes, swamps, bogs, floodplains, lakes, and reservoirs. Riparian areas are recognized as "a form of wetland transition" between permanently saturated wetlands and upland areas (Leonard et al. 1992). For BLM purposes, riparian and wetland areas are referred to synonymously unless specifically discerned. Riparian and wetland ecosystems are classified by type based on hydrologic, geomorphologic, and biological factors (Cowardin et al. 1979).

Riparian/wetland habitats are fragile resources and are often among the first landscape features to reflect impacts from management activities. These habitats are used as indicators of overall land health and watershed condition. Healthy riparian systems filter and purify water, reduce sediment loads and enhance soil stability, reduce destructive energies associated with flood events, provide physical and thermal

micro-climates in contrast to surrounding uplands, and contribute to groundwater recharge and base flow (BLM 1991b).

2.8.2 Resource Characterization

Indicators

The BLM uses a qualitative method for assessing the condition of riparian/wetland areas called Proper Functioning Condition (PFC). This rating is the best indicator for riparian conditions. The assessment process considers the hydrology, vegetation, and erosion/deposition attributes of riparian/wetland areas. The PFC rating refers to how well the physical processes are functioning. PFC is assessed for each stream or varying segments. Functioning condition is rated by category to reflect ecosystem health as affected by management practices. Riparian/wetland areas are rated as in proper functioning condition when adequate vegetation, landform, or woody debris is present to:

- Dissipate high-energy water flow;
- Filter sediment, capture bedload, and aid floodplain development;
- Improve floodwater retention and groundwater recharge;
- Develop root masses that stabilize streambanks;
- Develop diverse fluvial geomorphology (pool and channel complexes) to provide habitat for wildlife; and
- Support greater biodiversity.

For areas that are not functioning properly, changes have to be made that allow them to recover (e.g., acquire adequate vegetation). A change such as acquiring vegetation leads to other physical changes, which allows the system to begin to function. If a riparian/wetland area is not in PFC, it is placed into one of three other categories:

- Functioning at Risk: Riparian-wetland areas that are in functional condition, but that have an existing soil, water, or vegetation attribute that makes them susceptible to degradation.
- Non-functioning: Riparian-wetland areas that clearly are not providing adequate vegetation, landform, or woody debris to dissipate energies associated with flow events, and thus are not reducing erosion, improving water quality, etc.
- Unknown: Riparian-wetland areas for which there is a lack of sufficient information to make any form of determination.

Current Condition

BLM administers 15,468 acres (2 percent of BLM-administered lands) of riparian and wetland resources on public lands within the Planning Area (Map 10). The majority of these resources are riparian areas located along the Colorado River, Green River, and their associated tributary drainages, including Kane Creek, Ten Mile Wash, Indian Creek, and many others. Table 2-14 identifies PFC ratings for riparian habitat within the planning area.

Table 2-14. Riparian Functioning Condition, Canyon Country Planning Area (BLM Lands Only)

	Moab Field Office (Acres within Planning Area)	Monticello Field Office (Acres within Planning Area)	Total (Acres within Planning Area)
Riparian	11,337	4,131	15,468

	Moab Field Office (Acres within Planning Area)	Monticello Field Office (Acres within Planning Area)	Total (Acres within Planning Area)
Proper Functioning Condition	5,427	NA*	5,427
Functioning at Risk	5,605	NA*	5,605
Non-Functioning	231	NA*	231
Unknown	NA*	4,131	4,131

*No data was available

Five riparian/wetland exclosures have been constructed in the riparian corridors along, Pack Creek, Colorado River near McGraw Bottom, Dry Oak Springs, Lost Springs Canyon, and around Levi Well.

Invasive and/or Non-Native Species

While functional ratings can indicate the health of an ecosystem and be used as management tools, they do not in themselves reflect the degree of ecosystem diversity relative to invasive, exotic or noxious plant species. This factor has severely altered the majority of native riparian and wetland ecosystems throughout the west. Table 2-15 identifies native and non-native plant species found in the Planning Area. Under this condition, a system can be severely altered and still function to a lesser degree than its desired or potential condition. Riparian areas are naturally dynamic zones driven by disturbance. Natural disturbance within riparian ecosystems associated with water amount, timing, duration and source supports the establishment of native vegetation but can also lead to encroachment by invasive and/or non-native plant communities if these seed sources are present.

Table 2-15. Common Riparian Plant Species Occurring in the Planning Area

Common Name	Scientific Name
Native Riparian Species	
Fremont cottonwood	*Populus fremontii*
Narrowleaf cottonwood	*Populus angustifolia*
Gooding willow (black willow)	*Salix gooddingii*
Coyote willow	*Salix exigua*
Yellow willow	*Salix lutea*
Water birch	*Betula occidentalis*
Box elder	*Acer negundo*
Bulrushes	*Scirpus spp.*
Rushes	*Juncus spp.*
Spike-rushes	*Eleocharis spp.*
Cattail	*Typha spp.*
Invasive/Exotic Species	
Russian Olive	*Elaeagnus angustifolia*
Tamarisk	*Tamarix spp.*
Chinese elm	*Ulmus parvifolia*

Common Name	Scientific Name
Ravenna grass	*Erianthus ravennae*
Clematis	*Clematis spp.*
Phragmites	*Phragmites spp.*
Noxious Species	
Russian knapweed	*Acroptilon repens*
Purple loosestrife	*Lythrum salicaria*
Spotted knapweed	*Centaurea maculosa*
Bermudagrass	*Cynodon dactylon*
Bindweed	*Convolvulus spp.*
Broad-leaved peppergrass (tall whitetop)	*Lepidium latifolium*
Canada thistle	*Cirsium arvense*
Diffuse knapweed	*Centaurea diffusa*
Perennial sorghum (including Johnson grass)	*Sorghum spp.*
Musk thistle	*Carduus nutans*
Quackgrass	*Elytrigia repens*
Scotch thistle	*Onopordum acanthium*
Squarrose knapweed	*Centaurea squarrosa*
Whitetop	*Cardaria spp.*

Invasive and noxious species (namely tamarisk, Russian olive, and Russian knapweed) are now common within most riparian/wetland ecosystems along major riverways in the Planning Area. Possibly the most devastating aspect of invasive exotic species is making healthy riparian ecosystems unhealthy. Exotic and noxious species can alter individual riparian functions or processes, including:

- Invasive and noxious plant species often dewater riparian sites because they have deeper tap roots to out-compete natives for availability of water in arid environments;
- Tamarisk secretes salt and increases soil and water salinity, resulting in reduced seed establishment of native species, and reduced downstream water quality. This has severe economic impacts;
- Invasive and noxious plant species compete for sun and space in narrow available habitats;
- Invasive and noxious plant species have large numbers of seeds and long seed establishment periods (very prolific in comparison to native species);
- Invasive and noxious plant species communities typically reduce biodiversity (significant decreases in numbers and types of associated biotic species, including birds, bats, insects, amphibians, etc.); and
- Invasive and noxious plant communities (e.g., *Typha spp.* and *Phragmites australis*) because of root and stem densities can armor stream banks promoting entrenched systems with highly destructive flooding energies which remain undissipated within deep channels, resulting in high bank loss downstream, sedimentation, and salinization.

Riparian/Wetland Improvement and Restoration

Impacts to Riparian Areas by Watershed

Improvements and restoration efforts are conducted to ensure proper management of riparian/wetland ecosystems based on monitoring and on evaluations of individual resources, resource objectives, or in response to activity plans (Table 2-16). Improvements are actions such as protective fencing or adjustments in management uses, while restoration refers to the repair of ecological functions of a riparian/wetland system.

Table 2-16. Riparian Corridors with Ongoing Restoration Actions in the Planning Area

Watershed	Issues Receiving Corrective Action
Kane Springs Creek	Invasive and noxious plant species, illegal off road travel, road in floodplain
Ten Mile Wash (and tributaries)	Illegal off road travel, dispersed camping, invasive and noxious plant species, livestock management, road in floodplain
Seven-mile Wash	Illegal off road travel, invasive and noxious plant species, livestock management, road in floodplain
Hunters Canyon	Invasive and noxious plant species, campground in floodplain
Lost Springs	Invasive and noxious plant species, livestock management
Bartlett Wash	Illegal off road travel, livestock management, road in floodplain
Moonflower Canyon	Social trailing, campground in floodplain, parking area maintenance

Current Riparian/Wetland Condition Status

Changes in riparian/wetland functioning condition generally occur dramatically rather than gradually, and often in response to cumulative impacts that cause failure following high flood events when functioning processes are most critical to dissipate destructive flows. However, in assessing the 1990 priority of riparian/wetlands in the Planning Area, very few changes in management priority are reflected, indicating that similar issues or conditions have been maintained over the last few years. Some notable differences in riparian/wetland condition and priorities have occurred in areas with popular OHV use (and associated dispersed camping), reoccurring livestock grazing, and increased use of county access roads.

Recent revisions of riparian/wetland priorities are based on the protection of important riparian/wetland resources or the need for additional management in response to impacts resulting in Functioning-At-Risk conditions or declining trends. Top priority is place upon riparian areas that are Functioning-At-Risk.

In the fall of 2004 the biological control agent, *Diorhabda elongata* or tamarisk leaf beetle, was released on private lands along a stretch of the Colorado River adjacent to the Potash Road north of Moab. This population established successfully throughout the Planning Area and repeated defoliation is expected to continue. There will likely be standing dead and defoliated plants, release of other suppressed weed species such as knapweed, kochia. Potentially some recovery of willow and other native species may occur, especially in headwaters or areas with less dense tamarisk infestations; however due to salinization of soils from dense tamarisk stands or hydrologic controls which may affect flooding and the potential for cottonwood establishment, natural revegetation may not readily occur and more active restoration techniques may be necessary to prevent erosion or degradation of riparian resources.

Trends

Riparian/wetland ecosystems are strong attractors for both animal and human activities, especially in the arid southwest where summer temperatures often exceed 100 ºF. Demand for diverse riparian/wetland ecosystems is high and currently exceeding the average capacity of these systems in the Planning Area, with resulting decreases in sustainability, and proper functioning condition. The recreational demand within riparian/wetland is highest during critical spring growing seasons when seedling establishment and stand recruitment occurs, but recreation peaks again during fall seasons after extreme summer temperatures decline.

Forecasts

Demands for water resources with potential direct and indirect impacts to associated riparian/wetlands would likely increase in response to current and prolonged droughts. Climate change, ground water development use, may also affect riparian habitat due to seeps and springs usage/depletion. With decreasing quantity and quality of riparian/wetlands due to growing popularity, the demand for diverse wildlife habitat and refuge becomes even more critical as more species and habitats become sensitive or endangered.

Key Features

Key features to consider for managing riparian/wetland areas in the Planning Area are associated with surface water features including rivers, streams, springs, lakes, ponds, marshes, fens, seeps, and playas. Riparian/wetland areas are entirely dependent upon places on the landscape that have water on or near the surface for an extended period of time (riparian/wetland vegetation usually needs 30 days or more of contact with the water table or the presence of mineral soil/organic matter that absorbs and holds water for a long time to establish and remain on a given site).

Watersheds, including ephemeral drainages and groundwater recharge areas, are also key features because they have a great deal of influence on associated surface and groundwater features and therefore influence the functional state/condition of the riparian/wetland areas they support. There are numerous riparian and wetland habitats that fit the criteria for key features.

2.9 SOIL AND WATER

Soils in the Planning Area are diverse; great differences in soil properties can occur within short distances. The distribution and occurrence of soils is dependent on a number of factors including the interaction of relief (slope), aspect, parent material (geology), living organisms, and climate. These variables create complex and diverse soil patterns that influence the use and management of the soil resource. Stable and productive soils provide the foundation for other resources and for resource uses. Soils are also a living system that is linked to nutrient and hydrologic cycles, energy flows, and other ecological processes. Soils are affected by a variety of surface uses that loosen topsoil and damage or remove vegetation or other ground cover, which may result in accelerated erosion.

Water resources are important in this arid region, and support other resources and uses including riparian vegetation, wildlife, grazing, recreation, municipal and private drinking water sources. Water quality varies based on parent rock properties, local conditions and uses. Water quantity varies widely based on availability and uses. Changes in either water quality or water quantity can affect associated ecological factors including wildlife habitat, floodplain stability, and vegetation, as well as non-ecological factors, including scenic values, grazing uses, recreation uses, domestic uses, and energy development uses.

Surface water can be found in streams, springs, ponds, reservoirs, rivers, and in ponds or troughs storing water from water wells. Groundwater is an important component of water resources, and varies in quality and depth within the planning area. Groundwater flows to the surface at many isolated springs and seeps, and is the source of most stream flow in the planning area.

Surface water and groundwater resources are interconnected. Changes to groundwater conditions such as water quality or depths can affect surface water resources over time. Groundwater resources, recharged by infiltration of snowmelt, rainwater and sometime stream flows, can be affected by surface water conditions and climatic variations.

2.9.1 Regional Context

Watersheds

The USGS has divided and subdivided the United States into successively smaller hydrologic units which are classified into 6 levels: regions (largest), sub-regions, accounting units, subbasins, watersheds and sub-watersheds. Each hydrologic unit is identified by a unique hydrologic unit code (HUC) consisting of two to fourteen digits based on the level of classification (UGS 2003). The MLP Planning Area, located within the Upper Colorado Region, has portions of 16 watersheds within 4 sub-basins. Subbasin and watershed boundaries are shown on Map 11 and are described in Table 2-17.

Table 2-17. Subbasins and Watersheds within the MLP

HUC	Subbasin Name	Watershed Name	Acres
1403000107	Westwater Canyon. Colorado, Utah	Sagers Wash	22,469
1403000407	Lower Dolores. Colorado, Utah	Granite Ck- Lower Dolores R	19,289
1403000501	Upper Colorado- Kane Springs. Colorado, Utah	Salt Wash	68,546
1403000502	Upper Colorado- Kane Springs. Colorado, Utah	Courthouse Wash	74,620
1403000503	Upper Colorado- Kane Springs. Colorado, Utah	Placer Creek- Colorado R	29,308
1403000504	Upper Colorado- Kane Springs. Colorado, Utah	Mill Creek	583
1403000505	Upper Colorado- Kane Springs. Colorado, Utah	East Canyon- Hatch Wash	22,293
1403000506	Upper Colorado- Kane Springs. Colorado, Utah	Hatch Wash- Kane Springs	137,132
1403000507	Upper Colorado- Kane Springs. Colorado, Utah	Harts Draw	72,894
1403000508	Upper Colorado- Kane Springs. Colorado, Utah	Indian Creek	108,370
1403000509	Upper Colorado- Kane Springs. Colorado, Utah	Salt Creek	2658
1403000510	Upper Colorado- Kane Springs. Colorado, Utah	Lockhart Canyon- Colorado R	103,587
1406000803	Lower Green. Utah	Little Grand Wash	681
1406000804	Lower Green. Utah	Salt Wash- Green River	50,373
1406000805	Lower Green. Utah	Tenmile Canyon	100,403
1406000807	Lower Green. Utah	Taylor Canyon- Green River	104,258

Southeast Colorado River Basin

The Planning Area is located within the Southeast Colorado River Basin, an administrative area designated by the Utah Division of Water Resources (UDWR) and includes Grand and San Juan

Counties. This area is used by the Utah Division of Water Quality as a water quality assessment area, and by the UDWR for water rights administration.

Salinity

Saline soils can contribute salinity loading to the Upper Colorado River Basin, which is a regional and national concern. With the passing of the Colorado River Basin Salinity Control Act of 1974 (Public Law 93-320) and subsequent public laws, the Department of Interior was mandated to implement salinity control actions in the Colorado River Basin.

Wind Erosion/Dust

Increased dust levels are national and regional concerns, as higher dust levels in higher elevations can cause earlier and faster snow melt events. Earlier snow melts can cause earlier peak flows, and can impact aquatic species that need peak flows later in the season.

An implication of wind-borne sediment is its effect on snowpack in downwind mountain ranges and ultimately, on water yield to the Colorado River and its tributaries. Airborne dust that collects on mountain snow decreases snow reflectance and accelerates spring snowmelt. For example, in 2009, the San Juan Mountains experienced heavy fallout from spring dust storms; even though the snow pack was average, spring snow melt was the earliest on record at 50 days earlier than normal (J. Deems, REA Workshop 3 presentation). Painter et al. (2010) modeled the impacts of dust on snow to estimate its contribution to changes in runoff in the Upper Colorado River Basin during the timeframe 1916–2003. They found that while modeled natural flow peaked in June and produced runoff into July, post-disturbance (present day) runoff increased in April, peaked in May, and dropped off in June.

The models indicate that dust is reducing the flow on the Colorado River by 5 percent (two times the annual allotment for Las Vegas). Early snowmelt from accumulated dust (26–50 days) is greater than that predicted for temperature and precipitation changes from climate change (5–15 days). The authors believe that regional efforts at dust abatement and soil stabilization could have a mitigating effect on the runoff response of the Upper Colorado River as well as on future regional impacts of climate change. (Bryce, 2012)

Water Erosion/Sedimentation

Increased water erosion of soils and associated sediment loading are of regional concern as Lake Powell is downstream of this entire region. Lake Powell is filling up with sediments which will be a problem for electrical generation in the future.

2.9.2 Resource Characterization

Indicators

Soil

Soil conditions are influenced by natural factors such as slope, aspect, elevation and presence of water. Soils conditions are also based on natural parameters such as soil chemistry including salinity levels, wind and water erodibility, and percent organic material. Surface disturbing uses may affect these conditions and decrease overall soil health for a period of time. The larger, more extensive disturbances will cause larger, longer term impacts.

Indicators of degraded soil conditions include increased water and wind erosion rates, loss of soil stability, decreased floodplain stability, increased gullying, increased compaction levels, decreased infiltration rates, reduced biological soil crust development, and decreased or loss of soil productivity.

Monitoring and assessment of soil conditions in the Planning Area is mainly project related to provide the BLM with information on impacts and restoration successes. Other soil assessments include Rangeland Health Assessments associated with grazing permit renewals. Monitoring is ongoing at long-term study sites and grazing exclosures.

Water

Natural processes and human actions influence the chemical, physical, and biological characteristics of water. Water quality varies from place to place, seasonally, and by the kind of substrate through and over which water moves. Indicators of water quality include, but are not limited to:

- Chemical characteristics (e.g., pH, conductivity, dissolved oxygen, salinity);
- Physical characteristics (e.g., sediment, temperature, color); and
- Biological characteristics (e.g., macro-and micro-invertebrates, fecal coliform and E. coli, and plant and animal species).

Maintaining water quantity is as important as maintaining water quality for ecological values and water uses including stock, wildlife, recreation and drinking water.

Water resource monitoring in the Planning Area is designed and managed to provide the BLM with baseline information on water quantity and quality conditions as well as any changes in condition due to management activities. Monitoring activities include hydrological and climatological data collection, water quality sampling, stream flow monitoring and aquatic habitat assessments including macro-invertebrate sampling. Indirect indicators of water quality conditions and watershed health include the riparian assessments using the PFC assessment techniques.

Current Condition

Soil

Soils are the medium for plant growth, and provide nourishment for nearly all terrestrial organisms. They support a wide variety of plant and animal communities within the Planning Area. Soils have developed in bedrock, sedimentary ocean deposits, materials washed down by rivers and streams, and windblown sands and silts known as loess, residuum, colluvium, alluvium, aeolian sands, and loess. They are derived primarily from the sedimentary geologic deposits that occur throughout the Planning Area. Soil temperature regimes predominantly vary from mesic (moderate, mean annual soil temperatures are 46 to 59 °F) at lower elevations to cryic (cold, mean annual soil temperatures are less than 46 °F, and they don't warm significantly in the summer) at higher elevations. Soil moisture ranges from aridic (very dry) to ustic (dry, but with some moisture in the growing season) throughout the Planning Area, with hydric (wet) soils occurring in riparian and wetland areas.

There are a variety of soil types in the Planning Area, including soils that are sensitive in nature such as moderately saline and highly erodible soils. Sensitive soils need special management to protect these soils from accelerated erosion and associated degradation. These soils may be especially vulnerable to impacts and harder to reclaim or restore after disturbance.

Biological crust communities can provide significant protection from wind and water erosion. Disturbance of biological crusts affects most soils, some more than others, depending on the type of soil and biotic community.

Sensitive Soils
"Sensitive soils" are those identified as having characteristics that make them extremely susceptible to impacts or more difficult to restore or reclaim after disturbance, including:

- erodible soils (high and moderate wind or water erosion ratings)
- saline soils (moderate to high salinity levels)
- steep slopes
- droughty soils
- alkaline soils
- sodic soils
- shallow soils
- biotic soil crusts
- dust blowout /dust sink areas.

Once these sensitive soils are disturbed, the impact usually is long-lasting.

Erodible Soils
There are soils in the Planning Area that are susceptible to wind and water erosion. Although these soils have naturally high rates of erosion, the erosion rates are easily accelerated by surface-disturbing activities. Best management practices to protect soil stability include interim reclamation, mulching bare ground with natural materials, limiting or seasonally restricting surface-disturbing activities such as grazing, off-road travel, and mineral exploration and development.

Wind can strip the surface horizon of soil and nutrients necessary for seed germination and plant recruitment. Soils are especially susceptible to wind erosion when plant cover and/or biological soil crust cover are removed. A well-developed biological soil crust can prevent soil movement during high wind events, especially when interspersed between shrubs. Increases in wind erosion rates increase regional dust production, which can affect regional snow melt conditions.

In the Planning Area, highly wind erodible soils occur on 142,396 acres and moderately wind erodible soils occur on 458,479 acres as shown on Map 12. Highly wind erodible soils are soils within wind erodibility groups 1 and 2, while moderately wind erodible soils are within wind erodibility groups 3, 4, and 4L (as assigned in SSURGO database).

Accelerated water erosion can cause the formation of rills and gullies, and can contribute to excess sedimentation in streams and reservoirs. Within the Planning Area there are approximately 25,058 acres of soils with high water erosion ratings and 44,206 acres of soils with moderate water erosion ratings and are shown on Map 13. Potential for water erosion is calculated combining percent slope and k-factor (an erodibility constant). Soils with high potential for water erosion have slopes 10 percent and greater and K-factors greater than or equal to 0.37; or slopes greater than 30 percent and K-factors between 0.20 and 0.36. Soils with moderate potential for water erosion have slopes between 10-30 percent and K-factors between 0.20 and 0.36; or slopes greater than 30 percent and K-factors less than 0.20.

Saline Soils
There are soils within the Planning Area with moderate and low salinity levels, and no soils with high salinity levels. Moderately saline soils have electrical conductivity levels between 8 and 16 mmhos/cm. Soils with moderate salinity content have naturally high erosion rates and low reclamation potential. They

are highly susceptible to surface disturbance, and erosion rates are easily accelerated. Erosion of saline soils impacts the water quality of downstream watersheds, raising salinity, selenium and sediment loads and associated water chemistry parameters (Total Dissolved Solids, Total Suspended Solids, etc.). The Planning Area contains approximately 78,941 acres of moderately saline soils, in the Mancos Shale along the northern Planning Area as shown in Map 14.

Steep Slopes
There are 159,356 acres of steep slopes (slopes greater than 30 percent) within the Moab portion of the Planning Area as shown on Map 15. Surface disturbances, such as road or well pad construction and large truck traffic, on steep slopes can increase erosion and surface runoff rates. Seasonal restrictions and erosion control plan requirements can minimize these impacts.

In lands within the Monticello Field Office, new surface disturbing activities are not allowed on slopes greater than 40 percent; surface disturbing activities on slopes between 21-40 percent require an erosion control strategy, reclamation and site plan with a designed approved by the BLM prior to construction.

Droughty Soils
There are 41,888 acres of highly droughty soils and 234,317 acres of moderately droughty soils within the Planning Area. These ratings are based on available water capacity factors which can affect revegetation and reclamation activities. Highly droughty soils have available water capacity levels less than 0.05 in/in and moderately droughty soils have available water capacity levels between 0.05 and 0.10 in/in. These soil types and associated vegetation are severely impacted during drought conditions and are shown on Map 16.

Alkaline Soils
There are 43,867 acres of highly alkaline soils and 697,507 acres of moderately alkaline soils within the Planning Area. These ratings are based on pH levels measured in the surface layer. Highly alkaline soils have a pH of 9.0 or greater. Moderately alkaline soils have a pH between 7.8 and 8.9. These soils are vulnerable to site degradation and are difficult to successfully revegetate; these soils are shown on Map17.

Sodic Soils
There are 212,131 acres of moderately sodic soils within the Planning Area. These ratings are based on Sodium Adsorption Ratio levels (SAR), which is the amount of sodium that can be held by the soils. This influences nutrient uptake. Highly sodic soils have a SAR value greater than 13, while moderately sodic soils have a SAR value between 4 and 13. Sodic soils are vulnerable to site degradation and are difficult to successfully revegetate; they are shown on Map 18.

Shallow Soils
There are 210,663 acres of highly shallow soils and 91,388 acres of moderately shallow soils within the Planning Area. These ratings are based on soil depth to bedrock or hardpan. Highly shallow soils have a depth of less than 10” to bedrock or a hardpan surface. Moderately shallow soils have a depth between 10” and 20” to bedrock or a hardpan surface. These soils are vulnerable to site degradation and are difficult to successfully revegetate; they are shown on Map 19.

Biotic Soil Crusts
Biotic soil crusts are made up of mats or filaments of cyanobacteria, lichens and mosses. Development of biotic soil crust is strongly influenced by soil texture, soil chemistry, and soil depth. Crusts are more developed in shallow, sandy, non-saline soils, but can also be found throughout saline soil areas. They tend to be commonly found associated with soils high in gypsum. Soil crust species richness varies by soil type and parent material, with species richness higher on gypsiferous soils, non-calcareous sandy

soils, and limestone-derived soils. Many of the vegetative communities found in the Planning Area have evolved with the presence of biological soil crusts.

Biotic soil crusts play a major role in reducing water and wind erosion and in preventing the establishment of invasive annual grasses. They fix atmospheric nitrogen and carbon, retain soil moisture, and provide surface cover. Crust composition and level of abundance can be used to determine the ecological history and condition of a site (BLM 2001).

Loss of biotic soil crust leads to reduced soil productivity, decreased plant cover and vigor, and increased wind and water erosion. Severity, size, frequency, and timing of a surface-disturbing activity affect the degree of impacts to biotic soil crusts. Fine-textured soils have faster crust recovery rates than coarse-textured soils (BLM 2001).

"Soil crust populations are degraded when mechanical disturbances such as vehicular traffic, land clearing, or trampling disturb the soil surface. While any of these disturbances may not directly eliminate soil crusts, repeated disturbance degrades and fragments crust cover and may keep it in an early successional state (Belnap et al. 2001; Bryce, 2012)"

Although soil crusts can be found throughout the Planning Area, there are areas with high density or well-developed crusts or unusual crust components. Areas with higher potential for high density or well-developed crusts include Pinyon-Juniper woodland areas and shallow sandy areas associated with Slickrock and rock outcrops.

Dust Blowout/Dust Sink Areas

After the extensive drought in 2002, the USGS mapped 4,544 acres of "dust blowout areas" in the Moab Field Office (Map 20). These dust blowout/dust sink areas are discrete areas with actively blowing dust features such as active dunes or ripples and little to no vegetation. Often these areas are historic sheep bedding areas or areas surrounding heavily used water sources. During drought conditions, these areas can contribute large quantities of dust during high wind events. Under normal conditions, these areas are dominated by invasive and exotic plant species and lack soil productivity and stability.

Water

Surface waters in the Planning Area are important resources in this arid region. Surface waters include two major rivers (the Colorado River and the Green River), 64 miles of perennial streams, 136.5 miles of intermittent streams, and many springs and seeps. These surface waters are important ecologically and support uses including grazing, wildlife, and recreation. The miles of perennial and intermittent stream segments by watershed in the Planning Area are listed in Table 2-18, and are shown on Map 21.

Streams

The sources of water for the Colorado and Green rivers lie outside the Planning Area, with their headwaters in Colorado, northern Utah and Wyoming. The water in the smaller streams comes from springs and seeps along with snowmelt from the La Sal Mountains and other surface runoff.

Table 2-18. Miles of Perennial and Intermittent Stream Segments by Watershed

Watershed	Stream	Perennial	Intermittent
Courthouse Wash	Bartlett Wash	0.5	4.5
Courthouse Wash	Hidden Canyon	0	1.5
Courthouse Wash	Tusher Canyon	0.5	2
Courthouse Wash	Mill Canyon	0	1.5

Watershed	Stream	Perennial	Intermittent
Courthouse Wash	Courthouse Wash	0	2
Courthouse Wash	Seven Mile Wash	0	3
East Canyon- Hatch Wash		0	0
Granite Ck- Lower Dolores River	Fisher Creek	11	0
Granite Ck- Lower Dolores River	Waring Canyon	0	2
Granite Ck- Lower Dolores River	Hideout Canyon	0	1
Harts Draw	Harts Draw	0	12
Hatch Wash- Kane Springs	Kane Springs	10	10.5
Hatch Wash- Kane Springs	Trough Springs	2	1
Hatch Wash- Kane Springs	Hatch Wash	6	9
Hatch Wash- Kane Springs	Goodman Canyon	0.5	1
Hatch Wash- Kane Springs	Unnamed	0	4
Hatch Wash- Kane Springs	Muleshoe Canyon	0	4
Hatch Wash- Kane Springs	Hunter Canyon	0	6
Hatch Wash- Kane Springs	Troutwater Springs Canyon	0	2.5
Hatch Wash- Kane Springs	unnamed	0	1
Hatch Wash- Kane Springs	West Coyote Wash	0	5
Hatch Wash- Kane Springs	Three Mile Creek	0	3
Hatch Wash- Kane Springs	Little Water Creek	0	2.5
Hatch Wash- Kane Springs	Hatch Ranch Wash	0	2
Hatch Wash- Kane Springs	Windwhistle Draw	0	3.5
Indian Creek	Indian Creek	13	2
Indian Creek	North Cottonwood Creek	14	0
Little Grand Wash		0	0
Lockhart Canyon- Colorado River	Day Canyon	0	1.5
Lockhart Canyon- Colorado River	unnamed	1	0
Mill Creek		0	0
Placer Creek- Colorado River		0	0
Sagers Wash	San Arroyo Wash	0	1
Sagers Wash	Owl Draw	0	0.5
Salt Creek		0	0
Salt Wash	Lost Spring Canyon	1	0
Salt Wash	Yellow Cat Wash	1	0
Salt Wash- Green River	White Wash	0	7
Salt Wash- Green River	Red Wash	0	3.5
Salt Wash- Green River	unnamed	0	3.5
Taylor Canyon- Green River	Spring Creek	0	8

Watershed	Stream	Perennial	Intermittent
Taylor Canyon- Green River	Mineral Canyon	0	6
Taylor Canyon- Green River	unnamed	0	0.5
Ten Mile Canyon	Ten Mile Wash	3.5	14
Ten Mile Canyon	Cow Canyon	0	0.5
Ten Mile Canyon	Freckles Canyon	0	1
Ten Mile Canyon	Trail Canyon	0	1
Ten Mile Canyon	Trough Canyon	0	2

Springs/seeps

Springs and seeps are important sources of water in isolated areas, used by wildlife, grazing, and recreationists. These water sources are directly related to groundwater, and are affected by changes to groundwater water quality conditions or flow conditions. Spring flows often have seasonal and annual variations, with a delayed response to recharge conditions. This delay may be short term, with quick responses to drought conditions, or may be long term, taking years to show any changes. The important springs and spring areas within the Planning Area are listed in Table 2-19 and are shown on Map 22.

Table 2-19. Important Springs and Spring Areas within the Planning Area

Name	Location
Bartlett Wash Springs Area	T24S R19E
Big Mountain Spring	T24S R18E sec 12
Cave Springs Area	T23S R23E
Courthouse Springs Area	T23S R20E, T24S R20E
Crystal Springs Area	T23S R18S sec 25
Day Canyon Spring	T26S R20S sec 1
Deadman Spring	T25S R18E sec 9
Dripping Spring- Kane Creek Canyon	T26S R21E sec 21
Dripping Spring- Lockhart Basin	T28S R20E
Dry Oak Spring	T22S R21E sec 26
Hart Spring	T31S R22E sec 1
Hatch Ranch Springs	T29.5S R22E sec 35
Horsethief Springs Area	T26S R18E sec 27, 28
JC Park Spring	T26S R21E sec 10
Kane Springs	T28S R22E sec 1
Lost Spring	T23S R22E sec 17
Ten Mile Canyon Springs Area	T24S R18E
Trough Springs Area	T27S R21E
Troutwater Springs	T28S R21E sec 25
White Wash Springs Area	T23S R17E
Yellow Jacket Springs Area	T23S R23E sec 10, 11

Bartlett Wash Springs Area

The Bartlett Wash Springs Area includes over 10 larger springs and seeps within a several-mile radius, all located on or near the northern side of the Moab Fault. This area is adjacent and southwest of the Courthouse Springs Area. The recharge area for these springs is the Bartlett Flat area to the southwest. Base flows for these springs range from 5-20 gallons per minute (gpm).

Cave Springs Area

The Cave Springs Area includes 3 smaller springs and seeps within a 1 mile radius. These springs are located in alcoves or narrow side canyons, seeping out from sandstone layers. The spring flows fluctuate seasonally with base flows of less than 5 gallons per minute (gpm).

Courthouse Springs Area

An ecologically important spring system has been identified by Arches National Park which is located along the western boundary of Arches National Park. This spring system includes several springs on BLM lands as well as springs within the National Park, and provides base flows in Sevenmile Wash and Courthouse Wash.

After extensive hydro-geologic studies, it is clear that these springs are hydrologically connected and ecologically important to this area. The source of water for the spring system is the Moab Member aquifer, a well sorted, calcite-cemented, densely jointed aeolian sandstone. The recharge area for the springs is the portion of Courthouse Wash Watershed located on the east side of the Moab Fault. This is a shallow aquifer system with a relatively short travel time of about 50 years (Hurlow and Bishop, 2003). The Moab Fault is considered a groundwater barrier, so any withdrawals to the northwest of the Moab Fault would not impact this spring system.

The springs in the area are highly vulnerable to any contamination and/or withdrawals of groundwater from the Moab Member aquifer. The National Park Service is currently working with the State of Utah Division of Water Rights to develop future groundwater withdrawal restrictions within the recharge area in order to maintain springs flows and water quality and to ensure the stability of the spring ecosystem.

Crystal Springs Area

The Crystal Springs Area includes several small springs within a one-mile radius that are located along or on the southwestern edge of the Moab Fault. These springs fluctuate seasonally, ranging in flows from 10 gpm to no flow in late summer. The springs provide water to a large area with no other surface water resources.

Horsethief Springs Area

The Horsethief Springs Area includes several small springs and seeps within a one mile radius and is located in alcoves or small canyons. These springs fluctuate seasonally, ranging in flows from 10 gpm to no flow in late summer. The springs provide water to a large area with no other surface water resources.

Ten Mile Canyon Springs Area

The Ten Mile Canyon Springs Area includes several small springs and seeps in both the main canyon and tributaries within the Ten Mile Wash ACEC. The ACEC was established as an ACEC in the 2008 Moab RMP based on relevance criteria including scenic, cultural, wildlife, natural processes, and natural hazards. All the relevance criteria are enhanced or influenced by perennial pools, springs and seeps, and perennial and intermittent stream segments within the canyon.

Water maintains the ecological diversity in this area by supporting a rich mixture of riparian resources and well-developed wetlands. The source of these springs and seeps is groundwater discharge. Springs

and seeps provide water to perennial to intermittent pools and stream segments scattered throughout the area.

Trough Springs Area

The Trough Springs Area includes at least 5 larger springs and several smaller seeps within 2 miles of each other, along the rim of Trough Springs Canyon. The location of these springs is influenced by the geologic structures and faults in the area. Base flows at these springs have not been monitored but are expected to be in the range of 10- 50 gpm, and may fluctuate seasonally. These springs are important surface water sources for the northern Hatch Point area, with only one small spring within 10 miles.

White Wash Springs Area

The White Wash Springs Area involves several large springs and many small springs and seeps, located in White Wash and tributaries as well as under the large sand dune area. The springs and seeps at the surface provide the only surface water within almost 10 miles, with base flows ranging from 1 to 20 gpm. The springs located under the sand dune area provide water for isolated cottonwood trees in an unusual ecological setting.

Yellow Jacket Springs Area

The Yellow Jacket Springs Area include several small springs and seeps located in Yellow Jacket Canyon, a Slickrock wash with little soil or vegetation. Although these springs and seeps have very low flow, barely measurable, they do provide the only surface water resources for miles.

Water Wells

Water wells are another important source of water in isolated areas, used by wildlife, grazing, and recreationists. (Public drinking water sources are discussed in the Public Water Reserves section). These wells access shallow groundwater resources, and are affected by changes to groundwater water quality conditions or flow conditions. Water levels in wells often have seasonal and annual variations, with a delayed response to recharge conditions. This delay may be short term, with quick responses to drought conditions, or may be long term, taking years to show any changes. The 7 important or larger water wells within the Planning Area are listed in Table 2-20 and are shown on Map 22.

Table 2-20. Important Water Wells within the Planning Area

Name	Location
Dubinky Well	T24S R18E sec 25
Eight Mile Rock Well	T29S R21E sec 14
Levi Well	T24S R18E sec 12
Monument Wash Wells (2)	T22S R22E sec 15
Queens Well	T23S R19E sec 18
Three Mile Well	T29S R22E sec 30
Mail Station Well	T30S R23E sec 8
Tank Draw Well	T30S R23E sec 22
West Division Well	T30S R23E sec 30
Lloyd Adams Well	T31S R23E sec 5
Lightning Draw Well	T31S R23E sec 3
Lone Cedar Draw Well	T31S R23E sec 17
Harts Draw Well	T32S R23E sec 7

Name	Location
Hart Point Well No. 2	T31S R22E sec 4
Hart Point Well No. 1	T31S R22E sec 6
Hart Point Well No. 3	T31S R22E sec 25
Hart Point Well No. 4	T30S R22E sec 31
Photograph Gap Well	T31S R23E sec 21

Public Water Reserves (PWRs)

Public water reserves are federally reserved water rights created by executive orders and are designed to reserve natural springs and water holes on public lands for general public use. A PWR designation is a federally reserved water right as well as a land withdrawal. There are 8,878 acres of PWRs within the Planning Area as shown on Map 23. To date, many of these PWRs have not been registered with the state and/or are not adjudicated.

Until 1926, PWRs were created on an ad hoc and site-specific basis. Federal agencies identified the springs they wanted reserved and these springs were incorporated by executive order into a chronologically numbered Public Water Reserve. Therefore PWRs with early numbers refer to site-specific reservations. In 1926, a carte blanche Public Water Reserve was created through an executive order by President Coolidge titled "Public Water Reserves No. 107." PWR 107 ended the site-specific system of reserving springs and water holes. The purpose of PWR 107 was to reserve natural springs and water holes yielding amounts in excess of homesteading requirements. The order states that "legal subdivision(s) of public land surveys which is vacant, unappropriated, unreserved public land and contains a spring or water hole, and all land within one quarter of a mile of every spring or water be reserved for public use." There was no intent to reserve the entire yield of each public spring or water hole, but rather reserved water was limited to domestic human consumption and stock watering. All waters from these sources in excess of the minimum amount necessary for these limited public watering purposes are available for appropriation through state water law.

Water Quality

The U.S. Geological Survey (USGS), the BLM, and the Utah Department of Environmental Quality (Utah DEQ) conduct water quality and stream flow monitoring programs. The USGS Division of Water Resources monitors stream flow and water quality of the Colorado River just upstream of the Planning Area at Dewey Bridge, and near Moab just outside the Planning Area. The USGS also monitors the Green River upstream of the Planning Area at the Green River State Park. The water quality monitoring includes specific conductivity and temperature readings.

The DEQ and BLM sampling programs support state water quality assessments and are more extensive, including many of the smaller creeks, springs, and lakes. The DEQ sampling program was started as the basis for Utah's water quality assessment required under Section 305(b) of the Clean Water Act, and Section 303(d) list of impaired water bodies.

The BLM monitors surface water quality conditions primarily by conducting water chemistry sampling. BLM participates in a cooperative program with the Utah DEQ to sample sites for water chemistry. BLM personnel take field measurements and collect grab samples. The State of Utah provides lab analysis and data management. When necessary, BLM uses other EPA-certified labs for analysis (e.g., American West Analytical Labs).

Most of the perennial streams within the Planning Area have been sampled for water chemistry several times. Water quality sample sites that have been established by BLM in cooperation with DEQ within or near the Planning Area are shown on Map 24. Data from samples collected before 2012 are available online in the STORET database (http://www.epa.gov/storpubl/). Data from samples collected after Jan 1, 2012 will be available online in the State of Utah database in the near future.

BLM also monitors water quality conditions by collecting macro-invertebrate samples for expert analysis. Some of the perennial streams within the Planning Area have been sampled for macro-invertebrates, and these sample sites are shown on Map 24. These data are shared with DWQ to assist with analyses and assessments.

Potential concerns with water quality within the Planning Area can include high stream temperatures, low dissolved oxygen levels, high sediment loads, high nutrient levels, and high levels of Total Dissolved Solids (TDS), salinity, and high coliform bacteria levels. High stream temperatures and low dissolved oxygen levels are associated with low stream flow conditions, but can be due to lack of riparian vigor and shading. High sediment loads are often associated with natural flood events, but can be increased by surface disturbances upstream in the watershed.

TMDL/Impaired Waters

With sufficient data it can be determined if a stream is meeting state standards. If a problem is documented, that stream segment will be included by the State of Utah on the List of Impaired Waters of Utah (303d list) submitted to the EPA every 2 years. A schedule for a Total Maximum Daily Load study (TMDL) is set. This study determines how to reduce pollutants and restore all beneficial uses. The TMDL also establishes the amount of a pollutant allowed in the water.

The only water body within the Planning Area determined by DEQ to be impaired is the Colorado River, which was listed in 2006 for impairment to the selenium standard. A TMDL has been initiated by the State of Utah, Division of Water Quality, with a moderate priority level. The selenium levels are already high and above Utah state standards near the Colorado-Utah state line, where the Colorado River enters Utah. Upstream in the Gunnison Valley and Montrose areas of Colorado are high contributions of selenium from irrigation and development on Mancos Shale related soils. There are several private farming operations upstream of the Planning Area; irrigating Mancos Shale related soils in Utah that may be contributing additional selenium to the Colorado River.

Salinity

High salinity levels in water are a surface water quality concern of national significance recognized in the Colorado River Basin Salinity Control Act of 1974. Salinity contributions are from both point sources and nonpoint sources. During low flow periods, salt contribution comes solely from point sources including seeps, springs, and groundwater flow. During high flow periods, non-point sources, including erosion of saline soils, become major contributors to salinity problems.

Point sources for salinity include discharge of saline groundwater from natural springs, seeps, flowing wells, and gaining streams. Although the Planning Area contains several small isolated springs and seeps with highly saline waters, they are not hydrologically connected to the Colorado River and do not affect the water quality conditions of any perennial streams or rivers. Stinking Springs in Onion Creek, which has been identified as a large natural point source of salinity, is located outside the Planning Area.

The primary nonpoint sources of salinity in the Planning Area are the diffuse overland runoff from saline soils and erosion and transport of saline soils during flow events. The Mancos Shale is recognized as the largest contributor of nonpoint salinity in the Upper Colorado River Basin (Laronne 1977). There are

approximately 78,941 acres of moderately saline, Mancos Shale-derived, soils in the northern portion of the Planning Area.

Any surface disturbance on these soils increases erosion and associated salinity and sediment loading to the Colorado River Basin, especially when the soils are wet and easily compacted.

Groundwater

Groundwater resources vary in quality and depth throughout the Planning Area. There are good quality shallow groundwater resources in the southern portion, and poor quality, limited quantity resources in the northern portion. Groundwater wells provide water to livestock, wildlife, and recreation users. Groundwater is the source of water for most springs and seeps in the Planning Area, supporting riparian resources and wildlife habitat.

Groundwater occurs in both consolidated and unconsolidated rock aquifers within the Planning Area. The main consolidated rock aquifer is known as the N aquifer, and includes the Glen Canyon aquifer and the Entrada aquifer. Water from the N aquifer is generally of good quality and suitable for drinking. Other groundwater sources include the Morrison and Dakota aquifers. These aquifers are not laterally or vertically homogenous within the Planning Area (Eisinger and Lowe 1999).

Due to evaporate deposits in the Paradox Formation underlying much of the Planning Area, there is a significant occurrence of briny groundwater at deeper levels. Total Dissolved Solid (TDS) concentrations can exceed 10,000 milligrams per liter (mg/L).

Another groundwater source is located adjacent to the Planning Area in the Moab/Spanish Valley area, in the unconsolidated material called the Valley Fill aquifer. This source provides lower quality irrigation water to Moab-area residents.

N Aquifer/ Glen Canyon Aquifer

The Glen Canyon aquifer consists of consolidated rocks of the Glen Canyon Group: Navajo Sandstone, Kayenta Formation and Wingate Sandstone and is the principal source of drinking water in the Moab area. These rock layers are highly faulted and fractured near the edge of Spanish Valley (Masbruch, 2012).

Recharge primarily occurs as infiltration from precipitation in the upland areas and is higher in areas with highly fractured rock, or in areas with shallow sandy soils and high infiltration rates. Recharge can also come from infiltration of surface water from streams and springs. Discharge from this aquifer can be found at numerous springs, seeps, and streams within the Planning Area.

N Aquifer/ Entrada Aquifer

The Entrada aquifer consists of consolidated rocks of the Moab Member of the Curtis Formation and the Slick Rock Member of the Entrada Formation, with moderate transmissivity rates. Again, recharge is mainly from infiltration from precipitation falling on Entrada outcrop areas. Discharge from the aquifer goes to water wells and to seeps and springs within the Planning Area.

Valley Fill Aquifer/ Spanish Valley

The Valley Fill aquifer can be found in the Moab-Spanish Valley area, adjacent to the Planning Area. This aquifer consists of unconsolidated Quaternary deposits and is currently the principal source of irrigation water in the Moab area (Masbruch, 2012). Water from the Valley Fill aquifer has slightly poorer water quality than the Glen Canyon aquifer, with higher levels of Total Dissolved Solids (TDS).

The majority of recharge is inflow from the Glen Canyon aquifer northeast of Moab (Masbruch, 2012). Discharge from this aquifer is to springs, water wells, streams, and wetlands within the Moab-Spanish Valley area.

Dakota Aquifer

The Dakota aquifer consists of consolidated rocks of the Dakota Sandstone and the Burro Canyon Formation. This aquifer is classified as having low to moderate transmissivity rates, with higher rates in faulted or fractured areas. Recharge to the aquifer is likely from infiltration from precipitation that falls on Dakota Sandstone outcrops (Masbruch, 2012). The aquifer discharges to low flow seeps and springs (Blanchard, 1990) within the Planning Area.

Morrison Aquifer

The Morrison aquifer consists of consolidated rocks of the Salt Wash Member of the Morrison Formation, with low transmissivity rates similar to the Dakota aquifer. Recharge and discharge conditions are similar to the Dakota aquifer. Discharge may contain high concentrations of radionuclides (Blanchard, 1990) due to high quantities of uranium found in the Morrison Formation.

Drinking Water

Groundwater resources in the southern portion of the Planning Area are important drinking water sources for several public water sources on BLM and private lands within and adjacent to the Planning Area, domestic water wells on state and private lands, and irrigation on private lands. Groundwater feeds Indian Creek and the associated municipal diversion for the City of Monticello just south of the Planning Area.

There are 2 Sole Source Aquifers located adjacent and to the northeast of the Planning Area. The Glen Canyon Sole Source Aquifer is the source of drinking water for the City of Moab and Spanish Valley. The Castle Valley Sole Source Aquifer is the source of drinking water to the Town of Castle Valley.

There are 5 public drinking water systems with 7 water sources (water wells) within the Planning Area (Table 2-20). The State Division of Drinking Water (DDW) approves "public drinking water source protection zones" for each public drinking water source or water well (Map 25).

Sole Source Aquifers

Sole source aquifers are designated by EPA on the request of the drinking water supplier, and are shallow, unconfined aquifers which supply at least 50 percent of the drinking water consumed in the area overlying the aquifer. These areas can have no alternative drinking water sources that could supply those who depend upon the aquifer for drinking water. The Planning Area is directly adjacent or close to 2 Sole Source Aquifers that provide drinking water to the Moab-Spanish Valley area and Castle Valley.

The Sole Source Aquifer designation petition for the Glen Canyon Aquifer System was filed by the City of Moab in May 2001. The City of Moab obtains all its drinking water from the Glen Canyon Aquifer System, from 4 springs and 5 water wells. Another potential water supply is the Valley Fill aquifer in Spanish Valley; however, as it has poor water quality, it is not considered a viable source of water. Because the Glen Canyon Aquifer system is exposed at the surface within the delineated Drinking Water Source Protection Zones, it is not protected from potential contaminants spilled on the ground. The aquifer is also vulnerable to contamination introduced through poorly constructed oil wells and test holes in the area.

The Sole Source Aquifer Designation Petition for the Castle Valley Aquifer System was filed with EPA in August 2001. The Castle Valley Aquifer System serves as the sole source of drinking water for residents of Castle Valley, with no alternative drinking water source that could provide 50 percent or more of the area's drinking water needs. Most residents have individual water wells that pump water from

quaternary alluvium/valley fill or from the underlying fractured Cutler Formation. The unconsolidated Valley Fill aquifer is the most important source of good quality drinking water; however, it is most susceptible to contamination. Recharge is partially from the La Sal Mountains. Potential sources of contamination include petroleum and mineral exploration, geophysical drilling, accidental spills along roadsides, and upward migration of lower quality water from bedrock aquifers through man-made conduits.

Public Drinking Water Sources and Protection Zones

A "public drinking water system" is legally defined as any drinking water system (publicly or privately owned) which serves 15 or more connections, or 25 or more people at least 60 days out of the year. BLM Instruction Memorandum UT- 2010-055 describes the responsibility of the BLM to ensure that usable ground water zones, including Drinking Water Source Protection Zones (DWSPZs), are protected through review and analysis at the filing of a notice of staking (NOS) or application for permit to drill (APD), and during subsequent drilling and completion operations.

There are five public drinking water systems located within the Planning Area, with seven water sources (See Table 2-21).

Table 2-21. Public Drinking Water Sources within the Planning Area

Name	water source	location
Archview Resort	well	T24S R20E sec 35
Canyonlands Field #1	well	T23S R20E sec 31
Canyonlands Field #2	well	T24S R20E sec 06
Moab Salt, Inc.	Colorado River	T26S R20E sec 24
Windwhistle Campground	well	T30S R22E sec 13
Wilson Arch Resort #1	well	T29S R23E sec 22
Wilson Arch Resort #2	well	T29S R23E sec 15

In addition, there are nine public drinking water systems, with eleven water sources, within 2 miles of the Planning Area (as listed below in Table 2-22):

Table 2-22. Public Drinking Water Sources within Two miles of the Planning Area

Name	water source	location
Arches National Park- Devils Garden	well	T23S R21E sec 27
Arches National Park- Headquarters	well	T25S R21E sec 21
Bucks Grill	well	T25S R21E sec 26
Canyonlands National Park - Needles District Headquarters	well	T30S R20E sec 20
Canyonlands National Park-Needles District Headquarters	well	T30S R20E sec 20
Kane Springs Highway Rest Stop	well	T28S R22E sec 1
Kane Springs Highway Rest Stop	well	T28S R21E sec 1
Matrimony Springs	spring	T25S R21E sec 26
Moab City- Skakel Spring	spring	T25S R21E sec 36

Name	water source	location
Red Cliffs Ranch	well	T24S R22E sec 35
Slickrock Campground	well	T25S R21E sec 26
Wilson Arch Resort Community	well	T29S R23E sec 22

Each public water provider is required to develop, submit, and implement a Drinking Water Source Protection Plan (DWSP Plan) to the State of Utah Division of Drinking Water (DDW) for each of its groundwater sources to a public drinking water supply. These plans delineate 4 source protection zones or management areas around each groundwater source of drinking water (Map 25):

- Zone one is the area within a 100-foot radius from the wellhead or margin of the collection area.
- Zone two is the area within a 250-day groundwater time of travel to the wellhead or margin of the collection area, the boundary of the aquifer(s) which supplies water to the groundwater source, or the groundwater divide, whichever is closer.
- Zone three is the area within a 3-year ground-water time of travel to the wellhead or margin of the collection area, the boundary of the aquifer(s) which supplies water to the groundwater source, or the groundwater divide, whichever is closer.
- Zone four is the area within a 15-year groundwater time of travel to the wellhead or margin of the collection area, the boundary of the aquifer(s) which supplies water to the groundwater source, or the groundwater divide, whichever is closer.

Providers of public water may choose to use the Optional 2-mile Radius Delineation Procedure to delineate a management area instead of the 4 protection zones described above. This procedure is best applied in remote areas where few, if any, potential contamination sources are located. Four of the five public drinking water systems within the Planning Area do not have delineated protection zones, relying instead on the 2-mile radius management area for protection

Water Use

Water in the Planning Area is utilized for potash mining, livestock grazing, wildlife, and public and private drinking water. There is currently one existing potash mining operation which obtains water directly from the Colorado River. Water for livestock includes surface water, stock ponds, water wells, and troughs. Wildlife use water from natural sources such as springs, streams, ponds, wetlands, and human-made sources such as troughs, guzzlers, and stock ponds. Public and private drinking water is derived from wells drilled into shallow groundwater aquifers.

Water Quantity/Water Rights

The administration of water rights is the responsibility of the Utah State Division of Water Rights. There are a total of 891 active water right applications filed on water sources, both groundwater and surface water sources, within the Planning Area. BLM has 351 approved water right applications on water sources located on BLM lands. These water rights are for uses including livestock water, wildlife, and drinking water. See Map 26 for the locations of active water rights within the Planning Area.

Trends

Climatic conditions in the Colorado Plateau region are expected to undergo general warming over the entire region with as much as 2 °C increase by 2060 in some locations. Average summer temperatures are expected to increase, but even greater increases are simulated for the winter months. Precipitation is expected to decline throughout much of the year during the 2015–2030 time period (with the exception of certain months in the fall) with severe drought likely to occur in some areas (Bryce 2012).

Future trends for water resources within the Planning Area include less recharge to groundwater related to climate change, and increased water use for drinking water and mineral production. These trends will lead to reduced groundwater availability.

Future trends for soils indicate a warmer and drier climate with less precipitation, resulting in increased wind erosion and the production of dust. Mineral exploration and production is likely to increase which will have additional impacts to soils such as additional salinity loading, increased erosion rates, and reduced soil health and productivity. These impacts can be minimized through the use of best management practices during mineral related activities.

Forecasts

Increased mineral development, recreational activities, and continued livestock grazing will place an increased demand on soil and water resources.

Disturbance to soils associated with mineral operations involve pipeline installation, powerline construction, road construction, seismic exploration, exploratory drilling, mining and drilling operations, and processing facilities such as large areas for evaporation ponds. Disturbance to soils associated with recreation include trails, OHV use, campgrounds, dispersed camping, events, staging areas, recreational facilities. Disturbance to soils from livestock grazing activities include water developments, vegetative treatments, and range improvements. The impacts to soils resulting from these disturbances include increased compaction, decreased infiltration rates, increased erosion rates, and reduced nutrient cycling.

The disturbances listed for soils also impacts water resources. The impacts include increased sedimentation loads, increased salinity levels, and higher stream temperatures. The expected increase in mineral and recreational activities will also result in an increased demand for both surface and groundwater. This increase in water use may cause reduced stream flows, spring flows, and lower groundwater levels.

Key Features

The following surface water features, watersheds, and groundwater resources have all been identified to help guide land use management decisions:

- Erodible soils
- Saline soils
- Steep slopes
- Droughty soils
- Alkaline soils
- Sodic soils
- Shallow soils
- Biotic soil crusts
- Dust blow out/dust sink areas
- Perennial and intermittent streams
- Springs, spring areas, seeps, and water wells
- Public water reserves
- TMDL/Impaired waters
- Groundwater resources
- Public drinking water source protection zones

2.10 SPECIAL DESIGNATIONS: AREAS OF CRITICAL ENVIRONMENTAL CONCERN

The FLPMA defines an ACEC as an area "within the public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards." With ACECs, there is no one method of management for all areas. Special management is designed specifically for the relevant and important values of each ACEC, and therefore varies from area to area. The one exception is that a mining plan of operation is required for any proposed mining activity that would create surface disturbance greater than casual use within a designated ACEC (43 CFR 3809 Regulations).

Current Condition

There are six ACECs that are entirely located within the MLP Planning Area (Map 27). These ACECs are listed in Table 2-23 along with the associated acreage, relevant and important values, and Field Office.

Table 2-23. ACECs within the Planning Area

ACEC Name	Acreage	Relevant and Important Values	Field Office
Behind the Rocks	3,771	Natural systems (threatened, sensitive and endangered plants), cultural resources, scenery	Moab
Highway 279/Shafer Basin/Long Canyon	12,537	Scenery, wildlife, natural systems(threatened, sensitive, and endangered plants), cultural resources	Moab
Indian Creek	3,900	Scenic	Monticello
Lavender Mesa	649	Relict Vegetation	Monticello
Shay Canyon	119	Scenic	Monticello
Ten Mile Wash	4,988	Natural systems (riparian/wetlands), wildlife, cultural and natural hazards	Moab

Below are descriptions of each ACEC and the relevance and importance criteria for which the ACEC was designated.

Behind the Rocks ACEC (3,771 Acres)

Description of Area: Behind the Rocks is located west of the city of Moab and east of Kane Creek Canyon (Map 27). It is an area of sandstone fins and deeply entrenched canyons, with arches and other features. The BLM-identified boundary of the ACEC was established to insure that all relevant and important cultural, wildlife, plant, and scenic resources were included.

Relevance Criteria: The ACEC contains significant cultural resources, including rock art and habitation sites. The scenic values are outstanding, with slickrock domes and fins present on a grander scale than those found in Arches National Park. There are several large natural arches found within the ACEC. The ACEC also contains habitat for several special status wildlife species, including the peregrine falcon, southwest willow flycatcher, spotted bat, and big free-tailed bat. Three special status plant species occur within the ACEC; they include the Canyonlands biscuitroot, alcove rock daisy, and alcove bog orchid. The area is one of only three major population centers (and of these, the least imperiled) for the

Canyonlands biscuitroot. Two narrowly distributed plants, the western hophornbeam and alcove death camas also occur. In addition, there are relict plant communities within the area that are valuable for scientific study.

Importance Criteria: Within the ACEC, cultural sites are distinctive and of special worth. Scenic values found in the ACEC are nationally significant; for instance, Behind the Rocks is the best example of Navajo sandstone fins in the world, and provides the scenic backdrop to the town of Moab. The rare and endemic plants in the ACEC are fragile, rare, and irreplaceable. Behind the Rocks is one of only twelve known areas with occurrences of the alcove rock daisy, and one of three areas in which the Canyonlands biscuitroot is found. The ACEC also contains plant communities and soils that have received little disturbance or alteration, providing an uncommon remnant of the presettlement landscape.

Highway 279/Shafer Basin/Long Canyon ACEC (12,537 Acres)

Description of the Area: The area is a corridor along Highway 279, including the extension road into the Shafer Basin (Map 27). The Shafer Basin provides the viewshed from Dead Horse Point State Park. In addition, Long Canyon to the Dead Horse Mesa is included in this ACEC. The boundary of the ACEC has been identified by BLM to ensure that relevant and important values are included.

Relevance Criteria: The ACEC contains significant scenic, cultural, plant and wildlife resources. Highway 279, a state scenic byway, is located within the ACEC. The byway provides extraordinary scenery and ancient rock art that is enjoyed by thousands of visitors every year as they drive along the Colorado River. The Shafer Basin provides the spectacular foreground scenery as viewed from the road and from Dead Horse Point State Park. Long Canyon also provides a scenic backcountry drive just off Highway 279. The scenery is classified as VRM Class I.

Jane's globemallow, a Utah BLM sensitive plant, is found in the Shafer Basin portion of the ACEC. The plant is both rare and unique and extremely susceptible to general human disturbance. In addition, both Shafer Basin and Long Canyon contain important habitat to the desert bighorn sheep. As a result of this vegetation, the uplands north of Dead Horse Point State Park contain significant values for wildlife and plants.

Importance Criteria: The ACEC includes spectacular scenery and cultural resources, and provides vegetation for wildlife. It is also habitat for the Jane's globemallow, a BLM sensitive species. The stunning scenery within Shafer Basin and Long Canyon as viewed from State Scenic Byway 279 and Dead Horse Point State Park is internationally renowned. Highway 279, Shafer Basin and Long Canyon are also venues for many film permits, due to their spectacular scenic backdrops.

The wildlife values meet the importance criteria as the Shafer Basin is primary habitat for desert bighorn sheep, which also utilize Long Canyon. These distinctive animals are unique and of more than local significance. It is the Shafer Basin habitat which enabled the dwindling desert bighorn herd to survive. This bighorn herd is one of only two indigenous native desert bighorn herds in the state of Utah, and the Shafer Basin herd has provided stock for restoring desert bighorns to other environments.

Indian Creek ACEC (3,900 Acres)

Description of Area: Indian Creek ACEC is located in the southern portion of the MLP Planning Area, east of and adjacent to Canyonlands National Park/Needles District (Map 27). The Indian Creek ACEC buffers the scenic view from Needles Overlook across BLM land into Canyonlands National Park. The area includes the lower end of Indian Creek and Rustler Canyon. The ACEC corresponds roughly with the Indian Creek WSA, but is slightly larger.

Relevance Criteria: The Indian Creek ACEC is noted for its incised, meandering canyons that wind through dark red mudstones, forming many rounded spires, and "hoodoos" (boulders atop eroded rock that look like mushrooms). These various formations continue uninterrupted into Canyonlands National Park, which contains some of the most unique landforms in the world. Visitors from around the world come to view this area from overlooks across BLM land and Canyonlands National Park.

Importance Criteria: The scenic values of the ACEC are based on the rock formations similar to those found in Canyonlands National Park. The area surrounding the ACEC has a VRM Classification I when viewed from the overlook; conversely, when viewed from the basin, the area appears less natural due to resource activities that have taken place within the basin. The area provides extensive scenic viewsheds seen from the eastern rims high above the area into Canyonlands National Park.

Lavender Mesa (Mesa Top Only) ACEC (649 Acres)

Description of Area: Lavender Mesa ACEC covers the top of Lavender Mesa, located in the Indian Creek corridor of the Planning Area (Map 27). Lavender Mesa is isolated and inaccessible to humans and herbivores by ground routes; even small mammals such as rabbits and mice appear to be absent. The mesa top supports a relict plant community environment. Most of the mesa is pinyon-juniper woodland with the exception of a small 20-acre sagebrush-grass park. The entire mesa is BLM-administered public land, and its boundary is high cliffs protecting the mesa top from access.

Relevance Criteria: The vegetative community present on the top of Lavender Mesa is unique because it has developed without the influence of grazing animals and most other mammals. The area is ecologically relevant because it presents an isolated, relict plant community that remains unaltered by human or animal intervention. The vegetative community is important as a baseline for comparative studies of pinyon-juniper woodland and sagebrush-grass communities in other parts of the Colorado Plateau.

Importance Criteria: The vegetative community is important for study and comparison purposes to design management for pinyon-juniper woodland and sagebrush-grass communities in other parts of the Colorado Plateau. The area offers an unimpacted area naturally protected from other resource activities. In a range of comparison of relict plant communities, Lavender Mesa provides a baseline area free from even small animals, while Bridger Jack Mesa provides an area protected from human activities, but with the presence of large and small mammals.

Shay Canyon ACEC (119 Acres)

Description of Area: Shay Canyon ACEC is located in the southern portion of the Indian Creek corridor and is adjacent to the northern boundary of the Manti–La Sal National Forest (Map 27). It includes sections of the upper Indian Creek drainage with a Special Emphasis Area for the protection of aquatic and riparian habitat, delineated as a 275-foot corridor along upper Indian Creek.

Relevance Criteria: Relevance/Cultural: Rock art sites covering the walls of Shay Canyon are the significant cultural resources along Indian Creek. Native Americans who have visited these sites, recognize images that relate to their migration history. Dinosaur tracks in the bedrock of the Shay Canyon streambed are a unique visual reminder of the area's distant geologic and natural past.

Importance Criteria: Cultural resources in this area represent the interface between two prehistoric cultural groups: Anasazi and Fremont. This interface is represented in the unique motifs in the rock art and within site features and artifacts such as ceramics and baskets. The area provides an opportunity for cultural scientific research, and paleontology study.

Ten Mile Wash ACEC (4,988 Acres)

Description of Area: Ten Mile Wash is located northwest of Moab; it drains into the Green River just downstream of White Wash and upstream of Spring Canyon (Map 27). The ACEC consists of the Ten Mile drainage from the Green River to two miles upstream of Dripping Spring.

Relevance Criteria: Ten Mile Wash ACEC is noted for its scenic, cultural, wildlife, and the natural systems or processes, as well as natural hazards that are found within the ACEC. Ten Mile Wash ACEC contains high-quality scenery related to sandstone buttes, cliffs, side canyons and alcoves; the scenery is enhanced by the presence of a riparian greenbelt that is located within the bottom of the canyon. Ten Mile Wash contains significant cultural resources, including important habitation sites and unusual artifacts.

Ten Mile Wash ACEC contains perennial and intermittent flows that maintain ecological diversity in upland and riparian/wetland areas. The wash provides a favorable environment for wildlife within an extremely arid portion of the Field Office. Ten Mile Wash contains a rich mixture of riparian, wetland and hydrologic resources. Perennial segments support well-developed wetlands that are rare and unusual in arid regions. Ten Mile Wash is subject to extreme flooding, posing potential safety hazards to vehicle and camping activities. The potential for flooding is great because the Ten Mile Wash watershed basin drains 175,185 acres.

Importance Criteria: This ACEC meets the importance criteria for cultural, wildlife values, natural systems or processes, and natural hazards. Cultural resources in Ten Mile Wash ACEC are of more than local significance, and are fragile, rare, and exemplary. Ten Mile Wash is a very important wildlife habitat because it offers water and habitat in the driest portion of the Planning Area. Ten Mile Wash contains textbook examples of areas with wetland potential. Riparian/wetland ecosystems in Ten Mile Wash are rare, sensitive resources vulnerable to degradation from surface disturbances. These wetland ecosystems are exemplary and rare; they serve as attractors for wildlife and for human activities, making the wash extremely susceptible to adverse impact. Riparian/wetland ecosystems are a national priority concern, and are managed for health and diversity as required by the Clean Water Act, Floodplain and Wetland Executive Orders, Rangeland Standards and Guidelines, and the National Riparian Area Policy. Ten Mile Wash contains extreme seasonal flooding potentials that warrant special management regarding public access and camping within the drainage.

2.11 SPECIAL DESIGNATIONS: NATIONAL HISTORIC TRAILS AND BACKWAYS AND BYWAYS

2.11.1 National Historic Trails

National Historic Trails are “extended trails which follow as closely as possible and practicable the original route or routes of travel of national historical significance” (NPS 2009). The purpose of the National Historic Trails is “the identification and protection of the historic route and its historic remnants and artifacts for public use and enjoyment” (NPS 2001).

The National Trails System Act of 1968 provides for the establishment of a system that includes recreational, scenic, and historic trails. A national historic extended trail must possess several qualities for designation as a national historic trail. The trail must be at least 100 miles in length and as closely as possible follow the original route. The trail must be established by historic use and be historically significant as a result of that use. The trail must be of national significance with respect to any of several broad categories of American history, such as trade and commerce, exploration, migration and settlement, or military campaigns. Finally, the trail must have significant potential for public recreational use or historical interest based on historic interpretation and appreciation.

In southern Utah the only National Historic Trail is the Old Spanish Trail, which was designated on December 4, 2002, by the Old Spanish Trail Recognition Act. The trail and its variants make up a 2,700-mile long route that extends from Santa Fe, New Mexico, to Los Angeles, California. The trail passes through the states of New Mexico, Colorado, Utah, Arizona, Nevada, and California. Approximately 56 miles of the Old Spanish Trail are located within the Planning Area (Map 9).

2.11.2 National Scenic Byways

The National Scenic Byways Program was established under the Intermodal Surface Transportation Efficiency Act of 1991, and reauthorized in 1998 under the Transportation Equity Act for the 21st Century. Under the program, the U.S. Secretary of Transportation recognizes certain roads as National Scenic Byways or All-American Roads based on their archeological, cultural, historic, natural, recreational, and scenic qualities.

There are also State of Utah-designated Byways and Backways found within the MLP Planning Area. For a description of these see the recreation section of this document.

Current Condition

National Historic Trails

There is one National Historic Trail located within the Planning Area and that is the Old Spanish Trail. The congressionally designated trail was established by the National Park Service by utilizing the historic record. Archeological inventory has also identified visible portions of the route that although close in proximity to the designated trail are a distinct entity. These findings will be treated as contributing portions of the Old Spanish Trail subjected to the National Historic Trails Act and the National Historic Preservation Act. Approximately 45 miles of the congressionally designated Old Spanish Trail are located within the Planning Area. Archaeological inventory has identified an additional 11 miles of trail trace to date in the Planning Area.

National Scenic Byway

The Dinosaur Diamond National Scenic Byway is the only National Scenic Byway located within the MLP Planning Area. The Dinosaur Diamond Scenic Byway is a 512-mile National Scenic Byway located in eastern Utah and western Colorado. The section of the Byway found within the Planning Area includes portions of Highway 128 and Highway 191 (Map 9). Notable features surrounding the byway include Canyonlands National Park and Arches National Park.

2.12 SPECIAL DESIGNATIONS: WILD AND SCENIC RIVERS

The Wild and Scenic Rivers Act of 1968 (WSRA) established legislation for a National Wild and Scenic Rivers System (NWSRS) to protect and preserve designated rivers in their free-flowing condition throughout the nation and to protect and preserve their immediate environments. The WSRA includes policy for managing designated rivers and created processes for designating additional rivers to the NWSRS.

A wild and scenic river (WSR) review was conducted as part of both the Moab and Monticello 2008 RMP planning process. The first phase of the WSR review involved the inventorying of all potentially eligible rivers to determine which of those rivers were eligible for consideration as part of the NWSRS. To be eligible, rivers must be free-flowing and possess at least one outstandingly remarkable value (ORV). ORVs are evaluated in the context of regional and/or national significance and must be river-related. Each river/segment determined to be eligible is then given a tentative classification based on the

current level of human development associated with that river/segment. The tentative classification is based on the criteria listed in the classification table from Wild and Scenic River Review in the State of Utah (BLM 1996) as noted below.

- A Wild river is free of impoundments, with shorelines or watersheds essentially primitive, and with unpolluted waters.
- A Scenic river may have some development, and may be accessible in places by roads.
- A Recreational river is accessible by road (or railroad), may have more extensive development along its shoreline, and may have undergone some impoundment or diversion in the past.

The BLM established WSR eligibility determinations and tentative classification for four rivers/segments within the Planning Area. These rivers/segments are summarized along with their ORVs in Table 2-24.

The second phase of the WSR review occurred as all eligible rivers were taken through the land-use planning process of the RMP to determine their "suitability" for designation into the NWSRS. Suitability is discussed in Chapter 4 of the FEIS for both Moab and Monticello and "Suitability" determinations can be found in the ROD for the RMPs. BLM found a total of four suitable rivers/segments in the MLP Planning Area.

Current Condition

Suitable rivers/segments located within the Planning Area are found in Table 2-24 and Map 28. These rivers/segments are managed under specified guidelines to protect the free-flowing nature of the rivers/segment, and to protect the identified ORVs and tentative classification. The management of these rivers/segments will continue until congress, or the Secretary of the Interior, makes the determination that the river will be included in the NWSRS.

Table 2-24. Suitable Rivers/Segments in the Planning Area

River/Segment Name	Segment Description and Approximate Length in Free-Flowing BLM River Miles (BLMRM), total River Mines (TRM)	Outstandingly Remarkable Value(s)	Tentative Classification
Colorado River Segment 4	Confluence with the Dolores River to mile 49 near Potash (BLMRM 32.6) (TRM 15.7)	Scenery, recreation, wildlife, fish, cultural, geology, ecological	Recreational
Colorado River Segment 5 (Moab): same as Segment 2 (Monticello)	River Mile 44.5 to Mile 38.5 State land boundary (BLMRM 6.1) (TRM 6.8)	Scenery Recreation, wildlife, fish, cultural, ecological	Scenic
Colorado River Segment 6 (Moab): same as Segment 3 (Monticello)	River Mile 35.7 Stat land to Mile 34 Canyonlands National Park (BLMRM 3.8) (TRM 3.8)	Scenery, recreation, wildlife, fish, cultural, ecological	Scenic
Green river Segment 4(a)	Mile 97 to Canyonlands NP Boundary. (BLMRM 97) (TRM 07).	Scenery, recreation, wildlife, fish, cultural, ecological	Scenic

2.13 SPECIAL STATUS SPECIES

The BLM is responsible for managing habitat for special status plant species. Special status species considered in this analysis are those listed as threatened or endangered under the Endangered Species Act (ESA), those proposed for listing or are candidates for listing under the provisions of the ESA, or those designated by the BLM State Director or the State of Utah as sensitive.

2.13.1 Regional Context

Special status species occur in a variety of cover types across the Planning Area. For BLM management purposes, special status species include species listed as endangered, threatened, proposed, and/or candidate under the ESA, as well as those species listed as sensitive in the State of Utah by the BLM.

Species listed as threatened or endangered are afforded protection under the ESA (BLM Manual 6840). The BLM is required to consult with the U.S. Fish and Wildlife Service (USFWS) on potential impacts to federally listed species. The USFWS does not consult on candidate species, although they are included for informational purposes in consultation documents and USFWS may provide information and suggestions regarding them during consultation. Periodic review of the special status species list allows for additions and/or removals depending on the status of populations, habitats, and potential threats. A total of eight federally listed species were identified as having the potential to occur within Grand and San Juan Counties. These include four wildlife and four fish species.

Sensitive species are managed to prevent further listing, with the same level of protection as candidate species (BLM Manual 6840). BLM sensitive species are designated by the State Director under 16 U.S.C. 1536 (a) (2). The BLM has identified 82 species (that are BLM Sensitive Species, State Sensitive Species, or Species of Concern) as having the potential to occur within Grand and San Juan Counties.

2.13.2 Resource Characterization

Indicators

Relevant wildlife indicators include population numbers; species recruitment; wildlife observations; habitat quality; gain or loss of valuable habitats; identified high value habitat areas and important habitat features for various species; species listed as threatened or endangered or as Utah BLM sensitive species; Rangeland Health Standards; riparian PFC ratings; disease occurrence/impacts; numbers of hunting permits issued; harvest rates; poaching rates; population indices; and harvest statistics for individual herd units.

Current Condition

Threatened, Endangered, And Candidate Species

The USFWS has identified the following threatened, endangered, and candidate wildlife, fish, and plant species located within the Planning Area (Table 2-25). Discussions of each species follow.

Table 2-25. U.S. Fish and Wildlife Service Threatened, Endangered and Candidate Species within the Planning Area

Common Name (*Scientific Name*)	Habitat	Status	Designated Critical Habitat	Potential Habitat
Wildlife				
California Condor (Gymnogyps californianus)	Roosts and nests in cliff habitat. Forages in open areas.	Endangered, Experimental	None	NA[1]
Mexican spotted owl (Strix occidentalis lucida)	Steep rocky canyons.	Threatened	175,725	364,256
Southwestern willow flycatcher *(Empidonax traillii extimus)*	Low scrub, thickets, or groves of small trees, often near watercourses.	Endangered	None	15,202
Western yellow-billed cuckoo (Coccyzus americanus occidentalis)	Riparian habitats.	Candidate	None	15,202
Fish				
Bonytail (Gila elegans)	Eddies, pools, and backwaters near swift current in large rivers	Endangered	23,327	23,327
Colorado pikeminnow (*Ptychochelius lucius*)	Adults can be found in habitats ranging from deep turbid rapids to flooded lowlands. Young prefer slow-moving backwaters	Endangered	23,327	23,327
Humpback chub (*Gila cypha*)	Fast, deep, white-water areas	Endangered	23,327	23,327
Razorback sucker (*Xyrauchen texanus*)	Slow backwater habitats and impoundments	Endangered	23,327	23,327

[1] Incomplete data, acreages not available. They could occur in the area.

Source: USFWS Federally Listed and Proposed Endangered, Threatened and Candidate Species and Critical Habitat in Utah – Species list by County 2012.

California Condor

The California Condor is a federally-listed endangered species with non-essential, experimental status in Utah south of Interstate 70 and west of Highway 191. Under Section 10(j) of the ESA (ESA; 16 USC 1536[c]), this means that the species is treated as though it is proposed for federal listing, rather than as endangered. No California Condors are known to nest in the Planning Area; however, they have the potential to move through the area where suitable nesting habitat does exist. A few condors have been sighted throughout Utah since being released in northern Arizona in 1996 (USFWS 1996a). Any California Condors that leave the experimental population area will be considered endangered. The agreement (Endangered and Threatened Wildlife and Plants: Establishment of a Nonessential Experimental Population of California Condors in Northern Arizona) includes provisions for the capture

and return of California Condors to the experimental population area should they be found outside of it (USFWS 1996). California Condors prefer mountainous country at low and moderate elevations, especially rocky and brushy areas near cliffs. California Condor colonies often roost in snags, tall open-branched trees, or cliffs, often near important foraging grounds (UDWR 2007). This species lays a single egg between late January and early April. The California Condor feeds only on the carcasses of dead animals and it prefers to do so in relatively open areas (USFWS 1996b).

Mexican Spotted Owl

Steep slopes and canyons with rocky cliffs characterize much of the Mexican spotted owl (MSO) habitat in Utah. Within the Colorado Plateau, MSO are known to nest in steep-walled canyon complexes and rocky canyon habitat within desert scrub vegetation. The MSO exists in small isolated subpopulations and is threatened by habitat loss and disturbance from recreation, improper grazing practices, road development, catastrophic fire, timber harvest, and mineral development. The Planning Area contains 175,726 acres of designated critical habitat according to the Spotskey-Willey MSO habitat model (Willey and Spotskey1997) and roughly 364,256 acres of potential habitat (Table 2-25 and Map 29). Within the Planning Area, known nesting territory has been identified. No known nesting territories have been identified within designated critical habitat in the Planning Area. Nesting and breeding begins in March, and eggs are laid in late March or early April and incubated for approximately 30 days. The eggs usually hatch in early May. Nesting MSO fledge from early to mid-June and disperse out of the natal area in the fall.

Southwestern Willow Flycatcher

The Southwestern Willow Flycatcher utilizes and breeds in patchy to dense riparian habitats along streams and wetlands near or adjacent to surface water or saturated soils. These dense patches are often interspersed with small openings, open water, and/or shorter/sparser vegetation, creating a mosaic habitat pattern. Historically, nests were constructed in native willow species, but currently the Southwestern willow flycatcher will utilize both native and exotic species, such as tamarisk and Russian olive that provide desired habitat requirements (Sogge et al. 1997). Nesting season typically begins in May when males arrive to establish breeding territories. The females arrive a week or two later and nest building begins. Eggs are laid and incubated from late May through July. Chicks fledge 12 to 15 days after hatching during July and August and migrate south in late August through early fall. Population declines are attributed to numerous, complex, and interrelated factors such as habitat loss and modification, invasion of exotic plants into breeding habitat, brood parasitism by cowbirds, vulnerability of small population numbers, and winter and migration stress. Southwestern willow flycatcher has been documented migrating along the Indian Creek corridor area and along the Colorado and Green Rivers. Recent mist netting studies in Cross Canyon have shown that they are potentially nesting in the area as well. There is a total of 15,202 acres of potential habitat within the Planning Area (Table 2-25 and Map 30).

(Western) Yellow-Billed Cuckoo

The Yellow-billed Cuckoo is a federal candidate species that has been listed due to loss of riparian habitat from agricultural use, water use, road development and urban development. No known population of this species exists at present within the Planning Area. The yellow-billed cuckoo, however, is a neotropical migrant that utilizes riparian valleys throughout the state. The Planning Area contains 15,202 acres of potential riparian habitat for this species (Map 30).

Bonytail Chub

The bonytail chub has drastically declined in numbers since the 1960s and little is known about its biological requirements. Historically it was once widespread throughout the Colorado River Basin. Today it is thought to be found in large river reaches of the Colorado and Green rivers. The Planning Area

contains both possible populations and designated critical habitat for this species. There are 23,327 acres of designated critical habitat within the Planning Area (Table 2-25 and Map 31) (USFWS 1990b).

Colorado Pikeminnow
Natural populations of the Colorado pikeminnow are restricted to the upper Colorado River Basin in Wyoming, Colorado, Utah, and New Mexico. The main stem of the Colorado River from Palisade, Colorado, to Lake Powell has known population within this region (UDWR 2005b). Flow regulations, migration barriers, habitat loss/alteration, and introduced non-native fish have all been identified as causes of population decline (UDWR 2005b). The Planning Area contains both populations and 23,327 acres of designated critical habitat within the Planning Area (Table 2-25 and Map 31) (USFWS 1991).

Humpback Chub
Populations of humpback chub have been identified in the Upper Colorado River Basin with the highest concentrations found in the Black Rocks and Westwater Canyon reaches of the Colorado River near the Colorado/Utah state line (UDWR 2005b). The presences of juvenile population suggest spawning may occur in the Upper Colorado River at Black Rocks, Westwater Canyon, Cataract Canyon, and Desolation/Gray Canyon (UDWR 2005b). Flow alterations have been identified as a significant cause of decline. The Planning Area contains both populations and 23,327 acres of designated critical habitat within the Planning Area (Table 2-25 and Map 31) (USFWS 1990a).

Razorback Sucker
The Green River has the only known spawning areas for the razorback sucker, some of which are found in the Planning Area. Populations have been identified in the Colorado River from Rifle Colorado to Lee's Ferry Arizona and also in areas of the Green, Gunnison, and Yampa rivers (UDWR 2005b). The Planning Area contains both populations and USFWS designated Critical Habitat for this species. There are 23,327 acres of designated critical habitat within the Planning Area (Table 2-25 and Map 31) (USFWS 1999).

BLM Sensitive Species

The BLM maintains a list of sensitive species that may occur on managed lands. The BLM Utah state director's Sensitive Species List includes those that are federally listed species (those not listed in Table 2-25), those identified by the BLM, and those listed as state sensitive by the State of Utah. Table 2-26 identifies the State Sensitive species that are known, or have that potential to occur within the Planning Area. These species are either on the BLM Utah state director's Sensitive Species List or the UDWR's State Sensitive Species List., A brief description for wildlife species follows this table.

Table 2-26. BLM and State Sensitive Species within the Planning Area

Common Name (*Scientific Name*)	Habitat	Status	Known Habitat (Acres)	Potential Habitat (Acres)
Wildlife				
Bald Eagle (Haliaeetus leucocephalus)	Roosts and nests in tall trees near bodies of water.	BLM SSS / SPC	133,581	133,581
Big free-tailed bat (*Nyctinomops macrotis*)	Rocky and woodland habitats, roosts in caves, mines, old buildings, and rock crevices.	BLM SSS / SPC	None	NA*
Bobolink (Dolichonyx oryzivorus)	Riparian or wetland areas	BLM SSS / SPC	None	NA*

Common Name (*Scientific Name*)	Habitat	Status	Known Habitat (Acres)	Potential Habitat (Acres)
Burrowing owl (Athene cunicularia)	Open grassland and prairies	BLM SSS / SPC	None	362,285
Ferruginous hawk (*Buteo regalis)*	Flat and rolling terrain in grassland or shrub steppe; nests on elevated cliffs, buttes, or creek banks	BLM SSS / SPC	None	33,395
Fringed myotis (*Myotis thysanodes*)	Desert and woodland areas, roosts in caves, mines, and buildings.	BLM SSS / SPC	None	NA*
Gunnison's prairie dog (*Cynomys gunnisoni)*	Grasslands, semidesert and montane shrublands	BLM SSS / SPC	None	6,943
Kit fox (Vulpes macrotix)	Semi desert grasslands and open shrublands	BLM SSS / SPC	None	783,381
Long-billed Curlew (*Numenius americanus*)	Grassland/ herbaceous	BLM SSS / SPC	None	NA*
Mogollon vole (Microtus mogollonensis)	Dry meadows	SPC	None	None
Peregrine Falcon (*Peregrinus falconus*)	Steep, rocky canyons near riparian or wetland areas	BLM SSS and BCC	None	NA*
Short-eared owl (*Asio flammeus)*	Grasslands, shrublands, and other open habitats	BLM SSS / SPC	None	NA*
Spotted bat (Euderma maculatum)	Found in a variety of habitats, ranging from deserts to forested mountains; roost and hibernate in caves and rock crevices.	BLM SSS / SPC	None	NA*
Townsend's big-eared bat (*Corynorhinus townsendii*)	Occur in many types of habitat, but is often found near forested areas; roosts and hibernates in caves, mines, and buildings.	BLM SSS / SPC	None	NA*
Western red bat (Lasiurus blossevillii)	Forest - Hardwood, Forest - Mixed, Suburban/orchard, Woodland - Hardwood, Woodland – Mixed, riparian	BLM SSS	None	NA*
Fish				
Flannelmouth sucker	Large rivers, where they are often found	CS	None	NA*

Common Name (*Scientific Name*)	Habitat	Status	Known Habitat (Acres)	Potential Habitat (Acres)
(*Catostomus latipinnis*)	in deep pools of slow-flowing, low gradient reaches			
Roundtail chub (*Gila robusta)*	Large rivers, and is most often found in murky pools near strong currents	CS	None	NA*
Amphibians and Reptiles				
Cornsnake (Elaphe guttata)	Near streams, or in rocky or forest habitats	SPC	None	NA*
Great Plains Toad (*Bufo Cognatus*)	Cropland/hedgerow, Desert, Grassland/herbaceous, Shrubland/chaparral, Suburban/orchard	BLM SSS / SPC	None	NA*
Plants				
Alcove rock (*Perityle specuicola*)-daisy	Drier crevices in seasonally wet hanging gardens, and alcove communities. Navajo and Windgate sandstone and Rico Formation, but not substrate specific. Blooms mid-July-late Sept. 3,690-4,000'.	BLM SSS	None	No map info**
Canyonlands lomatium (C. biscuitroot, or C. desert-parsley) (*Lomatium latilobum*)	Sandy soil or crevices in Entrada sandstone. Slot canyons. (Found in Navajo sandstone that weathers like Entrada in Sand Flat and Mill Creek.) Prefers the sheltered, cool habitat on all slopes and aspects. April-June. 4,800-6,855'.	BLM SSS	None	No map info**
Cisco milkvetch (Astragalus sabulous var. sabulous)	Salt desert shrub in Mancos Shale Formation in Grand River Valley (Cisco desert). Selenophyte. Blooms late March-May. 4,260-5,250.	BLM SSS	None	No map info**
Entrada rushpink (or skeletonweed) (*Lygodesmia grandiflora* var. *entrada*)	Juniper, mixed desert shrub communities. June. 4,400-4,800'.	BLM SSS	None	No map info**
Jane's Globemallow	Sandy soils of	BLM SSS	None	No map info**

Common Name (*Scientific Name*)	Habitat	Status	Known Habitat (Acres)	Potential Habitat (Acres)
(Sphaeralcea janeae or S. leptophylla var. janeae)	weathered white rim and Organ Rock members of Cutler Formation. Warm and salt desert shrub. 4,000-4,600'. Blooms May-June.			
Paradox breadroot (Pediomelum aromaticum var. tuhyi)	Pinyon-juniper and mixed desert shrub on Entrada, Kayenta and Mossback Formations. 5,600-6,500'. Blooms May-June.	BLM SSS, SS	None	No map info**
Stage-station milkvetch (*Astragalus sabulous* var. *vehiculus*)	Salt desert shrub in Morrison Formation. Selenophyte. Blooms April-May. 4500 to 4,800 feet. Considered geographically isolated from var. *sabulous.*	BLM SSS	None	No map info**
Trotter's oreoxis (spring-parsley) (*Oreoxis trotter)*	Mixed juniper and warm desert shrub. Slickrock or Main Body Entrada sandstone on eastern slope of Courthouse Rock and Navajo sandstone below on flats. Most abundant on Moab Tongue white sandstone of Entrada. Late Aprilmid- June. 4,750-5,000'.	BLM SSS	None	No map info**

BCC: Birds of Conservation Concern
BLM SSS: BLM Special Status Species
CS: Species receiving special management under Conservation Agreement in order to preclude the need for Federal listing
PIF: Partners in Flight Species of Concern
SPC: State Wildlife Species of Concern
SS: Sensitive Species (1991, 2002)
* The Planning Area does contain potential habitat but the exact acreages are unknown
**The Planning Area does contain potential habitat but exact acreages are unknown and locations are not given

Sources: UDWR Utah's Sate Listed Species by County 2011; BLM 2002d; Atwood et al. 1991; Welsh et al. 2003. Utah Native Plant Society 2005; BLM 2008.

Bald Eagle

Utah's wintering bald eagle population is typically found near rivers, lakes, and marshes where unfrozen, open waters offer the opportunity to prey on fish and waterfowl. The Colorado and Green River corridors are used frequently by Utah's wintering bald eagles. The eagles begin to arrive in November and head north by March. Utah also hosts a small population of desert bald eagles that can be found in desert valleys, far from any water. These eagles feed primarily on carrion. There are four active nests which occur on the Colorado River but are not within the Planning Area. Nesting bald eagles in the Planning

Area return to their nesting territories in early spring. Egg laying and incubation occurs from February through May with eaglets hatching during May and early June, and fledging by early July. The bald eagle continues to be protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. Within the Planning Area there are approximately 133,581 acres of potential bald eagle habitat (Map 32).

Big Free-tailed Bat

The big free-tailed bat is listed as a BLM Sensitive Species because of declining population sizes and limited distribution within the state. It is a migratory species and is known from the southern half of Utah, although it may range farther north. The big free-tailed bat has been captured in riparian, desert shrub and montane forest habitat types (UDWR 2005b). The Planning Area does contain potential habitat, but the exact acreages are unknown.

Bobolink

The bobolink is listed as a BLM Sensitive Species and a State Sensitive Species because of range-wide declining populations and limited habitat. Wet meadow habitats which are the preferred bobolink habitat have been decreased and fragmented in Utah due to many of the same factors that impact riparian areas, e.g., agricultural encroachment, urban encroachment, road development, water development (reservoirs and in-stream flow depletions), and channelization (Parrish et al. 2002). The Planning Area does contain potential winter habitat, but the exact acreages are unknown and minimal.

Burrowing Owl

The burrowing owl is listed as a BLM Sensitive Species to recent decreases in population size. Burrowing owls are neotropical migrants, nest underground in burrows, and are typically found in open desert grassland and shrubland areas that are level and well drained (Gleason and Johnson 1985). They depend on burrowing mammals for nest sites and are often associated with prairie dog colonies (Konrad and Gilmer 1984). The decline of the owl's population across its range appears to be due primarily to agricultural practices, use of pesticides, and the decline of prairie dog colonies (Haug et al. 1993). The Planning Area contains approximately 362,285 acres of burrowing owl potential habitat (Map 33).

Ferruginous Hawk

The ferruginous hawk, a BLM Sensitive Species, is the largest of the North American buteos. It is a neotropical migrant breeding from southwestern Canada to central Arizona, New Mexico, and northern Texas and wintering in California to northern Mexico. It is a year-round resident from Nevada through western and southern Utah, northern Arizona, and New Mexico to eastern Colorado and South Dakota. In Utah, the ferruginous hawk nests at the edge of juniper habitats and open, desert and grassland habitats in the western, northeastern, and southeastern portions of the state. Within the Planning Area they are found through the Cisco Desert, along the Colorado and the Green rivers, and the potash area. Ferruginous hawks are highly sensitive to human disturbance and are also threatened by habitat loss from surface disturbance, agricultural practices, and urban encroachment. They have experienced a decline across much of their range and have been extirpated from some of their former breeding grounds in Utah (UDWR 2005b). The Planning Area contains approximately 33,395 acres of ferruginous hawk potential habitat (Map 34).

Fringed Myotis Bat

The fringed myotis bat is listed as BLM Sensitive Species because of limited distribution within the state. This species occurs predominantly in southern Utah, although records of this species occur throughout the state. Fringed myotis occur in a variety of habitat including riparian, desert shrub, pinyon-juniper, mountain meadow, ponderosa pine, and montane forest (UDWR 2005b). The Planning Area does contain potential habitat, but the exact acreages are unknown.

Gunnison's Prairie Dog

The Gunnison's prairie dog is listed as a BLM Sensitive Species. This species is highly susceptible to sylvatic plague and has a low ability to repopulate once the plague has decimated a colony. Mortality from plague frequently exceeds over 99 percent within colonies. Additional threats include poisoning, agricultural conversion, and urbanization and development (UDWR 2005b). The Planning Area contains approximately 6,943 acres of Gunnison prairie dog potential habitat (Map 35) according to a draft model developed by UDWR.

Kit Fox

The kit fox is listed as a BLM Sensitive Species. It opportunistically eats small mammals (primarily rabbits and hares), small birds, invertebrates, and plant matter. The species is primarily nocturnal, but individuals may be found outside of their dens during the day. The kit fox mates in late winter, with a litter of four to seven pups being born about two months later. Young first leave the den about one month after birth, in late spring or early summer. The species most often occurs in open prairie, plains, and desert habitats. The Planning Area contains approximately 783,381 acres of kit fox potential habitat.

Long-billed Curlew

The long-billed curlew (*Numenius americanus*) breeds from south-central British Columbia, southern Alberta, southern Saskatchewan, and southern Manitoba south to east-central California, central Nevada, central Utah, central New Mexico, and northern Texas, and east to southwestern North Dakota, northwestern South Dakota, north-central Nebraska, and southwestern Kansas. It winters from Washington, extreme northern Mexico, southern Texas, southern Louisiana, southern Alabama, and coastal South Carolina south to southern Mexico (Oaxaca, Veracruz, and the Yucatan Peninsula) and southern Florida, irregularly through northern Central America to Honduras and Costa Rica (A.O.U. 1998). The long-billed curlew is a fairly common summer resident and migrant in Utah, especially through the central and more northern valleys. It is less common in the Colorado River drainage. This species lives and breeds in higher and drier meadowlands than many other shorebird species (Parrish et al. 1999). The Planning Area does contain potential habitat, but the exact acreages are unknown.

Peregrine Falcon

Although the peregrine falcon (*Falco peregrinus*) is still rare in Utah, it has become much more abundant throughout its range in recent years. The widespread use of the pesticide DDT in the 1940s, 1950s, and 1960s caused a drastic reduction in peregrine falcon numbers (and in the numbers of other raptor species) throughout North America. It was eventually determined that DDT was moving up the food chain and causing raptors to lay thin-shelled eggs that would often break during incubation. DDT was banned in the early 1970s, which allowed the peregrine falcon to start its recovery. By August 1999, the peregrine falcon had recovered to the point that it was removed from the federal endangered species list (UDWR 2005). The Planning Area does contain potential habitat, but the exact acreages are unknown. The Utah Natural Heritage Database has approximately 50 nests identified within the Planning Area though current activity is not known on many of them.

Short-Eared Owl

The short-eared owl is listed as a BLM Sensitive Species. This owl is usually found in grasslands, shrublands, and other open habitats. There is some concern that short-eared owl populations are declining. It is an uncommon breeder in the northern half of the Utah, mostly in the northwestern portion of the state (UDWR 2005b). The Planning Area does contain potential habitat, but the exact acreages are unknown.

Spotted Bat

The spotted bat is listed as a BLM Sensitive Species and is considered rare in Utah (although the spotted bat's distribution ranges throughout the western states from British Columbia to Mexico). The spotted bat has a very low reproductive potential, and therefore once populations are reduced they rebuild slowly.

Several sightings were reported to the UDWR in the southern portion of the Planning Area in 1959 and 1965, although no current populations are known today (UDWR 2005b). The Planning Area does contain potential habitat, but the exact acreages are unknown.

Townsend's Big-Eared Bat

The Townsend's big-eared bat is a BLM Sensitive Species, and USFS-listed Sensitive species due to limited distribution and a declining population (Oliver 2000). The Townsend's big-eared bat is a cave-roosting species that moves into man-made caves such as mines and buildings. Unlike many other bats, they are unable to crawl into crevices and usually roost in enclosed areas where they are vulnerable to disturbance. The Townsend's big-eared bat is quite sensitive to human disturbance, and this appears to be the primary cause of population decline for this species. This bat is colonial during the maternity season, when compact clusters of up to 200 individuals might be found. Maternity roosts form in the spring and remain intact during the summer. Site fidelity is high, and if undisturbed, the bats will use the same roost for many generations (Brown 1996). The Planning Area does contain potential habitat, but the exact acreages are unknown and there is no known habitat within the Planning Area.

Western Red Bat

The western red bat (*Lasiurus blossevillii*) occurs in the western United States and parts of Mexico. The species is extremely rare in Utah, being known from only a few locations in the state. It is included on the Utah Sensitive Species List.

Western red bats are normally found near water, often in wooded areas. Some individuals may hibernate during cold times of year, but most members of the species migrate south to warmer climates for the winter. The species is nocturnal; daytime roosting usually occurs in trees. Females may give birth to one litter of two to four young during late spring. Western red bats eat insects, often foraging near riparian areas (UDWR 2005, Burt 1980). The Planning Area does contain potential habitat.

Flannelmouth Sucker

The flannelmouth sucker is listed as a BLM Sensitive Species, as it now occupies only 50 percent of its historical range within the Upper Colorado River Basin. Within the Planning Area, populations are known to occur in the Colorado, Green and Dolores rivers. Populations have declined since the 1960s due to impoundment of the mainstem of the Green and Colorado rivers. (Flannelmouths have been extirpated from portions of the Gunnison River.) This fish is also susceptible to altered thermal and hydrological regimes, hybridization and competition of non-native fish (UDWR 2005b). The Planning Area does contain potential habitat.

Roundtail Chub

The roundtail chub is listed as a BLM Sensitive Species as it has been extirpated from 45 percent of its historical distribution in the Colorado River Basin. Within the Planning Area, populations are known to occur in the Colorado River from the Utah border to Moab and in the Green River from the Colorado-Green confluence upstream to Echo Park. Declines in populations are attributed to hybridization with other chub, habitat loss and degradation due to dam and reservoir construction, competition and predation of non-natives, parasitism, and dewatering activities (UDWR 2005b). The Planning Area does contain potential habitat.

Cornsnake

The cornsnake is listed as a BLM Sensitive Species because of limited distribution and its potential for genetic uniqueness from the cornsnakes east of the Continental Divide. The cornsnake is associated with the Colorado and Green River corridors and population declines are attributed to habitat degradation, vegetative changes, and illegal collection (UDWR 2005b). The Planning Area does contain potential habitat, but the exact acreages are unknown.

Great Plains Toad

The Great Plains toad (*Bufo cognatus*) is a common and widespread toad that occurs across the central United States, much of Mexico, and limited areas of Canada. In Utah, the Great Plains toad occurs in scattered areas throughout the state, where it prefers desert, grassland, and agricultural habitats. In cold winter months, the Great Plains toad burrows underground and becomes inactive (UDWR 2005, Stebbins 1985). The Planning Area does contain potential habitat, but the exact acreages are unknown and there is no known habitat within the Planning Area.

Conservation Agreement Species

Conservation Agreements exist among resource agencies in Arizona, Colorado, New Mexico, Utah, and Wyoming to expedite the implementation of conservation measures concerning the following species: Colorado cutthroat trout, the blueheaded sucker, the roundtail chub, the flannelmouth sucker and the northern goshawk. Those species with no known habitat or potential habitat within the Planning Area will not be carried forward in this document.

Trends

Most of the trends that affect other fish, wildlife and plant species in the Planning Area also affect special status species. These include habitat degradation and fragmentation, grazing practices, and management, invasive species, motor vehicles, drought, fire, floods, and climate. Trends for special status species generally are difficult to assess due to lower population numbers and/or secretive nature of these species.

Forecasts

Many of the forecasts described in the wildlife and vegetation sections of this document for other species in the Planning Area also apply to special status species. This is because the forecasted changes would also alter the habitat quality and availability for special status species.

Under current management from the BLM RMP, the forecast for special status species in the Planning Area is to maintain and or increase populations overall. Stochastic variables may prevail but BLM is managing for seasonal and spatial needs.

Key Features

- Riparian corridors
- Sagebrush habitat
- Pinion juniper woodland habitat

2.14 SOCIAL AND ECONOMIC CONDITIONS

The socioeconomic baseline report includes the current conditions, trends, and forecasts for the social and economic conditions. Refer to the socioeconomic report for detailed information. The report is available from the Canyon Country District Office.

2.15 VEGETATION

Vegetation in the Planning Area provides direct economic benefits such as livestock grazing, as well as indirect benefits such as wildlife cover, browse, and nesting habitat for a variety of wildlife species. Vegetation also functions in the hydrologic cycle as a dynamic interface between the soil and atmosphere. It intercepts precipitation, retards overland flow, retains soil water and nutrients (root absorption), and

transports water and nutrients back to the atmosphere via stems and leaves (evapotranspiration). Vegetation is also an integral part of what makes the Planning Area an aesthetically pleasing destination for visitors.

2.15.1 Regional Context

The State of Utah is divided into five major eco-regions determined by geographic and climatic similarity. The Planning Area occurs entirely within the Colorado Plateau ecological province. The unique climate and geology of the Colorado Plateau allow for the growth of many endemic and rare plant species and, thus, a substantial amount of biodiversity. The variety of elevations and precipitation zones within the Planning Area only enhances the area's biodiversity.

2.15.2 Resource Characterization

Indicators

Common indicators of vegetation health include cover, composition, bare ground and litter, structural diversity, species' diversity, and the presence and density of invasive plant species. These indicators are associated with ecological sites and with Standards 1, 3, and 4 of the Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management for Public Lands Administered by the BLM in the State of Utah (BLM 1997).

The presence of invasive plant species may indicate a disturbance to the native vegetation community. Denser populations of invasive species are generally associated with soil disturbing activities, extended improper grazing practices, wildfire, or other major events.

Current Condition

Vegetation across the Planning Area has been identified using Southwest Regional Gap Analysis Project (SWReGAP, RS/GIS Laboratory et al. 2005). Gap vegetation data were developed using multi-spectral satellite imagery in conjunction with image processing and classification software. The relationship between spectral signatures and a given vegetation type was further refined via development of models that incorporated a variety of topographic and distributional information for that given vegetation type. SWReGAP vegetation data were intended to be used for depicting the distribution of the state's various vegetation types at scales of 1:100,000 or smaller. While adequate for characterizing vegetation over large areas, this data is less accurate when viewed for smaller project areas. Utah Gap Analysis data indicate the following cover types and acreages in the Planning Area (Table 2-27). Similar cover types have been grouped together and are described in the sections following Table 2-27. The cover types that do not have significant native vegetation (Unclassified and Disturbed Areas) are presented in the table, but not discussed in this document.

Table 2-27. Acres of Land by SWReGAP Cover Type in the Planning Area

Cover Type	Monticello FO* (Acres)	Moab FO* (Acres)	Planning Area (Acres)	Planning Area (Percent)
Unclassified Areas	3,017	7,632	10,656	1.1
Blackbrush	44,885	175,452	220,337	23.3
Disturbed Areas	752	1,851	2,603	0.3
Douglas-fir / Mixed Conifer	17	4	15	0.0

Cover Type	Monticello FO* (Acres)	Moab FO* (Acres)	Planning Area (Acres)	Planning Area (Percent)
Dunes	573	26,228	26,802	2.8
Grasslands	3,914	26,527	30,441	3.2
Invasives	3,964	10,453	14,417	1.5
Mountain Shrub	242	43	285	0.0
Pinyon-Juniper	133,103	244,370	377,473	39.9
Ponderosa Pine	14	20	34	0.0
Riparian / Wetlands	1,970	800	2,770	0.3
Sagebrush	39,936	47,034	86,970	9.2
Salt Desert Shrub	18,460	155,203	173,663	18.3
Total Acres	**250,847**	**695,618**	**946,466**	**100%**

*Field Office acres listed are only acres within the Planning Area.

The distribution of vegetation types in the Planning Area is primarily influenced by soil type, elevation, precipitation, and topography, and also by land management activities such as livestock and wildlife grazing, road and minerals development, and OHV use. Additionally, vegetation communities were impacted by severe drought conditions existing in the area from 1998 through 2004. See Map 36 for the distribution of vegetation across the Planning Area.

Douglas-fir / Mixed Conifer and Ponderosa Pine

This vegetation type accounts for approximately less than one percent of the cover in the Planning Area. The annual precipitation ranges from 14 to 25 inches in areas that support this vegetation community. Elevations range from 6,000 to 9,000 feet and slopes are often extremely steep. The soils are more fertile than those in other areas. Due to the extreme slopes and often rocky terrain these community types are generally managed for wildlife habitat (Grand County Soil Survey, NRCS 1981). This vegetation community is defined as a conifer forest or woodland with Douglas-fir, ponderosa pine, or quaking aspen dominate, associated, or co-dominate with mountain shrub. The principle tree species are Douglas-fir (*Pseudotsuga menziesii*), ponderosa pine (*Pinus ponderosa*) and quaking aspen (*Populus tremuloides*) and other associated tree species, including subalpine fir (*Abies lasiocarpa*), white fir (*Abies concolor*), Englemann spruce (*Picea engelmannii*), and limber pine (*Pinus flexilis*). Principle shrub species include Gamble oak (*Quercus gambelii*), bitterbrush (*Purshia tridentata*), bigtooth maple (*Acer grandidentatum*), snowberry, serviceberry, manzanita, and ninebark (*Physocarpus* spp.). Other associated shrub species include common juniper (*Juniperus communis*), sagebrush, rabbitbrush, and curlleaf mountain mahogany (*Cercocarpus ledifolius*). Although this vegetation type is not actively managed and only represents less than one percent of the Planning Area, it provides crucial wildlife habitat and ecological diversity. It is comprised of high elevation tundra vegetation; including grasses, forbs, sedges, and shrubs. Principle species include Ross' avens (*Geum rossii*), sedges (*Carex* spp.), tufted hair grass (*Deschampsia caespitosa*), Colorado fescue (*Festuca brachyphylla*), American bistort (*Polygonum bistortoides*), and willow (*Salix* spp.). The primary associated tree species is Engelmann spruce krummholz (*Picea engelmannii*).

Dunes

Dune communities comprise 2.8 percent of the Planning Area. Dunes are found primarily in the canyon lands and high plateaus of the Colorado Plateau. This area has been structurally uplifted over time while

the rivers flowing across it were cutting down into its bedrock. This site occurs on dunes, coppice dunes, and mesas (NRCS 2011). The dune lands are characterized by mounds of sand that are 4 to 20 feet in height and 10 to 200 feet in diameter. Dunes support little vegetation if any. The present vegetation in most areas consists of sand sage (*Artemisia filifolia*), Havard oak (*Quercus havardii*), slender buckwheat (*Eriogonum spp.*), Indian ricegrass, James galletta, sand dropseed, sandhill muhly (*Muhlenbergia pungens*), and a variety of forbs. In the lower lying areas where the water collects it can support Fremont cottonwood (*Populus fremontii*) and greasewood (*Sarcobatus vermiculatus*) (NRCS, 1989). Dune communities occur in elevation from 4,100 to 5,660 feet with an average precipitation of 5 to 10 inches annually.

Grasslands

Grassland communities occur as a unique component of the Planning Area. They are similar to salt-desert, sagebrush, and blackbrush types in species composition, but differ in that grasses dominate instead of browse species. The dominant grass species depend on the soil, with species such as saltgrass (*Distichlis stricta*), galleta grass, squirreltail, blue grama, and western wheatgrass occurring on heavy soils. Sandy sites usually support species such as Indian ricegrass, sand dropseed (*Sporobolus cryptandrus*), and needle-and-thread grass. Grassland communities occur from 4,000 to 6,000 feet elevation with an average precipitation total of 5 to 15 inches (Valentine 1961).

Pinyon-juniper and shrub encroachment, along with that of invasive annuals such as cheatgrass (*Bromus tectorum*) and Russian thistle (*Salsola tragus*), are the main issues of concern for this community type.

Mountain Shrub

This vegetation type accounts for less than one percent of the cover in the Planning Area. Deciduous shrubland principally dominated by alder-leaf mountain-mahogany (*Cercocarpus montanus*), cliff-rose (*Purshia mexicana*), bitterbrush (*Purshia tridentata*), serviceberry (*Amelanchier utahensis* and *Amelanchier alnifolia*), buckbrush (*Ceanothus* spp.), chokecherry (*Prunus virginiana*), snowberry (*Symphoricarpos* spp.), point-leaf manzanita (*Arctostaphylos pungens*) and bearberry (*Arctostaphylos uva-ursi*). Primary associated shrub species include gambel oak (*Quercus gambelii*), palmer oak (*Quercus chrysolepis*), Tucker's oak (*Quercus welshii*), Turbinella live-oak (*Quercus turbinella*), sagebrush and maple (*Acer* spp.) Primary associated tree species include quaking aspen (*Populus tremuloides*) and curl-leaf mountain-mahogany (*Cercocarpus ledifolius*).

Pinyon-Juniper

This vegetation type accounts for approximately 40 percent of the cover in the Planning Area. These woodland species generally grow at elevations between 4,700 and 8,600 feet where precipitation totals 12 to 18 inches per year. The supporting landscape varies in topography from level to steep slopes (0 percent to 80 percent). Dominant tree species include pinyon (*Pinus edulis*) and Utah juniper (*Juniperus osteosperma*). Primary associated shrub species include sagebrush, Mormon tea, and blackbrush. Dominant grass species include saline wildrye. Pinyon dominates the overstory as stands reach the upper limits of the elevational range, whereas juniper dominates at lower elevations. As elevation increases within this zone, stand structure changes from open overstory with a sparsely vegetated understory to more dense with a greater variety of species. Land treatments followed by crested wheatgrass seedings have historically occurred within this community type and are considered altered ecological sites.

Unhealthy pinyon-juniper stands are evident across the Planning Area, especially on sites with shallow soils. Pinyon mortality, attributed to the combination of drought, Ips beetle, and root disease, is estimated at 20 to 30 percent in the Monticello Planning Area. It is reasonable to assume a similar mortality throughout the MLP Planning Area. Pinyon is a valuable resource for other programs such as woodlands (firewood harvest) and wildlife habitat management. It also provides pine nuts for human collection and

consumption. The increase in dead wood has led to an increase in fuel loading and area fire hazards. However, this dead wood also provides a short term resource as collectable firewood.

Pinyon-juniper encroachment on sites with deep soils is continuing. More sagebrush communities and understory vegetation are lost as this occurs, resulting in an increase in soil erosion. Following wildfires, rehabilitation seedings have occurred in pinyon-juniper woodlands.

Riparian/Wetlands

This vegetation type accounts for less than one percent of the cover in the Planning Area. Riparian and wetland areas contain vegetation associated with surface or subsurface moisture. Wetlands require prolonged saturation of soils and contain certain vegetative species dependent upon soil saturation. Less than one percent of the Planning Area is riparian; these areas are located along major rivers, drainages, or spring sites. Riparian vegetation in the Planning Area is generally located in areas with an elevation of less than 5,500 feet. Principal woody species include Fremont cottonwood (*Populus fremontii*), salt-cedar (*Tamarix chinensis*), coyote willow (*Salix exigua*), and squawbush (*Rhus aromatica* var. *trilobata*). Principal wetland species include cattail (*Typha latifolia*), bullrush (*Scirpus* spp.), and sedge (*Carex* spp.). More detailed information concerning riparian and wetland species are located in the Riparian section of this document.

Hanging gardens and spring-fed vegetation communities are rare to the arid and semiarid environments of the Colorado Plateau. Hanging gardens occur where groundwater seeps through sandstone or limestone substrates, often along overhanging cliffs adjacent to rivers. Plants found in hanging garden communities are often wetland-riparian species endemic to the Colorado Plateau (Spence unpub.). Spring-supported communities often contain riparian woodlands of species such as willow and cottonwood. Some less common mixed-deciduous woodlands comprised of species such as birchleaf buckthorn (*Rhamnus betulifolia*) are also found in the region.

Sagebrush

This vegetation type accounts for approximately 9 percent of the cover in the Planning Area. The landscapes that support this vegetation community have moderately deep soils and precipitation totaling 11 to 16 inches per year. Elevation ranges from 5,500 to 7,300 feet with little localized relief. Big sagebrush (*Artemisa tridentata*) dominates the vegetation in this community type. Elevation and soil depth influence the species composition and density, which may include horsebrush, rabbitbrush, spiny hopsage, saltbush, Mormon tea, and winterfat (*Krascheninnikovia lanata*) (MacMahon 1988). Principle grass species include sand dropseed (*Sporobolus cryptandrus*), western wheatgrass (*Elymus smith*ii), Indian ricegrass, and galleta. Land treatments, including crested wheatgrass (*Agropyron cristatum*) seedings, have historically occurred within this community type and are considered altered ecological sites. Additionally, significant percentages of sagebrush have also been converted to monotypic stands of exotic cheatgrass (*Bromus tectorum*) or Russian thistle (*Salsola kali*) as a result of wildfires, drought, and improper grazing management practices. Appropriate revegetation methods can be effective in restoring diverse community compositions in this zone, but large-scale rehabilitation has yet to be implemented successfully within the Planning Area (personal communication between Daryl Trotter, BLM, and Susan Kammerdiener, SWCA on January 6, 2006).

Salt Desert Shrub

This vegetation type accounts for approximately 18 percent of the cover in the Planning Area. Areas supporting salt desert shrub vegetation receive relatively low annual precipitation (5 to 10 inches), which results in very little soil moisture available for plant growth. Elevations range is from 4,000 to 5,400 feet. Soils are often very saline or alkaline and vary in moisture availability, from drier, well-drained areas to areas where the water table is near the surface (MacMahon 1988). Dominant shrub species include

shadscale (*Atriplex confertifolia*), greasewood (*Sarcobatus vermiculatus*), blackbrush (*Coleogyne ramosissima*), four-wing saltbush (*Atriplex canescens*), Nuttall's saltbush (*Atriplex nuttallii*), mat saltbush (*Atriplex corrugata*), Mormon tea (*Ephedra* spp.), spiny hopsage (*Grayia spinosa*), horsebrush (*Tetradymia canescens*), and rabbitbrush *Chrysothamnus spp*.). Dominant forb species include snakeweed (*Gutierrezia sarothrae*) and buckwheat (*Eriogonum* spp.). Dominant grass species include saline wildrye (*Leymus salinus*), galleta (*Hilaria jamesii*), Indian ricegrass (*Stipa hymenoides*), and sand dropseed (*Sporobolus airoides*). These communities are generally associated with Mancos-derived clay soils, which are extremely susceptible to wind and water erosion following surface disturbances. For additional information see the Soils section of this document.

Special Status Plant Species

Special status plant species include all federally listed threatened and endangered species and BLM sensitive species. Special status plant species with potential to occur in the Planning Area are listed and discussed in the Special Status Species section of this document.

Invasive Species and Noxious Weeds

One of the BLM's highest priorities is to promote ecosystem health and one of the greatest obstacles to achieving this goal is the rapid expansion of invasive, non-native species or weeds across public lands. A noxious weed is any plant designated by a federal, state, or county government as injurious to public health, agriculture, recreation, wildlife, or property (Sheley, Petroff, and Borman 1999). Noxious weeds are designated and regulated by various state and federal laws. Approximately 14,417 acres or 1.5 percent of the Planning Area is dominated by this vegetation type. A systematic weed inventory has not been completed for the Planning Area. The BLM treats weed infestations, including those within the Planning Area, with mechanical, cultural, chemical, manual, biological, and prevention measures. Of particular concern is a population of a weedy plant known as camelthorn; this population is found in the southern portion of the Planning Area and is the only known infestation of this species in Utah. Significant efforts are being made to control this infestation before it becomes widespread.

In most cases, noxious weeds are also non-native species (BLM 1991b). They are capable of invading plant communities and replacing native species, and are particularly successful following a disturbance. The BLM considers plants invasive if they have been introduced to an environment where they did not evolve. As a result, they usually have no natural enemies to limit their reproduction and spread (Westbrooks 1998). These invasive plants can dominate and often cause permanent damage to natural plant communities. If not eradicated or controlled, noxious and invasive weeds could jeopardize the health of the public lands and the myriad of activities that occur on them. Noxious and invasive weed species identified in Grand County and San Juan County are listed in Table 2-28.

The spread of invasive species across the management area continues to be a primary concern. Tamarisk and Russian olive infestations are found in many waterways and have resulted in vegetation compositions far removed from native riparian plant communities. Although known as a highly invasive species, without official designation as a problematic species, tamarisk eradication has not been mandatory in Utah. Populations of Russian knapweed have also reached high levels in many river corridors with camelthorn and ravennagrass (Saccharum ravennae) following suit. New species invasions such as these threaten existing vegetation communities, species diversity, and habitats of special status species.

Effects of the current drought are evidenced by reduced plant productivity. Unfavorable climactic conditions also predispose vegetation to insect infestations. Visitor numbers within the Planning Area continue to increase, and with this comes a greater risk of disturbance to native plant communities and special status species. Activities such as seed collection have become more popular as the demand for drought-tolerant plants increases. Recreationists are seeking new areas, as well as continuing to visit

popular destinations, which exposes new areas to disturbance and increases the chance for outbreaks of undesirable plants.

Controlling undesirable and non-native species is one of the most difficult challenges, as well as one of the most significant problems, facing vegetation managers. To control weeds on BLM land, the BLM along with Grand and San Juan Counties are utilizing integrated pest management strategies (combined use of mechanical, cultural, chemical, manual, biological, and prevention measures).

Table 2-28. Noxious and Invasive Species of Grand County and San Juan County, Utah

Common Name	Scientific Name
Bermudagrass	*Cynodon dactylon*
Bindweed	*Convolvulus spp.*
Black hendbane	*Hysocyamus niger*
Buffalobur	*Sloanum rostratum*
Canada Thistle	*Cirsium arvense*
Camelthorn	*Alhagi pseudalhagi*
Cheatgrass	*Bromus Tectorum*
Dalmation toadflax	*Linaria dalmatica*
Diffuse Knapweed	*Centaurea diffusa*
Dyer's Woad	*Isatis tinctoria*
Field bindweed	*Convolvulus arvensis*
Halogeton	*Halogeton glomeratus*
Hog millet	*Panicum miliaceum*
Houndstongue	*Hyoscyamus niger*
Jointed goatgrass	*Aegilops cylindrical*
Johnson Grass	*Sorghum halepense*
Perennial Sorghum	*Sorghum almum*
Musk Thistle	*Carduus nutans*
Poison hemlock	*Conium maculatum*
Perennial Pepperwood/Whitetop	*Lepidium latifolium*
Phragmites	*Phragmites spp.*
Punctureviné	*Tribullus terrestris*
Purple loosestrife	*Lythrum salicaria*
Quackgrass	*Elytrigia repens*
Russian Knapweed	*Centarea repens*
Russian Olive	*Elaegnus angustifolia*
Russian thistle	*Salsola tragus*
Salt-cedar	*Tamarix chinensis*
Scotch Thistle	*Onopordium acanthium*
Silverleaf nightshade	*Solanum elaeagnifolium*

Common Name	Scientific Name
Spotted Knapwee	*Centaurea maculosa*
Squarrose Knapweed	*Centaurea squarrosa*
Water hemlock	*Cicuta douglasii*
Whitetop/Hoary cress	*Cardaria spp.*
Whorled milkweed	*Asclepias subverticillate*
Yellow nutsedge	*Cypreus esculentus*
Yellow toadflax	*Linaria vulgaris*

Weed eradication methods, such as herbicide spraying, must be consistent with the Final EIS and Record of Decision (Utah section) for *Vegetation Treatment on BLM Lands in Thirteen Western States* (BLM 1991c) and the *Final Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States Programmatic EIS* (BLM 2007b). The use of certified weed-free hay is one guideline implemented from Utah BLM Health Standards and Guidelines for Healthy Rangelands to control the spread of noxious weeds (BLM 1997). For revegetation purposes, the use and perpetuation of native species is a priority, except for instances when non-intrusive, nonnative species are more ecologically or economically feasible.

Seed and Plant Collection

Private individuals may collect seed and plants after acquiring a permit, which includes a list of stipulations. The public may collect seed on BLM-administered lands during non-drought years from a seed source that has been verified as being in good vegetative condition (e.g. vigor and viable seed). Popular species for seed collection include fourwing saltbush, globemallow (*Sphaeralcea* spp.), rabbitbrush (*Chrysothamnus* spp.), winterfat, and needle-and-thread grass.

Collection of individual forbs, grasses, and most shrubs is allowed for scientific purposes only. Federally protected plant species may not be collected, but BLM-listed sensitive species may be collected if the population is sufficiently large as to not be affected. Before collecting plant specimens, the local Moab and Monticello field offices must be notified. A list of species collected and a copy of the herbarium labels produced for each specimen must be submitted to the BLM Utah State Office at the end of collection season.

Trends

Vegetative trends throughout the Planning Area fluctuate from year to year. The trend of the vegetation is dependent on climate, grazing pressure/timing, and disturbances. Analysis of data from the 1990s and early 2000s shows a cyclical pattern in vegetative trends. Preliminary analysis of available current data indicates that vegetative trends are on the increase in some parts of the Planning Area. Impacts of drought on the Planning Area vary widely. Primary impacts of the extended drought are reduced vegetative production, reduction of cover canopy, heights of grasses, production of palatable herbage, and reduced livestock performance and wildlife physical condition. Drought is also thought to give a growing advantage to cheatgrass, since even low amounts of snowfall are adequate to provide moisture to initiate growth up through seedset. Other vegetation relies on spring/summer rains to initiate growth and completion of their lifecycle.

Forecasts

Increases in surface disturbing activities are a threat to vegetation communities within the Planning Area. Drought conditions are forecasted to continue, which will have short and long term effects on vegetation and ecological communities.

Key Features

- Specific vegetative communities
- Diverse vegetative communities
- Riparian vegetation

2.16 VISUAL RESOURCE MANAGEMENT

The BLM visual resource management (VRM) system is a way to identify and evaluate scenic values to determine the appropriate levels of management. VRM is a tool to identify and map essential landscape settings to meet public preferences and recreational experiences today and into the future. The BLM's VRM system helps to ensure that actions taken on the public lands will benefit the visual qualities associated with the landscapes while protecting these visual resources for adjacent communities in the future.

2.16.1 Regional Context

The Planning Area is an internationally recognized, world-famous scenic destination containing an unusually large number of areas that possess a high degree of scenic quality and a high level of visual sensitivity. The Planning Area draws an increasing number of visitors each year who come to the area to recreate and sightsee. In general, high scenic quality within the Planning Area is a product of the extraordinary topography, geology, and cultural history. Scenically diverse vistas and canyon river ways, rare and unusual geological formations, colorful and highly contrasting sandstones, and numerous prehistoric rock art and structures also contribute to the area's high visual quality. Areas with high visual sensitivity are the primary result of the high degree of visitor interest in and public concern for a particular area's visual resources, an area's high degree of public visibility, the level of use of an area by the public, and the type of visitor use that an area receives (BLM 1992b).

2.16.2 Resource Characterization

Indicators

BLM categorizes visual resources into four distinctive inventory classes, which are based on scenic quality evaluations, sensitivity level analysis, and the delineation of distance zones. These inventory classes are then filtered with current management objectives of all resource programs to create VRM classes, which determine the amount of change that is allowable to the basic elements of the landscape for development activities. The classes are as follows:

- **Class I** – The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
- **Class II** – The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be

seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

- **Class III** – The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
- **Class IV** – The objective of this class is to provide for management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

Current Condition

The major areas within the Planning Area that possess both outstanding scenic quality and high visual sensitivity include, but are not limited to: Canyon Rims (encompassing the area from Harts Draw to Hurrah Pass); the Indian Creek Corridor; Lockhart Basin; Kane Creek; Wall Street; the Labyrinth Rims; Gemini Bridges; the Dead Horse Point/Shafer Trail area; Porcupine Rim; and the area around Mill and Tusher Canyons. Visually scenic and sensitive river areas include the segments of the Colorado River and Labyrinth Canyon (the Green River and its tributaries).

Areas of high scenic quality and visual sensitivity that are associated with travel corridors include the Kane Creek area (from U.S. Highway 191 to its confluence with the Colorado River); the non-paved portion of the Potash Road (Shafer Basin) from Utah Highway 279 to the border with Canyonlands National Park; and the State Highway 313/Seven Mile Canyon/Monitor-Merrimac Buttes area. Other major scenic travel corridors within the Planning Area include U.S. Highway 191 and State Highways 128, 211, 279, and 313, which have been designated as State Scenic Byways. In addition, the Needles Overlook and Anticline Overlook Roads, as well as the Lockhart Basin/Kane Creek roads, are designated as State Scenic Backways. The Planning Area also contains thousands of miles of OHV, bike, equestrian, and foot trails that are traveled as scenic routes, many of which are internationally recognized.

Current VRM management is shown by acres in Table 2-29 and Map 37.

Table 2-29. VRM Acreage in the Planning Area

VRM Management Class	Acreage
VRM Management Class I	13,417
VRM Management Class II	322,085
VRM Management Class III	373,170
VRM Management Class IV	74,692

In 2011 and 2012, the BLM conducted a visual resource inventory (VRI) which included lands within Planning Area. The VRI process provides BLM with a means for determining visual values. The inventory consists of a scenic quality evaluation, sensitivity level analysis, and a delineation of distance zones. Based on these three factors lands are placed into one of four visual resource inventory classes. The inventory classes represent the relative values of the visual resources.

Class I and II identify areas with the most values, Class III represents a moderate value, and Class IV identifies those lands with the least value. The inventory classes provide the basis for considering visual values during the RMP process and are the basis for determining the appropriate management prescriptions. While no management prescriptions have been applied to the new VRI this data may be used during this planning process to assist BLM in identifying appropriate visual resource management and stipulations.

The resulting VRI acreages are presented in Table 2-30 and on Map 38.

Table 2-30. VRI Acreage in the Planning Area

VRI Class	Acreage
VRI Class I	90
VRI Class II	421,097
VRI Class III	165,208
VRI Class IV	108,344

Trends

The landscape within the Planning Area is being impacted by increases in recreation and tourism, vehicular travel, the increasing number and length of roads and trails, and the increasing numbers of sightseers attracted to the Planning Area. These increases have occurred primarily because of the extraordinary scenic qualities of the area. The tourist industry is also increasing as a result of increased recreational and vehicular use and an increase in visitors to Arches and Canyonlands National Parks who subsequently recreate on BLM-administered lands. Additionally, the area has experienced an increased demand by filming, commercial photography, and television commercial filming industries due in large part to the unique visual quality. The visual quality within the Planning Area is being impacted by development of utility corridors, from minerals exploration and development, from seismic exploration, and from other land-use disturbances.

Forecasts

A number of actions have the potential to alter visual resources in the Planning Area. Mineral development and associated infrastructure could change visual resources. Although the MLP process will further identify areas where mineral development would allowed or restricted, the demand for mineral development and associated infrastructure will likely increase impacts to the areas visual quality.

Key Features

The main locations within the Planning Area possessing outstanding scenic quality include, but are not limited to:

- ACECs
- SRMAs
- Wild and Scenic River segments
- Lands with Wilderness Characteristics

2.17 WILDLIFE AND FISHERIES

2.17.1 Regional Context

The Planning Area is in the heart of the Colorado Plateau and has a great amount of landscape diversity. This location produces a unique combination of landforms and habitat types. This diversity of habitat is reflected in the diversity of terrestrial and aquatic life that occurs within its borders.

Species in the Planning Area include big game species such as mule deer (*Odocoileus heminonus*), Rocky Mountain elk (*Cervus canadensis*), pronghorn (*Antilocapra americana*), desert bighorn sheep (*Ovis Canadensis nelsoni*), black bear (*Ursus americanus*) and mountain lion (*Felis concolor*). Additional species of concern in the Planning Area fall within the general categories of upland game species, raptors, waterfowl, and shorebirds, fish and aquatic species, neotropical migrants and small mammals and reptiles. Management goals for most wildlife populations in the Planning Area are determined primarily by the UDWR, with the exception of the federally protected wildlife populations, which are determined by the USFWS. The current RMP allocates forage for elk, deer, bighorn sheep and antelope. Resource allocations for raptors, reptiles, amphibians, and other non-game species are limited to protecting individuals and the habitat of state and federally listed species, and designating spatial and temporal barriers for nesting raptors.

The BLM's management of wildlife habitat has had, and will continue to have, an impact on both local communities and those that exist outside the Colorado Plateau. There is considerable regional interest in the overall condition and management of the Planning Area. In the past, a majority of the local interest has been focused on big-game management and associated recreational activities. In recent years, however, non-consumptive uses in the in the Planning Area, such as tourism and wildlife viewing have been increasing with the continued expansion of Utah's tourism industry. Because many of the wildlife species found in the Planning Area regularly cross public, private, and tribal lands, a collaborative effort between all land managers and owners has been essential for effective wildlife management in the Planning Area.

2.17.2 Resource Characterization

Indicators

Relevant wildlife indicators include population numbers; species recruitment; wildlife observations; habitat quality; gain or loss of valuable habitats; identified high value habitat areas and important habitat features for various species; species listed as Threatened or Endangered or as Utah BLM sensitive species; Rangeland Health Standards; riparian PFC ratings; disease occurrence/impacts; numbers of hunting permits issued; harvest rates; poaching rates; population indices; and harvest statistics for individual herd units.

Current Condition

Big Game

Mule Deer (*Odocoileus Hemionus*)
Mule deer occupy most ecosystems in Utah but likely attain their greatest densities in shrublands on areas characterized by rough, broken terrain and abundant browse and cover. In the Rocky Mountains, winter diets of mule deer consist of approximately 75 percent browse from a variety of trees and shrubs and 15 percent forbs. Grasses make up the remaining 10 percent of the diet during winter. In the spring, browse is 49 percent of the diet and grasses and forbs make up approximately 25 percent each. Summer diets are

50 percent browse, with forbs consumption increasing to 46 percent. Browse use increases again in the fall to approximately 60 percent of the mule deer diet, forb use declines to 30 percent, and grasses increase to 10 percent (Fitzgerald et al. 1994). Mule deer summer range habitat types include spruce/fir, aspen, alpine meadows, and large grassy parks located at higher elevations. Winter range habitat primarily consists of shrub-covered, south-facing slopes and often coincides with areas of concentrated human use and occupation. Winter range is often considered a limiting factor for mule deer in the Intermountain West. The portions of these acreages managed by the BLM are listed in Table 2-31 and identified in Map 39.

Table 2-31. BLM-Managed Mule Deer Habitat within the Planning Area

Habitat Type	Acres (Moab FO)	Acres (Monticello FO)	Acres* (Planning Area)
Year Long Habitat	None	None	None
Winter Habitat	16,804	64,042	80,846
Summer Range	None	None	None
Fawning Habitat	None	None	None
Migration Corridors	None	None	None

*These acreages are only for the Planning Area

Because of learned behavioral use patterns passed on from one generation to the next, deer migrate for the winter into the same areas every year, regardless of forage availability or condition. These generally are areas lacking in snow depth, which allow easier movement, with pinion-juniper and sagebrush vegetation types. These vegetation types provide deer with both escape and thermal cover. Sagebrush is their primary forage during the winter season.

The management goals for mule deer populations in the Planning Area are to provide a broad range of recreational opportunities, including hunting and viewing; balance mule deer herd impacts with human needs, such as private property rights, agricultural crops, and local economies; and maintain the mule deer population at a level that is within the long-term capability of the available habitat. The target wintering mule deer herd size and annual harvest as well as current mule deer number estimates for the wildlife management units associated with the Planning Area are described in Table 2-32. The deer in the Dolores subunit migrate onto this unit and are also hunted in Colorado, but Colorado figures are not known. The harvest figures are generally low for Utah because the deer are typically in Colorado at the time of the Utah deer hunting season.

Mule deer are used as a representative guild species for the following habitats in the district: deciduous woodland, riparian, mountain shrub, pinyon-juniper woodland, and sagebrush. Impacts to this species can be partly assessed through the impact to these habitat types.

Table 2-32. UDWR Current Mule Deer Estimates

Unit Number	Unit Name (subunit)	Postseason Bucks/100 Does Objective**	Classification % Bucks ≥ 3 Points	Population Estimate (# animals)*	Population Objective	Percent Objective	Current Buck/Doe Ratio**	2010 Harvest**
13a	La Sal (La Sal Mountains)	15	68%	6,600	18,100	36%	15/100	514
13b	La Sal (Dolores Triangle)	35	61%					20
14a	San Juan (Abajo Mountains)	14	74%	12,900	20,500	63%	14/100	537
14b	San Juan (Elk Ridge)	38	77%					47
13 & 14	Planning Area	25.5	70%	19,500	38,600	51%	14.5/100	1,118

*2010 Antlerless Deer Permit Summary and Recommendations
**Utah Annual Big Game Report 2010

Rocky Mountain Elk (*Cervus Elaphus Nelsoni*)

The Rocky Mountain elk is considered a generalist feeder (Fitzgerald et al. 1994). Grasses and shrubs compose most of the winter diet, with the former being of primary importance in the spring months (Kufeld 1973). Forbs become increasingly important in late spring and summer, and grasses again dominate in the fall. These feeding relationships may change somewhat, depending on location. Associated with seasonal changes in diet are seasonal changes in habitat. The season and function of use of these habitats help distinguish various types of winter ranges, production areas (calving grounds), and/or summer range. Production or calving areas are used from mid-May through June and typically occupy higher elevation sites than winter range. Calving grounds are usually characterized by aspen, montane coniferous forest, grassland/meadow, and mountain brush habitats, and are generally in locations where cover, forage, and water are in close proximity (Fitzgerald et al. 1994). In western Colorado, for instance, most females calve within 660 feet of water (Seidel 1977). Winter range is often considered a limiting factor for Rocky Mountain Elk in the Intermountain West. Typical Rocky Mountain Elk winter range occurs between 5,500 and 7,500 feet elevation and comprises mountain shrub and sagebrush habitats. Crucial winter range is considered to be the part of the local deer and/or elk range where approximately 90 percent of the local population is located. The middle and higher elevations of the Planning Area sustain several large Rocky Mountain Elk populations.

The portions of these acreages managed by the BLM are listed in Table 2-33 and identified in Map 39.

Table 2-33. BLM Managed Rocky Mountain Elk Habitat within the Planning Area

Habitat Type	Acres (Moab FO)	Acres (Monticello FO)	Acres (Planning Area)*
Year Long Habitat	None	5,796	5,796
Winter Habitat	None	1,701	1,701
Summer Range	None	None	None
Calving Habitat	None	None	None
Migration Corridors	None	None	None

*These acreages are only for the Planning Area

Rocky Mountain elk populations are associated with the four wildlife management subunits found in the Planning Area. The management goals for Rocky Mountain elk populations are to provide a broad range of recreational opportunities, including hunting and viewing; balance elk herd impacts with human needs, such as private property rights, agricultural crops, and local economies; and maintain the elk population at a level that is within the long-term capability of the available habitat. Rocky Mountain elk objectives and numbers for the Planning Area are displayed in Table 2-34.

Table 2-34. UDWR Current Rocky Mountain Elk Estimates

Unit Number	Unit name subunit	Winter Population Objective (# animals)*	Age Objective**	Winter Population Estimate (# animals)*	Percent of Objective	Current Bull/Cow Ratio	2010 Harvest**
13a	La Sal (La Sal Mountains)	2,500	5.5-6.0	2,500	100%	39/100	301
13b	La Sal (Dolores Triangle)		5.5-6.0			23/100	8
14a	San Juan (Abajo Mountains)	1,300	7.5-8.0	1,600	81%	70/100	72****
14b	San Juan (Elk Ridge)						218
13 & 14	Planning Area	3,800	6.2-6.7	4,100	93%	44/100	599

*Antlerless Elk Permit Summary and Recommendations.
**Utah Annual Big Game Report 2010.
***Elk Management Plan
**** This number comprises Abajo Mountains and Montezuma Canyon

A majority of the elk in the La Sal wildlife management unit stay on private and USFS lands year-round; however, BLM lands do provide some winter range. The La Sal Mountains elk herds may winter on portions of the Adobe Mesa, Black Ridge, Hatch Point, Lisbon, Mill Creek, North Sand Flat, Professor

Valley, and South Sand Flat allotments as well as Polar Mesa and Taylor allotments on the north side of the mountains. The Dolores Triangle provides winter range for elk, which migrate from Colorado to habitat in all or portions of Big Triangle, Buckhorn, Gateway, Granite Bench, Granite Creek, Mountain Island, Sand Flats, Scharf Mesa, Spring Creek, Steamboat Mesa and Taylor allotments. The number of elk within the Dolores Triangle varies from year to year, depending on the severity of the winter. During mild winters, relatively few elk migrate into this area.

Black Bear

In the Intermountain West, black bears are typically associated with forested or brushy mountain environments and wooded riparian corridors. They seldom use open habitats (Zeveloff and Collett 1988). Black bears tend to be nocturnal and crepuscular and are considered omnivorous. Preferred foods include berries, honey, fish, rodents, birds and bird eggs, insects, and nuts. Black bears obtain most of their meat from carrion. From November to April, bears enter a period of winter dormancy. Winter dens are located in caves, under rocks, or beneath the roots of large trees where they are kept nourished and insulated by a several-inch-thick layer of fat (Zeveloff and Collett 1988).

A black bear management plan for the State of Utah was completed by the UDWR in 2000. This plan outlines the historic and current management of black bears in the state. With respect to black bears, the goal of the wildlife management units in the Planning Area is to maintain a healthy bear population capable of providing a broad range of recreational opportunities (including hunting and viewing in existing occupied habitat) while considering human safety, economic concerns, and other wildlife species. The management objectives are to maintain bear distribution and increase it in suitable unoccupied or low density areas; maintain current bear populations with a reasonable proportion of older age animals and breeding females; balance bear population numbers with other wildlife species; minimize the loss in quality and quantity of UDWR-identified, crucial and high-priority bear habitat, including migration corridors between occupied areas; reduce the risk of loss of human life and reduce chances of injury to humans by bears; reduce the number of livestock killed by bears; and maintain quality consumptive and non-consumptive recreational opportunities (UDWR 2000b).

Pronghorn

Pronghorn can be found throughout the western United States, Canada, and northern Mexico. They are generally associated with open plains where they feed mainly on forbs and grasses. Pronghorn prefer to occupy areas with large tracts of flat to rolling open terrain where they rely on keen eyesight and swift movement to avoid predators. They also rely on vegetation within the shrub and grassland plant communities for food. Pronghorn are often found in small groups and are usually most active during the day. Pronghorn habitat acreages managed by the BLM within the Planning Area are listed in Table 2-35 and identified in Map 40.

Table 2-35. BLM Managed Pronghorn Habitat within the Planning Area

Habitat Type	Acres (Moab FO)	Acres (Monticello FO)	Acres (Planning Area)*
Year Long Habitat	71,693	27,657	99,350
Winter Habitat	None	None	None
Summer Range	None	None	None
Fawning Habitat	None	None	None
Migration Corridors	None	None	None

*These acreages are only for the Planning Area

There are two pronghorn herds within the Planning Area: the San Juan Hatch Point herd and the La Sal Cisco Desert herd. A pronghorn management plan for the State of Utah is currently being developed by the UDWR. This plan will outline the historic and current management of pronghorn in the state as well as the management goals and objectives for pronghorn populations in the state. Table 2-36 outlines the UDWR's current management goals for pronghorn and actual counts.

Table 2-36. UDWR Pronghorn Wildlife Management Goals, Counts, and Trends

Unit Number	Unit Name	Population Counts*	Bucks*	Does*	Population Objective**	Buck/Doe Ration*	2010 Harvest*
13	La Sal (South Cisco)	106	32	74	250	NA	1
14	San Juan (Hatch Point)	123	22	101	300	41/100	2
13 & 14	Planning Area	229	54	175	550	NA	3

* Utah Annual Big Game Report 2010
**UDWR Pronghorn Management Unit Plans 2010

Source: UDWR 2010.

Desert Bighorn Sheep

Desert bighorn sheep are uniquely adapted to inhabit some of the most remote and rugged parts of the Planning Area. Desert bighorns are sometimes referred to as a wilderness species because of the steep rocky areas the occupy for escape and safety. Habitat is characterized by rugged terrain including canyons, gulches, talus cliffs, steep slopes, mountaintops, and river benches (Shakleton et al. 1999). Desert bighorn generally occur in Southern Utah and do not migrate. Desert bighorn habitat acreages managed by the BLM within the Planning Area are listed in Table 2-37 and identified in Map 41.

Table 2-37. BLM Managed Desert Bighorn Sheep Habitat within the Planning Area.

Habitat Type	Acres (Moab FO)	Acres (Monticello FO)	Acres (Planning Area)*
Year Long Habitat	332,453	56,047	388,500
Winter Habitat	None	None	None
Summer Range	None	None	None
Fawning Habitat	100,461	None	100,461
Migration Corridors			

*These acreages are only for the Planning Area

There are five herd areas for desert bighorn sheep in the Planning Area. The herd areas are 1) La Sal 2) La Sal Potash, 3) La Sal Professor Valley, 4) San Juan Lockhart, 5) San Juan North, and 6) San Juan South.

The La Sal Potash bighorn herd is one of the only remaining native (not transplanted or reintroduced) desert bighorn herds in Utah. This herd supports a viable population and is often used for reintroductions and augmentations throughout the Western United States.

The habitat of the La Sal Professor Valley herd extends to the east of Arches National Park on BLM managed lands in the Cache Valley and Dome Plateau area. This area is located north of the Colorado River.

A State of Utah management plan for desert bighorn sheep was developed in 1999. This plan assesses current information on bighorn sheep, identifies issues and concerns relating to bighorn sheep management, and establishes goals and objectives for future bighorn management programs in Utah. The State intends to release a new management plan for desert bighorn sheep in June of 2013.

Table 2-38 outlines the current desert bighorn sheep estimates in the Planning Area and the wildlife management goals for desert bighorn sheep in the Planning Area.

Table 2-38. UDWR Current Desert Bighorn Sheep Estimates in the Planning Area

Unit Number	Unit Name (subunit)	Population Count*	Population Objective**	Percent of Objective	Current Rams/ Ewes	2010 Harvest***
13	La Sal (Potash)	118	300	39%	51/100	3
13	La Sal (Professor Valley)	25***	100	25%	NA	NA
14	San Juan (Lockhart)	46	200	23%	52/100	2
14	San Juan (North)	17	100	17%	45/100	NA
14	San Juan (South)	57	300	19%	40/100	3
	Planning Area	288	1,100	26%	NA	8

*Utah Annual Big Game Report 2010
Utah Bighorn Sheep State-wide Management Plan.
**UDWR Desert Bighorn Sheep Management Unit Plan 2000
***Estimates from UDWR Sate Wide Management Plan for Bighorn Sheep 2008

Source: UDWR 2007.

Bighorn sheep require separation from domestic sheep to prevent the transmission of diseases against which they have no natural defenses. Water and vegetation improvements have also been shown to benefit bighorn sheep populations.

Mountain Lion (Cougar)
The mountain lion, or cougar, likely inhabits most ecosystems in Utah. However, it is most common in the rough, broken terrain of foothills and canyons, often in association with montane forests, shrublands, and pinyon-juniper woodlands (Fitzgerald et al. 1994). Mule deer is the mountain lion's preferred prey species. Consequently, mountain lion seasonal use ranges are likely to closely parallel those of mule deer.

Upland Game

Upland game in the Planning Area includes populations of blue grouse (*Dendragapus obscurus*), chukar partridge (*Alectoris chukar*), Rio Grande turkey (*Meleagris gallopavo*), and Gambel's Quail (Callipepla gambelii). Annual fluctuations for most upland game bird and small mammal populations very closely

correlate with annual climatic patterns. Mild winters and early spring precipitation during the months of March, April, and May are associated with increases in upland game populations. Warm, dry weather, especially during June, is generally considered vital for the survival of newly born young of many upland game species.

Raptors

Special habitat needs for raptors include nest sites, foraging areas, and roosting or resting sites. Buffer zones are usually recommended around raptor nest sites during the early spring and summer when raptors are raising their young. The most utilized raptor nesting habitats in the Planning Area are generally found along riparian areas and cliff faces. Juniper-desert shrub transition areas are identified as being important for nesting ferruginous hawks (*Buteo regalis*). Bald eagles use the Planning Area extensively for winter foraging.

The golden eagle (*Aquila chrysaetos*), and peregrine falcon (*Falco peregrinus*) are representative guild species for cliff rock habitat. The ferruginous hawk (*Buteo regalis*) and burrowing owl (*Athene canicularia*) are representative guild species for grassland habitat. The ferruginous hawk is also a representative guild species for desert scrub habitat. Impacts to these species can be partly assessed through the impact to these habitat types.

Waterfowl

Waterfowl in the Planning Area is generally associated with the Colorado River and its drainages. Some waterfowl can also be found in other riparian areas, such as ponds, reservoirs, and perennial streams. Some individuals or species breed, winter, or remain yearlong in the state, while larger numbers pass through the area during the spring and fall migration. Many species feed on insects and small fish or amphibians in addition to aquatic plant foods. In addition, some species feed frequently on upland grasses and forbs in grassy fields and meadows where such vegetation is succulent and habitat is sufficiently open to preclude hiding predators and enable rapid flight. Within the Planning Area, the most important areas for waterfowl are the Colorado River and the Indian Creek corridor.

Neotropical Migratory Birds

There are a wide variety of songbirds and neo-tropical migrants which spend at least part of the year within the Planning Area (Parrish et. al. 2002). These species utilize a wide variety of habitats found within the Planning Area. Special habitat needs for migratory birds include nest sites and foraging areas.

A variety of migratory bird species use habitats within the Planning Area for breeding, nesting, and foraging. Migratory birds may nest on tree limbs, on the ground, or in/on rock outcrops. The nesting season for migratory birds is generally May 1st through July 31st. Raptor nest sites are typically located on promontory points such as cliff faces and rock outcrops in areas with slopes of 30 percent or greater, but they may also nest in pinyon, juniper, or deciduous trees. Raptors typically use the same nest site year after year. Nesting and fledgling seasons for raptors vary but typically extend from March 1st through August 31st, or slightly longer than for migratory birds generally. The planning area also offers suitable wintering and migration habitats for non-nesting raptor species. The U.S. Fish and Wildlife Service (USFWS) has issued guidelines for the protection of raptors that include species-specific timing limitations and spatial offsets to active nests (Romin and Muck 2002).

Migratory birds are protected under the Migratory Bird Treaty Act (MBTA). The MBTA makes it unlawful to pursue, hunt, kill, capture, possess, buy, sell, purchase, or barter any migratory bird, including the feathers or other parts, nests, eggs, or migratory bird products. Some birds are also protected by the Endangered Species Act, the Bald and Golden Eagle Protection Act, and/or are included in the State of Utah/BLM Sensitive Species Lists. The Bald and Golden Eagle Protection Act, which initially protected

only bald eagles, was amended in 1962 to include the golden eagle because of its dwindling populations and similar appearance to bald eagles when both eagles are young. The act prohibits anyone from "taking" eagles, including their parts, nests, or eggs without a permit issued by the Secretary of the Interior. A taking also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death, or nest abandonment.

To further the purposes of these protective acts, Memorandum of Understanding (MOU) WO-230-2010-04, *To Promote the Conservation of Migratory Birds*, was issued in 2010 by the BLM and the USFWS. Identifying species of concern, priority habitats, and key risk factors includes identifying species listed on the USFWS Birds of Conservation Concern (BCC) that are most likely to be present in the project area and evaluating and considering management objectives and recommendations for migratory birds resulting from comprehensive planning efforts, such Utah Partners in Flight (PIF) American Landbird Conservation Plan. The Utah PIF Working Group completed a statewide avian conservation strategy identifying "priority species" for conservation due to declining abundance distribution, or vulnerability to various local and/or range-wide risk factors. One application of the strategy and priority list is to give these birds specific consideration when analyzing effects of proposed management actions and to implement recommended conservation measures where appropriate.

The Utah PIF Priority Species List, the BCC list for Region 16 (Colorado Plateau), and the Utah Conservation Data Center database were used to identify potential habitat for priority species that could utilize habitats within the Planning Area. Table 2-39 lists the BCC and PIF species that may occur within the Planning Area.

Table 2-39. BCC Region 16 and Utah PIF High Priority Species That May Occur in Planning Area

Species	BCC§	UPIF‡	DWR Habitats†	1st Breeding Habitat‡	2nd Breeding Habitat‡	Winter Habitat‡
Black Rosy-finch	X	X	Substantial/ Critical	Alpine	Alpine	Migrant
Black-throated Gray Warbler		X	Prime Breeding	Pinyon-Juniper	Mountain Scrub	Migrant
Bobolink		X	Prime Breeding/Winter	Wet Meadow	Agriculture	High Desert Scrub
Brewer's Sparrow	X	X	Critical/High	Shrubsteppe	High Desert Scrub	Migrant
Broad-tailed Hummingbird		X	High/ Substantial	Lowland Riparian	Mountain Riparian	Migrant
Burrowing Owl	X		Primary Breeding	High Desert Scrub	Grassland	Migrant
Gambel's Quail		X	High	Low Desert Scrub	Lowland Riparian	Low Desert Scrub
Golden Eagle	X		High	Cliff	High Desert Scrub	High Desert Scrub
Grace's Warbler	X		Critical	Ponderosa pine	Mixed conifer	Migrant
Gray Vireo	X	X	Prime Breeding/Winter	Pinyon-Juniper	Oak	Migrant

Species	BCC§	UPIF‡	DWR Habitats†	1st Breeding Habitat‡	2nd Breeding Habitat‡	Winter Habitat‡
Juniper Titmouse	X		Critical/High	Pinyon-Juniper	Pinyon-Juniper	Pinyon-Juniper
Long-billed Curlew	X	X	Substantial/Prime Breeding	Grassland	Agriculture	Migrant
Peregrine Falcon	X		Prime Breeding	Cliff	Lowland Riparian	Wetlands
Pinyon Jay	X		Critical/High	Pinyon-Juniper	Ponderosa pine	Pinyon-Juniper
Prairie Falcon	X		Critical/High	Cliff	High Desert Scrub	Agriculture
Sage Sparrow		X	Critical	Shrubsteppe	High Desert Scrub	Low Desert Scrub
Virginia's Warbler		X	Winter	Oak	Pinyon-Juniper	Migrant

‡Utah Partners in Flight Avian Conservation Strategy Version 2.0 (Parrish et al., 2002), §Birds of Conservation Concern 2008 (USFWS, 2008)
†Utah Conservation Data Center, *Utah Sensitive Species,**=Federally List,
Italic=Utah Sensitive Species

Special habitat needs for raptors include nest sites, foraging areas, and roosting or resting sites. Buffer zones are usually recommended around raptor nest sites during the early spring and summer when raptors are raising their young. The most utilized raptor nesting habitats in the Planning Area are generally found along riparian areas and cliff faces. Juniper-desert shrub transition areas are identified as being important for nesting ferruginous hawks.

Reptile, Amphibian, and Other Non-Game Species

The Planning Area contains a high diversity of reptile, amphibian, and other non-game species, including small mammals, birds, and invertebrates, because of the variety of habitats found within the area. The Planning Area contains various riparian, talus slope, marsh, aspen-conifer, pinyon-juniper, and ridgetop habitats that support these species.

Riparian and Aquatic Species

The riparian and aquatic habitat in the Planning Area is associated with the Colorado River and tributaries. Riparian Species and Avian Riparian Species of Special Concern in the Planning Area include yellow-billed cuckoo (*Coccyzus americanus*) and southwestern willow flycatcher (*Empidonax traillii*) and the following four federally endangered fish species: bonytail, Colorado pikeminnow, humpback chub, and razorback sucker.

Trends

Big Game

Mule Deer (*Odocoileus Hemionus*)

Mule deer trends in Utah over the past several decades have been highly variable. Mule deer population crashed following several years of drought and an unusually hard winter (1992 to 1993). Since then mule deer trends state wide have on average be increasing (UDWR 2010, UDWR 2007). Over the past five

years fawn production has been poor and the overall deer population has been declining in the Planning Area leading to a population estimate that is well below the UDWR current objective (Table 2-40). Poor range conditions caused by severe drought could be a major factor causing the population decline (UDWR 2005a). Predation, while not within BLM's jurisdiction, can also contribute to deer population declines.

Table 2-40. Mule Deer Population Trends

Unit Number	Unit Name (subunit)	Current Objectives	2006 Winter Population Estimate	2007 Winter Population Estimate	2008 Winter Population Estimate	2009 Winter Population Estimate	2010 Winter Population Estimate	Trend
13	La Sal	18,100	10,850	11,100	7,400	7,800	6,600	Declining
14	San Juan	20,500	13,700	15,400	12,800	16,400	12,900	Declining
13 & 14	La Sal and San Juan	38,600	24,550	26,500	20,200	24,200	19,500	Declining

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Rocky Mountain Elk

Rocky Mountain Elk trends for the past seven years have been relatively stable (Table 2-41). Although there has been variability between years overall the population is stable and near UDWR population objectives.

Table 2-41. Rocky Mountain Elk Population Trends

Unit Number	Unit name subunit	Population Objective	2003	2004	2005	2006	2007	2008	2009	Trend
13	La Sal (All Sub Units)	2,500	2,650	2,600	1,970	1,900	2,100	2,500	2,300	Stable
14	San Juan (All Sub Units)	1,300	1,130	1,140	1,350	1,400	1,100	1,400	1,400	Stable
13 & 14	Planning Area	3,800	3,780	3,740	3,320	3,300	3,200	3,900	3,700	Stable

Source: UDWR Utah Elk Statewide Management Plan 2010

Black Bear
The middle and higher elevations of the Planning Area sustain several large black bear populations. Total acreage of black bear habitat in the Planning Area is unknown but black bear populations tend to mimic prey species trends as well as plant habitat health.

Black bear are used as a representative guild species for old growth conifer habitat in the district. Impacts to this species can be partly assessed through the impact and trend to this habitat type.

Pronghorn
The Planning Area contains a total of 99,350 acres of BLM pronghorn habitat (Table 2-35). The two pronghorn herds within the Planning Area are the San Juan Hatch Point herd and the La Sal Cisco Desert herd.

In 1971, 172 pronghorn were reintroduced to the Hatch Point area. The population appeared to increase for the first three years following their introduction, but has declined since 1975. Drought, severe winter weather, and predation could be factors in the depletion of this herd.

The current Cisco Desert pronghorn herd originated from 48 animals that were released in Colorado in 1968. In 1983 an additional 150 pronghorn were released. This increased the herd to approximately 250 animals. In 1988, Colorado Division of Wildlife released another 90 pronghorn near the Utah-Colorado state line. The Cisco pronghorn have expanded west and are sometimes seen near Green River and south of I-70. The herd had increased to approximately 1,000 animals by 1999. However, pronghorn are responsive to climatic conditions and while mild winters and good moisture conditions prevailed, pronghorn numbers increased, and their range expanded. During drought cycles, such as currently being experienced, pronghorn numbers sharply decline. The Cisco herd is currently believed to comprise less than 300 animals according to UDWR aerial counts conducted in 2010. The five year trend data (2008) for both herds show them to be increasing (La Sal) and stable (San Juan) although the ten year trend data shows the San Juan herd to be decreasing in the long term (Table 2-42). Aerial counts from 2009 and 2010 indicate that the herds may be declining.

Table 2-42. UDWR Pronghorn Wildlife Management Estimates and Trends

Unit Number	Unit Name	Population Estimate*	5 Year Trend	10 Year Trend
13	La Sal (South Cisco)	125	Increasing	Increasing
14	San Juan (Hatch Point)	175	Stable	Decreasing
13 & 14	Planning Area	300	NA	NA

Source: Utah Annual Big Game Report 2010.
*The Population Estimate is Different than the Population Counts shown in Table 2-35.

Pronghorn are used as a representative guild species for grasslands and desert shrub habitats in the district. Impacts to this species can be partly assessed through the impact to these habitat types.

To ensure the current and future success of the Hatch Point herd, all surface disturbing land use activities are prohibited during the fawning season to reduce stress on does and fawn mortality. As development activities increase in the Hatch Point area, additional research may be needed to determine if these protective measures are adequate to ensure population viability. Currently there are no stipulations in place to protect the fawning season in the South Cisco herd area. As development activities increase in the South Cisco area, additional research may be needed to determine if protective measures needed insure population viability.

Desert Bighorn Sheep
The herd areas for desert bighorn sheep in the Planning Area are 1), 2) La Sal Potash, 3) La Sal Professor Valley, 4) San Juan Lockhart, 5) San Juan North, and 6) San Juan South.

Two of the herds were originally transplanted and the rest are native to the area. The transplanted herds have a stable population trend while the native herds have either a stable or increasing population trend (Table 2-43).

Table 2-43. Desert Bighorn Sheep Trends within the Planning Area

Unit Number	Unit Name (subunit)	Population Count	Trend	Herd Status
13	La Sal (Potash)	69	Decreasing	Native
13	La Sal (Professor Valley)	25	Stable	Transplanted
14	San Juan (Lockhart)	40	Decreasing	Native
14	San Juan (North)	13	Stable	Native
14	San Juan (South)	39	Decreasing	Native
	Planning Area	186	Decreasing	Native or Transplanted

Source: UDWR State Wide Management Plan for Bighorn Sheep 2008

To ensure current and future success of the Potash herd, the most important habitats are protected from any type of activities that could permanently degrade habitat suitability, resulting in habitat abandonment.

Using slope recommendation from the NPS escape terrain model developed in the Bighorn Sheep Habitat Assessment of the Greater Canyonlands/Arches National Park Area (1995), escape terrain adjacent to potential lambing and migration corridors was identified within the UDWR bighorn habitat for the Potash bighorn herd. Approximately 101,000 acres of cohesive escape terrain that supports potential lambing, rutting, and migration areas was mapped and protected through the land use planning process GPS collar data from 2003 and 2004 also was used to 'ground truth' this escape terrain area but this data were very limited. Additional data has been collected during 2007, 2008, 2010 and 2011 and field work has occurred.

Demands on most wildlife and their habitats within the planning unit are projected to increase. Future demands by other land uses are also expected to remain at current levels or increase, resulting in pressure upon existing wildlife habitat.

Mountain Lion (Cougar) (*Felis concolor*)
UDWR manages mountain lion population throughout the state. Population trends from 1997-2008 indicate a stable population (UDWR 2011). Mule deer is the mountain lion's preferred prey species. Consequently, mountain lion seasonal use ranges as well as trends are likely to closely parallel those of mule deer.

Upland Game

On a large scale, and the overall level of human disturbance is relatively high. Furthermore, the ongoing severe drought of recent years has contributed substantially to habitat deterioration. Therefore, overall habitat conditions are relatively poor and unstable compared to optimal sage-grouse habitat. Trends for

upland species typically mimic habitat quality. Overall Upland game population will either maintain or decrease in numbers until habitat quality returns.

Raptors

Throughout the western region of the United States raptor population trends have tended to be stable to decreasing for most species, due to habitat loss and drought (RPI 2011). The Merlin is the only one species has shown an increase in this region over the past 25 years (RPI 2011).

Waterfowl

Waterfowl population trends generally throughout the Planning Area and Region are stable to increasing (Sauer et al. 2012). Blue-winged teal was the only species that was considered to have a decreasing trend in population (Sauer et al 2012).

Neotropical Migratory Birds

Most of the bird species (especially neo-tropical) are decreasing in numbers throughout their ranges. This can be seen with the type of species listed on the threatened and endangered species list for San Juan County. According to Parrish et al. (2002), riparian habitats are used as either breeding or wintering habitat by Utah's birds almost twice as much as any other habitat type. Within Utah, 66 to 75 percent of all bird species use riparian habitats during some portion of their life cycle. Shrublands, forest, and additional habitat groups (e.g. water, rock, playa, agriculture, urban, and cliff) all are about equal and second to riparian when considering their importance to bird species. To prevent further population declines for bird species, the protection of these habitat types, especially riparian are crucial. Certain species can be followed more closely as indicators of overall ecosystem health.

Loggerhead shrike habitat consists of open country with short vegetation. These habitats include areas such as pastures with fence rows, old orchards, mowed roadsides, cemeteries, golf courses, agricultural fields, riparian areas, and open woodlands. The loggerhead shrike is a small avian predator that hunts from perches and impales its prey on sharp objects such as thorns and barbed-wire fences. The Loggerhead shrike is one of the few North American passerines whose populations have declined continent wide in recent decades. Changes in human land-use practices, the spraying of biocides, and competition with species that are more tolerant of human-induced changes appear to be major factors contributing to this decline.

The sage sparrow is a migrant that summers in Idaho and winters in Arizona, New Mexico and northern Mexico. It is found in sagebrush flats and desert shrub areas. It usually nests in sagebrush and typically feeds on insects and seeds. This species has been in recent decline. This decline is due to reduced, fragmented, and lost sagebrush steppe habitat that has resulted from increased wildland fires and cheatgrass invasion.

This sage thrasher's populations are mostly stable where suitable shrub-steppe habitat remains. However, its numbers have been dramatically reduced, and in some cases local populations have been eliminated where there has been wholesale conversion of sagebrush rangeland.

The Brewer's sparrow major habitat type is sagebrush shrublands. The Brewer's sparrow is by far the most abundant bird in sagebrush shrublands during spring and summer. Recent (1980s and 1990s) surveys (Rotenberry et. al. 1999) have shown breeding numbers to be in significant decline throughout the species' range. The causes are uncertain, but they may be related to fundamental changes in shrubland ecosystems being brought about by agriculture, grazing, and the invasion of exotic plant species.

The Warbling Vireo occupies predominantly riparian habitat, but may also use a variety of other habitats including oak/mountain shrub and deciduous forest. It builds its nests in the forked limbs of trees from one to 40 meters (130 feet) above the ground at elevations ranging from sea level to over 3,000 meters (9,800 feet). The species appears well adapted to human landscapes, as nests have been found in neighborhoods, urban parks, orchards, and farm fencerows. However, its reproductive success in these areas has never been quantified.

The Green-tailed Towhee prefers species-rich shrub communities within shrub-steppe habitats and disturbed and open areas of montane forest, often created by forest fires. The bulky nests of this species are concealed in shrubs but often are prone to predation. In winter, individuals are common in dense mesquite (*Prosopis* spp.) shrub habitat along desert washes. Breeding bird survey data suggest that populations have been stable overall since 1966, with no significant broad trends (Dobbs et. al. 1998).

The juniper titmouse is a year-round resident of the pinyon-juniper and pine woodlands; it is also common in suburbs. It nests in snag holes, both natural and made by woodpeckers. They typically feed on fruit, seeds, and insects. This species is generally tolerant of human encroachment.

The Gray flycatcher is a migrant species that summers in Utah and Idaho and winters in Mexico. It nests in arid pinyon-juniper woodlands and sagebrush areas. It builds its nest in the crotch of juniper trees or sagebrush. It feeds exclusively on insects. This species is still quite common but faces the same risks that other sagebrush guild species face.

No known populations of Yellow-billed cuckoo exist at present within the Planning Area (personal communication between Tammy Wallace, BLM, and Thomas Sharp, SWCA Environmental Consultants, 2003). The Yellow-billed cuckoo, however, is a neotropical migrant that utilizes riparian valleys throughout the state. The Western Yellow-billed cuckoo is associated with cottonwoods and riparian cover, which provides nesting and brood-rearing habitat. Western Yellow-billed cuckoos are obligate riparian nesters and are restricted to more mesic habitat along rivers, streams, and other wetlands. Yellow-billed cuckoos are discussed further under the sensitive species section of the document.

The Southwestern willow flycatcher utilizes and breeds in patchy to dense riparian habitats along streams and wetlands near or adjacent to surface water or saturated soils. These dense patches are often interspersed with small openings, open water, and/or shorter/sparser vegetation, creating a mosaic habitat pattern. Population declines are attributed to numerous, complex, and interrelated factors such as habitat loss and modification, invasion of exotic plants into breeding habitat, brood parasitism by cowbirds, vulnerability of small population numbers, and winter and migration stress.

Song sparrows are relatively common in riparian habitat. They build open-cup nests near fresh water wherever suitable cover and insect food are present.

Spotted towhee breed in wide variety of plant associations, all characterized by dense, broadleaf shrubby growth (variously described as brush, thickets, or tangles). This shrubby growth is typically only a few meters tall, with or without emergent trees, and provides deep, sheltered, semi-shaded litter and humus on ground, and a screen of twigs and foliage close overhead.

Several of the migratory birds can be used as guild species for different wildlife habitat types. The loggerhead shrike is associated with desert shrub habitat, the sage sparrow, sage thrasher, and Brewer's sparrow are associated with sagebrush and perennial grassland, the Warbling vireo, Green-tailed towhee, and Blue Grouse are associated with oak mountain shrub habitat, the juniper titmouse, and Gray flycatcher are associated with pinyon-juniper habitat and Yellow-billed cuckoo, Southwestern willow flycatcher, Song sparrow, and Spotted towhee are associated with riparian habitat. For the purposes of this

analysis, impacts to these habitats will be used, in part, to assess impacts to these species. Unless stated above, the exact population status of all these species in the Planning Area is not known.

Reptile, Amphibian, And Other Non-Game Species

The Planning Area contains a high diversity of reptile, amphibian, and other non-game species, including small mammals, birds, and invertebrates, because of the variety of habitats found within the area. The area contains various habitat types (e.g., riparian, talus slope, marsh, aspen-conifer, pinyon-juniper, and ridgetop habitats) which are special habitat needs for migratory birds. Very little is known about the status of most of these species, but an effort is being made to acquire basic information on those listed by state and federal agencies as threatened and endangered species.

Riparian and Aquatic Species

Southwestern Willow Flycatcher potentially occurs within the Planning Area. It is currently believed that the range of this subspecies extends north to the Sand Wash area of the Green River (near the Uintah-Carbon county line). Many other threatened and endangered species are highly dependent on riparian areas, and they are also crucial to neo-tropical migrant birds. A primary concern with the riparian areas is the effect of decreased regeneration of cottonwood and willow stands and the invasion of non-native plant species such as salt cedar (*Tamarix* spp.) and Russian olive (*Elaeagnus angustifolia*) on riparian and aquatic wildlife species.

Aquatic species in the Planning Area include several T&E species such as bonytail (*Gila elegans),* Colorado pikeminnow (*Ptychochelius lucius)*, humpback chub (*Gila cypha*), razorback sucker (*Xyrauchen texanus)*, roundtail chub (*Gila robusta)*, blueheaded sucker (*Catostomus discobolus)*, and flannelmouth sucker (*Catostomus latipinnis)*. Table 2-44 gives the current UDWR inventories of fisheries within the Planning Area.

Table 2-44. UDWR Inventory of Fisheries within the Planning Area

River	Species
Colorado River	Colorado pikeminnow, humpback chub, bonytail, razorback sucker, flannelmouth sucker, blueheaded sucker, channel catfish, roundtail chub, speckled dace, Plains killifish, fathead minnow, red shiner, sand shiner, smallmouth bass, largemouth bass, carp, black bullhead, walleye
Green River	Colorado pikeminnow, humpback chub, bonytail, razorback sucker, flannelmouth sucker, blueheaded sucker, channel catfish, roundtail chub, speckled dace, fathead minnow, red shiner, sand shiner, smallmouth bass, largemouth bass, carp, black bullhead, yellow bullhead, walleye, northern pike
Kane Creek	speckled dace, fathead minnow, red shiner, sand shiner, mosquitofish, plains killifish
Cottonwood Wash	Fathead minnow, red shiner, sand shiner

*Where *fathead minnow, red shiner, sand shiner* are added in italics, these are not necessarily documented. However, they are prolific in the mainstream Green and Colorado rivers. Thus, it is likely that they are in at least the lower extremities of these smaller tributaries

Forecasts

Population trends are forecasted to be stable to decreasing within the Planning Area. As wildlife populations reach carrying capacity, population trends are potentially influenced by vegetation and habitat trends. Increases in surface disturbing activities which are a threat to vegetation communities will create increased human disturbance to wildlife populations, increase habitat fragmentation, and create additional displacement of animals within the Planning Area and will decrease overall vegetation habitat health and reduce wildlife habitat availability and quality. Drought conditions are forecasted to continue, which will have short and long term effects on vegetation, ecological, and wildlife communities.

Key Features

- Riparian corridors
- Sagebrush habitat
- Pinion juniper woodland habitat
- Alcoves
- Cliffs
- Vegetation

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CHAPTER 3—CURRENT MANAGEMENT DIRECTION

This chapter describes decisions from the 2008 Resource Management Plans for the BLM Moab and Monticello Field Offices which pertain to the Planning Area. The management directions identified in this chapter will become the no-action alternative in the Master Leasing Plan (MLP) Environmental Impact Statement (EIS).

Table 3-1. List of Relevant BLM Plans

Document Title	Date
Moab RMP and Record of Decision	October 2008
Monticello RMP and Record of Decision	November 2008

3.1 AIR RESOURCES

Table 3-2. Current Management for Air Resources

Current Management Decision	Planning Decision Number	Decision Source	Status
As appropriate, quantitative analysis of potential Air Quality impacts will be conducted for project-specific developments.	AQ-1	Moab RMP	Ongoing
Comply with Utah Air Conservation (UAC) Regulation R446-1. The best air quality control technology, as per guidance from the Utah Division of Air Quality (UDAQ), will be applied to actions on public lands as needed to meet air quality standards.	AQ-3	Moab RMP	Ongoing
Comply with UAC Regulation R446-1-4.5.3, which prohibits the use, maintenance, or construction of roadways without taking appropriate dust abatement measures. Compliance will be obtained through special stipulations as a requirement on new projects and through the use of dust abatement control techniques in problem areas	AQ-4	Moab RMP	Ongoing
Manage all BLM and BLM-authorized activities to maintain air quality within the thresholds established by the State of Utah Ambient Air Quality Standards and to ensure that those activities continue to keep the area as attainment, meet prevention of significant deterioration (PSD) Class II standards, and protect the Class I air shed of the National Parks (e.g., Arches and Canyonlands National Parks).	AQ-5	Moab RMP	Ongoing
BLM will continue to work cooperatively with state, federal, and tribal entities in developing air quality assessment protocols to address cumulative impacts and regional air quality issues.	AQ-7	Moab RMP	Ongoing
National Ambient Air Quality Standards are enforced by the Utah Department of Environmental Quality, Division of Air Quality (UDEA-DAQ), with EPA oversight. Special requirements to reduce potential air quality impacts will be considered on a case-by-case basis in process land use authorizations.	AQ-9	Moab RMP	Ongoing

Current Management Decision	Planning Decision Number	Decision Source	Status
BLM will utilize BMPs and site specific mitigation measures, when appropriate, based on site specific conditions, to reduce emissions and enhance air quality. Examples of these types of measures can be found in the Four Corners Air Quality Task Force Report of Mitigation Options, November 1, 2007.	AQ-10	Moab RMP	Ongoing
Project specific analyses will consider use of quantitative air quality analysis methods (i.e. modeling), when appropriate as determined by BLM, in consultation with state, federal and tribal entities.	AQ-11	Moab RMP	Ongoing
The best available control technology, recommended by the Utah Division of Air Quality (UDAQ), will be applied as needed to meet air quality standards.	AQ-1	Monticello RMP	Ongoing
The BLM will comply with Utah Air Conservation (UAC) Regulation R307–205, which prohibits the use, maintenance, or construction of roadways without taking appropriate dust abatement measures.	AQ-3	Monticello RMP	Ongoing
The BLM will manage emissions to prevent deterioration to air quality in Class I Airsheds.	AQ-5	Monticello RMP	Ongoing
The BLM will continue to work cooperatively with state, federal, and tribal entities in developing air quality assessment protocols to address cumulative impacts and regional air quality issues.	AQ-6	Monticello RMP	Ongoing
National Ambient Air Quality Standards are enforced by the Utah Department of Environmental Quality, Division of Air Quality (UDEQ-DAQ), with EPA oversight. Special requirements to reduce potential air quality impacts will be considered on a case-by-case basis in processing land-use authorizations.	AQ-8	Monticello RMP	Ongoing
The BLM will utilize best management practices (BMPs) and site-specific mitigation measures, when appropriate, based on site-specific conditions, to reduce emissions and enhance air quality. Examples of these types of measures can be found in the Four Corners Air Quality Task Force Report of Mitigation Options, November 1, 2007.	AQ-9	Monticello RMP	Ongoing
Project specific analyses will consider use of quantitative air quality analysis methods (i.e., modeling), when appropriate as determined by the BLM, in consultation with state, federal, and tribal entities.	AQ-10	Monticello RMP	Ongoing

3.2 CULTURAL RESOURCES

Table 3-3. Current Management for Cultural Resources

Current Management Decision	Planning Decision Number	Decision Source	Status
All land-disturbing activities within Traditional Cultural Properties will be designed to avoid or minimize impacts,	CUL-5	Moab RMP	Ongoing

Current Management Decision	Planning Decision Number	Decision Source	Status
where reasonable. Proposed projects or actions will be modified to avoid the area or site, avoid time of use by Native American groups, or will be eliminated altogether.			
Cultural plants, once identified by interested tribes, will be managed to insure that ground disturbing activities on the land do not contribute to the decline of cultural sensitive plant communities.	CUL-16	Moab RMP	Ongoing
Protective measures will be established and implemented for sites, structures, objects, and traditional use areas that are important to tribes with historical and cultural connections to the land, in order to maintain the view shed and intrinsic values, as well as the auditory, visual, and esthetic settings of the resources. Protection measures for undisturbed cultural resources and their natural settings will be developed in compliance with regulatory mandates and Native American consultation.	CUL-14	Monticello RMP	Ongoing

3.3 LANDS AND REALTY

Table 3-4. Current Management for Lands and Realty

Current Management Decision	Planning Decision Number	Decision Source	Status
To reduce surface use conflicts along the U.S. Highway 191 utility corridor within Moab Canyon, apply a no surface occupancy stipulation for oil and gas leasing and other surface disturbing activities (Appendix A from the Moab ROD), except those associated with utility ROWs.	LAR-9	Moab RMP	Ongoing
To be consistent with the existing withdrawals from mineral entry, apply a no surface occupancy stipulation for oil and gas leasing and other surface-disturbing activities within the area of the Three Rivers and Westwater Mineral Withdrawals. This action will further protect the riparian, wildlife, scenic, and recreation values addressed in these withdrawals.	LAR-12	Moab RMP	Ongoing

3.4 MINERALS

Table 3-5. Current Management for Minerals

Current Management Decision	Planning Decision Number	Decision Source	Status
On 9,599 acres of split-estate lands, the BLM will apply the same lease stipulations as those applied to surrounding lands with federal surface. Mitigation measures to protect other resource values will be developed during the appropriate site-specific environmental	MIN-4	Moab RMP	Ongoing

Current Management Decision	Planning Decision Number	Decision Source	Status
analysis and will be attached as conditions of approval to permits in consultation with the surface owner or SMA.			
To the extent possible, the stipulations developed for oil and gas leasing are applicable to potash leasing.	MIN-9:	Moab RMP	Ongoing
Leasable Minerals: In areas where mineral activities would be incompatible with existing surface use, apply a no surface occupancy stipulation for oil and gas leasing and other surface disturbing activities. These areas are as follows, Moab Landfill, Moab Airport, and Dead Horse Point State Park.	MIN-10	Moab RMP	Ongoing
Leasable Minerals: In accordance with an UDEQ-DAQ letter dated June 6, 2008 (Appendix J from the Moab ROD) requesting implementation of interim nitrogen oxide control measures for compressor engines; BLM will require the following as a Lease Stipulation and a Condition of Approval for Applications for Permit to Drill: (1) All new and replacement internal combustion oil and gas field engines of less than or equal to 300 design-rated horsepower must not emit more than 2 gms of NOx per horsepower-hour. This requirement does not apply to oil and gas field engines of less than or equal to 40 design-rated horsepower; (2) All new and replacement internal combustion oil and gas field engines of greater than 300 design rated horsepower must not emit more than 1.0 gms of NOx per horsepower-hour.	MIN-13	Moab RMP	Ongoing
Leasable Minerals: Oil and Gas Leasing Stipulations (Map 42) • Approximately 194,020 acres will be open to oil and gas leasing, subject to standard terms and conditions. • Approximately 260,192 acres will be open to oil and gas leasing subject to CSU and TL stipulations. • Approximately 132,125 acres will be open to oil and gas leasing subject to an NSO stipulation. • Approximately 0 acres will be closed to oil and gas leasing	MIN-19	Moab RMP	Ongoing
In areas where the No Surface Occupancy (NSO) stipulation for oil and gas leasing is applied, the same restriction will also, where appropriate and practical, apply to other surface-disturbing activities (and occupancy) associated with land-use authorizations, permits, and leases issued on BLM lands. The restrictions will not apply to activities and uses where they are contrary to laws, regulations or specific program guidance. The intent is to maintain consistency to the extent possible in applying stipulations/restrictions to all surface-disturbing activities.	MIN-5:	Monticello RMP	Ongoing
Certain federal oil and gas resources within the Monticello PA underlie lands not administered by the BLM. The BLM administers the federal leases on these lands. These lands include: 5,281 MLP acres on split-estate lands	MIN 9	Monticello RMP	Ongoing
On split-estate lands, lease stipulations will consist of those necessary to comply with non-discretionary federal laws, such as the Endangered Species Act. The one exception to this will be the stipulations developed for Gunnison Sage-grouse as identified in Appendix B of the Monticello ROD. Mitigation measures will also be applied to protect other resource values such as VRM class, recreation, and non-federally protected fish and wildlife species consistent with Section 6 of the standard lease terms. These	MIN-10	Monticello RMP	Ongoing

Current Management Decision	Planning Decision Number	Decision Source	Status
mitigation measures will be developed during site-specific environmental analysis and will be attached as conditions of approval (COA) in consultation with the surface owner or SMA.			
In accordance with an UDEQ-DAQ letter dated June 6, 2008, (Appendix C of the Monticello ROD) requesting implementation of interim nitrogen oxide control measures for compressor engines; the BLM will require the following as a Lease Stipulation and a Condition of Approval for Applications for Permit to Drill: All new and replacement internal combustion oil and gas field engines of less than or equal to 300 design-rated horsepower must not emit more than 2 gms of NOx per horsepower-hour. This requirement does not apply to oil and gas field engines of less than or equal to 40 design-rated horsepower. All new and replacement internal combustion oil and gas field engines of greater than 300 design rated horsepower must not emit more than 1.0 gms of NOx per horsepower-hour.	MIN-11	Monticello RMP	Ongoing
• Approximately 16,864 acres are available for oil and gas leasing, subject to standard lease terms. • Approximately 180,164 acres are available for oil and gas leasing subject to timing limitations. • Approximately 43,810 acres are available for oil and gas leasing subject to controlled surface use. • Approximately 50,264 acres are available for oil and gas leasing subject to timing limitations and controlled surface use. • Approximately 5,978 acres are available for oil and gas leasing subject to no surface occupancy. • Approximately 1,192 acres are unavailable for leasing.	MIN-23 through 27 and 29	Monticello RMP	Ongoing

3.5 PALEONTOLOGY

Table 3-6. Current Management for Paleontology

Current Management Decision	Planning Decision Number	Decision Source	Status
Attach lease notices, stipulations, and other requirements to permitted activities to prevent damage to paleontological resources.	PAL-10	Moab RMP	Ongoing
Conduct on-site evaluation of surface-disturbing activities for all Class 5 areas and minimize impacts to paleontological resources to the degree practicable. Evaluation will consider the type of surface disturbance proposed and mitigation will be developed based on site-specific information.	PAL-10	Monticello RMP	Ongoing

3.6 RECREATION

Table 3-7. Current Management for Recreation

Current Management Decision	Planning Decision Number	Decision Source	Status
Continue to manage Kane Creek Road to Hurrah Pass and the roads to Needles, Anticline, and Minor overlooks as Utah Scenic Backways	REC-14	Moab RMP	Ongoing
BLM Back Country Byways and National Recreation Trails may be designated in the future as deemed appropriate with site-specific environmental analysis.	REC-15	Moab RMP	Ongoing
Apply a no surface occupancy stipulation for oil and gas leasing and preclude other surface disturbing activities (Appendix A in the Moab ROD) within 0.5 miles of developed recreation sites (current and planned as Potential Future Facilities; see each SRMA).	REC-20	Moab RMP	Ongoing
Manage all SRMAs according to the Visual Resource Management Class to protect scenic values and settings important to recreation.	REC-22	Moab RMP	Ongoing
Canyon Rims SRMA: Manage the Canyon Rims SRMA (101,520 acres) as a Destination SRMA. Major management actions in the Canyon Rims SRMA include: • Manage the area as open to mineral leasing with controlled surface occupancy use. • Developed recreation sites will be managed as open to leasing with no surface occupancy. • Manage the western rim land areas of Hatch Point as VRM Class II and the remainder of the area as VRM Class III. Hatch Wash Hiking and Backpacking Focus Area – Non-mechanized Recreation (3,614 acres) Needles and Anticline Roads Focus Area (Utah Scenic Backways) • Scenic Driving Corridor. Manage for scenic driving enjoyment. The corridor is defined as having a width of 1/2 mile from centerline (or to border of adjoining Focus Area).	REC-36	Moab RMP	Ongoing
Colorado Riverway SRMA Will be established as a Destination SRMA at 31,131 acres. Negro Bill Hiking and Ecological Study Focus Area (1,346 acres) Richardson Amphitheater/Castle Rock, Hiking, Climbing and Equestrian Focus Area (175 acres): Focus Areas -- Scenic Driving Corridors: These corridors include Highways 128 and 279 (which are both designated Utah Scenic Byways), as well as the Kane Creek/Hurrah Pass portion of the Lockhart Basin Scenic Backway. Focus Areas -- Specialized Sport Venue, Non-motorized: Tombstone Competitive BASE Jumping Focus Area (42 acres): Focus Areas -- Specialized Sport Venue, Non-motorized Wall Street Sport Climbing Focus Area (44 acres) (with special protective measures taken for rock art)	REC-37	Moab RMP	Ongoing
Dolores River Canyons SRMA (Map 7): • Manage as an undeveloped SRMA (2,329 acres)	REC-38	Moab RMP	Ongoing
Labyrinth Rims/Gemini Bridges SRMA: • Manage the Labyrinth Rims/Gemini Bridges area (Map 7) as a	REC-39	Moab RMP	Ongoing

Current Management Decision	Planning Decision Number	Decision Source	Status
Destination SRMA (275,267 acres). **Focus Area -- Scenic Driving Corridors:** Highway 313 and the Island in the Sky Road (Utah Scenic Byway): Manage for scenic driving enjoyment. The corridor is defined as having a width of 1/2 mile from centerline (or to border of adjoining Focus Area; Goldbar/Corona Arch Hiking Focus Areas (4,138 acres). Apply a no surface occupancy stipulation for oil and gas leasing and preclude other surface-disturbing activities to protect primitive hiking opportunities and scenic values. • Spring Canyon Hiking Focus Area (455 acres) • Labyrinth Canyon Canoe Focus Area (6,812 acres) • Seven Mile Canyons Equestrian Focus Area (1,028 acres) • Klondike Bluffs Mountain Biking Focus Area (14,597 acres) • Bar M Mountain Biking Focus Area (2,906 acres) • Tusher Slickrock Mountain Biking Focus Area (428 acres) • Mill Canyon/Upper Courthouse Mountain Biking Focus Area (5,741 acres) • Gemini Bridges/Poison Spider Mesa Focus Area (16,354 acres) • Mineral Canyon/Horsethief Point Competitive BASE Jumping Focus Area (762 acres) • Bartlett Slickrock Freeride Mountain Bike Focus Area (166 acres) • Dee Pass Motorized Trail Focus Area (21,158 acres) • Airport Hills Motocross Focus Area (290 acres) • White Wash Sand Dunes Open OHV Focus Area, (1,944 acres)			
South Moab SRMA (Map 7): • Manage the South Moab SRMA as a Destination SRMA (22,505 acres). – Behind the Rocks Hiking Focus Area (3,438 acres) – 24 Hours of Moab Focus Area (2,914 acres)	REC-42	Moab RMP	Ongoing
Extensive Recreation Management Area.	REC-45	Moab RMP	Ongoing
Indian Creek SRMA (76,595 Acres, Map 7) Goals and Objectives: • Provide outstanding recreational opportunities and visitor experiences while protecting natural and cultural resource values through integrated management between the BLM, NPS, State of Utah, and the Nature Conservancy • Provide for premier rock climbing experiences, outstanding OHV opportunities, scenic vistas, cultural site interpretation at Newspaper Rock, destination camping areas, and a gateway to Canyonlands National Park.	REC-124	Monticello RMP	Ongoing

3.7 RIPARIAN

Table 3-8. Current Management for Riparian

Current Management Decision	Planning Decision Number	Decision Source	Status
Preclude surface-disturbing activities within 100-year floodplains and within 100 meters of riparian areas, public water reserves, and springs.	RIP-7	Moab RMP	Ongoing
The BLM will take appropriate actions to maintain water quality in streams within Monticello Planning Area to meet state and federal water quality standards, including designated beneficial uses and anti-degradation requirements.	RIP-2	Monticello RMP	Ongoing
No new surface-disturbing activities are allowed within active floodplains or within 100 meters of riparian areas unless it can be shown that: a) there are no practical alternatives or, b) all long-term impacts can be fully mitigated or, c) the activity will benefit and enhance the riparian area.	RIP-5	Monticello RMP	Ongoing
Pipeline crossings of perennial, intermittent, and ephemeral stream channels should be constructed to withstand 100-year floods to prevent breakage and subsequent accidental contamination of runoff during high-flow events. Surface crossings must be constructed high enough to remain above stream flows at each crossing, and subsurface crossings must be buried deep enough to remain undisturbed by scour throughout passage of the peak flow. Hydraulic analysis will be completed in the design phase by the project proponent to eliminate potential environmental degradation associated with pipeline breaks at stream crossings to avoid repeated maintenance of such crossings. Specific recommendations regarding surface and subsurface crossings are found in guidance for pipeline crossings (Appendix L of the Monticello ROD).	RIP-18	Monticello RMP	Ongoing

3.8 SOIL AND WATER

Table 3-9. Current Management for Soil and Water

Current Management Decision	Planning Decision Number	Decision Source	Status
BLM will work with partners to implement Best Management Practices (BMPs) and continue BLM's cooperative work with the Utah Divisions of Water Rights and Water Quality in accordance with the administrative memorandum of understanding (MOU) and the cooperative agreement addressing water quality monitoring.	SOL-WAT-4	Moab RMP	Ongoing
Allow no surface occupancy and preclude surface-disturbing activities within 100-year floodplains, within 100 meters of a natural spring, or within public water reserves.	SOL-WAT-5	Moab RMP	Ongoing
To protect sensitive soils on slopes, apply a timing limitation	SOL-WAT-9	Moab RMP	Ongoing

Current Management Decision	Planning Decision Number	Decision Source	Status
stipulation for oil and gas leasing and other surface-disturbing activities prohibiting surface-disturbing activities on slopes in the Book Cliffs (Map 15) greater than 30 percent from November 1 to April 30. This restriction includes road construction and traffic on existing roads associated with initial drilling operations. In addition, apply a controlled surface use stipulation for oil and gas and other surface-disturbing activities on slopes greater than 30 percent throughout the Planning Area.			
Apply environmental BMPs to all oil and gas authorizations in accordance to WO IM 2007-021 and the most current version of the "Goldbook".	SOL-WAT-13	Moab RMP	Ongoing
Develop BMPs to address health and safety concerns associated with blowing dust along U.S. 191 and I-70.	SOL-WAT-14	Moab RMP	Ongoing
Maintain and/or restore overall watershed health and reduce erosion, stream sedimentation, and salinization of water.	SOL-WAT-17	Moab RMP	Ongoing
Develop BMPs for activities on saline and other sensitive soils.	SOL-WAT-21	Moab RMP	Ongoing
Specific recommendations regarding surface and subsurface pipeline crossings found in Guidance for Pipeline Crossings (Appendix O of the Moab ROD) will be implemented to prevent breakage and subsequent contamination.	SOL-WAT-22	Moab RMP	Ongoing
Manage public lands in a manner consistent with the Colorado River Salinity Control Program, implementing BMPs and watershed restoration projects to reduce salinity contributions to the Colorado River system.	SOL-WAT-24	Moab RMP	Ongoing
Saline Soils in Mancos Shale: To minimize watershed damage on saline soils in the Mancos Shale, apply a timing limitation stipulation for oil and gas leasing and other surface-disturbing activities (Appendix A of the Moab ROD) prohibiting surface-disturbing activities on 78,941 acres of moderately to highly saline soils in the Mancos Shale (Map 14) from December 1 to May 31. This restriction includes road construction and traffic on existing roads associated with drilling operations.	SOL-WAT-27	Moab RMP	Ongoing
Manage public lands consistent with the Colorado River Salinity Control Act.	SOLW-3	Monticello RMP	Ongoing
Any proposed activities that will be located in sensitive soils (e.g., hydric, saline, gypsiferous, or highly erodible soils), will incorporate BMPs and other mitigation measures to minimize soil erosion and maintain soil stability. Site-specific mitigation measures and other additional mitigation measures required to protect soil resources and maintain soil productivity, will be determined in site-specific NEPA analysis.	SOLW-13	Monticello RMP	Ongoing
If surface-disturbing activities cannot be avoided on slopes between 21 percent and 40 percent, an erosion control plan will be required. The plan must be approved by the BLM prior to construction and maintenance and include the following: An erosion control strategy The BLM accepted and/or approved survey and design	SOLW-14	Monticello RMP	Ongoing
For slopes greater than 40 percent, no surface disturbance is allowed unless it is determined that it will cause undue or unnecessary	SOLW-15	Monticello RMP	Ongoing

Current Management Decision	Planning Decision Number	Decision Source	Status
degradation to pursue other placement alternatives. An erosion control plan is required.			

3.9 SPECIAL DESIGNATIONS: AREAS OF CRITICAL ENVIRONMENTAL CONCERN

Table 3-10. Current Management Areas of Critical Environmental Concern

Current Management Decision	Planning Decision Number	Decision Source	Status
Designate, modify and manage areas as ACECs where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards. In those areas where ACECs overlap with WSAs, the WSA management prescriptions, as stipulated in the Interim Management Policy for Lands Under Wilderness Review (IMP) will take precedence.	ACEC-1	Moab RMP	Ongoing
ACECs will be avoidance areas for all ROWs, including wind, solar energy and communication sites	ACEC-2	Moab RMP	Ongoing
Behind the Rocks (3,771 acres) will be designated as an ACEC. This area excludes the Behind the Rocks WSA, which will be managed according to the IMP to protect wilderness values. Special Management: To protect the relevant and important values of natural systems (threatened, sensitive and endangered plants), cultural resources and scenery, the following management prescriptions will apply: • Apply a no surface occupancy stipulation for oil and gas leasing and preclude other surface disturbing activities (Appendix A of the Moab ROD).	ACEC-3	Moab RMP	Ongoing
Highway 279/Shafer Basin/Long Canyon (12,537 acres) will be designated as an ACEC. Special Management: To protect the relevant and important values of scenery, wildlife, natural systems (threatened, sensitive, and endangered plants), and cultural resources, the following management prescriptions will apply: • Manage the entire area as no surface occupancy for oil and gas leasing and preclude other surface-disturbing activities.	ACEC-5	Moab RMP	Ongoing
Ten Mile Wash (4,988 acres) will be designated as an ACEC. Special Management: To protect the relevant and important values of natural systems (riparian/wetlands), wildlife, cultural resources and natural hazards, the following management prescriptions will apply: • Apply a no surface occupancy stipulation for oil and gas leasing and preclude other surface disturbing activities (Appendix A of the Moab ROD).	ACEC-7	Moab RMP	Ongoing
Indian Creek (3,900 acres) is designated as an ACEC and is managed with the following prescriptions:	ACEC-50	Monticello	Ongoing

Current Management Decision	Planning Decision Number	Decision Source	Status
• Available for mineral leasing subject to No Surface Occupancy (NSO). • Available for geophysical work if VRM Class I can be met.		RMP	
Lavender Mesa (649 acres) will continue to be designated as an ACEC and will be managed with the following management prescriptions: • Managed as NSO for oil and gas leasing. • Geophysical exploration allowed if it does not adversely impact vegetation communities.	ACEC-51		Ongoing
Shay Canyon (119 acres) is designated as an ACEC and is managed with the following prescriptions: • NSO for oil and gas. • Open to geophysical exploration as long as it is consistent with the objectives of the ACEC.	ACEC-57	Monticello RMP	Ongoing

3.10 SPECIAL DESIGNATIONS: NATIONAL HISTORIC TRAILS AND BACKWAYS

Table 3-11. Current Management for National Historic Trails and Backways

Current Management Decision	Planning Decision Number	Decision Source	Status
Segments of the Old Spanish Trail will be identified and classified for historic integrity and condition. These segments will then be designated for appropriate types of management and travel.	TRA-1	Moab RMP	Ongoing
Consider plan amendment, as necessary, to incorporate provisions of the forthcoming Old Spanish Trail Comprehensive Management Plan.	TRA-3	Moab RMP	Ongoing

3.11 SPECIAL DESIGNATIONS: WILD AND SCENIC RIVERS

Table 3-12. Current Management for Wild and Scenic Rivers

Current Management Decision	Planning Decision Number	Decision Source	Status
WSR segments recommended as suitable for Wild will be designated as VRM Class I, closed to oil and gas leasing and closed to motorized travel; Scenic and Recreational segments of suitable Wild and Scenic Rivers will be designated as VRM Class II, managed with a no surface occupancy for oil and gas leasing and other surface disturbing activities, and managed with travel limited to designated routes.	WSR-3	Moab RMP	Ongoing
The Colorado River Segment 2 (Map 28) is identified as suitable for designation into the National Wild and Scenic River System. The	WSR-5	Monticello RMP	Ongoing

Current Management Decision	Planning Decision Number	Decision Source	Status
Segment specifics include: • Recommendation: Suitable—Scenic • Size: 809 acres • Location: State lands near river mile 44 to approximately river mile 38.5 (5.5 miles). • Total river miles: 6.8 • BLM river miles: 6.8 This segment is managed with the following prescriptions: • Available for oil and gas leasing subject to NSO.			
The Colorado River Segment 3 (Map 28) is identified as suitable for designation into the National Wild and Scenic River System. The Segment specifics include: • Recommendation: Suitable—Scenic • Size: 974 acres • Location: From approximately river mile 37.5 at state land to boundary of Canyonlands • National Park near river mile 31 (6.5 miles). • Total river miles: 6.5 • BLM river miles: 6.5 This segment is managed with the following prescriptions: • Unavailable to oil and gas leasing	WSR-7	Monticello RMP	Ongoing

3.12 SPECIAL STATUS SPECIES

Table 3-13. Current Management for Special Status Species

Current Management Decision	Planning Decision Number	Decision Source	Status
Mexican Spotted Owl (MSO): • If BLM determines that a proposed action may affect MSO or its habitat, consultation with the USFWS will be initiated. • Protect occupied and potential habitat, including designated critical habitat for the MSO, by applying the standard terms and conditions developed in consultation with the USFWS for oil and gas leasing and other surface-disturbing activities. These stipulations will preclude temporary activities within designated critical habitat from March 1 through August 31. Permanent actions are prohibited year-round within 0.5 miles of a PAC.	SSS-20	Moab RMP	Ongoing
Southwestern Willow Flycatcher: • If BLM determines that a proposed action may affect Southwestern willow flycatcher or its habitat, consultation with the USFWS will be initiated. • Protect Southwestern willow flycatcher and their habitat by applying the standard terms and conditions developed in consultation with the USFWS for oil and gas leasing and other surface-disturbing activities within suitable habitat. These stipulations will preclude activities within a 100-m buffer of suitable habitat year long. Activities within 0.25 miles of	SSS-21	Moab RMP	Ongoing

Current Management Decision	Planning Decision Number	Decision Source	Status
occupied breeding habitat will not occur during the breeding season, May 1 through August 15.			
Bald Eagle: • Protect bald eagle nest sites by applying the standard terms and conditions developed in consultation with the USFWS for oil and gas leasing and other surface-disturbing activities (see Standard Terms and Conditions [Lease Notices] which are Required to Protect Special Status Species and to Comply with the Endangered Species Act, Appendix A of the Moab ROD) within 1.0 mile of documented nest sites (0 acres). These stipulations will preclude surface disturbing activities within a 1.0 mile radius of nest sites from January 1 through August 31 (Map 32). No permanent structures will be allowed within 0.5 miles of known bald eagle nest sites year-round. Deviations may be allowed only after appropriate levels of consultation and coordination with the USFWS. • Protect bald eagle winter habitat by applying the standard terms and conditions developed in consultation with the USFWS for oil and gas leasing and other surface-disturbing activities within 0.5 mile of winter roost areas. These stipulations will preclude activities and permanent structures within a 0.5 mile radius of winter roost sites from November 1through March 31 (Map 32). No permanent structures will be allowed within 0.5 mile of winter roost sites, if the structure will result in the habitat becoming unsuitable for future winter roosting by bald eagles.	SSS-22	Moab RMP	Ongoing
Gunnison Prairie Dog Habitat: • Manage 950 acres of habitat designated by UDWR for Gunnison prairie dogs. Apply a controlled surface use stipulation for oil and gas leasing and other surface-disturbing activities (Appendix A of the Moab ROD) within 660 feet of active prairie dog colonies. This stipulation will preclude surface-disturbing activities within 660 feet of these colonies. No permanent above-ground facilities will be allowed within 660 feet of prairie dog colonies. Power lines will be avoided within prairie dog colonies; however in the event that power lines are required within colonies, raptor anti-perch devices will be required.	SSS-27	Moab RMP	Ongoing
Colorado River Endangered Fish: • No surface-disturbing activities within the 100-year floodplain of the Colorado River, Green River, and at the confluence of the Dolores and Colorado rivers will be allowed. Any exceptions to this requirement will require consultation with the USFWS. Restrictions on surface disturbance within this critical habitat will be developed through this consultation process (Map 31).	SSS-28	Moab RMP	Ongoing
Golden Eagle: • Known golden eagle nest sites will be protected according to the Bald and Golden Eagle Protection Act amended in 1978. • Protect golden eagle nest sites and habitat (4,356 acres) by applying the standard terms and conditions developed in consultation with the USFWS for oil and gas leasing and other surface-disturbing activities (see Standard Terms and Conditions [Lease Notices] which are required to Protect Special Status Species and to Comply with the Endangered Species Act, Appendix A of the Moab ROD). These stipulations	SSS-29	Moab RMP	Ongoing

Current Management Decision	Planning Decision Number	Decision Source	Status
will preclude surface-disturbing activities within 0.5 miles of documented nest sites from February 1 to July 15.			
Burrowing Owl: • Protect burrowing owls by applying the standard terms and conditions developed in consultation with the USFWS (Appendix R of the Moab ROD) for oil and gas leasing and other surface disturbing activities (see Standard Terms and Conditions [Lease Notices] which are Required to Protect Special Status Species and to Comply with the Endangered Species Act, Appendix A of the Moab ROD) by precluding surface-disturbing activities within 0.25 miles of known nests from March 1 through August 31 (Map 33). • The species will be managed under the guidance provided by the Raptor Best Management Practices (Appendix R of the Moab ROD), which includes implementation of spatial and seasonal buffers to protect nesting raptors and their habitats.	SSS-30	Moab RMP	Ongoing
Kit Fox: • Protect kit fox by precluding surface-disturbing activities within 200 meters of an occupied kit fox den.	SSS-31	Moab RMP	Ongoing
Ferruginous Hawk: • Manage ferruginous hawk nesting and foraging habitat by applying the standard terms and conditions developed in consultation with the USFWS (Appendix R of the Moab ROD) for oil and gas leasing and other surface-disturbing activities (see Standard Terms and Conditions [Lease Notices] which are Required to Protect Special Status Species and to Comply with the Endangered Species Act, Appendix A of the Moab ROD) precluding surface-disturbing activities within 0.5 miles of active nests from March 1 through August 1 (Map 34). • The species will be managed under the guidance provided by the Raptor BMPs (Appendix R of the Moab ROD), which includes implementation of spatial and seasonal buffers to protect nesting raptors and their habitats.	SSS-32	Moab RMP	Ongoing
Yellow-billed Cuckoo: • Avoid loss or disturbance of yellow-billed cuckoo habitat and manage yellow-billed cuckoo nesting and foraging habitat by applying the standard terms and conditions developed in consultation with the USFWS for oil and gas leasing and other surface-disturbing activities (see Standard Terms and Conditions [Lease Notices] which are Required to Protect Special Status Species and to Comply with the Endangered Species Act, Appendix A of the Moab ROD). These stipulations preclude surface-disturbing activities within 100 meters of yellow-billed cuckoo habitat within riparian areas from May 15 through July 20. • Compliance with BLM Riparian Policy will restrict surface disturbance within 100 meters of riparian habitat and will therefore protect nesting habitat for yellow-billed cuckoo	SSS-33	Moab RMP	Ongoing
California Condor: • Within potential habitat for the California Condor, surveys will be required prior to operations unless species occupancy and distribution information is complete and available. • Surface disturbing activities will not occur within 1.0 miles of	SSS-35	Moab RMP	Ongoing

Current Management Decision	Planning Decision Number	Decision Source	Status
nest sites during the breeding season of August 1 to November 30 or within 0.5 miles of established roosting sites (see Standard Terms and Conditions (Lease Notices) which are Required to Protect Special Status Species and to Comply with the Endangered Species Act, Appendix A of the Moab ROD). • No permanent infrastructure will be placed with 1.0 mile of nest sites and within 0.5 miles of established roosting sites.			
Threatened and Endangered species conservation measures and lease notices will be used for all surface-disturbing activities to comply with the Endangered Species Act, and the BLM Manual 6840, Special Status Species Management (Appendix B of the Monticello ROD). These species include: California condor, Mexican spotted owl, Southwestern willow flycatcher, Yellow-billed cuckoo, Bonytail, Colorado pikeminnow, Humpback chub, and Razorback sucker. • Appendix B of the Monticello ROD includes stipulations applicable to Oil and Gas leasing and other surface disturbing activities regarding the 10 listed and candidate species. • The decisions for these species are found in Appendix B of the Monticello ROD. They should be spelled out unless they are identical to Moab and in that case just add Monticello ROD under Decision Source. Navajo sedge is not found within the Planning Area.	SSP-1	Monticello RMP	Ongoing

3.13 VEGETATION

Table 3-14. Current Management for Vegetation

Current Management Decision	Planning Decision Number	Decision Source	Status
Restoration and rehabilitation will use native seed-mixes wherever possible. Non-native species may be used as necessary for stabilization or to prevent invasion of noxious or invasive weed species.	VEG-5	Moab RMP	Ongoing
Control noxious weed species and prevent the infestation and spread of invasive species. Develop cooperating agreements with other federal, state, local and private organizations to control invasive and noxious weed species.	VEG-8	Moab RMP	Ongoing
Adaptive Drought Management: Establish criteria for restricting activities during drought (see Appendix T of the Moab ROD for Drought Classification System) based on the following measures/parameters: Severe (D2): • No mineral restrictions. Extreme (D3): • No new surface-disturbing activities in areas with sensitive soils (subject to valid existing rights or actions associated with other valid permitted activities; see oil and gas Appendix A of the Moab	VEG-15	Moab RMP	Ongoing

Current Management Decision	Planning Decision Number	Decision Source	Status
ROD for definition of surface-disturbing activities). • Require additional erosion-control techniques/BMPs for surface-disturbing activities (e.g., hydromulching). Exceptional (D4): • No new surface-disturbing activities (subject to valid existing rights or actions associated with other valid permitted activities).			
Avoid or minimize to the extent possible the loss of sagebrush/steppe habitat from BLM-initiated or authorized actions. The BLM recommends that loss of sagebrush/steppe habitat essential to wildlife (e.g., sage-grouse, mule deer, and sagebrush obligate species) be reclaimed or mitigated off-site.	VEG-16	Moab RMP	Ongoing
Invasive and non-native weed species (as identified in Table 2-28), Invasive and Noxious Weeds of San Juan County) will be controlled, and the infestation and spread of new invasive species prevented through cooperative agreements and implementation of the principles in BLM weed management policies and action plans.	VEG-5	Monticello RMP	Ongoing
Restoration/rehabilitation activities are required to use certified weed-free seed mixes, mulch, fill, etc.	VEG-12	Monticello RMP	Ongoing

3.14 VISUAL RESOURCE MANAGEMENT

Table 3-15. Current Management for Visual Resource Management

Current Management Decision	Planning Decision Number	Decision Source	Status
Wild and Scenic River (WSR) segments recommended as suitable for Wild are designated as VRM Class I, Scenic segments are designated as VRM Class II, and Recreational segments are managed the same as the underlying VRM management class.	VRM-2	Moab RMP	Ongoing
Apply a no surface occupancy stipulation for oil and gas leasing and preclude other surface disturbing activities (Appendix A of the Moab ROD) in all areas designated as VRM Class I.	VRM-4	Moab ROD	Ongoing
Apply a controlled surface use stipulation for oil and gas leasing and other surface-disturbing activities (Appendix A of the Moab RMP) to all areas designated as VRM Class II. This requires surface-disturbing activities to meet the objectives of VRM Class II.	VRM-5	Moab RMP	Ongoing
Designated utility corridors within VRM Class II areas are designated as VRM Class III only for utility projects.	VRM-6	Moab RMP	Ongoing
Necessary road maintenance could occur regardless of VRM class.	VRM-7	Moab RMP	Ongoing
Public lands within the viewshed of Arches National Park are designated as VRM Class II.	VRM-8	Moab RMP	Ongoing
Areas with high potential for development of oil and gas (Big Flat/Hatch Point) will be designated as VRM Class III with the exception of those portions of SRMAs and ACECs that have more stringent VRM classifications.	VRM-10	Moab RMP	Ongoing

Current Management Decision	Planning Decision Number	Decision Source	Status
Manage the Shafer Basin portion of the Highway 279/Shafer Basin/Long Canyon ACEC as VRM Class I.	VRM-11	Moab RMP	Ongoing
Scenic driving corridors will be designated as VRM Class II within a specified viewshed not to exceed 0.5 mile from centerline. Apply a controlled surface use stipulation for oil and gas leasing and other surface-disturbing activities (Appendix A of the Moab RMP) within 0.5 mile of scenic driving corridors.	VRM-12	Moab RMP	Ongoing
Manage the following areas with high-quality visual resources as VRM Class II (Map 37): • Gemini Bridges/Monitor and Merrimac/Poison Spider/Goldbar/ Corona Arch area • The Colorado and Green River corridors • The Colorado Riverway • Matt Martin Point • Areas bordering Arches National Park • Kane Creek • Hatch Wash • The rims of Canyon Rims • The Behind the Rocks ACECs • Long Canyon	VRM-13	Moab RMP	Ongoing
Apply a no surface occupancy stipulation for oil and gas leasing and preclude other surface disturbing activities (Appendix B of the Monticello RMP) in all areas designated as VRM Class I.	Appendix B	Monticello RMP	Ongoing
Apply a controlled surface use stipulation for oil and gas leasing and other surface-disturbing activities (Appendix B of the Monticello RMP) to all areas designated as VRM Class II. This requires surface-disturbing activities to meet the objectives of VRM Class II.	Appendix B	Monticello RMP	Ongoing
5,097 acres are managed as VRM Class I (Map 37). These areas include: ACECs: • Indian Creek WSRs: • Colorado River Suitable Segment 3	VRM-1	Monticello RMP	Ongoing
97,069 acres are managed as VRM Class II including but not limited to the following (Map 37): • Lavender Mesa • Shay Canyon • Colorado River Suitable Segment 2 • Indian Creek SRMA from Indian Creek ACEC south to USFS boundary and Davis and Lavender Canyons • Lockhart Basin	VRM-2	Monticello RMP	Ongoing

3.15 WILDLIFE AND FISHERIES

Table 3-16. Current Management for Wildlife and Fisheries

Current Management Decision	Planning Decision Number	Decision Source	Status
Migratory Birds: During nesting season for migratory birds (May 1 – July 31), avoid surface disturbing activities and vegetative-altering projects and broad-scale use of pesticides in identified occupied migratory bird habitat.	WL-9	Moab RMP	Ongoing
The BLM will approach compensatory mitigation on an "as appropriate" basis where it can be performed onsite, and on a voluntary basis where it is performed offsite, or, in accordance with current guidance.	WL-11	Moab RMP	Ongoing
Raptors will be managed under the auspices of Best Management Practices (BMPs; Appendix R of the Moab RMP), which will include implementation of spatial and seasonal buffers. These BMPs implement the USFWS's Guidelines for Raptor Protection From Human and Land-use Disturbances, with modifications allowed as long as protection of nests is ensured. Seasonal and spatial buffers are also listed in Appendix R of the Moab RMP. Cooperate with utility companies to prevent electrocution of raptors. Temporarily close areas (amount of time depends on the species) near raptor nest to rock climbers or other activities if the activity could result in nest abandonment.	WL-18	Moab RMP	Ongoing
Bighorn Sheep Habitat Manage 9,278 acres along the rim of Hatch Point as part of the Lockhart Bighorn Sheep habitat area. Apply a timing limitation stipulation to oil and gas leases and other permitted uses, which will restrict surface-disturbing activities from April 1 through June 15 for lambing and from October 15 through December 15 for rutting (Appendix A of the Moab RMP).	WL-32	Moab RMP	Ongoing
Pronghorn Habitat Protect pronghorn fawning habitat (71,693 acres) within Hatch Point by applying a timing limitation stipulation that will preclude surface-disturbing activities from May 1 to June 15.	WL-24	Moab RMP	Ongoing
Bighorn Sheep Habitat To protect lambing, rutting, and migration habitat (101,461 acres), apply a no surface occupancy stipulation for oil and gas leasing and preclude other surface disturbing activities Within migration corridors pipeline construction and geophysical exploration for oil and gas development will be allowed outside lambing and rutting periods from June 16 through October 14 and from December 15 through March 31, respectively.	WL-36	Moab RMP	Ongoing
Deer and Elk Habitat Protect deer and/or elk crucial winter habitat (16,804 acres) by applying a timing limitation stipulation for oil and gas leasing as well as other surface-disturbing activities (Appendix A of the Moab RMP). (This includes 73,160 acres in WSAs, which are already closed to leasing.) This limitation will preclude surface-disturbing activities from November 15 through April 15.	WL-44	Moab RMP	Ongoing
Migratory Birds	FWL-2	Monticello	Ongoing

Current Management Decision	Planning Decision Number	Decision Source	Status
During nesting season for migratory birds (May 1–July 30), avoid or minimize surface disturbing activities and vegetative-altering projects and broad-scale use of pesticides in identified occupied priority migratory bird habitat.		RMP	
Raptors Raptor management will be guided by the use of Best Management Practices for Raptors and Their Associated Habitats in Utah (Utah BLM 2006, Appendix N of the Monticello RMP), utilizing seasonal and spatial buffers, as well as mitigation, to maintain and enhance raptor nesting and foraging habitat, while allowing other resource uses.	FWL-8	Monticello RMP	Ongoing
Bighorn Sheep Within bighorn sheep lambing and rutting areas (56,047 acres) apply a timing limitation stipulation where no surface disturbing activities or occupancy are allowed from April 1 through June 15 for lambing and from October 15 through December 15 for rutting.	FWL-11	Monticello RMP	Ongoing
Off-site Mitigation The BLM will approach compensatory mitigation on an "as appropriate" basis where it can be performed on site, and on a voluntary basis where it is performed off-site, or, in accordance with current guidance.	FWL-27	Monticello RMP	Ongoing
Pronghorn Fawning Area Within pronghorn fawning grounds (27,657 acres), apply a timing limitation stipulation where no surface-disturbing activities may occur from May 1 to June 15.	FWL-31	Monticello RMP	Ongoing
Deer Winter Range Within deer winter range (64,042 acres), apply a timing limitation where no surface disturbing activities may occur from November 15 to April 15.	FWL-33	Monticello RMP	Ongoing
Elk Winter Range Within elk winter range (1,701 acres), apply a timing limitation where no surface disturbing activities may occur from November 15 to April 15.	FWL-34	Monticello RMP	Ongoing

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CHAPTER 4—MANAGEMENT OPPORTUNITIES

4.1 AIR RESOURCES

Table 4-1. Adequacy of Current Management Direction for Air Resources

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
As appropriate, quantitative analysis of potential Air Quality impacts will be conducted for project-specific developments	Moab RMP AQ-1	Yes	The decision is appropriate	None
Comply with Utah Air Conservation (UAC) Regulation R446-1. The best air quality control technology, as per guidance from the Utah Division of Air Quality (UDAQ), will be applied to actions on public lands as needed to meet air quality standards.	Moab RMP AQ-3	Yes	The decision is appropriate	None
Comply with UAC Regulation R446-1-4.5.3, which prohibits the use, maintenance, or construction of roadways without taking appropriate dust abatement measures. Compliance will be obtained through special stipulations as a requirement on new projects and through the use of dust abatement control techniques in problem areas.	Moab RMP AQ-4	Yes	The decision is appropriate	None
Manage all BLM and BLM-authorized activities to maintain air quality within the thresholds established by the State of Utah Ambient Air Quality Standards and to ensure that those activities continue to keep the area as attainment, meet prevention of significant deterioration (PSD) Class II standards, and protect the Class I air shed of the National Parks (e.g., Arches and Canyonlands National Parks).	Moab RMP AQ-5	Yes	The decision is appropriate	None
BLM will continue to work cooperatively with state, federal, and tribal entities in developing air quality assessment protocols to address cumulative impacts and regional air quality issues.	Moab RMP AQ-7	Yes	The decision is appropriate	None
National Ambient Air Quality Standards are enforced by the Utah Department of Environmental Quality, Division of Air Quality (UDEA-DAQ), with EPlanning Area oversight. Special requirements to reduce potential air quality impacts will be considered on a	Moab RMP AQ-9	Yes	The decision is appropriate	None

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
case-by-case basis in process land use authorizations.				
BLM will utilize BMPs and site specific mitigation measures, when appropriate, based on site specific conditions, to reduce emissions and enhance air quality. Examples of these types of measures can be found in the Four Corners Air Quality Task Force Report of Mitigation Options, November 1, 2007.	Moab RMP AQ-10	No	Not specific	Consider BMPs
Project specific analyses will consider use of quantitative air quality analysis methods (i.e. modeling), when appropriate as determined by BLM, in consultation with state, federal and tribal entities.	Moab RMP AQ-11	Yes	The decision is appropriate	None
The best available control technology, recommended by the Utah Division of Air Quality (UDAQ), will be applied as needed to meet air quality standards.	Monticello RMP AQ-1	Yes	The decision is appropriate	None
The BLM will comply with Utah Air Conservation (UAC) Regulation R307–205, which prohibits the use, maintenance, or construction of roadways without taking appropriate dust abatement measures.	Monticello RMP AQ-3	Yes	The decision is appropriate	None
The BLM will manage emissions to prevent deterioration to air quality in Class I Airsheds.	Monticello RMP AQ-5	Yes	The decision is appropriate	None
The BLM will continue to work cooperatively with state, federal, and tribal entities in developing air quality assessment protocols to address cumulative impacts and regional air quality issues.	Monticello RMP AQ-6	Yes	The decision is appropriate	None
National Ambient Air Quality Standards are enforced by the Utah Department of Environmental Quality, Division of Air Quality (UDEQ-DAQ), with EPA oversight. Special requirements to reduce potential air quality impacts will be considered on a case-by-case basis in processing land-use authorizations.	Monticello RMP AQ-8	Yes	The decision is appropriate	None
The BLM will utilize best management practices (BMPs) and site-specific mitigation measures, when appropriate, based on site-specific conditions, to reduce emissions and enhance air quality. Examples of these	Monticello RMP AQ-9	No	Not specific	Consider BMPs

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
types of measures can be found in the Four Corners Air Quality Task Force Report of Mitigation Options, November 1, 2007.				
Project specific analyses will consider use of quantitative air quality analysis methods (i.e., modeling), when appropriate as determined by the BLM, in consultation with state, federal, and tribal entities.	Monticello RMP AQ-10	Yes	The decision is appropriate	None

4.2 CULTURAL RESOURCES

Table 4-2. Adequacy of Current Management Direction for Cultural Resources

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
All land-disturbing activities within Traditional Cultural Properties will be designed to avoid or minimize impacts, where reasonable. Proposed projects or actions will be modified to avoid the area or site, avoid time of use by Native American groups, or will be eliminated altogether.	Moab RMP CUL-5	No	May require a lease stipulation to protect cultural values	Consider lease stipulation
Cultural plants, once identified by interested tribes, will be managed to insure that ground disturbing activities on the land do not contribute to the decline of cultural sensitive plant communities.	Moab RMP CUL-16	No	May require a lease stipulation to protect cultural plants	Consider lease stipulation
Protective measures will be established and implemented for sites, structures, objects, and traditional use areas that are important to tribes with historical and cultural connections to the land, in order to maintain the view shed and intrinsic values, as well as the auditory, visual, and esthetic settings of the resources. Protection measures for undisturbed cultural resources and their natural settings will be developed in compliance with regulatory mandates and Native American consultation.	Monticello RMP CUL-14	No	May require a lease stipulation to protect cultural values	Consider lease stipulation

4.3 LANDS AND REALTY

Table 4-3. Adequacy of Current Management Direction for Lands and Realty

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
To reduce surface use conflicts along the U.S. Highway 191 utility corridor within Moab Canyon, apply a no surface occupancy stipulation for oil and gas leasing and other surface disturbing activities (Appendix A of the Moab RMP), except those associated with utility ROWs.	Moab RMP LAR-9	Yes	The decision is appropriate to reduce surface use conflicts along the highway	None
To be consistent with the existing withdrawals from mineral entry, apply a no surface occupancy stipulation for oil and gas leasing and other surface-disturbing activities within the area of the Three Rivers and Westwater Mineral Withdrawals. This action will further protect the riparian, wildlife, scenic, and recreation values addressed in these withdrawals.	Moab RMP LAR-12	Yes	The decision is appropriate for protecting the river corridors.	None

4.4 MINERALS

Table 4-4. Adequacy of Current Management Direction for Minerals

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
On 9,599 acres of split-estate lands, the BLM will apply the same lease stipulations as those applied to surrounding lands with federal surface. Mitigation measures to protect other resource values will be developed during the appropriate site-specific environmental analysis and will be attached as conditions of approval to permits in consultation with the surface owner or SMA.	Moab RMP MIN-4	Yes	The decision is appropriate to address split estate lands	None
To the extent possible, the stipulations developed for oil and gas leasing are applicable to potash leasing	Moab RMP MIN-9	Yes	This decision is appropriate for applying lease stipulations consistently.	None
Leaseable Minerals: In areas where mineral activities would be incompatible with existing surface use, apply a no surface occupancy stipulation for oil and gas leasing and other surface disturbing activities. These areas are as follows, Moab Landfill, Moab Airport, and Dead	Moab RMP MIN-10	Yes	This decision is appropriate for protecting these existing surface uses.	None

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
Horse Point State Park.				
Leasable Minerals: In accordance with an UDEQ-DAQ letter dated June 6, 2008 (Appendix J of the Moab RMP) requesting implementation of interim nitrogen oxide control measures for compressor engines; BLM will require the following as a Lease Stipulation and a Condition of Approval for Applications for Permit to Drill: (1) All new and replacement internal combustion oil and gas field engines of less than or equal to 300 design-rated horsepower must not emit more than 2 gms of NOx per horsepower-hour. This requirement does not apply to oil and gas field engines of less than or equal to 40 design-rated horsepower; (2) All new and replacement internal combustion oil and gas field engines of greater than 300 design rated horsepower must not emit more than 1.0 gms of NOx per horsepower-hour.	Moab RMP MIN-13	Yes	The decision is appropriate	None
Leasable Minerals: Oil and Gas Leasing Stipulations (Map 42) • Approximately 194,020 acres will be open to oil and gas leasing, subject to standard terms and conditions. • Approximately 260,192 acres will be open to oil and gas leasing subject to CSU and TL stipulations. • Approximately 132,125 acres will be open to oil and gas leasing subject to an NSO stipulation. • Approximately 0 acres will be closed to oil and gas leasing	Moab RMP MIN-19	No	These stipulations are subject to change	Change lease stipulations
In areas where the No Surface Occupancy (NSO) stipulation for oil and gas leasing is applied, the same restriction will also, where appropriate and practical, apply to other surface-disturbing activities (and occupancy) associated with land-use authorizations, permits, and leases issued on BLM lands. The restrictions will not apply to activities and uses where they are contrary to laws, regulations or specific program guidance. The intent is to maintain consistency to the extent possible in applying stipulations/restrictions to all surface-disturbing activities.	Monticello RMP MIN-5	Yes	The decision is appropriate	None
Certain federal oil and gas resources within the Monticello PA underlie lands not administered by the BLM. The BLM administers the federal leases on these	Monticello RMP MIN-9	Yes	The decision is appropriate	None

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
lands. These lands include: 5,281 MLP acres on split-estate lands.				
On split-estate lands, lease stipulations will consist of those necessary to comply with non-discretionary federal laws, such as the Endangered Species Act. The one exception to this will be the stipulations developed for Gunnison Sage-grouse as identified in Appendix B of the Monticello RMP. Mitigation measures will also be applied to protect other resource values such as VRM class, recreation, and non-federally protected fish and wildlife species consistent with Section 6 of the standard lease terms. These mitigation measures will be developed during site-specific environmental analysis and will be attached as conditions of approval (COA) in consultation with the surface owner or SMA.	Monticello RMP MIN-10	Yes	This decision is appropriate to address split estate lands	None
In accordance with an UDEQ-DAQ letter dated June 6, 2008, (Appendix C of the Monticello RMP) requesting implementation of interim nitrogen oxide control measures for compressor engines; the BLM will require the following as a Lease Stipulation and a Condition of Approval for Applications for Permit to Drill: All new and replacement internal combustion oil and gas field engines of less than or equal to 300 design-rated horsepower must not emit more than 2 gms of NOx per horsepower-hour. This requirement does not apply to oil and gas field engines of less than or equal to 40 design-rated horsepower. All new and replacement internal combustion oil and gas field engines of greater than 300 design rated horsepower must not emit more than 1.0 gms of NOx per horsepower-hour.	Monticello RMP MIN-11	Yes	The decision is appropriate	None
• Approximately 16,864 acres are available for oil and gas leasing, subject to standard lease terms. • Approximately 180,164 acres are available for oil and gas leasing subject to timing limitations. • Approximately 43,810 acres are available for oil and gas leasing subject to controlled surface use. • Approximately 50,264 acres are available for oil and gas leasing subject to timing limitations and controlled surface use.	Monticello RMP MIN-23 through 27 and 29	No	The lease stipulation is subject to change	Change lease stipulation

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
• Approximately 5,978 acres are available for oil and gas leasing subject to no surface occupancy. • Approximately 1,192 acres are unavailable for leasing.				

4.5 PALEONTOLOGICAL RESOURCES

Table 4-5. Adequacy of Current Management Direction for Paleontological Resources

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
Attach lease notices, stipulations, and other requirements to permitted activities to prevent damage to paleontological resources.	Moab RMP PAL-10	No	Requires more specifics	Consider a lease stipulation or BMP
Conduct on-site evaluation of surface-disturbing activities for all Class 5 areas and minimize impacts to paleontological resources to the degree practicable. Evaluation will consider the type of surface disturbance proposed and mitigation will be developed based on site-specific information.	Monticello RMP PAL-10	No	May expand the requirement to other classes	Consider lease stipulation

4.6 RECREATION

Table 4-6. Adequacy of Current Management Direction for Recreation

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
Continue to manage Kane Creek Road to Hurrah Pass and the roads to Needles, Anticline, and Minor overlooks as Utah Scenic Backways.	Moab RMP REC-14	Yes	The decision is appropriate	None
BLM Back Country Byways and National Recreation Trails may be designated in the future as deemed appropriate with site-specific environmental analysis.	Moab RMP REC-15	Yes	The decision is appropriate	None
Apply a no surface occupancy stipulation for oil and gas leasing and preclude other surface disturbing activities (Appendix A of	Moab RMP	No	A more restrictive stipulation may	Change lease stipulation

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
the Moab RMP) within 0.5 miles of developed recreation sites (current and planned as Potential Future Facilities; see each SRMA).	REC-20		be necessary to protect developed recreation sites	
Manage all SRMAs according to the Visual Resource Management Class to protect scenic values and settings important to recreation.	Moab RMP REC-22	Yes	The decision is appropriate	None
Canyon Rims SRMA: Manage the Canyon Rims SRMA (101,520 acres) as a Destination SRMA. Major management actions in the Canyon Rims SRMA include: • Manage the area as open to mineral leasing with controlled surface occupancy use. • Developed recreation sites will be managed as open to leasing with no surface occupancy. • Manage the western rim land areas of Hatch Point as VRM Class II and the remainder of the area as VRM Class III. Hatch Wash Hiking and Backpacking Focus Area – Non-mechanized Recreation (3,614 acres) Needles and Anticline Roads Focus Area (Utah Scenic Backways) • Scenic Driving Corridor. Manage for scenic driving enjoyment. The corridor is defined as having a width of 1/2 mile from centerline (or to border of adjoining Focus Area).	Moab RMP REC-36	No	A more restrictive stipulation may be necessary to protect the SRMA	Change lease stipulation
Colorado Riverway SRMA Will be established as a Destination SRMA at 31,131 acres. • Negro Bill Hiking and Ecological Study Focus Area (1,346 acres) • Richardson Amphitheater/Castle Rock, Hiking, Climbing and Equestrian Focus Area (175 acres): • Focus Areas -- Scenic Driving Corridors: • These corridors include Highways 128 and 279 (which are both designated Utah Scenic Byways), as well as the Kane Creek/Hurrah Pass portion of the Lockhart Basin Scenic Backway. • Focus Areas -- Specialized Sport Venue, Non-motorized: Tombstone Competitive BASE Jumping Focus Area (42 acres): • Focus Areas -- Specialized Sport Venue, Non-motorized Wall Street Sport Climbing Focus Area (44 acres) (with	Moab RMP REC-37	No	No restrictions applied to protect these high use recreation areas	Change lease stipulation

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
special protective measures taken for rock art)				
Dolores River Canyons SRMA (Map 7): • Manage as an undeveloped SRMA (2,329 acres)	Moab RMP REC-38	No	No restrictions applied to protect this high use recreation areas	Change lease stipulation
Labyrinth Rims/Gemini Bridges SRMA: • Manage the Labyrinth Rims/Gemini Bridges area (Map 7) as a Destination SRMA (275,267 acres). Focus Area -- Scenic Driving Corridors: Highway 313 and the Island in the Sky Road (Utah Scenic Byway): Manage for scenic driving enjoyment. The corridor is defined as having a width of 1/2 mile from centerline (or to border of adjoining Focus Area; Goldbar/Corona Arch Hiking Focus Areas (4,138 acres). Apply a no surface occupancy stipulation for oil and gas leasing and preclude other surface-disturbing activities to protect primitive hiking opportunities and scenic values. • Spring Canyon Hiking Focus Area (455 acres) • Labyrinth Canyon Canoe Focus Area (6,812 acres) • Seven Mile Canyons Equestrian Focus Area (1,028 acres) • Klondike Bluffs Mountain Biking Focus Area (14,597 acres) • Bar M Mountain Biking Focus Area (2,906 acres) • Tusher Slickrock Mountain Biking Focus Area (428 acres) • Mill Canyon/Upper Courthouse Mountain Biking Focus Area (5,741 acres) • Gemini Bridges/Poison Spider Mesa Focus Area (16,354 acres) • Mineral Canyon/Horsethief Point Competitive BASE Jumping Focus Area (762 acres) • Bartlett Slickrock Freeride Mountain Bike Focus Area (166 acres) • Dee Pass Motorized Trail Focus Area (21,158 acres) • Airport Hills Motocross Focus Area (290 acres) • White Wash Sand Dunes Open OHV Focus Area, (1,944 acres)	Moab RMP REC-39	No	No restrictions applied to protect this high use recreation areas	Change lease stipulation

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
South Moab SRMA (Map 7) • Manage the South Moab SRMA as a Destination SRMA (22,505 acres). Behind the Rocks Hiking Focus Area (3,438 acres) 24 Hours of Moab Focus Area (2,914 acres)	Moab RMP REC-42	No	No restrictions applied to protect these high use recreation areas	Change lease stipulation
Extensive Recreation Management Area.	Moab RMP REC-45	Yes	The decision is appropriate	None
Indian Creek SRMA (76,595 Acres, Map 7) Goals and Objectives: • Provide outstanding recreational opportunities and visitor experiences while protecting natural and cultural resource values through integrated management between the BLM, NPS, State of Utah, and the Nature Conservancy • Provide for premier rock climbing experiences, outstanding OHV opportunities, scenic vistas, cultural site interpretation at Newspaper Rock, destination camping areas, and a gateway to Canyonlands National Park.	Monticello RMP REC-124	No	No restrictions applied to protect these high use recreation areas	Change lease stipulation

4.7 RIPARIAN

Table 4-7. Adequacy of Current Management Direction for Riparian

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
Preclude surface-disturbing activities within 100-year floodplains and within 100 meters of riparian areas, public water reserves, and springs.	Moab RMP RIP-7	Yes	This decision is appropriate	None
The BLM will take appropriate actions to maintain water quality in streams within Monticello Planning Area to meet state and federal water quality standards, including designated beneficial uses and anti-degradation requirements.	Monticello RMP RIP-2	No	Lacks specifics	Consider more details
No new surface-disturbing activities are allowed within active floodplains or within 100 meters of riparian areas unless it can be shown that: a) there are no practical alternatives or, b) all long-	Monticello RMP RIP-5	Yes	The decision is appropriate to protect floodplains and riparian areas	None

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
term impacts can be fully mitigated or, c) the activity will benefit and enhance the riparian area.				
Pipeline crossings of perennial, intermittent, and ephemeral stream channels should be constructed to withstand 100-year floods to prevent breakage and subsequent accidental contamination of runoff during high-flow events. Surface crossings must be constructed high enough to remain above stream flows at each crossing, and subsurface crossings must be buried deep enough to remain undisturbed by scour throughout passage of the peak flow. Hydraulic analysis will be completed in the design phase by the project proponent to eliminate potential environmental degradation associated with pipeline breaks at stream crossings to avoid repeated maintenance of such crossings. Specific recommendations regarding surface and subsurface crossings are found in guidance for pipeline crossings (Appendix L of the Monticello RMP).	Monticello RMP RIP-18	No	The decision could be simplified	Consider a BMP

4.8 SOIL AND WATER

Table 4-8. Adequacy of Current Management Direction for Soil and Water

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
BLM will work with partners to implement Best Management Practices (BMPs) and continue BLM's cooperative work with the Utah Divisions of Water Rights and Water Quality in accordance with the administrative memorandum of understanding (MOU) and the cooperative agreement addressing water quality monitoring.	Moab RMP SOL-WAT-4	No	Not specific	Consider BMPs
Allow no surface occupancy and preclude surface-disturbing activities within 100-year floodplains, within 100 meters of a natural spring, or within public water reserves.	Moab RMP SOL-WAT-5	Yes	The decision is appropriate to protect floodplains and water resources	None
To protect sensitive soils on slopes, apply a timing limitation stipulation for oil and gas	Moab RMP SOL-WAT-9	No	Consider revising to	Consider revised BMP

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
leasing and other surface-disturbing activities prohibiting surface-disturbing activities on slopes in the Book Cliffs (Map 15) greater than 30 percent from November 1 to April 30. This restriction includes road construction and traffic on existing roads associated with initial drilling operations. In addition, apply a timing limitation stipulation for oil and gas and other surface-disturbing activities on slopes greater than 30 percent throughout the Planning Area.			make more clear and effective	or lease stipulation
Apply environmental BMPs to all oil and gas authorizations in accordance to WO IM 2007-021 and the most current version of the "Goldbook."	Moab RMP SOL-WAT-13	No	Not specific	Consider BMPs
Develop BMPs to address health and safety concerns associated with blowing dust along U.S. 191 and I-70.	Moab RMP SOL-WAT-14	No	Not specific	Consider BMPs
Maintain and/or restore overall watershed health and reduce erosion, stream sedimentation, and salinization of water.	Moab RMP SOL-WAT-17	No	Not specific	Develop BMPs
Develop BMPs for activities on saline and other sensitive soils.	Moab RMP SOL-WAT-21	No	Not specific	Develop BMPs
Specific recommendations regarding surface and subsurface pipeline crossings found in Guidance for Pipeline Crossings (Appendix O of the Moab RMP) will be implemented to prevent breakage and subsequent contamination.	Moab RMP SOL-WAT-22	No	Not specific	Develop BMPs
Manage public lands in a manner consistent with the Colorado River Salinity Control Program, implementing BMPs and watershed restoration projects to reduce salinity contributions to the Colorado River system	Moab RMP SOL-WAT-24	No	Not specific	Develop BMPs
Saline Soils in Mancos Shale: To minimize watershed damage on saline soils in the Mancos Shale, apply a timing limitation stipulation for oil and gas leasing and other surface-disturbing activities (Appendix A of the Moab RMP) prohibiting surface-disturbing activities on 78,941 acres of moderately to highly saline soils in the Mancos Shale (Map 14) from December 1 to May 31. This restriction includes road construction and traffic on existing roads associated with drilling operations.	Moab RMP SOL-WAT-27	No	Consider adjusting stipulation	Change lease stipulation
Any proposed activities that will be located in sensitive soils (e.g., hydric, saline,	Monticello RMP	No	Not specific	Consider BMPs

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
gypsiferous, or highly erodible soils), will incorporate BMPs and other mitigation measures to minimize soil erosion and maintain soil stability. Site-specific mitigation measures and other additional mitigation measures required to protect soil resources and maintain soil productivity, will be determined in site-specific NEPA analysis.	SOLW-13			
If surface-disturbing activities cannot be avoided on slopes between 21 percent and 40 percent, an erosion control plan will be required. The plan must be approved by the BLM prior to construction and maintenance and include the following: • An erosion control strategy • The BLM accepted and/or approved survey and design	Monticello RMP SOLW-14	No	Consider revising to make more clear and enforceable	Consider BMP or lease stipulation
For slopes greater than 40 percent, no surface disturbance is allowed unless it is determined that it will cause undue or unnecessary degradation to pursue other placement alternatives. An erosion control plan is required.	Monticello RMP SOLW-15	No	Consider revising to make more clear and enforceable	Consider BMP or lease stipulation

4.9 SPECIAL DESIGNATIONS: AREAS OF CRITICAL ENVIRONMENTAL CONCERN

Table 4-9. Adequacy of Current Management Direction for Areas of Critical Environmental Concern

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
Designate, modify and manage areas as ACECs where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards. In those areas where ACECs overlap with WSAs, the WSA management prescriptions, as stipulated in the Interim Management Policy for Lands Under Wilderness Review (IMP) will take precedence.	Moab RMP ACEC-1	Yes	This decision is appropriate to protect the ACEC values	None
ACECs will be avoidance areas for all ROWs, including wind, solar energy and communication sites.	Moab RMP ACEC-2	Yes	This decision is appropriate to protect the ACEC values	None

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
Behind the Rocks (3,771 acres) will be designated as an ACEC. This area excludes the Behind the Rocks WSA, which will be managed according to the IMP to protect wilderness values. Special Management: To protect the relevant and important values of natural systems (threatened, sensitive and endangered plants), cultural resources and scenery, the following management prescriptions will apply: • Apply a no surface occupancy stipulation for oil and gas leasing and preclude other surface disturbing activities (Appendix A of the Moab RMP).	Moab RMP ACEC-3	Yes	This decision is appropriate to protect the ACEC values	None
Highway 279/Shafer Basin/Long Canyon (12,537 acres) will be designated as an ACEC. Special Management: To protect the relevant and important values of scenery, wildlife, natural systems (threatened, sensitive, and endangered plants), and cultural resources, the following management prescriptions will apply: • Manage the entire area as no surface occupancy for oil and gas leasing and preclude other surface-disturbing activities.	Moab RMP ACEC-5	Yes	This decision is appropriate to protect the ACEC values	None
Ten Mile Wash (4,988 acres) will be designated as an ACEC. Special Management: To protect the relevant and important values of natural systems (riparian/wetlands), wildlife, cultural resources and natural hazards, the following management prescriptions will apply: • Apply a no surface occupancy stipulation for oil and gas leasing and preclude other surface disturbing activities (Appendix A of the Moab RMP).	Moab RMP ACEC-7	Yes	This decision is appropriate to protect the ACEC values	None
Indian Creek (3,900 acres) is designated as an ACEC and is managed with the following prescriptions: • Available for mineral leasing subject to No Surface Occupancy (NSO). • Available for geophysical work if VRM Class I can be met.	Monticello RMP ACEC-50	Yes	This decision is appropriate to protect the ACEC values	None
Lavender Mesa (649 acres) will continue to be designated as an ACEC and will be managed with the following management prescriptions: • Managed as NSO for oil and gas leasing. • Geophysical exploration allowed if it does not adversely impact vegetation communities.	Monticello RMP ACEC-51	Yes	This decision is appropriate to protect the ACEC values	None
Shay Canyon (119 acres) is designated as an ACEC and is managed with the following	Monticello RMP	Yes	This decision is appropriate to	None

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
prescriptions: • NSO for oil and gas. • Open to geophysical exploration as long as it is consistent with the objectives of the ACEC.	ACEC-57		protect the ACEC values	

4.10 SPECIAL DESIGNATIONS: NATIONAL HISTORIC TRAILS AND BACKWAYS

Table 4-10. Adequacy of Current Management Direction for National Historic Trails and Backways

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
Segments of the Old Spanish Trail will be identified and classified for historic integrity and condition. These segments will then be designated for appropriate types of management and travel.	Moab RMP TRA-1	No	May require lease stipulation to protect historic integrity of the Trail	Lease stipulation
Consider plan amendment, as necessary, to incorporate provisions of the forthcoming Old Spanish Trail Comprehensive Management Plan.	Moab RMP TRA-3	No	May require lease stipulation to protect historic integrity of the Trail	Lease stipulation

4.11 SPECIAL DESIGNATIONS: WILD AND SCENIC RIVERS

Table 4-11. Adequacy of Current Management Direction for Wild and Scenic Rivers

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
WSR segments recommended as suitable for Wild will be designated as VRM Class I, closed to oil and gas leasing and closed to motorized travel; Scenic and Recreational segments of suitable Wild and Scenic Rivers will be designated as VRM Class II, managed with a no surface occupancy for oil and gas leasing and other surface disturbing activities, and managed with travel limited to designated routes.	Moab RMP WSR-3	Yes	The decision is appropriate to protect Wild and Scenic River values	None
The Colorado River Segment 2 (Map 28) is	Monticello	Yes	This decision is	None

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
identified as suitable for designation into the National Wild and Scenic River System. The Segment specifics include: • Recommendation: Suitable—Scenic • Size: 809 acres • Location: State lands near river mile 44 to approximately river mile 38.5 (5.5 miles). • Total river miles: 6.8 • BLM river miles: 6.8 This segment is managed with the following prescriptions: • Available for oil and gas leasing subject to NSO.	RMP WSR-5		appropriate to protect the Wild and Scenic River values	
The Colorado River Segment 3 (Map 28) is identified as suitable for designation into the National Wild and Scenic River System. The Segment specifics include: • Recommendation: Suitable—Scenic • Size: 974 acres • Location: From approximately river mile 37.5 at state land to boundary of Canyonlands • National Park near river mile 31 (6.5 miles). • Total river miles: 6.5 • BLM river miles: 6.5 This segment is managed with the following prescriptions: • Unavailable to oil and gas leasing	Monticello RMP WSR-7	Yes	The decision is appropriate to protect Wild and Scenic River values	None

4.12 SPECIAL STATUS SPECIES

Table 4-12. Adequacy of Current Management Direction for Special Status Species

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
Mexican Spotted Owl (MSO): • If BLM determines that a proposed action may affect MSO or its habitat, consultation with the USFWS will be initiated. • Protect occupied and potential habitat, including designated critical habitat for the MSO, by applying the standard terms and conditions developed in consultation with the USFWS for oil and gas leasing and	Moab RMP SSS-20	Yes	Required by law	None

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
other surface-disturbing activities. These stipulations will preclude temporary activities within designated critical habitat from March 1 through August 31. Permanent actions are prohibited year-round within 0.5 miles of a PAC.				
Southwestern Willow Flycatcher: • If BLM determines that a proposed action may affect Southwestern willow flycatcher or its habitat, consultation with the USFWS will be initiated. • Protect Southwestern willow flycatcher and their habitat by applying the standard terms and conditions developed in consultation with the USFWS for oil and gas leasing and other surface-disturbing activities within suitable habitat. These stipulations will preclude activities within a 100-m buffer of suitable habitat year long. Activities within 0.25 miles of occupied breeding habitat will not occur during the breeding season, May 1 through August 15.	Moab RMP SSS-21	Yes	Required by law	None
Bald Eagle: • Protect bald eagle nest sites by applying the standard terms and conditions developed in consultation with the USFWS for oil and gas leasing and other surface-disturbing activities (see Standard Terms and Conditions [Lease Notices] which are Required to Protect Special Status Species and to Comply with the Endangered Species Act, Appendix A of the Moab RMP) within 1.0 mile of documented nest sites (0 acres). These stipulations will preclude surface disturbing activities within a 1.0 mile radius of nest sites from January 1 through August 31 (Map 32). No permanent structures will be allowed within 0.5 miles of known bald eagle nest sites year-round. Deviations may be allowed only after appropriate levels of consultation and coordination with the USFWS. • Protect bald eagle winter habitat by applying the standard terms and conditions developed in consultation with the USFWS for oil and gas leasing and other surface-disturbing activities within 0.5 mile of winter roost areas. These stipulations will preclude activities and permanent structures within a 0.5 mile radius of winter roost sites from November 1through March 31 (Map 32).	Moab RMP SSS-22	Yes	Required by law	None

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
No permanent structures will be allowed within 0.5 mile of winter roost sites, if the structure will result in the habitat becoming unsuitable for future winter roosting by bald eagles.				
Gunnison Prairie Dog Habitat: • Manage 950 acres of habitat designated by UDWR for Gunnison prairie dogs. Apply a controlled surface use stipulation for oil and gas leasing and other surface-disturbing activities (Appendix A of the Moab RMP) within 660 feet of active prairie dog colonies. This stipulation will preclude surface-disturbing activities within 660 feet of these colonies. No permanent above-ground facilities will be allowed within 660 feet of prairie dog colonies. Power lines will be avoided within prairie dog colonies; however in the event that power lines are required within colonies, raptor anti-perch devices will be required.	Moab RMP SSS-27	No	May require adjustment	Change lease stipulation
Colorado River Endangered Fish: • No surface-disturbing activities within the 100-year floodplain of the Colorado River, Green River, and at the confluence of the Dolores and Colorado rivers will be allowed. Any exceptions to this requirement will require consultation with the USFWS. Restrictions on surface disturbance within this critical habitat will be developed through this consultation process (Map 31).	Moab RMP SSS-28	No	May require adjustment	Change lease stipulation
Golden Eagle: • Known golden eagle nest sites will be protected according to the Bald and Golden Eagle Protection Act amended in 1978. • Protect golden eagle nest sites and habitat (4,356 acres) by applying the standard terms and conditions developed in consultation with the USFWS for oil and gas leasing and other surface-disturbing activities (see Standard Terms and Conditions [Lease Notices] which are required to Protect Special Status Species and to Comply with the Endangered Species Act, Appendix A of the Moab RMP). These stipulations will preclude surface-disturbing activities within 0.5 miles of documented nest sites from February 1 to July 15.	Moab RMP SSS-29	Yes	Required by law	None
Burrowing Owl: • Protect burrowing owls by applying the	Moab RMP	No	Not a species protected by	Develop a lease

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
standard terms and conditions developed in consultation with the USFWS (Appendix R of the Moab RMP) for oil and gas leasing and other surface disturbing activities (see Standard Terms and Conditions [Lease Notices] which are Required to Protect Special Status Species and to Comply with the Endangered Species Act, Appendix A of the Moab RMP) by precluding surface-disturbing activities within 0.25 miles of known nests from March 1 through August 31 (Map 33). • The species will be managed under the guidance provided by the Raptor Best Management Practices (BMPs; Appendix A of the Moab RMP), which includes implementation of spatial and seasonal buffers to protect nesting raptors and their habitats.	SSS-30		law so a lease notice does not apply	stipulation
Kit Fox: • Protect kit fox by precluding surface-disturbing activities within 200 meters of an occupied kit fox den.	Moab RMP SSS-31	No	Not a species protected by law so a lease notice does not apply	Develop a lease stipulation
Ferruginous Hawk: • Manage ferruginous hawk nesting and foraging habitat by applying the standard terms and conditions developed in consultation with the USFWS (Appendix R of the Moab RMP) for oil and gas leasing and other surface-disturbing activities (see Standard Terms and Conditions [Lease Notices] which are Required to Protect Special Status Species and to Comply with the Endangered Species Act, Appendix A of the Moab RMP) precluding surface-disturbing activities within 0.5 miles of active nests from March 1 through August 1 (Map 34). • The species will be managed under the guidance provided by the Raptor BMPs (Appendix A of the Moab RMP), which includes implementation of spatial and seasonal buffers to protect nesting raptors and their habitats.	Moab RMP SSS-32	No	Not a species protected by law so a lease notice does not apply	Develop a lease stipulation
Yellow-billed Cuckoo: • Avoid loss or disturbance of yellow-billed cuckoo habitat and manage yellow-billed cuckoo nesting and foraging habitat by applying the standard terms and conditions developed in consultation with the USFWS for oil and gas leasing and	Moab RMP SSS-33	Yes	Required by law	None

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
other surface-disturbing activities (see Standard Terms and Conditions [Lease Notices] which are Required to Protect Special Status Species and to Comply with the Endangered Species Act, Appendix A of the Moab RMP). These stipulations preclude surface-disturbing activities within 100 meters of yellow-billed cuckoo habitat within riparian areas from May 15 through July 20. • Compliance with BLM Riparian Policy will restrict surface disturbance within 100 meters of riparian habitat and will therefore protect nesting habitat for yellow-billed cuckoo				
California Condor: • Within potential habitat for the California Condor, surveys will be required prior to operations unless species occupancy and distribution information is complete and available. • Surface disturbing activities will not occur within 1.0 miles of nest sites during the breeding season of August 1 to November 30 or within 0.5 miles of established roosting sites (see Standard Terms and Conditions (Lease Notices) which are Required to Protect Special Status Species and to Comply with the Endangered Species Act, Appendix A of the Moab RMP). • No permanent infrastructure will be placed with 1.0 mile of nest sites and within 0.5 miles of established roosting sites.	Moab RMP SSS-35	Yes	Required by law	None
Threatened and Endangered species conservation measures and lease notices will be used for all surface-disturbing activities to comply with the Endangered Species Act, and the BLM Manual 6840, Special Status Species Management (Appendix B of the Monticello RMP). These species include California condor, Mexican spotted owl, Southwestern willow flycatcher, Yellow-billed cuckoo, Bonytail, Colorado pikeminnow, Humpback chub, and Razorback sucker. • Appendix B of the Monticello RMP includes stipulations applicable to Oil and Gas leasing and other surface disturbing activities regarding the 10 listed and candidate species. • The decisions for these species are found in Appendix B of the Monticello RMP.	Monticello RMP SSP-1	Yes	The decision is sufficient to protect T and E species	None

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
They should be spelled out unless they are identical to Moab and in that case just add Monticello RMP under Decision Source. Navajo sedge is not found within the Planning Area.				

4.13 VEGETATION

Table 4-13. Adequacy of Current Management Direction for Vegetation

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
Restoration and rehabilitation will use native seed-mixes wherever possible. Non-native species may be used as necessary for stabilization or to prevent invasion of noxious or invasive weed species.	Moab RMP VEG-5	No	Not specific	Consider a lease stipulation or BMP
Control noxious weed species and prevent the infestation and spread of invasive species. Develop cooperating agreements with other federal, state, local and private organizations to control invasive and noxious weed species.	Moab RMP VEG-8	No	Not specific	Consider a lease stipulation or BMP
Adaptive Drought Management: Establish criteria for restricting activities during drought (Appendix T of the Moab RMP for Drought Classification System) based on the following measures/parameters: Severe (D2): • No mineral restrictions. Extreme (D3): • No new surface-disturbing activities in areas with sensitive soils (subject to valid existing rights or actions associated with other valid permitted activities; see oil and gas Appendix A of the Moab RMP for definition of surface-disturbing activities). • Require additional erosion-control techniques/BMPs for surface-disturbing activities (e.g., hydromulching). Exceptional (D4): • No new surface-disturbing activities (subject to valid existing rights or actions associated with other valid permitted activities).	Moab RMP VEG-15	Yes	The decision is appropriate to protect vegetation during drought	None
Avoid or minimize to the extent possible the loss of sagebrush/steppe habitat from BLM-initiated or authorized actions. The BLM recommends	Moab RMP	No	Not specific	Consider a lease stipulation or

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
that loss of sagebrush/steppe habitat essential to wildlife (e.g., sage-grouse, mule deer, and sagebrush obligate species) be reclaimed or mitigated off-site.	VEG-16			BMP
Invasive and non-native weed species (as identified in Table 2-28, Invasive and Noxious Weeds of San Juan County) will be controlled, and the infestation and spread of new invasive species prevented through cooperative agreements and implementation of the principles in BLM weed management policies and action plans.	Monticello RMP VEG-5	No	Not specific	Consider a lease stipulation or BMP
Restoration/rehabilitation activities are required to use certified weed-free seed mixes, mulch, fill, etc.	Monticello RMP VEG-12	No	Not specific	Consider a BMP

4.14 VISUAL RESOURCE MANAGEMENT

Table 4-14. Adequacy of Current Management Direction for Visual Resource Management

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
Wild and Scenic River (WSR) segments recommended as suitable for Wild are designated as VRM Class I, Scenic segments are designated as VRM Class II, and Recreational segments are managed the same as the underlying VRM management class.	Moab RMP VRM-2	Yes	Visual resources along the Wild and Scenic Rivers are adequately protected.	None
Apply a no surface occupancy stipulation for oil and gas leasing and preclude other surface disturbing activities (Appendix A of the Moab RMP) in all areas designated as VRM Class I.	Moab RMP VRM-4	No	May require a more restrictive stipulation	Change lease stipulation
Apply a controlled surface use stipulation for oil and gas leasing and other surface-disturbing activities (Appendix A of the Moab RMP) to all areas designated as VRM Class II. This requires surface-disturbing activities to meet the objectives of VRM Class II.	Moab RMP VRM-5	No	May require a more restrictive stipulation	Change lease stipulation
Designated utility corridors within VRM Class II areas are designated as VRM Class III only for utility projects.	Moab RMP VRM-6	Yes	The decision is appropriate	None
Necessary road maintenance could occur	Moab	Yes	The decision is	None

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
regardless of VRM class.	RMP VRM-7		appropriate	
Public lands within the viewshed of Arches National Park are designated as VRM Class II.	Moab RMP VRM-8	No	May require a more restrictive stipulation	Change lease stipulation
Areas with high potential for development of oil and gas (Big Flat/Hatch Point) will be designated as VRM Class III with the exception of those portions of SRMAs and ACECs that have more stringent VRM classifications.	Moab RMP VRM-10	No	May require a more restrictive stipulation	Change lease stipulation
Manage the Shafer Basin portion of the Highway 279/Shafer Basin/Long Canyon ACEC as VRM Class I.	Moab RMP VRM-11	Yes	The decision is appropriate	None
Scenic driving corridors will be designated as VRM Class II within a specified viewshed not to exceed 0.5 mile from centerline. Apply a controlled surface use stipulation for oil and gas leasing and other surface-disturbing activities (Appendix A of the Moab RMP) within 0.5 mile of scenic driving corridors.	Moab RMP VRM-12	No	May require a more restrictive stipulation	Change lease stipulation
Manage the following areas with high-quality visual resources as VRM Class II (Map 37): • Gemini Bridges/Monitor and Merrimac/Poison Spider/Goldbar/ Corona Arch area • The Colorado and Green River corridors • The Colorado Riverway • Matt Martin Point • Areas bordering Arches National Park • Kane Creek • Hatch Wash • The rims of Canyon Rims • The Behind the Rocks ACECs • Long Canyon	Moab RMP VRM-13	Yes	The decision is appropriate	None
Apply a no surface occupancy stipulation for oil and gas leasing and preclude other surface disturbing activities (Appendix B of the Monticello RMP) in all areas designated as VRM Class I.	Monticello RMP Appendix B	No	May require a more restrictive stipulation	Change lease stipulation
Apply a controlled surface use stipulation for oil and gas leasing and other surface-disturbing activities (Appendix B of the Monticello RMP) to all areas designated as VRM Class II. This requires surface-	Monticello RMP Appendix B	No	May require a more restrictive stipulation	Change lease stipulation

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
disturbing activities to meet the objectives of VRM Class II.				
5,097 acres are managed as VRM Class I (Map 37). These areas include: ACECs: • Indian Creek WSRs: • Colorado River Suitable Segment 3	Monticello RMP VRM-1	Yes	The decision is appropriate	None
97,069 acres are managed as VRM Class II including but not limited to the following (Map 37): • Lavender Mesa • Shay Canyon • Colorado River Suitable Segment 2 Indian Creek SRMA from Indian Creek ACEC south to USFS boundary and Davis and Lavender Canyons • Lockhart Basin	Monticello RMP VRM-2	Yes	The decision is appropriate	None

4.15 WILDLIFE AND FISHERIES

Table 4-15. Adequacy of Current Management Direction for Wildlife and Fisheries

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
Migratory Birds: During nesting season for migratory birds (May 1 – July 31), avoid surface disturbing activities and vegetative-altering projects and broad-scale use of pesticides in identified occupied migratory bird habitat.	Moab RMPRMP WL-9	No	Needs to be specific to mineral actions	Lease stipulation
The BLM will approach compensatory mitigation on an “as appropriate” basis where it can be performed onsite, and on a voluntary basis where it is performed offsite, or, in accordance with current guidance.	Moab RMP WL-11	Yes	Allows for voluntary offsite mitigation	None
Raptors will be managed under the auspices of Best Management Practices (BMPs; Appendix R of the Moab RMP), which will include implementation of spatial and seasonal buffers. These BMPs implement the USFWS's Guidelines for Raptor Protection From Human and Land-use Disturbances, with modifications allowed as long as protection of nests is ensured. Seasonal and spatial buffers are also listed in Appendix A of the Moab RMP.	Moab RMP WL-18	No	Stipulations should be considered in place of BMPs	Lease stipulation

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
Cooperate with utility companies to prevent electrocution of raptors. Temporarily close areas (amount of time depends on the species) near raptor nest to rock climbers or other activities if the activity could result in nest abandonment.				
Bighorn Sheep Habitat Manage 9,278 acres along the rim of Hatch Point as part of the Lockhart Bighorn Sheep habitat area. Apply a timing limitation stipulation to oil and gas leases and other permitted uses, which will restrict surface-disturbing activities from April 1 through June 15 for lambing and from October 15 through December 15 for rutting (Appendix A of the Moab RMP).	Moab RMP WL-32	No	The habitat may require adjustment	Change lease stipulation
Pronghorn Habitat Protect pronghorn fawning habitat (71,693 acres) within Hatch Point by applying a timing limitation stipulation that will preclude surface-disturbing activities from May 1 to June 15	Moab RMP WL-24	No	The habitat may require adjustment and stipulations should be examined regarding protection of habitats	Change lease stipulation
Bighorn Sheep Habitat To protect lambing, rutting, and migration habitat (101,461 acres), apply a no surface occupancy stipulation for oil and gas leasing and preclude other surface disturbing activities Within migration corridors pipeline construction and geophysical exploration for oil and gas development will be allowed outside lambing and rutting periods from June 16 through October 14 and from December 15 through March 31, respectively.	Moab RMP WL-36	No	The habitat may require adjustment	Change lease stipulation
Deer and Elk Habitat Protect deer and/or elk crucial winter habitat (16,804 acres) by applying a timing limitation stipulation for oil and gas leasing as well as other surface-disturbing activities (Appendix A of the Moab RMP). (This includes 73,160 acres in WSAs, which are already closed to leasing.) This limitation will preclude surface-disturbing activities from November 15 through April 15.	Moab RMP WL-44	No	The habitat may require adjustment	Change lease stipulation
Migratory Birds During nesting season for migratory birds (May 1–July 30), avoid or minimize surface disturbing activities and vegetative-altering projects and broad-scale use of pesticides in identified occupied priority migratory bird	Monticello RMP FWL-2	No	Needs to be specific to mineral actions	Lease stipulation

Planning Decision	Decision Source	Is decision responsive to current issues?	Remarks (rationale)	Options for change
habitat.				
Raptors Raptor management will be guided by the use of Best Management Practices for Raptors and Their Associated Habitats in Utah (Utah BLM 2006, Appendix N of the Monticello RMP), utilizing seasonal and spatial buffers, as well as mitigation, to maintain and enhance raptor nesting and foraging habitat, while allowing other resource uses.	Monticello RMP FWL-8	Yes	Consider BMPs as lease stipulations	Lease stipulation
Bighorn Sheep Within bighorn sheep lambing and rutting areas (56,047 acres) apply a timing limitation stipulation where no surface disturbing activities or occupancy are allowed from April 1 through June 15 for lambing and from October 15 through December 15 for rutting.	Monticello RMP FWL-11	No	The habitat may require adjustment	Change lease stipulation
Off-site Mitigation The BLM will approach compensatory mitigation on an "as appropriate" basis where it can be performed on site, and on a voluntary basis where it is performed off-site, or, in accordance with current guidance.	Monticello RMP FWL-27	Yes	Allows for voluntary off-site mitigation	None
Pronghorn Fawning Area Within pronghorn fawning grounds (27,657 acres), apply a timing limitation stipulation where no surface-disturbing activities may occur from May 1 to June 15.	Monticello RMP FWL-31	No	The habitat may require adjustment	Change lease stipulation
Deer Winter Range Within deer winter range (64,042 acres), apply a timing limitation where no surface disturbing activities may occur from November 15 to April 15.	Monticello RMP FWL-33	No	The habitat may require adjustment	Change lease stipulation
Elk Winter Range Within elk winter range (1,701 acres), apply a timing limitation where no surface disturbing activities may occur from November 15 to April 15.	Monticello RMP FWL-34	No	The habitat may require adjustment	Change lease stipulation

CHAPTER 5—CONSISTENCY/COORDINATION WITH OTHER PLANS

5.1 LOCAL, STATE, FEDERAL MANAGEMENT PLANS

According to guidance found in the Federal Land Policy Management Act (FLPMA) (43 CFR 1610), the Moab Master Leasing Plan (MLP), as an amendment to the existing Resource Management Plans (RMPs), must be consistent with the purposes, policies, and programs of FLPMA and other federal laws and regulations related to public lands. If these other entities do not have officially approved or adopted resource-related plans, then the MLP must, to the extent practical, be consistent with those entities' officially approved and adopted resource-related policies and programs. This consistency will be accomplished so long as the MLP incorporates the policies, programs, and provisions of public land laws regulations. The following outlines the local, state, and federal management plans that may pertain to the Moab MLP. There are no applicable tribal plans which require coordination with the Moab MLP.

5.1.1 State of Utah

- Dead Horse Point State Park Resource Management Plan - 2007
- Plans of the Utah School and Institutional Trust Lands Administration (SITLA)
- Regional Plans of the Utah Department of Transportation (UDOT)
- State of Utah plans relating to water management, water quality, nonpoint source pollution, watershed management, wildlife management, and air quality.
- Utah's State Comprehensive Outdoor Recreation Plan (SCORP) - 2003

5.1.2 County Plans

- San Juan County, Utah: San Juan Master Plan (2008)
- Grand County, Utah: Grand County General Plan Update (2012)

5.1.3 Federal Plans

- Canyonlands National Park Natural Resource Management Plan
- Canyonlands National Park General Management Plans (NPS 1974, 2003, 2006)
- Canyonlands National Park Backcountry Management Plan (1995)
- General Management Plan and Development Concept Plan: Arches National Park (NPS 1989)
- BLM Price Field Offices RMP (2008)

5.2 COOPERATING AGENCIES

A cooperating agency is "an eligible governmental entity that has entered into a written agreement with the BLM establishing cooperating agency status in the planning and the National Environmental Policy Act (NEPA) process. The BLM and the cooperating agency will work together under the terms of the agreement. Cooperating agencies will participate in the various steps of the BLM's planning process as feasible, given the constraints of their resources and expertise" (43 CFR 1601.0-5 (e)). The BLM collaborates with cooperating agencies in identifying issues, collecting inventory data, formulating alternatives, and estimating effects of the alternatives. Table 5-1 shows those agencies who were invited to participate as cooperating agencies in the Moab MLP, and those who accepted the invitation.

Memorandums of Understanding (MOU) have been finalized with each of the agencies who accepted the invitation to participate.

Table 5-1. Cooperating Agencies

Agency	Divisions (as applicable)	Accepted
Counties		
Grand	County Council	Yes
San Juan	County Commission	Yes
State of Utah		
Office of the Governor	Public Lands Policy Coordination Office	Yes
Federal Agencies		
The National Park Service (NPS) (U.S. Department of Interior [DOI])	Southeast Utah Group	Yes

While the U.S. Environmental Protection Agency and the U.S. Fish and Wildlife Service are actively involved in the planning process, they are not formal cooperating agencies.

Table 5-2 contains a list of tribes specific to this planning effort.

Table 5-2. Native American Tribes Contacted for Consultation

Tribal Organization	
Hopi Indian Tribe	Navajo Nation
Pueblo of Acoma	Pueblo of Jemez
Pueblo of Laguna	Pueblo of Santa Clara
Pueblo of Zia	Pueblo of Zuni
Paiute Indian Tribe of Utah	Southern Ute Tribe
Uinta and Ouray Reservation	Ute Mountain Ute Tribe
White Mesa Ute Tribe	

To date, only the Hopi Indian Tribe has responded to the consultation letter sent by BLM on January 19, 2012. The Hopi accepted BLM's invitation to become involved in the MLP process. On April 18, 2012, a meeting between representatives of the Hopi Cultural Preservation Office and BLM staff was held at the Hopi Cultural Preservation Office in Kykotsmovi Village, Arizona. The purpose of the meeting was to discuss the MLP and any general issues and concerns.

A coordination meeting was held with the cooperating agencies on May 3, 2012. The meeting was attended by representatives from the State of Utah, Grand County, San Juan County, and the National Park Service. The purpose of the meeting was to inform the cooperating agencies about the MLP process, to explain their involvement in the process, and to present a schedule of milestones and events. The state and the counties questioned the necessity for a MLP since the Moab and Monticello Resource

Management Plans were just completed in 2008. They also expressed concerns about including potash in the MLP process and how this would substantially delay potash leasing and development.

A cooperating agency kickoff meeting and training was held on May 3, 2012. This kickoff meeting provided an opportunity to enhance coordination and share new information. The meeting was attended by several of the aforementioned agencies, including the State of Utah, Grand and San Juan Counties, and the National Park Service.

Additional opportunities for cooperation with other agencies will be sought throughout this planning process.

Two Socioeconomic Workshops were offered by the BLM to Grand County on June 27, 2012 and to San Juan County on June 28, 2012. The purpose of these workshops was to discuss the economic baseline data for the BLM for each of the counties. The workshops were attended by county elected officials, as well as by county staff and some members of the public. The information gained in the workshops will be used to inform the Socioeconomic Baseline Report that accompanies the Master Leasing Plan.

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CHAPTER 6—SPECIFIC MANDATES AND AUTHORITY

The foundation of public lands management is in the mandates and authorities provided in laws, regulations, and executive orders. BLM's planning process (as described in 43 CFR 1600) is authorized and mandated through two important laws: the Federal Land Policy and Management Act of 1976 and the National Environmental Policy Act of 1969 (NEPA). In addition to these acts, several other acts, Instruction Memorandums (IMs), Instruction Bulletins (IBs), manuals, and handbooks give direction and authority to the Bureau of Land Management (BLM). Following are some of the key documents that direct the management of public lands and resources specific to this planning process.

The Federal Land Policy and Management Act of 1976 (FLPMA) states that BLM "shall, with public involvement . . . develop, maintain, and when appropriate, revise land use plans" (43 U.S.C. 35 Section 1712 (a)). In addition to federal direction for planning, FLPMA declares the policy of the United States concerning the management of federally owned land administered by BLM. Key to this management policy is the direction that BLM "shall manage the public lands under principles of multiple use and sustained yield, in accordance with the [developed] land use plans" (43 U.S.C. 35 Section 1732 (a)). The commitment to multiple-use will not mean that all land will be open for all uses. Some uses may be excluded on some land to protect specific resource values or uses, as directed by FLPMA (43 U.S.C. 35 Sections 1712 (c) (3)). Any such exclusion, however, will be based on laws or regulations or be determined through a planning process subject to public involvement. In writing and revising LUPs, FLPMA also directs BLM to coordinate land use activities with the planning and management of other federal departments and agencies, state and local governments, and Indian tribes. This coordination, however, is limited "to the extent [the planning and management of other organizations remains] consistent with the laws governing the administration of the public lands" (43 U.S.C. 35 Section 1712 (c) (9)).

In the NEPA, the Congress directs "all agencies of the Federal Government . . . [to] . . . utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man's environment" (42 U.S.C. 55 Section 4332 (2A)). Because the development of a Master Leasing Plan (MLP) may cause impacts to the environment, NEPA regulations require the analysis and disclosure of potential environmental impacts in the form of an Environmental Impact Statement (EIS). The EIS will examine a range of alternatives, including a no action alternative, to resolve the issues in question. Alternatives should represent complete, but alternate means of satisfying the identified purpose and need of the EIS and of resolving the issues. The Moab MLP is being prepared using the best available information.

In addition to these acts, management of public land and resources is authorized and directed through several specific resource and resource use laws, regulations, and executive orders. The direction from these sources is refined and made department- and bureau-specific through agency documents such as IMs and IBs, and manuals and handbooks.

The Moab MLP is being developed as a result of IM 2010-117. This IM provides guidance on land use plan adequacy review and lease stipulation consistency, development of MLPs, and the lease sale parcel review process requirements. The Utah State Office developed an implementation plan in September 2010 that outlines the requirements in this IM, and identified areas meeting the criteria for MLP development.

Development of an MLP involves a stepped-down leasing analysis, where impacts of leasing and potential development are analyzed in greater detail than in an RMP. Key issues, such as protection of air

quality, watersheds, wilderness, wildlife, and nearby land uses are identified, as are appropriate leasing and higher-level development mitigation measures to protect the environment. The leasing process established in the IM will create more certainty and predictability, protect multiple-use values when the BLM makes leasing decisions, and provide for consideration of natural and cultural resources as well as meaningful public involvement.

The guidance presented in IM 2010-117 promotes a proactive approach to planning for oil and gas development. Generally, BLM uses RMPs to make oil and gas planning decisions, such as areas closed to leasing, open to leasing, or open to leasing with major or moderate constraints (lease stipulations) based on known resource values. However, additional planning and analysis can be necessary prior to oil and gas leasing because of changing circumstances, updated policies, and new information. Guidance in IM 2010-117 enables BLM to re-evaluate its leasing decisions in light of such changing circumstances.

Other additional documents that that may be utilized in this planning process which direct the management of public land and resources are identified in the tables below. The tables provide a fairly comprehensive list, by program, of the laws, regulations and policies guiding each resource. The lists are not exhaustive. IMs and IBs have not been included.

Table 6-1. Federal Laws and Statutes

Federal Laws and Statutes	Year
American Indian Religious Freedom Act of 1978, as amended, (42 U.S.C. 1996 et seq.)	1980
Antiquities Act of 1906, as amended, (16 U.S.C. 431-433) June 8, 1906	1978
Archeological and Historic Preservation Act of 1974, P.L. 86-523 (16 U.S.C. 469-469c-1; 74 Stat. 220, 88 Stat. 174)	1960
Archaeological and Paleontological Salvage for Federal Highway Projects (23 U.S.C. 305; 72 Stat. 913 (1958), 74 Stat. 525 (1960))	1974
Archeological Resources Protection Act (ARPA) of 1979, as amended, (42 U.S.C 1996 et seq., 16 U.S.C. 470aa)	1979
Clean Air Act of 1990, as amended, (42 U.S.C. 7418 et seq.)	1980
Clean Water Act of 1987, as amended, (33 U.S.C. 1251, 1977)	1990
Endangered Species Act (ESA) of 1973, as amended, (16 U.S.C. 1531 et seq.)	1987
Energy Policy and Conservation Act Reauthorization of 2000, as amended, P.L. 106-469	1973
Energy Policy and Conservation Act Report, P.L. 109-58	2000
Federal Agriculture Improvement and Reform Act of 1996, P.L. 104-127 (Repealed Colorado River Basin Salinity Control Act)	2005
Federal Land Policy and Management Act of 1976 (FLPMA), as amended, P.L. 94-579 (43 U.S.C. 1701-1782; 90 Stat. 2743; Sec 102, 103, 201, 202(c)(3), 505, and 03(a)(b)(c))	1947
Federal Land Recreation Enhancement Act, P.L. 108-447	1976
Federal Water Project Recreation Act (16 U.S.C. 4601-4612, et seq.)	1974
Federal Property Law of 1949	1965
Federal Water Pollution Control Act of 1948, as amended, (33 U.S.C. 1323 et seq.)	1949
Fish and Wildlife Conservation Act of 1980	1948
General Mining Law of 1872, as amended, (30 U.S.C. 21 et seq.)	1996
Historic Sites Act of 1935 (16 U.S.C. 461 et seq.; 49 Stat. 666)	2003

Federal Laws and Statutes	Year
Land and Water Conservation Fund Act of 1965, as amended, P.L. 88-578 (16 U.S.C. 4601(1-6a)-4)	1935
Materials Act of July 31, 1947 and 1955	1965
Migratory Bird Conservation Act of 1929, as amended, (16 U.S.C. 715 et seq.)	1947, 1955
Mineral Leasing Act of 1920, as amended, (30 U.S.C. 181 et seq.)	1929
Mining and Mineral Policy Act of 1970, as amended, (30 U.S.C. 21(a))	1920
Mining Law of 1872	1970
National Environmental Policy Act of 1969, P.L. 91-190 (42 U.S.C. 4321-47; 83 Stat. 852; Sec 101)	1872
National Historic Preservation Act (NHPA) of 1966, as amended, (16 U.S.C. 470 et seq.)	1969
National Parks and Recreation Act of 1978 (16 U.S.C. 1242-1243)	1966
National Trails System Act (16 U.S.C. 1241-1249)	1978
National Wild and Scenic Rivers Act of 1968, as amended, P.L. 90—542 (16 U.S.C. 1271-1287)	1968
Native American Graves Protection and Repatriation Act of 1990, as amended, (25 U.S.C. 3001 et seq.)	1968
Naval Petroleum Reserves Production Act of 1976	1990
Onshore Oil and Gas Leasing Reform Act of 1987, (30 U.S.C. 181 et seq.)	2004
Oregon and California Grant Lands Act of 1937, P.L. 75—876 (43 U.S.C. 1181a, et seq.)	1987
Plant Protection Act of 2000, P.L. 106-224 (includes management of undesirable plants on federal lands)	1937
Public Rangelands Improvement Act of 1978, P.L. 95-514 (43 U.S.C. 1901 et seq.; 92 Stat. 1803) October 25, 1978.	2000
Recreation and Public Purposes Act of 1926, as amended, (43 U.S.C. 869 et seq.)	1978
Resource Conservation and Recovery Act (RCRA)	1926
Safe Drinking Water Act, as amended 1977, P.L. 95-190 (42 U.S.C. 201 et seq.)	1976
Sikes Act of 1974 (16 U.S.C. 1531 et seq.)	1974, 1977
Standards Rivers and Harbors Act, (U.S.C 1899, Sec 10)	1974
Surface Mining Control and Reclamation Act of 1977, (30 U.S.C. 1201 et seq.)	1899
Taylor Grazing Act of 1934, as amended, P.L. 73-482 (43 U.S.C. 315; 48 Stat. 1269) June 28, 1934.	1977
Water Resources Planning Act of 1965, as amended, P.L. 89-80 (42 U.S.C. 1962 et seq.; 69 Stat. 244) July 22, 1965.	1934
Watershed Protection and Flood Control Act, as amended, P.L. 83-566 (16 U.S.C. 1001 et seq.; 68 Stat. 666) August 4, 1954.	1965
Wild and Scenic Rivers Act of 1968, as amended, (16 U.S.C. 1271 et seq.)	1971
Wilderness Act of 1964, as amended, P.L. 88-577 (16 U.S.C. 1131 et seq.; Sec 2(c))	1968

Table 6-2. Executive Orders/Secretarial Orders

Executive Orders/Secretarial Orders	Year
Executive Order: Public Water Reserve 107 signed by Calvin Coolidge in 1926, and having a priority date of April 17, 1926 springs and water holes.	1926
Executive Order 11644 (Off-Road Vehicles)	1972
Executive Order 11988 (Floodplain Management; Use of Off-Road Vehicles on Public Lands (37 FR 2877)), Feb 9, 1977	1977
Executive Order 11989 (Off-Road Vehicles on Public Lands (42 FR 26959)) May 25, 1977	1977
Executive Order 11990 (Protection of Wetlands)	1977
Executive Order 12088 (Federal Compliance with Applicable Pollution Control)	1978
Executive Order 12144 (Environmental Effects Abroad of Major Federal Actions)	1979
Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations)	1994
Executive Order 13007 (Indian Sacred Sites)	1996
Executive Order 13084 (Consultation and Coordination with Indian Tribal Governments)	1998
Executive Order 13175 (Consultation and Coordination with Indian Tribal)	2000
Executive Order 13112 (Invasive Species)	1999
Executive Order 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds)	2001
Executive Order 13212 (Actions to Expedite Energy Related Projects)	2003
Secretarial Order 3175 (Departmental Responsibilities for Indian Trust Resources (incorporated into the Departmental Manual at 512 DM 2)	1994
Secretarial Order 3206 (American Indian Tribal Rights, Federal Tribal Trust responsibilities, and the Endangered Species Act)	1997

Table 6-3. Handbooks and Manuals

BLM Handbooks and Manuals	Title	Year
BLM Handbook H843-1	Visual Resource Contrast Rating, January 17, 1986	1986
BLM Handbook H1283 - 1	Data Administration and Management	2006
BLM Handbook H1601-1	Land Use Planning Handbook	2005
BLM Handbook H1703-3	Natural Resources Damage Assessment and Restoration	2008
BLM Handbook H1703-4	Project Management Handbook (Hazmat)	2008
BLM Handbook H1703-5	Environmental and Disposal Liabilities	2010
BLM Handbook H1740-2	Integrated Vegetation Management	2008
BLM Handbook H-1790-1	National Environmental Policy Act	2008
BLM Handbook H-2100-1	Acquisitions	2002
BLM Handbook H-2101-4	Pre-acquisition Environmental Site Assessments	2000
BLM Handbook H-2200-1	Land Exchange Handbook	2005
BLM Handbook H-2930-1	Recreation Permit Administration	2006

BLM Handbooks and Manuals	Title	Year
BLM Handbook H-3070-2	Economic Evaluation of Oil and Gas Properties	
BLM Handbook H-3101-1	Issuance of Leases	
BLM Handbook H-3107-1	Continuation, Extension, or Renewal of Leases	
BLM Handbook H-3109-1	Leasing Under Special Acts	
BLM Handbook H-3110-1	Noncompetitive Leases	
BLM Handbook H-3150-1	Onshore Oil and Gas Geophysical Exploration Surface Management Requirements	2007
BLM Handbook H-3203-1	Leasing Terms	
BLM Handbook H-3600-1	Mineral Materials Disposal Handbook	2002
BLM Handbook H-3860-1	Mineral Patent Applications Processing	19914
BLM Handbook H-3870-1	Adverse Claims, Protests, Contests, and Appeals	1994
BLM Handbook H-3890-3	Validity Mineral Reports	2003
BLM Handbook H-4180-1	Implementation of the Taylor Grazing Act, Federal land Policy and Management Act, and the Public Rangelands Act	2001
BLM Handbook H-8120-1	General Procedural Guidance for Native American Consultation	2004
BLM Handbook H-8362-1	Working With Cooperating Associations	2003
BLM Handbook H-9113-1	Roads Design	2011
BLM Handbook H-9235-1	Mineral Material Trespass Prevention and Abatement	2003
BLM Handbook H-8270-1	General Procedural Guidance for Paleontological Resource Management	1998
BLM Handbook H-8550-1	Interim Management Policy for Lands under Wilderness Review	1995
BLM Manual 1601	Land Use Planning	2005
BLM Manual 1613	Areas of Critical Environmental Concern	1988
BLM Manual 1616	Prescribed Resource Management Planning Actions, April 6, 1984	1984
BLM Manual 1620	VRM Supplemental Program Guidance, November 14, 1986	1986
BLM Manual 1621	Supplemental Guidance for Environmental Resource, November 14, 1986	1986
BLM Manual 1624	Planning for Fluid Mineral Resources	
BLM Manual 1626	Travel and Transportation Manual (Public)	2011
H-1703-4	Project Management	
BLM Manual 1790	National Environmental Policy Act	2008
BLM Manual 3031	Energy and Mineral Resource Assessment	1985
BLM Manual 3060	Mineral Reports Preparation and Review	1994
BLM Manual 3600	Mineral Material Disposal	2002
BLM Manual 4180	Rangeland Health Standards	2001

BLM Handbooks and Manuals	Title	Year
BLM Manual 6840	Special Status Species Management	2001
BLM Manual 7240	Water Quality (USDI 1978)	1978
BLM Manual 7250	Water Rights (USDI 1984)	1984
BLM Manual 8120	Protecting Cultural Resources	2004
BLM Manual 8160	Native American Coordination and Consultation	1990
BLM Manual 8270	Paleontological Resource Management	1998
BLM Manual 8300	Recreation Management	
BLM Manual 8351	Wild and Scenic Rivers – Policy and Program Direction for Identification, Evaluation, and Management	1993
BLM Manual 8400	Visual Resource Management	1984
BLM Manual 8431	Visual Resource Contrast Rating	1986
BLM Manual 9211	Fire Planning	2006
BLM Manual 9400	Visual Resource Management	2008

Table 6-4. Applicable Utah State Laws, Regulations and Plans

Laws, Regulations, and Plans
Utah Code, Title 19, Chapter 2, Air Conservation Act
Utah Air Conservation Rule R307-204, Smoke Management
Utah Air Conservation Rule R307-406, Visibility
Utah Air Conservation Rule R307-401-6 (Conditions for Ordering and Approval Order)
Utah Air Conservation Rule R307-405-4 (PSD Increments and Ceilings)
Utah Air Conservation Rule R307-405-6 (PSD Areas–New Sources and Modifications)
Utah Air Conservation Rule R307-410-3 (Modeling of Criteria Pollutants in Attainment Areas)
Utah Air Conservation Rule R307-410-4 (Documentation of Ambient Air Impacts for Hazardous Air Pollutants)
Utah Air Conservation Rule R307-205-3 (Emission Standards for Fugitive Dust)
Utah Air Conservation Rule R307-205-4 (Emission Standards for Roads)
Utah Code, Title 73, Water and Irrigation
Utah Administrative Rule R309-605. Drinking Water Source Protection for Ground-Water Sources
Utah Administrative Rule R317-2. Standards of Quality for Waters of the State
Utah Administrative Rule R317-6. Ground Water Quality Protection
Utah Administrative Rule R317-8. Utah Pollution Discharge Elimination System (UPDES)
Utah Nonpoint Source Management Plan (October 2000)
Utah Nonpoint Source Management Plan for Hydrologic Modifications (March 1995)
Utah State Law 63-38d-401 (State Land Use Management Plans Amendments)
Utah Code Sections 63-38d-401 (establishes State planning policies in relation to management of Federal land)
State Comprehensive Outdoor Recreation Plan – 2003

Laws, Regulations, and Plans
Strategic Management Plan for Sage-Grouse – 2002
The Utah Noxious Weed Act
Utah Seed Act (Utah Code Annotated, Title 4, Chapter 16)
Utah Strategic Riparian Plan

Numerous Instruction Memorandums, Information Bulletins, Manual Sections, handbooks, and Technical Notes supplement and provide additional guidance to the BLM. No attempt has been made to list this guidance in this document.

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CHAPTER 7—SUMMARY OF SCOPING REPORT

On March 5, 2012, the Bureau of Land Management (BLM) Moab and Monticello Field Offices initiated a planning process to revise its land use plans with the publication of a Notice of Intent. As part of this process, opportunities for public input were created through a scoping process. The purpose of scoping, as required by National Environmental Planning Act (NEPA), is to determine the scope and significance of issues related to a proposed action such as the development and implementation of a new RMP (40 CFR 1501.7). These issues assist the BLM in the development of alternatives that will be evaluated in the EIS and will ultimately guide the development of the planning process. Scoping also provides the public an opportunity to learn about the management of public lands and helps BLM identify the public's concerns regarding resources within the decision area. Formal scoping closed on May 7, 2012.

Three public scoping meetings were held over a one-week period in March and April 2012. The meetings were conducted in an open house type format with attendees coming and going throughout a two hour period. Several informational posters and maps regarding specific resource uses and issues were displayed at the meetings. These posters and maps served as a starting point for attendees to frame comments and raise issues with the resource specialists, and helped participants to provide feedback and comments on specific policies and issues. Additionally, BLM resource specialists from a number of resource area disciplines were available to answer questions and provide additional information on these and other specific issues throughout the meeting.

The total registered attendance for all three scoping meetings was 100 people. Although the meetings were well attended and comment forms were provided, most commenters chose not to fill out comment forms at the meetings. Only 4 comments were received at the meetings. Fourteen additional comments forms handed out at the meetings were delivered to BLM later.

Throughout the scoping period, 181 individuals, agencies, and groups provided comments concerning the future management of the Planning Area. Analysis of these comments resulted in the identification of 372 unique substantive comments.

The following is a summary of the issues compiled during the analysis of the scoping report.

7.1 AIR RESOURCES

1) How would the MLP address emissions and pollutants affecting air quality resulting from oil and gas and potash development?
2) Would the MLP process require quantitative modeling to determine impacts to air quality and/or air quality related values (AQRVs)?
3) What mitigation measures and design features are necessary to address potential impacts to air quality or AQRV?
4) How would the MLP address cumulative impacts on air quality resources (including dust generation) that occurred from oil and gas and potash development?
5) How would the MLP address fugitive dust and dust suppression associated with mineral operations?
6) How would the MLP address impacts to air quality (including the Class I areas of Arches and Canyonlands National Parks), AQRVs, and compliance with the NAAQS?
7) What management actions in the MLP are required to address emission standards or limitations, BMPs, and control technologies?

7.2 CLIMATE CHANGE

1) What design features and technologies are necessary to minimize contributions to climate change?
2) Would the MLP address contributions from fugitive dust on early snowmelt?
3) How would the MLP address GHG emissions and their contributions to climate change including secondary effects on soil health, vegetation growth, wildlife, and water availability?
4) What measures are necessary to reduce GHG emissions?

7.3 CULTURAL/PALEONTOLOGY RESOURCES

1) How would the MLP provide protection for discovered and undiscovered paleontological and cultural resources?
2) What are the potential direct and indirect impacts to cultural resources resulting from roads built for extraction activities?
3) How would the MLP address the protection of Old Spanish Trail segments (Blue Hills and Moab Trail Segments) located within the Planning Area and the viewshed of these segments?
4) Where would prehistoric rock art and historic features require protection from fugitive dust?

7.4 FISH AND WILDLIFE/SPECIAL STATUS SPECIES

1) How would the MLP address impacts to wildlife, such as increased noise, traffic, and surface disturbance?
2) What lease stipulations and BMPs for oil, gas, and potash leasing are to protect fish and wildlife habitats found within the MLP area?
3) How would the MLP address disruption of migration corridors?
4) How would the MLP protect special status species?
5) How would the MLP address impacts to migratory birds and their habitats?
6) What BMPs are necessary to protect migratory birds from contact with hazardous materials associated with mineral development?
7) What leasing stipulations are needed to protect deer, elk, bighorn sheep, and pronghorn?
8) How would the MLP address habitat fragmentation?
9) What protections are necessary to protect raptors?
10) How would the MLP provide protections to areas such as springs, riparian areas, and wetlands that provide habitat to fish and wildlife species?
11) How would the MLP incorporate protections for Threatened and Endangered species as specified by the US Fish and Wildlife Service?
12) What lease stipulations are necessary to protect the 100 year floodplain to the Colorado and Green rivers which constitutes designated critical habitat for 4 federally endangered fish?
13) Would the MLP address pipeline shut-off valves for designated critical habitat for T&E species?
14) What impacts to fish habitats would result from water depletions due to mineral development?
15) How would the MLP address updated wildlife inventories?
16) How would the MLP address wildlife displacement including secondary impacts from visual, auditory, and fugitive dust?
17) How would the MLP address impacts to birds from powerline construction?
18) What surveys are needed for protection of wildlife species prior to mineral activities?
19) What design criteria, monitoring, and mitigation are necessary to provide protection to fish and wildlife habitats?

7.5 LANDS AND REALTY

1) How would the MLP address potential impacts to adjacent land owners resulting from mineral development?
2) How would leasing decisions in the MLP affect mineral leasing and development of state lands and private inholding?

7.6 MINERALS

1) What areas would be available for mineral development and what restrictions would be imposed to protect resource values and the recreation economy?
2) Where should the MLP establish corridors for roads, pipelines, and transmission lines in order to reduce impacts to natural resources?
3) What restrictions are necessary for the transportation of minerals to protect other users of public lands?
4) What restrictions on mineral development are necessary to prevent rock falls along cliff faces which impose a public safety hazard?
5) How would the MLP result in reducing the impacts of mineral leasing and development to air quality, water quality, wildlife habitat, viewsheds, and recreational opportunities?
6) What BMPs are needed to reduce impacts from mineral development such as noise, lights, dust, and pollution?
7) What BMPs are needed to protect birds from the impacts of potash evaporation ponds and pits?
8) How would the MLP address subsidence associated with underground solution mining operations?

7.7 RECREATION

1) How would the MLP reduce impacts to recreation use and visitor experience resulting from mineral activity and development such as noise, visual impacts, and emissions?
2) What restrictions are necessary to protect viewsheds associated with recreation experiences?
3) How would the MLP protect high use recreation opportunities and assets that occur on roads, trails, and sites that support hiking, biking, OHVs, camping, equestrian, and rock climbing from mineral development?
4) How would the MLP protect the non-motorized recreation focus areas designated in the Moab RMP?
5) How would the MLP protect commercially marketed recreation assets such as Jeep Safari routes and non-motorized trails from mineral development?

7.8 SOCIOECONOMICS

1) How would the MLP consider the economic sustainability of recreation and tourism as compared to mineral development?
2) How would the MLP consider the social impacts that mineral development has on the demographics and social institutions of affected communities?
3) How would the MLP address the health and safety of surrounding local populations and recreationists?
4) How would the MLP address environmental justice?
5) How would the MLP address non-market values as well as ecosystem services such as visual and air quality and water resources?
6) How would the MLP address potential economic impacts directly related to both mineral development and recreation activities, such as employment and labor income, pay levels, rents and royalties, and fiscal (severance and property taxes) benefits to state and local governments?

7) Would the MLP address the potential impacts associated with mineral development to the local communities and population changes, such as housing, demographics, and local vs. non-resident labor?
8) How would the MLP address the economic impact of increased mineral development on the recreation economy in general and on the commercial recreation sector in particular?

7.9 SPECIAL DESIGNATIONS

1) What restrictions or stipulations are necessary to protect special designation areas (ACECs, Wild and Scenic Rivers, and National Historic Trails)?

7.10 VEGETATION/FORESTRY/RIPARIAN

1) What protective measures for vegetation are necessary such as reclamation, soil stockpiling, interim seeding, vegetation salvaging, and soil stabilization?
2) How would the MLP address the control of noxious weeds and invasive species?
3) How would the MLP protect wetlands, riparian areas, and seeps/springs?
4) Would a monitoring program be implemented to ensure that reclamation efforts are successful?
5) What restrictions are necessary to protect the Isley milkvetch and the Cisco milkvetch (sensitive plant species proposed for T and E listing) from mineral development?

7.11 VISUAL RESOURCE MANAGEMENT/NOISE

1) How would the MLP protect sensitive visual resources including economically valuable assets such as recreation sites and roads; hiking, bicycle, and equestrian trails; scenic overlooks; Scenic Byways; river corridors; and lands with special designations?
2) What provisions are necessary to protect night skies and distant views?
3) How would the MLP protect important viewsheds from national and state parks?
4) What BMPs and design features such as screening, lighting, paint color, and hiding of mineral development facilities are needed to maintain the visual quality of the area?
5) What restrictions are necessary to protect high use recreation areas and residential areas from the impacts of noise associated with mineral development?
6) How would the MLP address residential viewsheds?
7) Would the MLP utilize an updated visual resource inventory?

7.12 WATER AND SOIL RESOURCES

1) What mineral leasing stipulations are necessary in order to protect municipal watersheds, aquifers, water supplies to national parks and other users, wetlands, springs, seeps, rivers, and riparian areas?
2) How would the MLP identify and address major, shallow, and sensitive aquifers, groundwater recharge areas, and potential underground sources of drinking water?
3) How would the MLP address Sole Source Aquifers, Drinking Water Source Protection Zones, and Municipal Watersheds?
4) How would the MLP address water uses such as surface water and groundwater use including the location and source identification of agricultural, domestic, and public water supply wells, springs, or surface water intakes.
5) How would the MLP identify and address surface water quality and impaired or threatened water body segments?
6) How would the MLP disclose the water needs of projected development?
7) Would the MLP require a water management plan and water monitoring plan for mineral projects to protect nearby water uses?

8) How would the MLP address impacts to surface and groundwater from waste management, solution mining, oil and gas well drilling?
9) How would the MLP address the effect of sedimentation from mineral development on surface water quality?
10) How would the MLP impose stipulations to avoid and mitigate potential significant impacts to water resources?
11) What BMPs are needed to protect surface and groundwater resources?
12) How should the MLP address soils, sensitive soils, biological soil crusts, and components of their health?
13) How would the MLP address soil erosion and the potential impacts to wildlife from mineral development?
14) What stipulations are necessary to protect steep slopes?
15) How would the MLP address secondary impacts to fish and wildlife from water usage associated with mineral development?
16) What BMPs are needed to protect stream crossings and ephemeral washes?

7.13 WILDERNESS/WSAS/WILDERNESS CHARACTERISTICS

1) What management actions and/or stipulations are needed to protect lands with wilderness characteristics from mineral development?

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CHAPTER 8—LIST OF PREPARERS

Table 8-1 lists those primarily responsible for preparing this AMS and presents their qualifications.

Table 8-1. List of Preparers

Name	Education	Project Role
Bureau of Land Management		
Brent Northrup	B.S., Geology, University of Utah	Project Manager
Ann Marie Aubry	B.S. Geology, Northern Arizona University,	Soil, Water, Riparian Resources, Floodplains (Moab)
Jed Carling	B.S., Rangeland Resources, Utah State University.	Floodplains, Wetlands/Riparian Resources, Invasive Species/Noxious Weeds, Vegetation (Monticello)
Rebecca Doolittle	B.S., Geology, Western Washington University	Mineral Resources (Moab)
Leonard Herr	B.S. Natural Resources, Humboldt State University.	Air Resources
Don Montoya	B.S. Anthropology, Brigham Young University M.A. Anthropology, Brigham Young University Graduate Certificate, Museum Studies, Brigham Young University	Cultural Resources
Aron King	B.S, Anthropology, University of Oregon	Cultural Resources
Eric Jones	B.S. Geological Engineering, South Dakota School of Mines and Technology	Mineral Resources
Ted McDougall	B.S., Geology, Utah State University	Mineral Resources (Monticello)
Marie McGann		Mineral Resources
Laird Naylor	B.S. Biology, Botany, Southern Utah University M.S. Quaternary Studies (Archaeology, Quaternary Geology, Paleoecology), Northern Arizona University	Cultural Resources
Todd Parker	B.A., Environmental Education, Prescott College	ACECs, Wild and Scenic Rivers, Recreation, Visual Resources, Wilderness, Wilderness Characteristics (Monticello)
Brian Quigley	B.S. Recreation Management, Utah State University	Monticello Oversight
Pam Riddle	B.S., Biology, Colorado Mesa University B.S., Environmental Science, Colorado Mesa University	Wildlife, Migratory Birds, T&E Species, Utah BLM Sensitive Species (Moab)
Amanda Scott	B.S. Wildlife Biology, University of Wyoming M.S. Rangeland Management, University of Wyoming	Wildlife, Migratory Birds, T&E Species, Utah BLM Sensitive Species (Monticello)
Katie Stevens	B.A., History, Loyola University Chicago,	QA/QC, ACECs, Recreation, Wild

Name	Education	Project Role
	M.A., English Education, Northeastern Illinois University Ph.D., Educational Psychology, University of Illinois at Urbana-Champaign	and Scenic Rivers, Visual Resources
Bill Stevens	B.A., History, Loyola University Chicago M.A., History, University of Toronto M.B.A., Accounting, University of Chicago Ph.D., Accountancy, University of Illinois at Urbana-Champaign	Socioeconomics, Wilderness, Areas with Wilderness Characteristics, Environmental Justice
Doug Wight	B.S., Forestry, Utah State University M.S., Forestry, Utah State University	GIS
Booz Allen Hamilton		
Erik Anderson	B.S., Civil and Environmental Engineering, Utah State University M.S., Environmental Policy and Management, University of Denver	Project Manager and Minerals Specialist
Lloyd Tabing	B.S., Urban Planning, University of Utah B.S., Natural Resource Management, University of Utah M.S., Environmental Planning, University of Utah University of Utah	Special Designations, Recreation, Visual Resources Specialists
Russell Franklin	B.S., Wildlife Sciences, Utah State University. M.S Natural Resource Management, (in progress), Utah State University	Fish and Wildlife, Special Status Species, Vegetation, Riparian Specialist
Tymeri Schleicher	B.S., Environmental Science, Creighton University M.S., Environmental Science, Indiana University MPA Public Affairs (Natural Resources), Indiana University	Cultural Resources, Tribal Interests, Paleontology, Water and Soils, Minerals Specialists
Mike Sumner	B.S., Recreation Resource Management, Utah State University	Public Outreach, Document preparation
Richard Pinkham	B.A., Geography, Dartmouth College M.S., Natural Resources Policy/Resource Economics, Cornell University	Socioeconomics Analyst

CHAPTER 9—ACRONYMS AND GLOSSARY

9.1 ACRONYMS

ACEC	Areas of Critical Environmental Concern
AIRFA	American Indian Religious Freedom Act of 1978
AMS	Analysis of the Management Situation
ANC	Acid neutralizing capacity
BCC	Birds of Conservation Concern
BLM	Bureau of Land Management
CAA	Clean Air Act
CASTNet	Clean Air Status and Trends network
CCC	Civilian Conservation Corps
CFR	Code of Federal Regulations
CH_4	Methane
CO	Carbon monoxide
CO_2	Carbon dioxide
DOI	Department of the Interior
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ERMA	Extensive Recreation Management Area
ESA	Endangered Species Act
FAR	Functioning at Risk
FLPMA	Federal Land Policy and Management Act
GHG	Greenhouse gases
H_2S	Hydrogen sulfide
HAP	Hazardous air pollutants
HNO_3	Nitric acid
IM	Instruction Memorandum
IMPROVE	Interagency Monitoring of Protected Visual Environments
IPCC	Intergovernmental Panel on Climate Change
KPLA	Known Potash Leasing Areas
LWWC	Lands with Wilderness Characteristics
MLP	Master Leasing Plan
MSO	Mexican Spotted Owl
N_2O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act of 1990
NAS	National Academy of Sciences
NF	Non-Functioning
NH_4^{++}	Ammonium
NO_2	Nitrogen dioxide
NO3	Nitrate
NRHP	National Register of Historic Places
NWSRS	National Wild and Scenic Rivers System
O_3	Ozone
OHV	Off-Highway Vehicle
ORV	Outstandingly Remarkable Value
Pb	Lead

PDSI	Palmer Drought Severity Index
PFC	Proper Functioning Condition
PFYC	Potential Fossil Yield Classification
PIF	Partners in Flight Species of Concern
PM10, PM2.5	Particulate Matter
PSD	Prevention of Significant Deterioration
RAMP	Recreation Area Management Plans
RMP	Resource Management Plan
RMZ	Recreation Management Zones
SITLA	Utah School and Institutional Trust Land Administration
SO_2	Sulfur Dioxide
SO_4	Sulfate
SPC	State Wildlife Species of Concern
SRMA	Special Recreation Management Areas
SS	Sensitive Species
SSS	Special Status Species
TCP	Traditional Cultural Properties
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Load study
UDWR	Utah Division of Water Resources
UGS	Utah Geological Survey
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Service
Utah DEQ	Utah Department of Environmental Quality
VOCs	Volatile Organic Compounds
VRI	Visual Resource Inventory
VRM	Visual Resource Management
WSA	Wilderness Study Area
WSRA	Wild and Scenic Rivers Act of 1968

9.2 GLOSSARY

Activity Plan: Site-specific plan which precedes actual development. This is the most detailed level of BLM planning.

All-Terrain Vehicle (ATV): A wheeled or tracked vehicle, other than a snowmobile or work vehicle, designed primarily for recreational use or for the transportation of property or equipment exclusively on undeveloped road rights of way, open country or other unprepared surfaces.

Allotment: An area of land where one or more livestock operators graze their livestock. Allotments generally consist of BLM lands but may also include other federally managed, state owned, and private lands. An allotment may include one or more separate pastures. Livestock numbers and periods of use are specified for each allotment.

Allotment Categorization: Grazing allotments and rangeland areas used for livestock grazing are assigned to an allotment category during resource management planning. Allotment categorization is used to establish priorities for distributing available funds and personnel during plan implementation to achieve cost-effective improvement of rangeland resources. Categorization is also used to organize allotments into similar groups for purposes of developing multiple use prescriptions, analyzing site-specific and cumulative impacts, and determining trade-offs.

Animal Unit Month (AUM): A standardized measurement of the amount of forage necessary for the sustenance of one cow unit or its equivalent for 1 month. Approximately 800 pounds of forage.

Area of Critical Environmental Concern (ACEC): Areas within the public lands where special management attention is required to: (1) protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or (2) protect life and safety from natural hazards.

Authorized Officer: The federal employee who has the delegated authority to make a specific decision.

Avoidance Areas: Areas with sensitive resource values where rights-of-way, leases, and easements would be strongly discouraged. Authorization made in avoidance areas would have to be compatible with the purpose for which the area was designated and not is otherwise feasible on lands outside the avoidance area.

Best Management Practices (BMPs): A suite of techniques that guide, or may be applied to, management actions to aid in achieving desired outcomes. Best management practices are often developed in conjunction with land use plans, but they are not considered a land use plan decision unless the land use plan specifies that they are mandatory. They may be updated or modified without a plan amendment if they are not mandatory.

Big Game: Large species of wildlife that are hunted, such as elk, deer, bighorn sheep, and pronghorn antelope.

Browse: To browse (verb) is to graze; also, browse (noun) is the tender shoots, twigs, and leaves and shrubs often used as food by livestock and wildlife.

Candidate Species: Any species included in the Federal Register notice of review that are being considered for listing as threatened or endangered by the U.S. Fish and Wildlife Service.

Casual Use: Mining activities that only negligibly disturb federal lands and resources. Casual use generally includes the collecting of geochemical, rock, soil, or mineral specimens using hand tools, hand panning, and nonmotorized sluicing. It also generally includes use of metal detectors, gold spears, and other battery-operated devices for sensing the presence of minerals, and hand battery-operated dry washers. Casual use does not include use of mechanized earth-moving equipment, truck-mounted drilling equipment, suction dredges, motorized vehicles in areas designated as closed to off-road vehicles, chemicals, or explosives. It also does not include occupancy or operations where the cumulative effects of the activities result in more than negligible disturbance.

Closed: Generally denotes that an area is not available for a particular use or uses; refer to specific definitions found in law, regulations, or policy guidance for application to individual programs.

Code of Federal Regulations (CFR): The official, legal tabulation or regulations directing federal government activities.

Collaboration: A cooperative process in which interested parties, often with widely varied interests, work together to seek solutions with broad support for managing public and other lands. This may or may not involve an agency as a cooperating agency.

Competitive Forage: Those forage species utilized by two or more animal species.

Conditions of Approval: Conditions or provisions (requirements) under which an Application for a Permit to Drill or a Sundry Notice is approved.

Conformance: That a proposed action shall be specifically provided for in the land use plan or, if not specifically mentioned, shall be clearly consistent with the goals, objectives, or standards of the approved land use plan.

Conservation Agreement: A formal signed agreement between the U.S. Fish and Wildlife Service or National Marine Fisheries Service and other parties that implements specific actions, activities, or programs designed to eliminate or reduce threats or otherwise improve the status of a species. CA's can be developed at a state, regional, or national level and generally include multiple agencies at both the state and federal level, as well as tribes. Depending on the types of commitments the BLM makes in a CA and the level of signatory authority, plan revisions or amendments may be required prior to signing the CA, or subsequently in order to implement the CA.

Conservation Strategy: A Strategy outlining current activities or threats that are contributing to the decline of a species, along with the actions or strategies needed to reverse or eliminate such a decline or threats. Conservation strategies are generally developed for species of plants and animals that are designated as BLM Sensitive species or that have been determined by the Fish and Wildlife Service or National Marine Fisheries Service to be federal candidates under the Endangered Species Act.

Contiguous: Lands or legal subdivisions having a common boundary; lands having only a common corner are not contiguous.

Cooperating Agency: Assists the lead federal agency in developing an Environmental Analysis or Environmental Impact Statement. The Council on Environmental Quality regulations implementing NEPA defines a cooperating agency as any agency that has jurisdiction by law or special expertise for proposals covered by NEPA. Any tribe of federal, state, or local government jurisdiction with such qualifications may become a cooperating agency by agreement with the lead agency.

Corridor: A wide strip of land within which a proposed linear facility could be located.

Council on Environmental Quality (CEQ): An advisory council to the President of the United States established by the national Environmental Policy Act of 1969. It reviews federal programs for their effect on the environment, conducts environmental studies, and advises the president on environmental matters.

Critical Habitat: For listed species: Consists of 1) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 4 of the Endangered Species Act, on which are found those physical or biological features (constituent elements) a) essential to the conservation of the species and b) which may require special management considerations or protection; and 2) specific areas outside the geographical are occupied by the species at the time it is listed in accordance with the provisions of section 4 of the Endangered Species Act upon a determination by the Secretary that such areas are essential for the conservation of the species. Designated critical habitats are described in 50 CFR§ 17 and 226.

Crucial Habitat: Habitat on which a species depends for survival because there are no alternative ranges or habitats available.

Crucial Winter Habitat (Range): Parts of the habitat necessary to sustain a wildlife population at critical periods of its life cycle. This is often a limiting factor on the populations, such as breeding habitat, winter habitat, etc.

Cryptobiotic (Cryptogrammic) Soils: Biological communities that form a surface layer or crust on some soils. These communities consist of cyanobacteria (blue-green bacteria), micro fungi, mosses, lichens, and green algae and perform many important functions, including fixing nitrogen and carbon, maintaining soil surface stability, and preventing erosion. Crypto biotic crusts also influence the nutrient levels of soils and the status and germination of plants in the desert. These crusts are slow to recover after severe disturbance, requiring 40 years of more to recolonize even small areas.

Cultural Resources: Nonrenewable elements of the physical and human environment including archeological remains (evidence of prehistoric or historic human activities) and sociocultural values traditionally held by ethnic groups (sacred places, traditionally utilized raw materials, etc.).

Cultural Site: Any location that includes prehistoric and/or historic evidence of human use or that has important sociocultural value.

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

Current Habitat: habitat currently occupied by a species during the development of the plan.

Desired Condition: Description of those factors, which should exist within ecosystems both to maintain their survival and to meet social and economic needs.

Development Well: A well drilled within the known or proven productive area of an oil field with expectation of producing oil or gas from the producing reservoir.

Discretionary Closure: Those lands where the BLM has determined that fluid minerals leasing, even with the most restrictive stipulations, would not adequately protect other resources, values, or land uses.

Dispersed/Extensive Recreation: Recreation activities of an unstructured type, which are not confined to specific locations such as recreation sites. Example of these activities may be hunting, fishing, off-road vehicle use, hiking, and sightseeing.

Disturbance Area: Area of influence around a disturbance causing a change in animal behavior such as: leaving the area, increased stress, abandoning young, not breeding, and aberrant behavior.

Drought: Drought is a protracted period of deficient precipitation resulting in extensive damage to crops, resulting in loss of yield.

Easement: A right afforded a person or agency to make limited use of another's real property for access or other purposes.

Endangered Species: A plant or animal species whose prospects for survival and reproduction are in immediate jeopardy, as designated by the Secretary of the Interior, and as is further defined by the Endangered Species Act.

Environmental Assessment (EA): A concise public document that analyzes the environmental impacts of a proposed federal action and provides sufficient evidence to determine the level of significance of the impacts.

Environmental Impact Statement (EIS): A detailed written statement required by the National Environmental Policy Act when an agency proposes a major federal action significantly affecting the quality of the human environment.

Erosion: The wearing away of the land surface by running water, wind, ice, or other geological agents.

Exclusion Area: Areas with sensitive resource values where rights-of-way, leases, and easements would not be authorized.

Extensive Recreation Management Area (ERMA): An area where significant recreation opportunities and problems are limited and explicit recreation management is not required. Minimal management actions related to the BLM's stewardship responsibilities are adequate in these areas.

Fawning Habitat: an area where big game animals usually give birth during a specific time of year.

Federal Land Policy and Management Act of 1976 (FLPMA): Public Law 94-579. October 21, 1976, often referred to as the BLM's "Organic Act," which provides the majority of the BLM's legislated authority, direction, policy, and basic management guidance.

Federal Register: A daily publication, which reports presidential and federal agency documents.

Fire Management Plan: A strategic plan that defines a program to manage wild land and prescribed fires and documents the fire management program in the approved land use plan; the plan is supplemented by operational procedures such as preparedness plans, preplanned dispatch plans, prescribed fire plans, and prevention plans.

Floodplain: The relatively flat area or lowlands adjoining a body of standing or flowing water, which has been or might be covered by floodwater.

Fluid Minerals: Oil and gas resources.

Focus Area: A recreation management zone that emphasizes particular types of recreation activities.

Fossil: Mineralized or petrified form from a past geologic age, especially from previously living things.

Geographic Information System (GIS): A computer system capable of storing, analyzing, and displaying data and describing places on the earth's surface.

Goal: A broad statement of a desired outcome. Goals are usually not quantifiable and may not have established time frames for achievement.

Grandfather (to): To exempt groups or individuals from provisions of laws or regulations because of preexisting conditions, such as exempting mining operations existing before new mining regulations are implemented from provisions of those new regulations.

Grazing System: The manipulation of livestock grazing to accomplish a desired result.

Guidelines: Actions or management practices that may be used to achieve desired outcomes, sometimes expressed as best management practices. Guidelines may be identified during the land use planning process, but they are not considered a land use plan decision unless the plan specifies that they are mandatory.

Habitat: A specific set of physical conditions that surround a species, group of species, or a large community. In wildlife management, the major constituents of habitat are considered to be food, water, cover, and living space.

Habitat Fragmentation: The disruption (by division) of extensive habitats into smaller habitat patches. The effects of habitat fragmentation include loss of habitat area and the creation of smaller, more isolated patches of remaining habitat.

Historic Habitat: Habitat occupied by a species prior to the development of this plan.

Impact: A modification of the existing environment caused by an action. These environmental consequences are the scientific and analytical basis for comparison of alternatives. Effects may be either direct, which are caused by the action and occur at the same time and place, or indirect, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable, or cumulative.

Implementation Decisions: Decisions that take action to implement land use plan decisions. They are generally appealable to Interior Board of Land Appeals.

Implementation Plan: A site-specific plan written to implement decisions made in a land use plan. An implementation plan usually selects and applies best management practices to meet land use plan objectives. Implementation plans are synonymous with "activity" plans. Examples of implementation plans include interdisciplinary management plans, habitat management plans, and allotment management plans.

Indian Tribe: Any Indian group in the conterminous United States that the Secretary of the Interior recognizes as possessing tribal status.

Interdisciplinary Team: A group of individuals with different training, representing the physical sciences, social sciences, and environmental design arts, assembles to solve a problem or perform a task. The members of the team proceed to a solution with frequent interaction so that each discipline may provide insights to any stage of the problem and disciplines may combine to provide new solutions. The number and disciplines of the members preparing the plan vary with circumstances. A member may represent one or more disciplines or BLM program interests.

Lambing Habitat: An area where bighorn sheep deliver and nurse young during a specific time of year.

Land Use Allocation: The identification in a land use plan of the activities and foreseeable development that are allowed, restricted, or excluded for all or part of the Planning Area, based on desired future conditions.

Land Use Plan: A set of decisions that establish management direction for land within an administrative area, as prescribed under the planning provisions of FLPMA; an assimilation of land-use-plan-level decisions developed through the planning process, regardless of the scale at which the decisions were developed.

Land Use Plan Decision: Establishes desired outcomes and the actions needed to achieve them. Decisions are reached using the BLM planning process. When they are presented to the public as proposed decisions, they can be protested to the BLM Director. They are not appealable to Interior Board of Land Appeals.

Leasable Minerals: Those minerals or materials designated as leasable under the Mineral Leasing Act of 1920. They include coal, phosphate, sulphur, potassium, and sodium minerals, and oil, gas, and geothermal.

Lease: (1) A legal document that conveys to an operator the right to drill for oil, gas; (2) the tract of land, on which a lease has been obtained, where producing wells and production equipment are located.

Lease Notice: Provides more detailed information concerning limitations that already exist in law, lease terms, regulations, and operational orders. A Lease Notice also addresses special items the lessee would consider when planning operations, but does not impose new or additional restrictions.

Lease Stipulation: A modification of the terms and conditions on a standard lease form at the time of the lease sale.

Lek: An assembly area where birds, especially sage grouse, carry on display and courtship behavior.

Limited Roads and Trails Designation: Designated areas where the use of off-road vehicles is subject to restrictions, such as limiting the number or types or vehicles allowed, dates and times of use (seasonal restrictions), and limiting all use to designated roads and trails. Under the designated roads and trails designation, use would be allowed only on roads and trails that are signed for use. Combinations of restrictions are possible, such as limiting use to certain types of vehicles during certain times of the year.

Locatable Minerals: Minerals subject to exploration, development, and disposal by staking mining claims as authorized by the Mining Law of 1872, as amended. This includes deposits of gold, silver, and other uncommon minerals not subject to lease or sale.

Management Decision: A decision made by the BLM to manage public lands. Management decisions are made on both land use plan decisions and implementation decisions.

Management Opportunities: A component of the analysis of the management situation; actions or management directions that could be taken to resolve issues or management concerns.

Mechanized Travel: Travel by use of a machine, either motorized or non-motorized.

Mineral Entry: The filing of a claim on public land to obtain the right to any minerals it may contain.

Mineral Estate: The ownership of minerals, including rights necessary for access, exploration, development, mining, ore dressing, and transportation operations.

Mineral Materials: Materials such as common varieties of sand, stone, building stone, gravel, and clay that are not obtainable under the mining or leasing laws but that can be acquired under the Mineral Materials Act of 1947, as amended. These are also called salable minerals.

Mineral Reserves: Known mineral deposits that are recoverable under present conditions but are as yet undeveloped.

Mineral Withdrawal: A formal order that withholds federal lands and minerals from entry under the Mining Law of 1872 and closes the area to mineral location (staking mining claims) and development.

Minimize: To reduce the adverse impact of an operation to the lowest practical level.

Mining Claim: A parcel of land that a miner takes and holds for mining purposes, having acquired the right of possession by complying with the Mining Law of 1872, as amended, and local laws and rules. A single mining claim may contain as many adjoining locations as the locator may make or buy.

Mitigation Measures: Methods or procedures that reduce or lessen the impacts of an action.

Multiple Use: The management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people; making the most judicious use of the lands for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; the use of some lands for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long term needs of future generations for renewable and nonrenewable resources, including but not limited to, recreation, range, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the lands and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or greatest unit output.

National Environmental Policy Act of 1969 (NEPA): An act that encourages productive and enjoyable harmony between man and his environment and promotes efforts to prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; enriches the understanding or the ecological systems and natural resources important to the Nation, and establishes the Council on Environmental Quality.

National Wild and Scenic Rivers System: A system of nationally designated rivers and their immediate environments that have outstanding scenic, recreational, geologic, fish and wildlife, historic, cultural, and other similar values and are preserved in a free-flowing condition. The system consists of three river classifications: (1) **Recreational**-rivers or sections of rivers that are readily accessible by road or railroad and that may have some development along their shorelines and may have undergone some impoundments or diversion in the past, (2) **Scenic**-rivers or sections of rivers free of impoundments with shorelines or watersheds still largely undeveloped but accessible in places by roads, and (3) **Wild**-rivers or sections of rivers free of impoundments and generally inaccessible except by trails, with watersheds or shorelines essentially primitive and waters unpolluted.

Neotropical Migratory Birds: Birds that travel to Central America, South America, the Caribbean, and Mexico during the fall to spend the winter and then return to the United States and Canada During the spring to breed. These birds include almost half of the bird species that breed in the United States and Canada.

No Surface Occupancy (NSO): A fluid minerals leasing constraint that prohibits occupancy or disturbance on all or part of the lease surface to protect special values or uses. Lessees may exploit the fluid mineral resources under the leases restricted by this constraint through use of directional drilling from sites outside the area.

Non-mechanized Travel: Travel by foot or on an animal.

Non-WSA Lands with Wilderness Characteristics: Undeveloped federal land that has been inventoried and/or reviewed by a BLM interdisciplinary team and determined to possess wilderness characteristics such as those listed in section 2(c) of the Wilderness Act of 1964. These lands do not possess special management designations like WSAs or protective management measures such as the IMP.

Noxious Weeds: A plant species designated by federal of state law as generally possessing one or more of the following characteristics: aggressive and difficult to manage; parasitic; a carrier or host of serious insects or disease; or nonnative, new, or not common to the United States.

Objective: A description of a desired condition for a resource. Objectives can be quantified and measured and, where possible, have established time frames for achievement.

Occupied Habitat: An area occupied by a species during the development of this plan.

Open: Generally denotes that an area is available for a particular use or uses. Refer to specific program definitions found in law, regulations, or policy guidance for application to individual programs.

Off-Highway Vehicle (OHV): Any motorized vehicle capable of, or designed for, travel on or immediately over land, water, or other natural terrain, excluding: (1) any nonamphibious registered motorboat; (2) any military, fire, emergency, or law enforcement vehicle while being used for emergency purposes; (3) any vehicle whose use is expressly authorized by the authorized officer, or otherwise officially approved; (4) vehicles in official use; and (5) any combat or combat support vehicle when used in times of national defense emergencies.

One-Hundred-Year Flood: A hydrologic event with a magnitude that has a recurrence interval of 100 years.

Open OHV Areas: Designated areas where off-road vehicles may engage in cross country travel.

Operator: Any person who has taken formal responsibility for the operations conducted on the leased lands.

Outstandingly Remarkable River Values: Values between those listed in Section 1(b) of the Wild and Scenic Rivers Act are "scenic, recreational, geological, fish and wildlife, historical, cultural, or other similar values…" Other similar values, which may be considered, include botanical, hydrological, paleontological, or scientific. Professional judgment is used to determine whether values exist to an outstandingly remarkable degree.

Paleontological Resources (Fossils): The physical remains of plants and animals preserved in soils and sedimentary rock formations. Paleontological resources are important for understanding past environments, environmental change, and the evolution of life.

Paleontology: A science dealing with the life forms of past geological periods as known from fossil remains.

Plan of Development: A mandatory plan, developed by an applicant of a mining operation or construction project that specifies the techniques and measures to be used during construction and operation of all project facilities on public land. The plan is submitted for approval to the appropriate federal agency before any construction begins.

Plan of Operations: A plan for mining exploration and development that an operation must submit to BLM for approval when more than 5 acres a year will be disturbed or when an operator plans to work in an area of critical environmental concern or a wilderness area. A plan of Operations must document in detail all actions that the operator plans to take from exploration through reclamation.

Planning Area: A geographical area, including all land ownerships, for which BLM land use and resource management plans are developed and maintained for the BLM-administered lands within that geographical area.

Planning Criteria: The standards, rules, and other factors developed by managers and interdisciplinary teams for their use in forming judgments about decision making, analysis, and data collection during planning. Planning criteria streamline and simplify the resource management planning actions.

Potential Wild and Scenic River: A flowing body of water or estuary or a section, portion, or tributary thereof, including rivers, streams, creeks, runs, rills, and small lakes.

Prescribed Fire: The introduction of fire to an area under regulated conditions for specific management purposes.

Primitive and Unconfined Recreation: Non-motorized, non-mechanized and undeveloped types of recreational activities.

Production Well: A well drilled in a known field that produces oil or gas.

Project Area: The area of land upon which an operator conducts mining operations, including the area needed for building or maintaining of roads, transmission lines, pipelines, or other means of access.

Project Plan: Detailed survey and design plan.

Public Land: Land or interest in land owned by the United States and administered by the Secretary of the Interior through the BLM, except lands located on the Outer Continental Shelf, and land held for the benefit of Indians, Aleuts, and Eskimos.

Quarry: An open or surface working, usually for the extraction of stone, slate, limestone, etc.

Range Development: A structure, excavation, treatment or development to rehabilitate, protect, or improve lands to advance range betterment.

Rangeland: Land used for grazing by livestock and big game animals on which vegetation is dominated by grasses, grass-like plants, forbs, or shrubs.

Raptor: Bird of prey with sharp talons and strongly curved beaks such as hawks, owls, vultures, and eagles.

Reasonably Foreseeable Development Scenario (RFD): The prediction of the type and amount of oil, gas and other mineral activity that would occur in a given area. The prediction is based on geologic factors, past history of drilling, projected demand for oil and gas, and industry interest.

Record of Decision (ROD): A document signed by a responsible official recording a decision that was preceded by the preparing of an environmental impact statement.

Recreational River: A wild and scenic river classification that identifies those rivers are river segments that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

Relict: A remnant or fragment of the vegetation of an area that remains from a former period when the vegetation was more widely distributed.

Resource Management Plan (RMP): A land use plan as prescribed by the Federal Land Policy and Management Act which establishes, for a given area of land, land-use allocations, coordination guidelines for multiple-use, objectives and actions to be achieved.

Right-of-Way (ROW): A ROW grant is an authorization to use a specific piece of public land for a specific project, such as roads, pipelines, transmission lines, and renewable energy and communication sites. The grant authorizes rights and privileges for a specific use of the land for a specific period of time.

Riparian Area: A form of wetland transition between permanently saturated wetlands and upland areas. Riparian areas exhibit vegetation or physical characteristics that reflect the influence of permanent surface or subsurface water. Typical riparian areas include lands along, adjacent to, or contiguous with perennially and intermittently flowing rivers and streams, glacial potholes, and the shores of lakes and reservoirs with stable water levels. Excluded are ephemeral streams or washes that lack vegetation and depend on free water in the soil.

Riparian-Functioning at Risk (FAR): Riparian-wetland areas are considered to be in functioning condition, but an existing soil, water, or vegetation attribute makes them susceptible to degradation.

Riparian-Non-Functioning (NF): Riparian-wetland areas that are clearly not providing adequate vegetation, landform, or large wood debris to dissipate stream energy associated with high flows, and thus are not reducing erosion, improving water quality, etc.

Riparian-Properly Functioning Condition (PFC): Riparian/wetland areas are in PFC when adequate vegetation, landform, or woody debris is present to: dissipate high-energy water flow, filter sediment, capture bedload, and aid floodplain development; improve floodwater retention and groundwater recharge; develop root masses that stabilize streambanks; develop diverse fluvial geomorphology (pool and channel complexes) to provide habitat for wildlife and support greater biodiversity.

Rock Art: Petroglyphs or pictographs.

Route: A linear line for motorized travel.

Rutting Habitat: An area where big game species engage in breeding activities during specific times of the year.

Salable Minerals: Common variety minerals on the public lands, such as sand and gravel, which are used mainly for construction and are disposed of by sales or special permits to local governments. Also referred to as mineral materials.

Scenic Byways: Highway routes, which have roadsides or corridors of special aesthetic, cultural, or historic value. An essential part of the highway is its scenic corridor. The corridor may contain outstanding scenic vistas, unusual geologic features, or other natural elements.

Scoping: The process of identifying the range of issues, management concerns, preliminary alternatives, and other components of an environmental impact statement or land-use planning document. It involves both internal and public viewpoints.

Section 7 Consultation: The requirement of Section 7 of the Endangered Species Act that all federal agencies consult with the U.S. Fish and Wildlife Service or the National Marine Fisheries Service if a proposed action might affect a federally listed species or its critical habitat.

Section 106 Compliance: The requirement of Section 106 of the National Historic Preservation Act that any project funded, licensed, permitted, or assisted by the federal government by reviewed for impacts to significant historic properties and that the State Historic Preservation Officer and the Advisory Council on Historic Preservation be allowed to comment on a project.

Sediment Yield: The amount of sediment produced in a watershed, expressed in tons, acre feet, or cubic yards, of sediment per unit of drainage are per year.

Sensitive Species: All species that are under status review, have small or declining populations, live in unique habitats, or need special management. Sensitive species include threatened, endangered, and proposed species as classified by the Fish and Wildlife Service and National Marine Fisheries Service.

Significant: An effect that is analyzed in the context of the proposed action to determine the degree or magnitude of importance of the effect, wither beneficial or adverse. The degree of significance can be related to other actions with individually insignificant but cumulatively significant impacts.

Slope: The degree of deviation of a surface from the horizontal.

Special Recreation Management Area (SRMA): Areas, which require explicit recreation management to achieve recreation objectives and provide specific recreation opportunities.

Special Status Species: Includes proposed species, listed species, and candidate species under the Endangered Species Act; state-listed species; and BLM State Director-designated sensitive species (see BLM Manual 6840-Special Status Species Policy).

Stipulations: Requirements that are part of the terms of a mineral lease. Some stipulations are standard on all federal leases. Other stipulations may be applied to the lease at the discretion of the surface management agency to protect valuable surface resources and uses.

Strategic Plan: A plan that establishes the overall direction for the BLM. This plan is guided by the requirements of the Government Performance and Results Act or 1993, covers a 5-year period, and is updated every 3 years. It is consistent with FLPMA and other laws affecting the public lands.

Surface Disturbance: Activities that normally result in more than negligible disturbance to public lands and that accelerate the natural erosive process. These activities normally involve use and/or occupancy of the surface, cause disturbance to soils and vegetation, and are usually caused by motorized or mechanical actions. Surface disturbance may result from activities using earth-moving and drilling equipment; geophysical exploration; off road vehicle travel; vegetation treatments; the use of pyrotechnics and explosives; and construction of facilities like powerlines, pipelines, oil and gas wells, recreation sites, livestock facilities, wildlife waters, or new roads. Surface disturbance is not normally caused by casual use. Activities that are not typically surface disturbing include, but are not limited to, proper livestock grazing, cross-country hiking, minimum impact filming and vehicle travel on designated routes.

Sustainability: The ability of an ecosystem to maintain ecological processes and functions, biological diversity, and productivity over time.

Threatened Species: Any plant or animal species defined under the Endangered Species Act as likely to become endangered within the foreseeable future throughout all or a significant portion of its range; listings are published in the Federal Register.

Timing Limitation Stipulation: A fluid minerals leasing constraint that prohibits surface use during specified time periods to protect identified resource values. The constraint does not apply to the operation and maintenance of production facilities unless analysis demonstrates that such constraints are needed and that less stringent, project-specific constraints would be insufficient.

Undertaking: (16 USC Sec. 470w (7)) A project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including those carried out by or on behalf of a federal agency; those carried out with federal financial assistance; those requiring a federal permit, license or approval; and those subject to state or local regulation administered pursuant to a delegation or approval by a federal agency.

User Day: Any calendar day, or portion thereof, for each individual accompanied or serviced by an operator or permittee on the public lands of related waters; synonymous with passenger day or participant day.

Utility Corridor: A parcel of land that has been identified by law, Secretarial order, through a land use plan or by other management decision as being the preferred location for existing and future right-of-way grants and suitable to accommodate one type of right-of-way or one or more rights-of-way which are similar, identical or compatible.

Valid Existing Rights: Valid existing rights are legal rights to use the land that were in existence prior to implementation of the decisions in the RMP. The most significant types of valid existing rights are oil and gas leases, potash and salt leases, mining claims, and right-of-way authorizations. The oil and gas leasing stipulations specified for specific areas in the RMP would not apply to existing leases. These existing leases would be subject to the specific lease stipulations that were applied under the previous land use plan. Mining claims that exist on the effective day of a withdrawal may still be valid if they can meet the test of discovery of a valuable mineral required under the Mining Laws. An existing right-of-way would only be subject to the specific terms and conditions that were applied when it was authorized even if it is located within a right-of-way exclusion or avoidance area specified under the RMP.

Vegetation Manipulation: Alteration of vegetation by using fire, plowing, or other means.

Vegetation Type: A plant community with distinguishable characteristics described by the dominant vegetation present.

Visual Resources: The visible physical features of a landscape (topography, water, vegetation, animals, structures, and other features) that constitute the scenery of an area.

Waiver: Permanent exemption from a lease stipulation. The stipulation no longer applies anywhere within the leasehold.

Water Quality: The chemical, physical, and biological characteristics of water with respect to its suitability for a particular use.

Watershed: All lands, which are enclosed by a continuous hydrologic drainage, divide and lay upslope from a specified point on a stream.

Way: A vehicle route within a wilderness study area that was in existence and identified during the FLPMA Section 603-mandated wilderness inventory. The Interim Management Policy for Lands under Wilderness Review (H-8550-1) defines a way as "a trace maintained solely by the passage of vehicles which has not been improved and/or maintained by mechanical means to ensure relatively regular and

continuous use." The term is also used during wilderness inventory to identify routes that are not roads. The term developed from the definition of the term "roadless" provided in the Wilderness Inventory Handbook (September 27, 1978), as follows: "roadless: refers to the absence of roads which have been improved and maintained by mechanical means to insure relatively regular and continuous use. A way maintained solely by the passage of vehicles does not constitute a road."

Wild, Scenic or Recreational River: The three classes of what is traditionally referred to as a "Wild and Scenic River." Designated river segments are classified as wild, scenic and/or recreational, but the segments cannot overlap.

Wild and Scenic River Study: Rivers identified in Section 5 of the Wild and Scenic Rivers Act for study as potential additions to the National Wild and Scenic Rivers System. The rivers shall be studied under the provisions of Section 4 of the Wild and Scenic Rivers Act.

Wilderness Study Area: A roadless area or island of undeveloped federal land that has been inventoried and found to possess wilderness characteristics described under Title VI, Section 603 of FLPMA and Section 2C of the Wilderness Act of 1964. These characteristics are: (1) generally appears to have been affected mainly by the forces of nature, with human imprints substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least 5,000 acres or is large enough to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historic value.

Wilderness: A congressionally designated area of undeveloped federal land retaining its primeval character and influence, without permanent improvements or human habitation that is protected and managed to preserve its natural conditions as described in Section 2A of the Wilderness Act of 1964.

Wilderness Characteristics: Features of the land associated with the concept of wilderness that specifically deal with naturalness and opportunities for solitude and primitive and unconfined recreation. These characteristics may be considered in land use planning when BLM determines that those characteristics are reasonably present, of sufficient value (condition, uniqueness, relevance, importance), and need (trend, risk), and are practical to manage (from IM-2003-275, Change 1, Considerations of Wilderness Characteristics in LUP, Attachment 1). Key characteristics of wilderness listed in section 2 (c) of the Wilderness Act of 1964 were used by BLM in conducting wilderness inventories. These characteristics are features of land associated with the concept of wilderness.

Wildfire: Any unwanted wild land fire.

Wildland Fire: Any nonstructural fire, other than prescribed fire, that occurs in the wild land.

Winter Range: The portion of the winter range to which a wildlife species is confined during periods of heaviest snow cover.

Withdrawal: An action that restricts the use of public lands by removing them from the operation of some or all of the public land or mining laws.

Woodland: A forest community occupied primarily by noncommercial species such as juniper, mountain mahogany, or quaking aspen groves; all western juniper forestlands are classified as woodlands, since juniper is classified as a noncommercial species.

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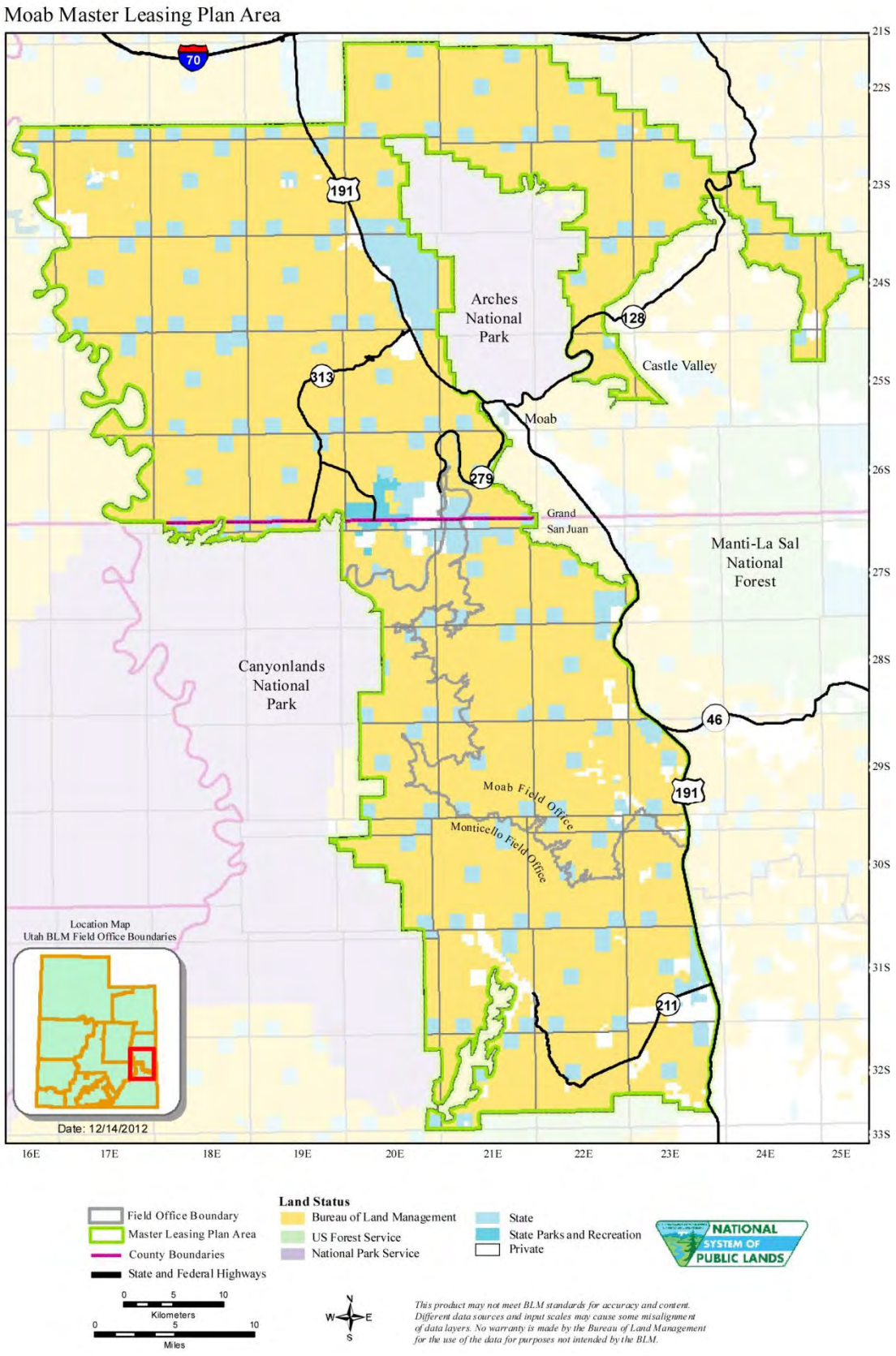

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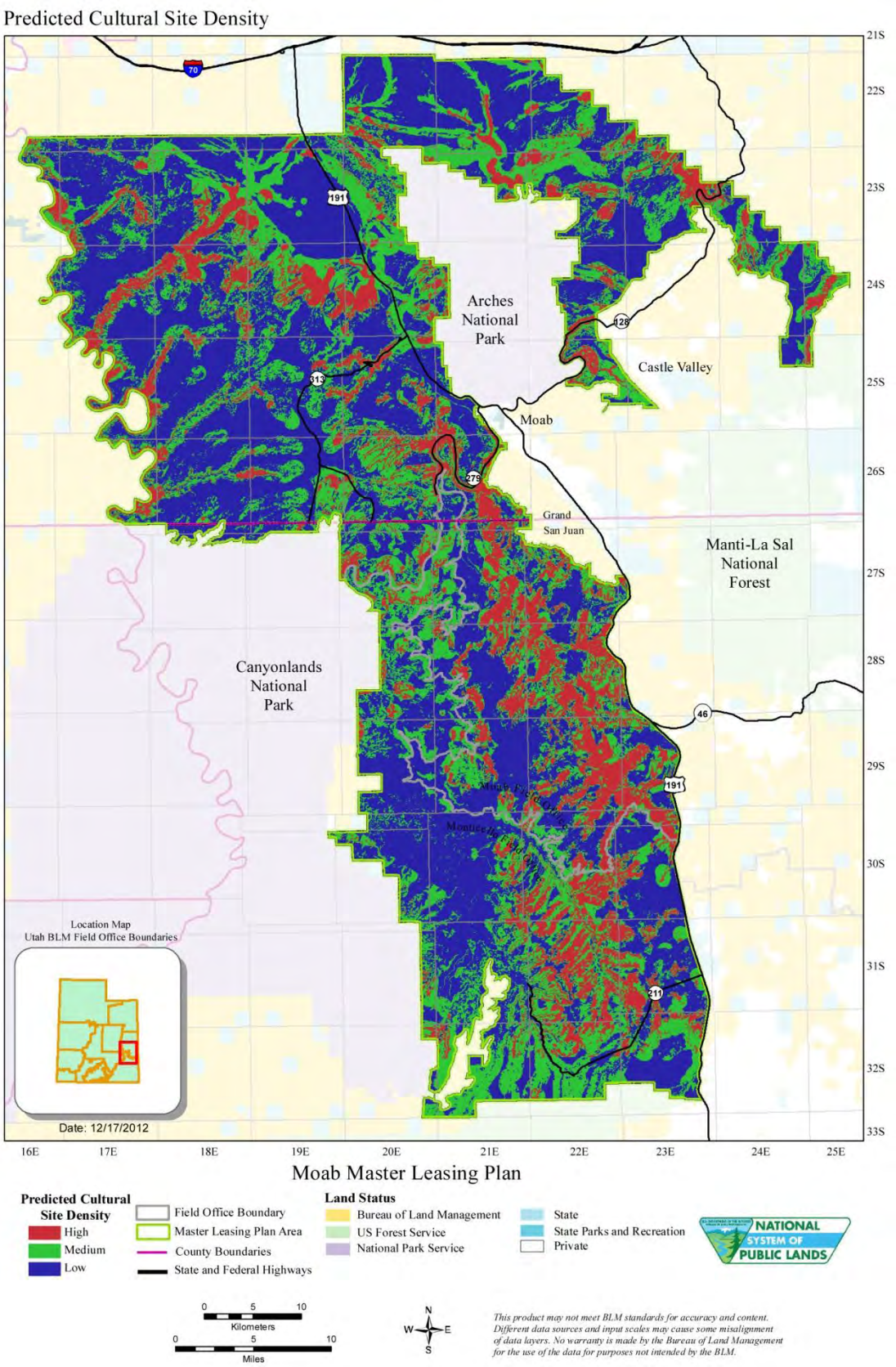

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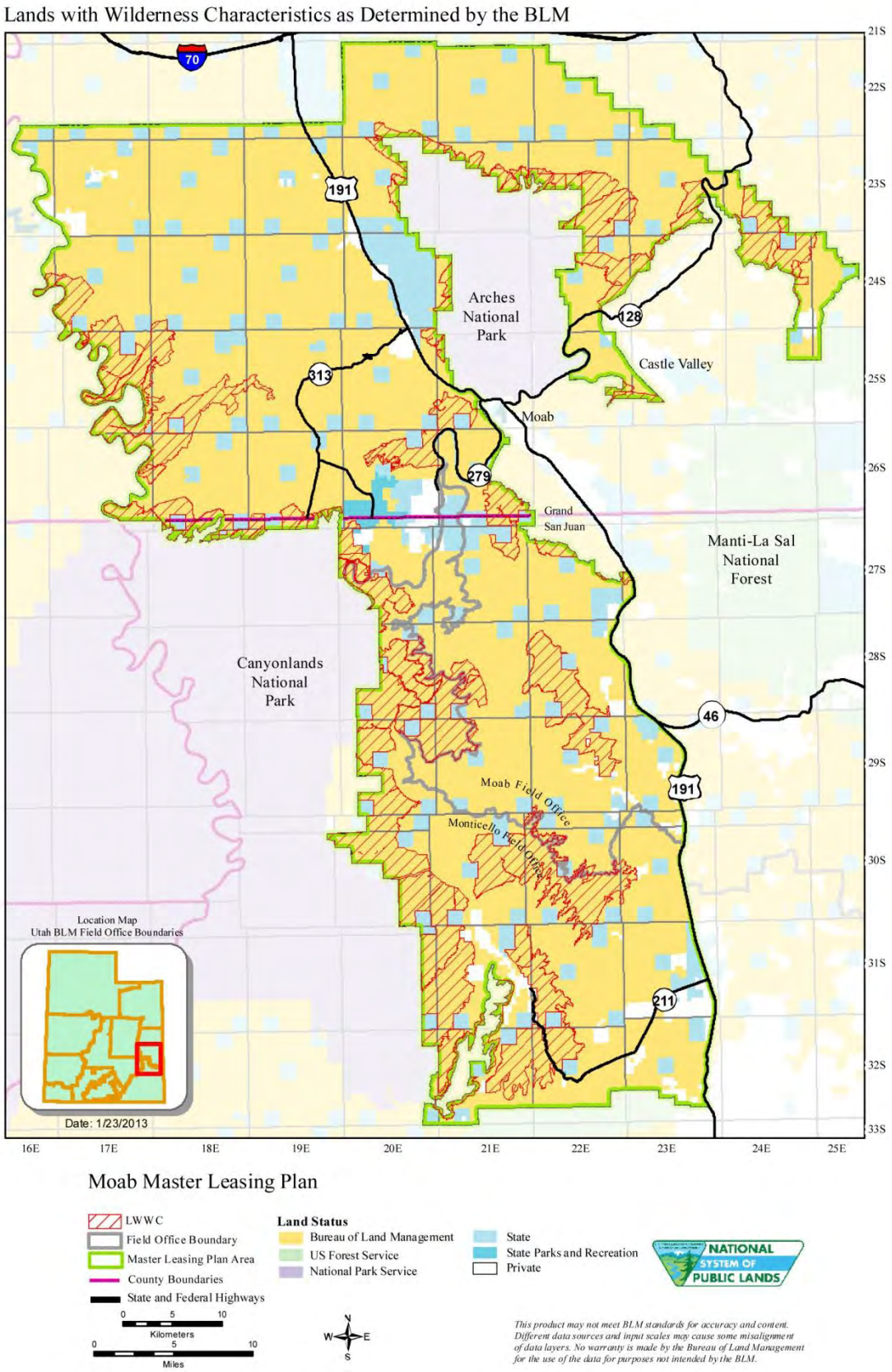

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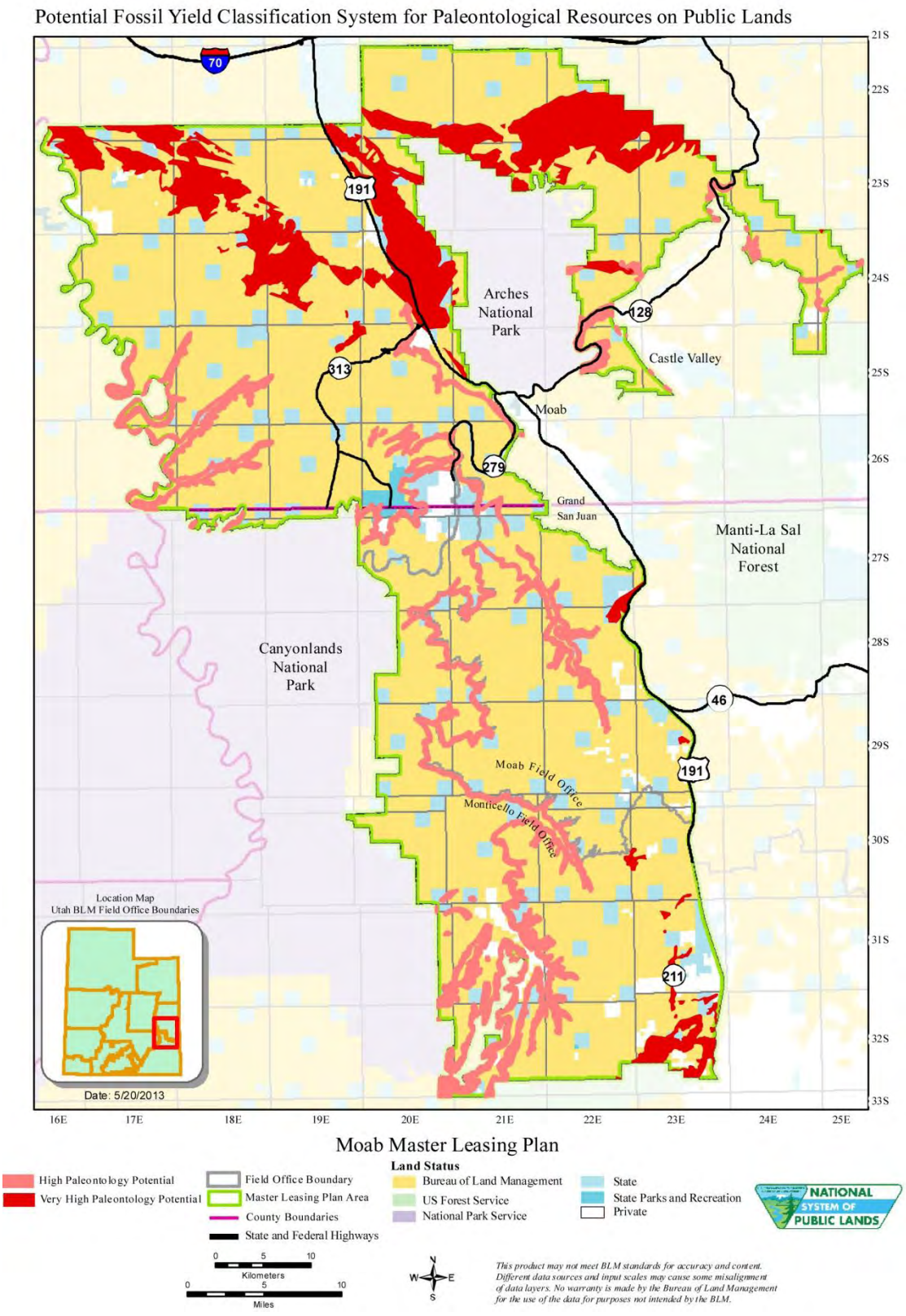

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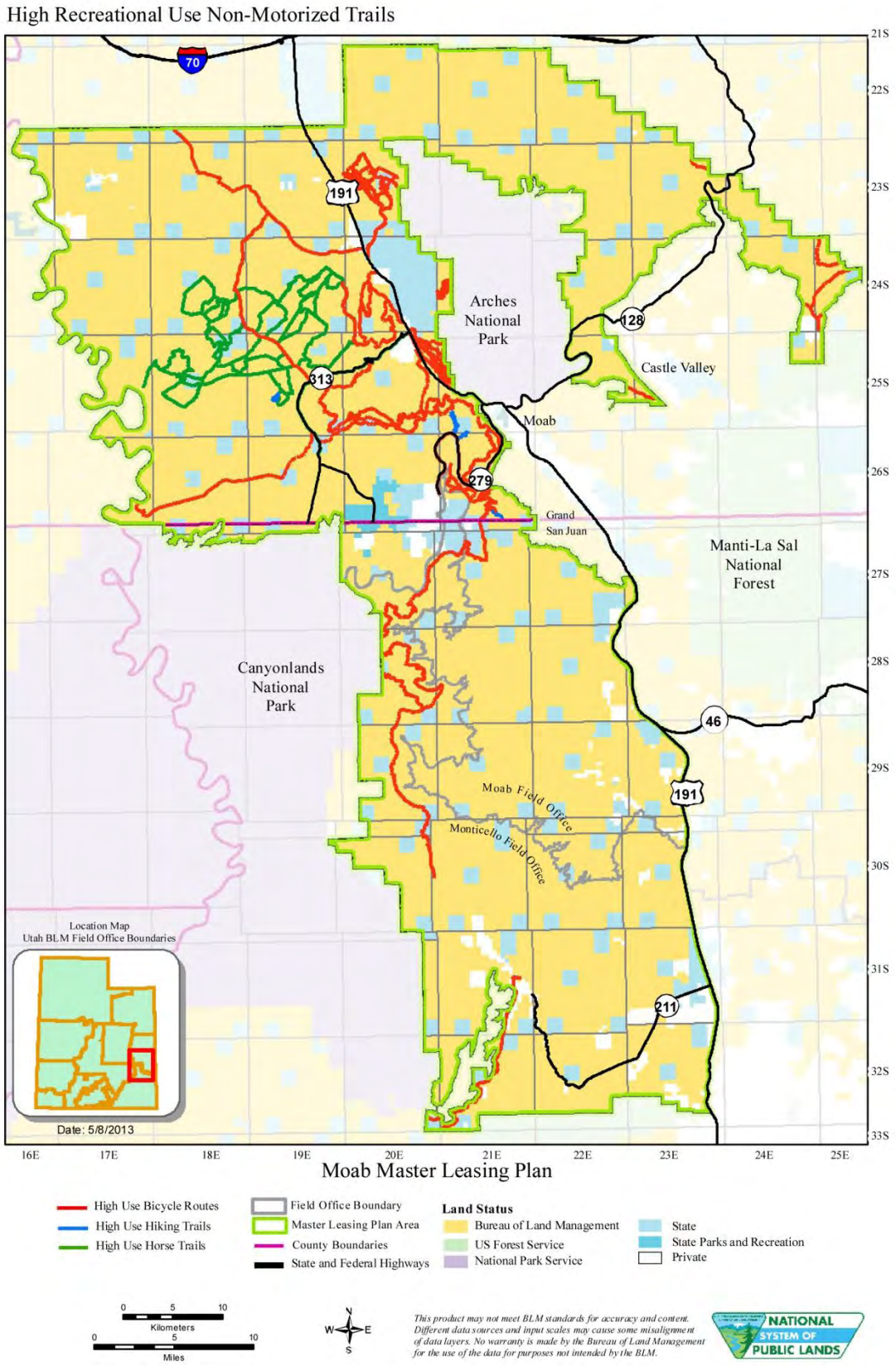

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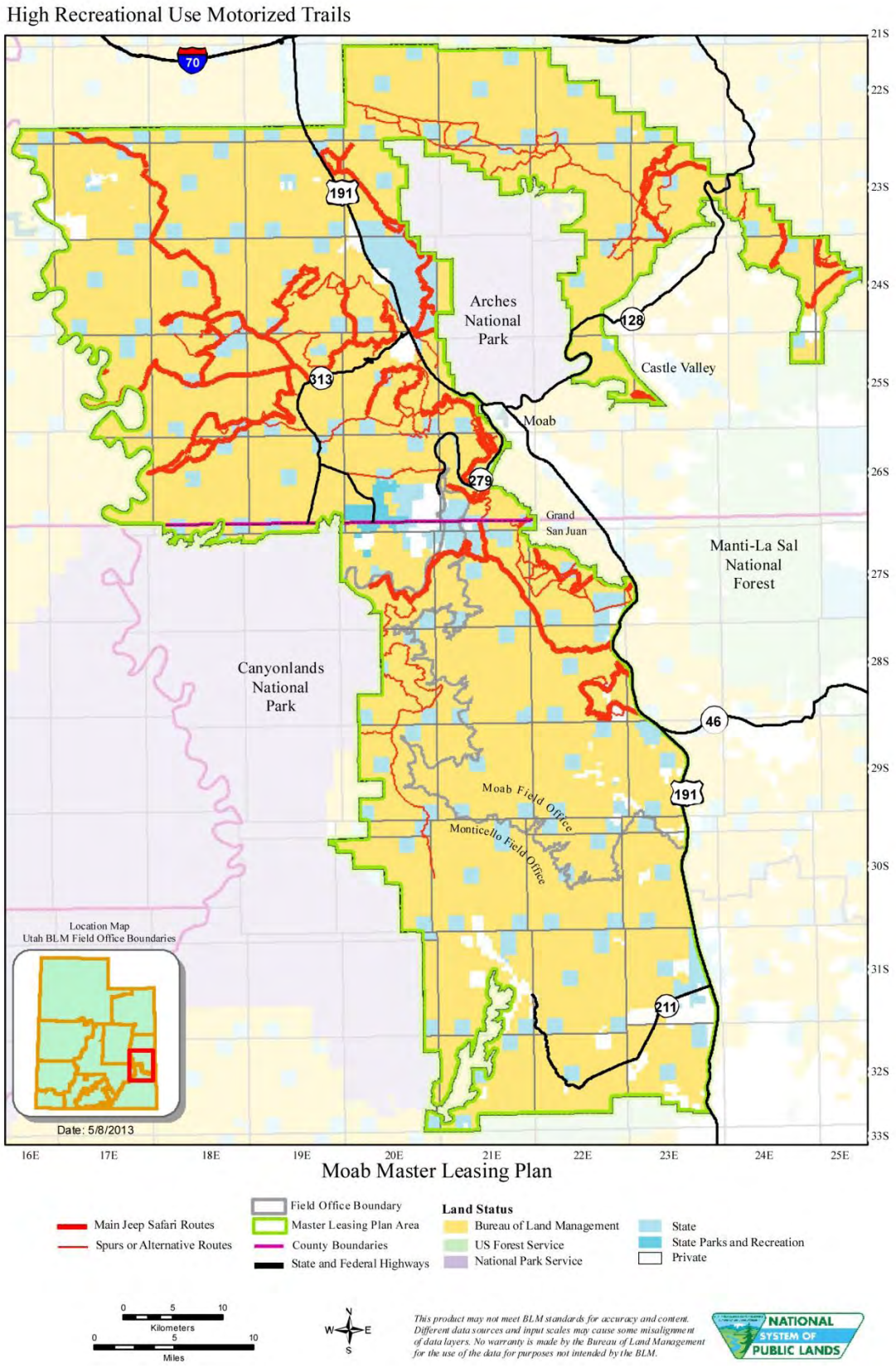

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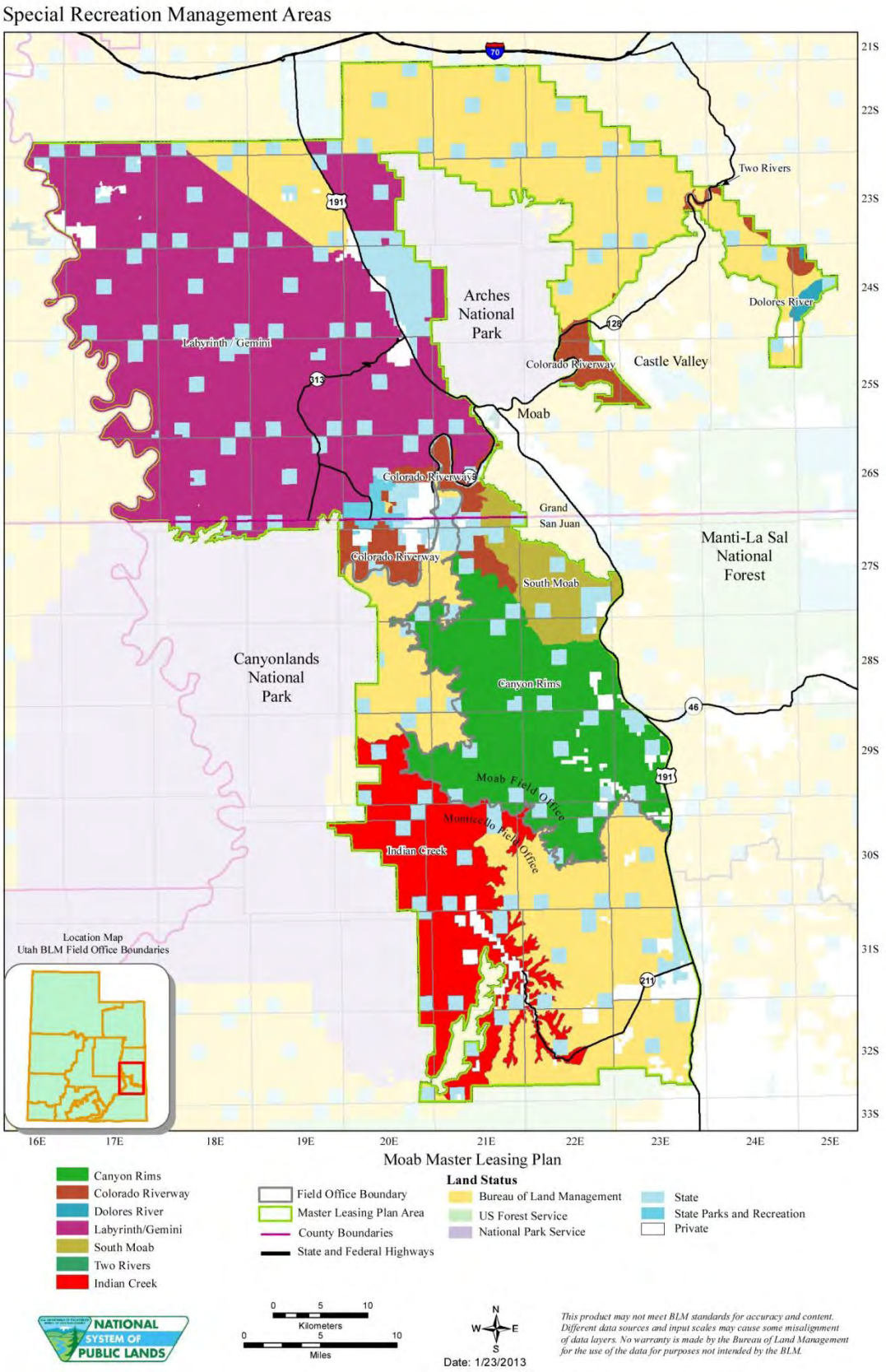

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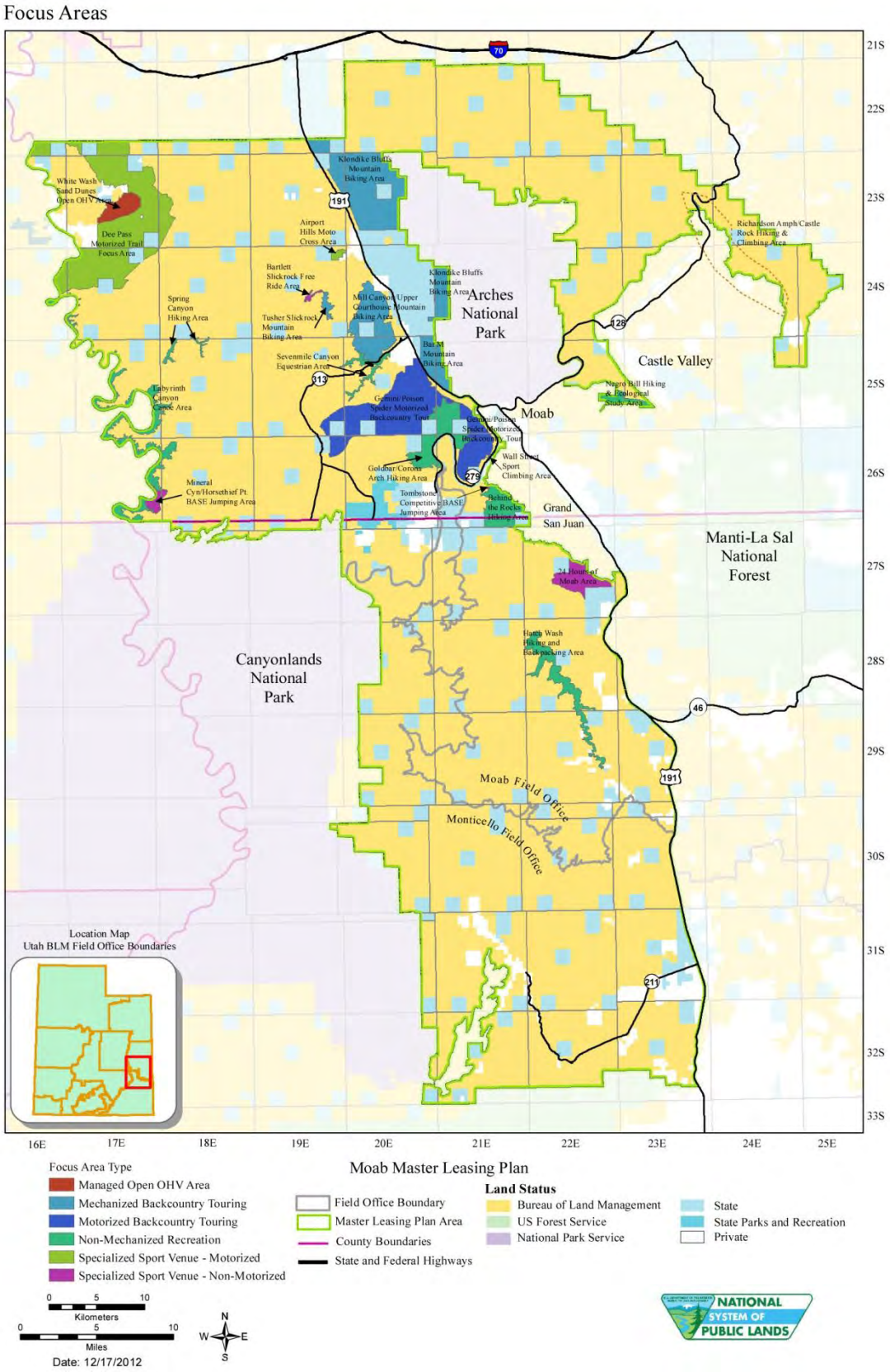

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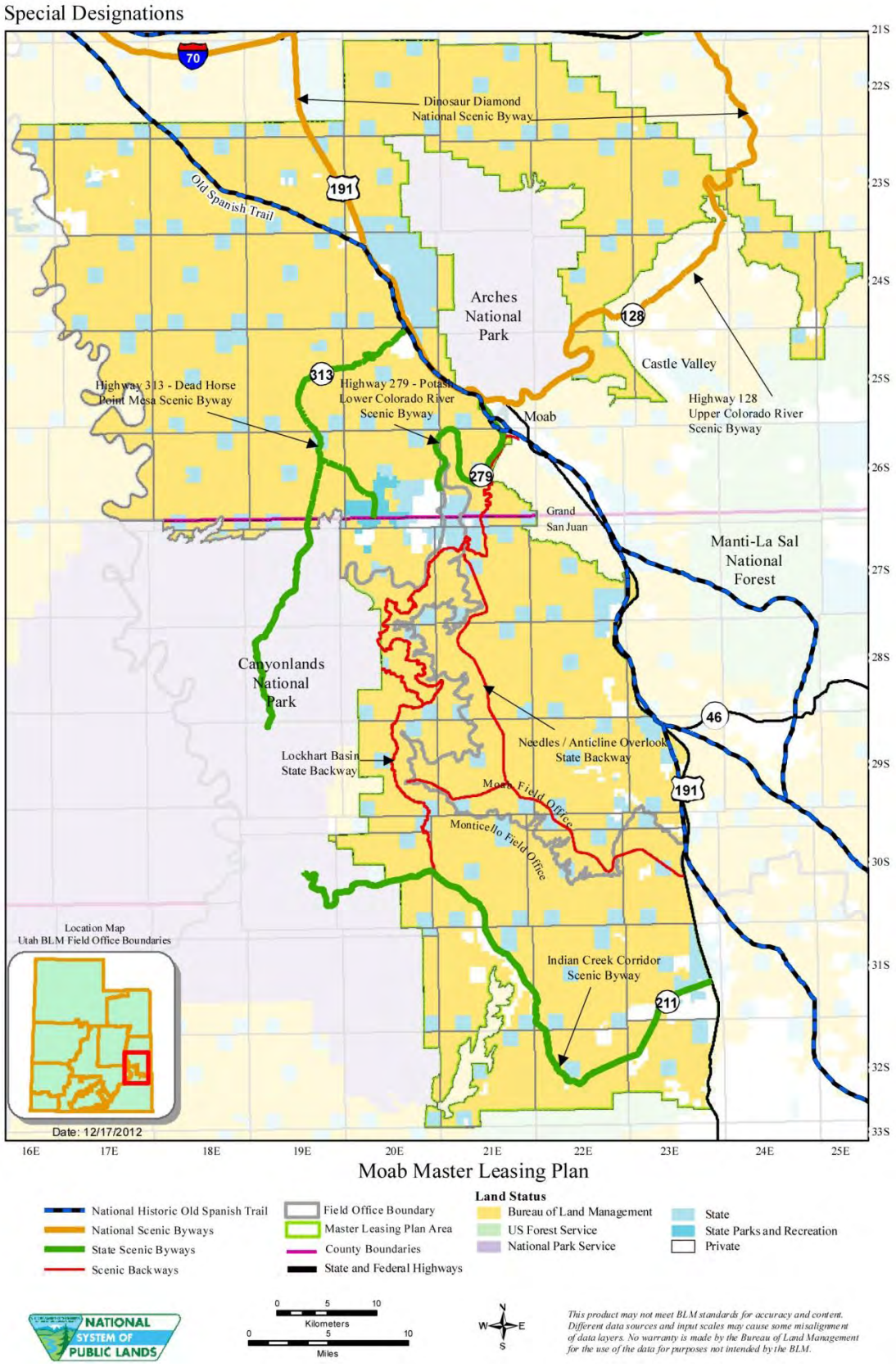

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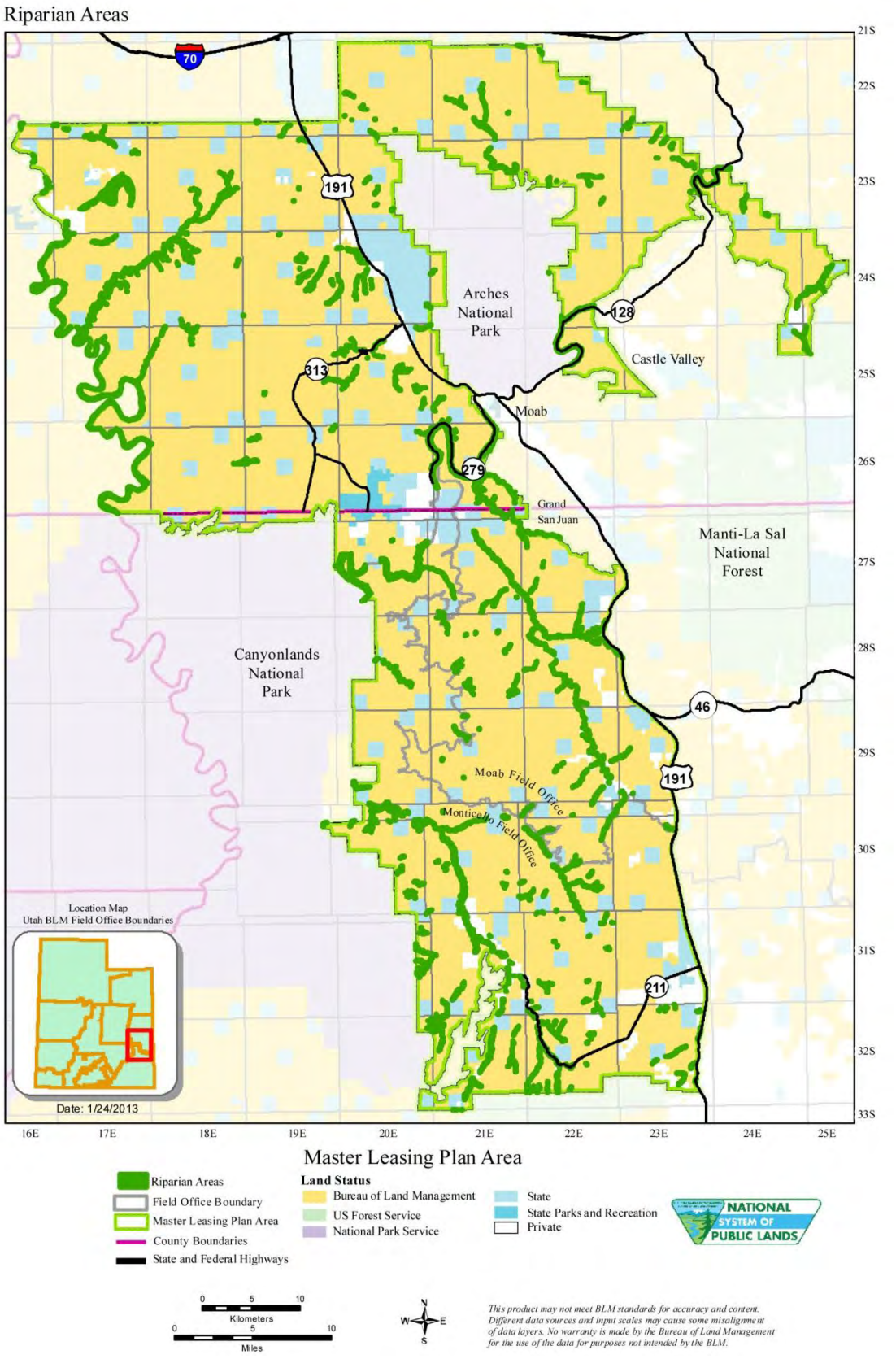

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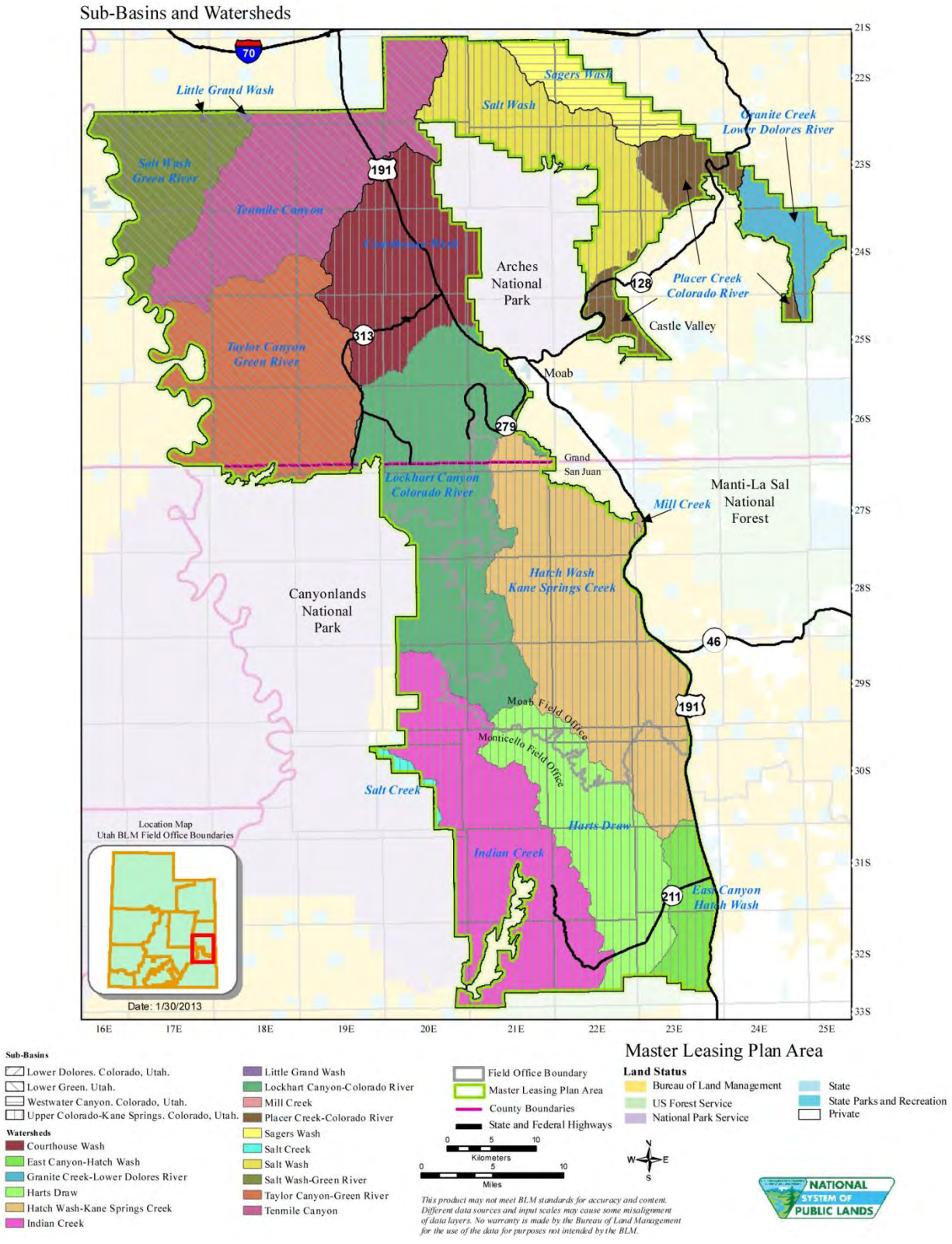

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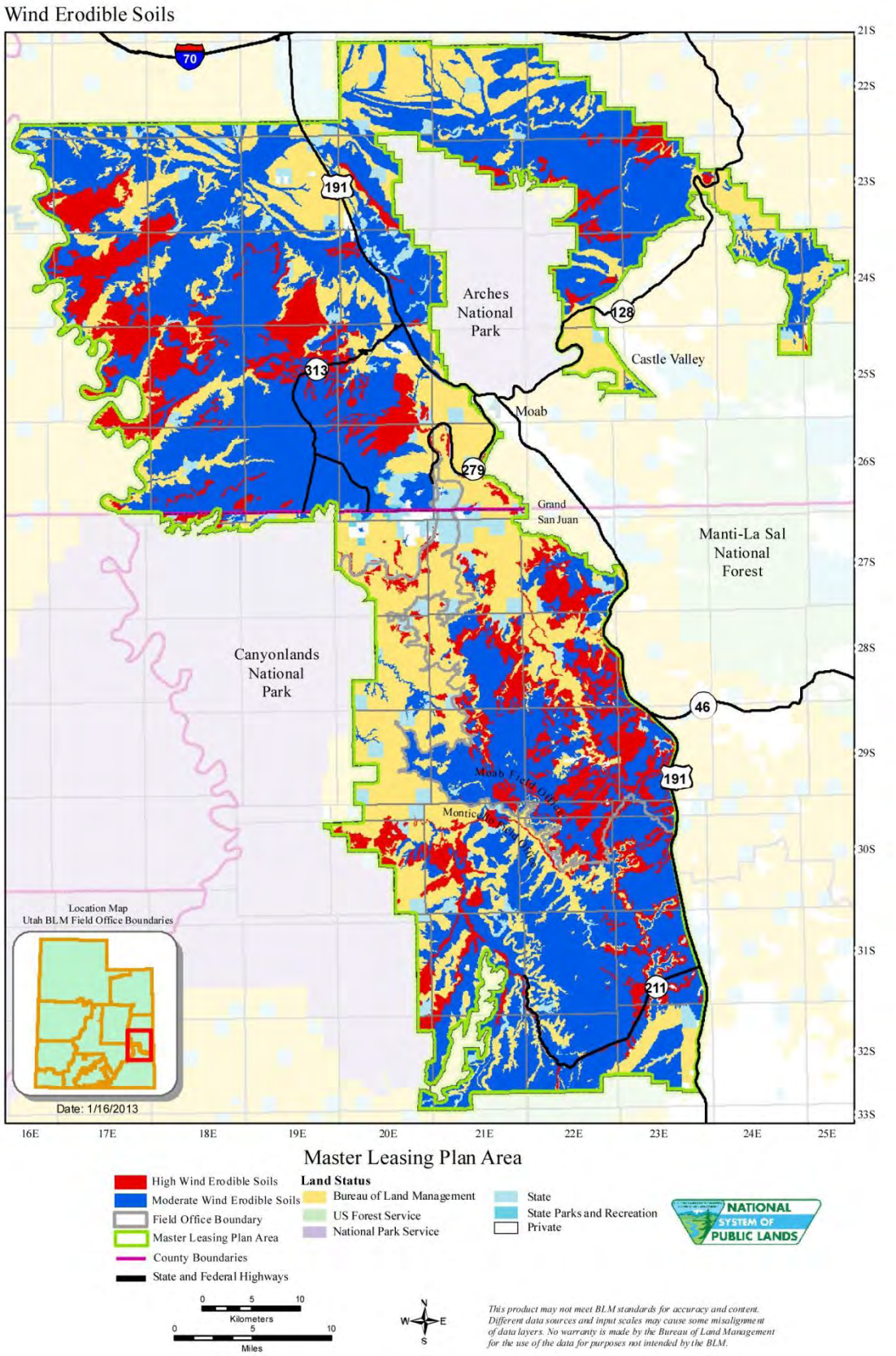

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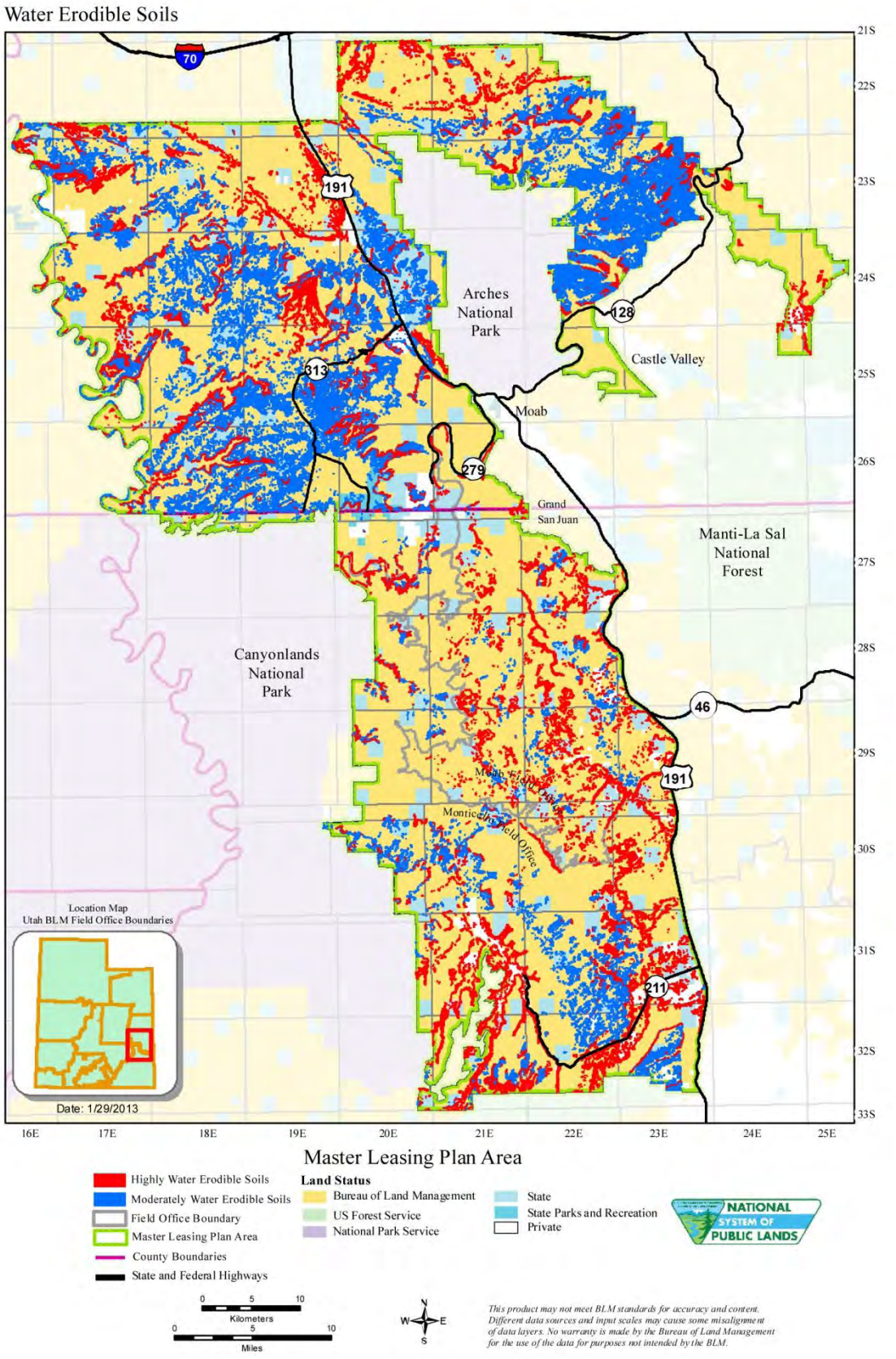

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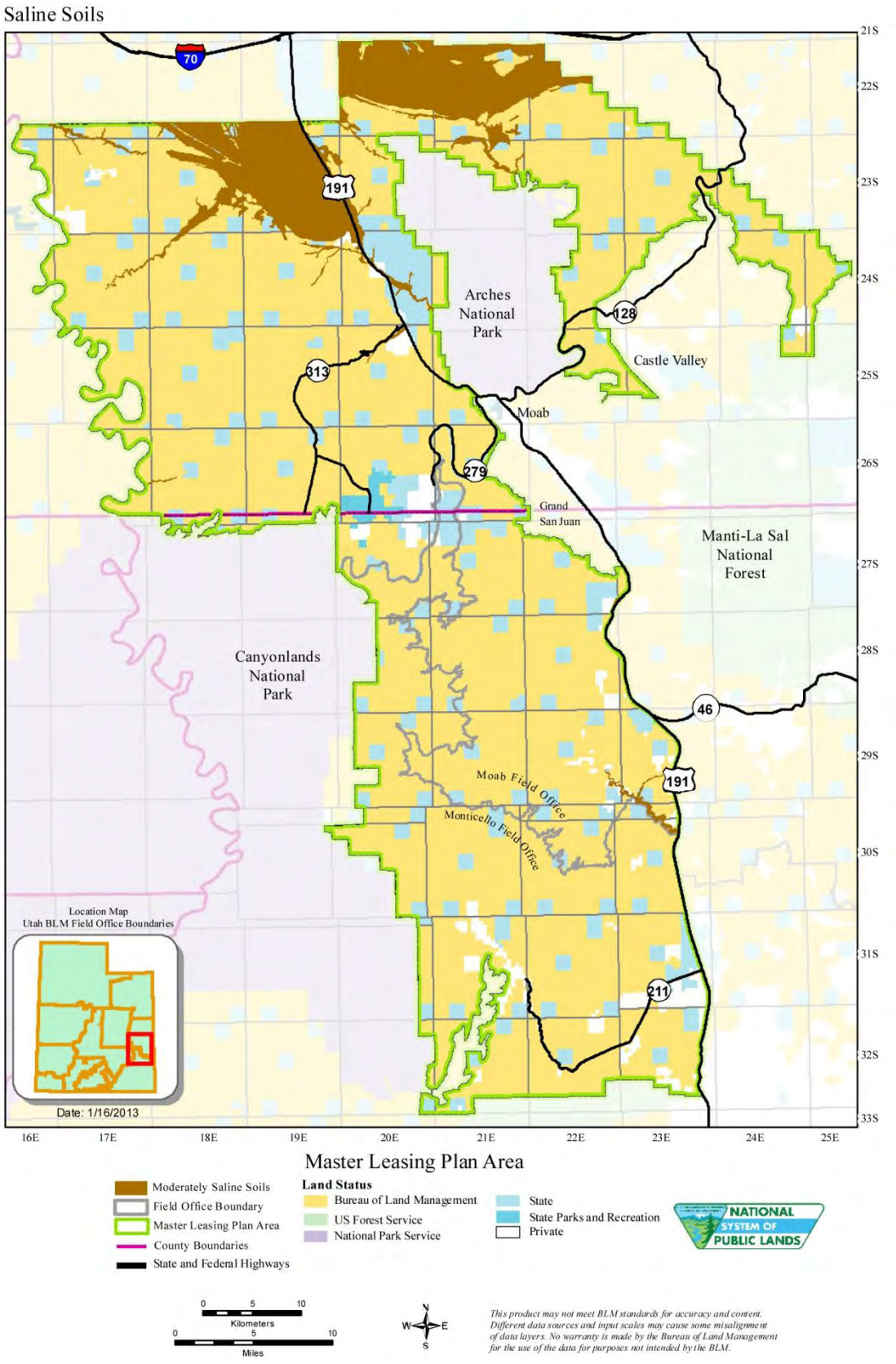

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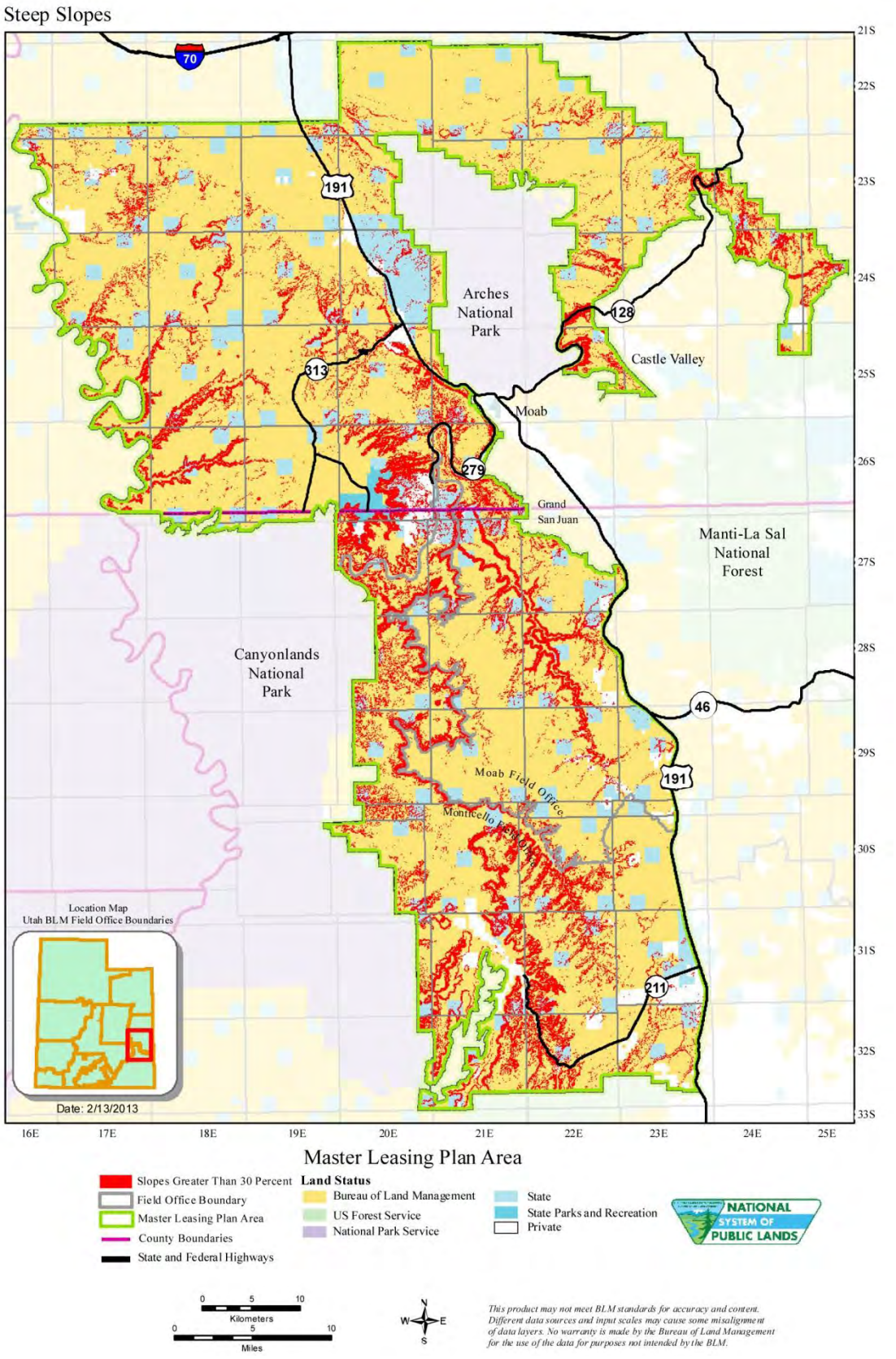

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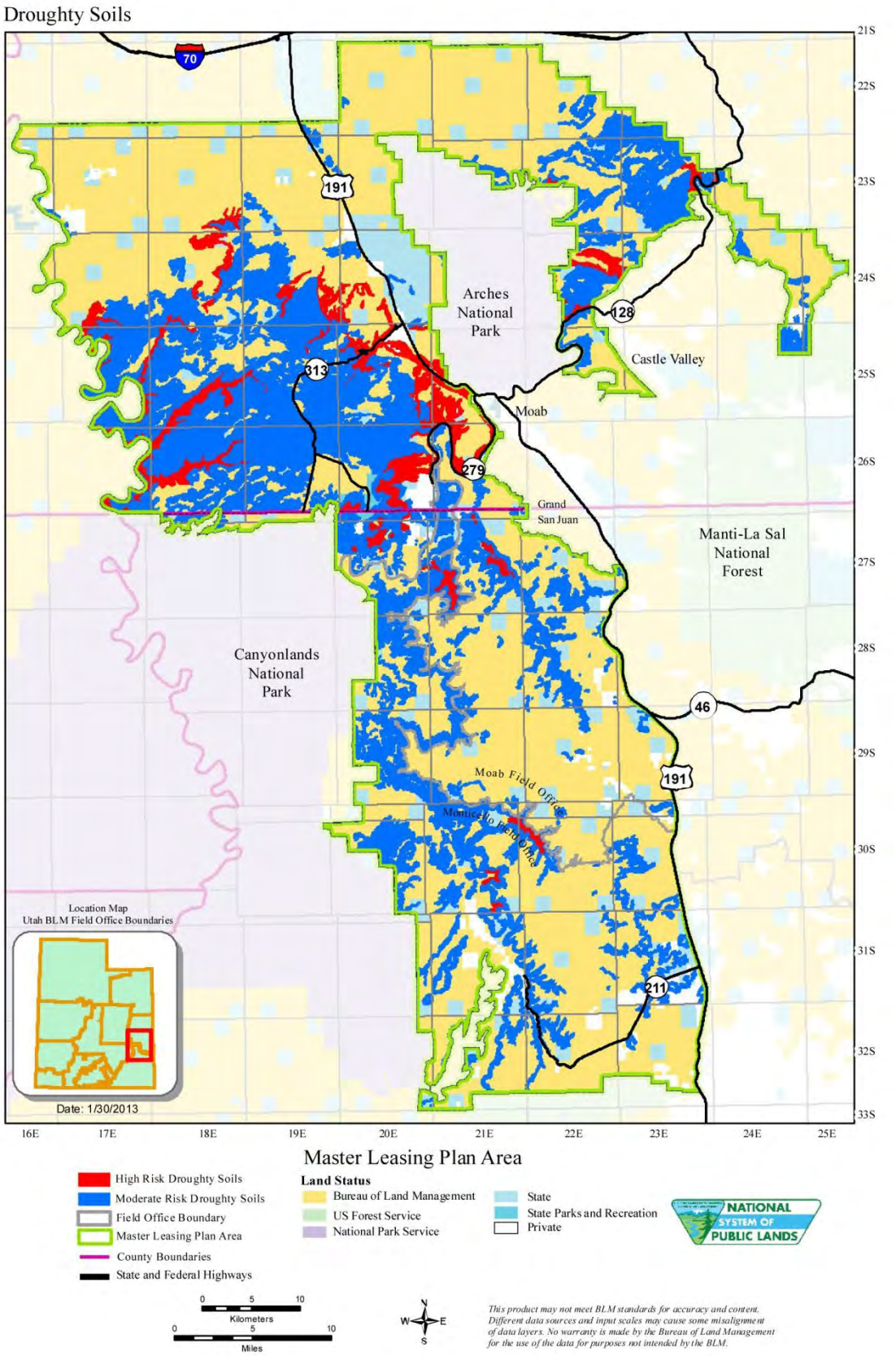

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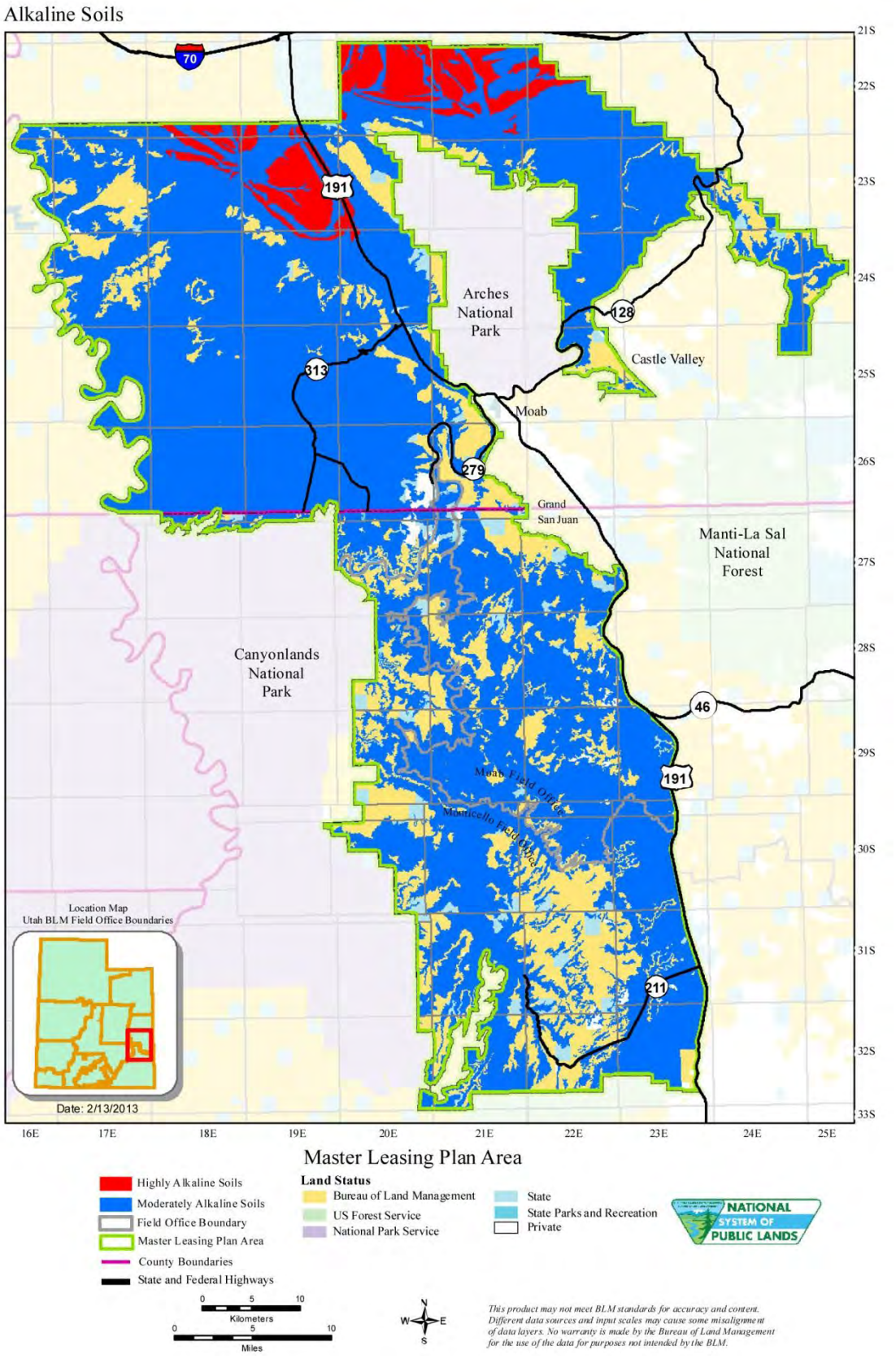

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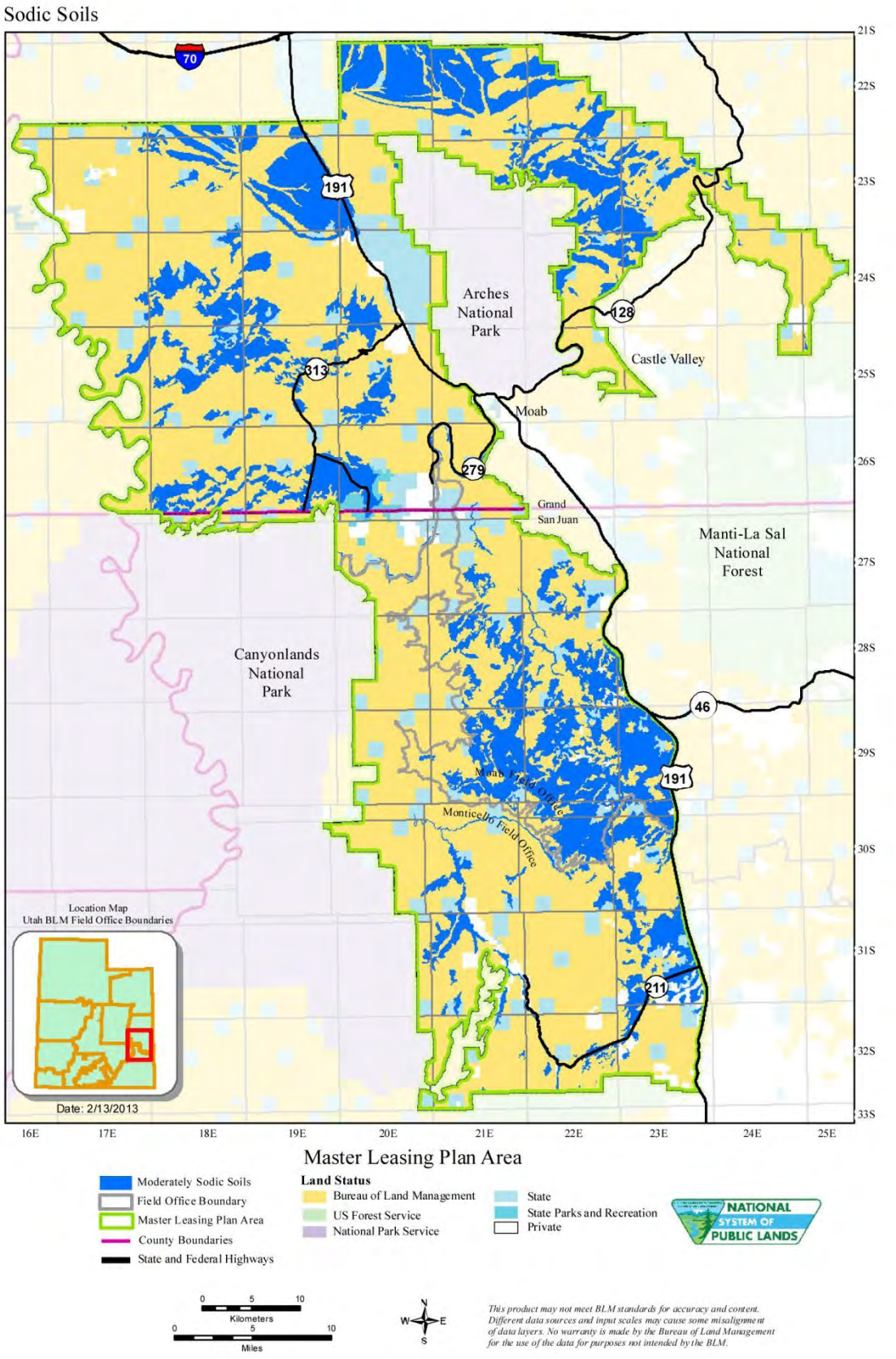

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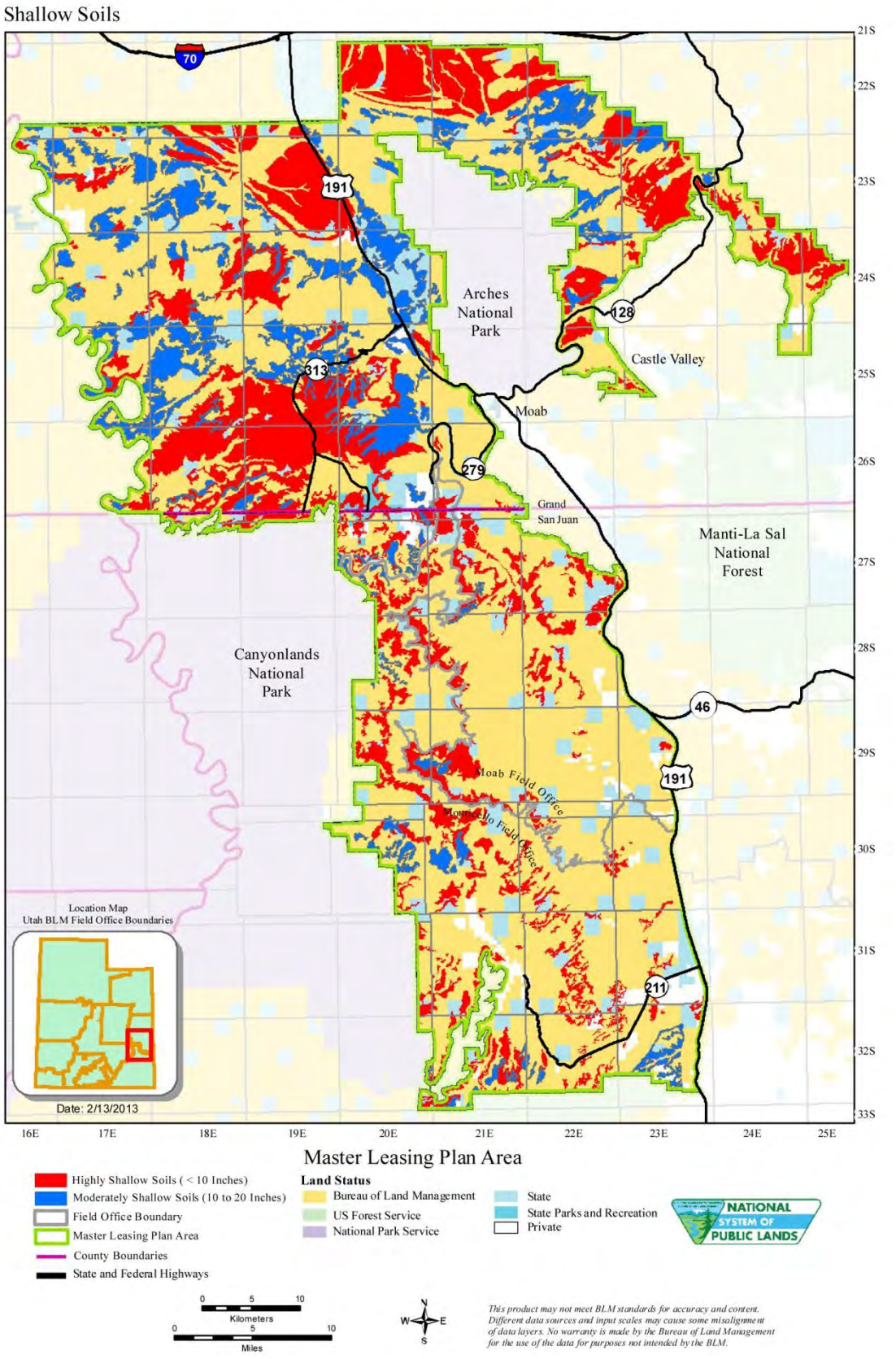

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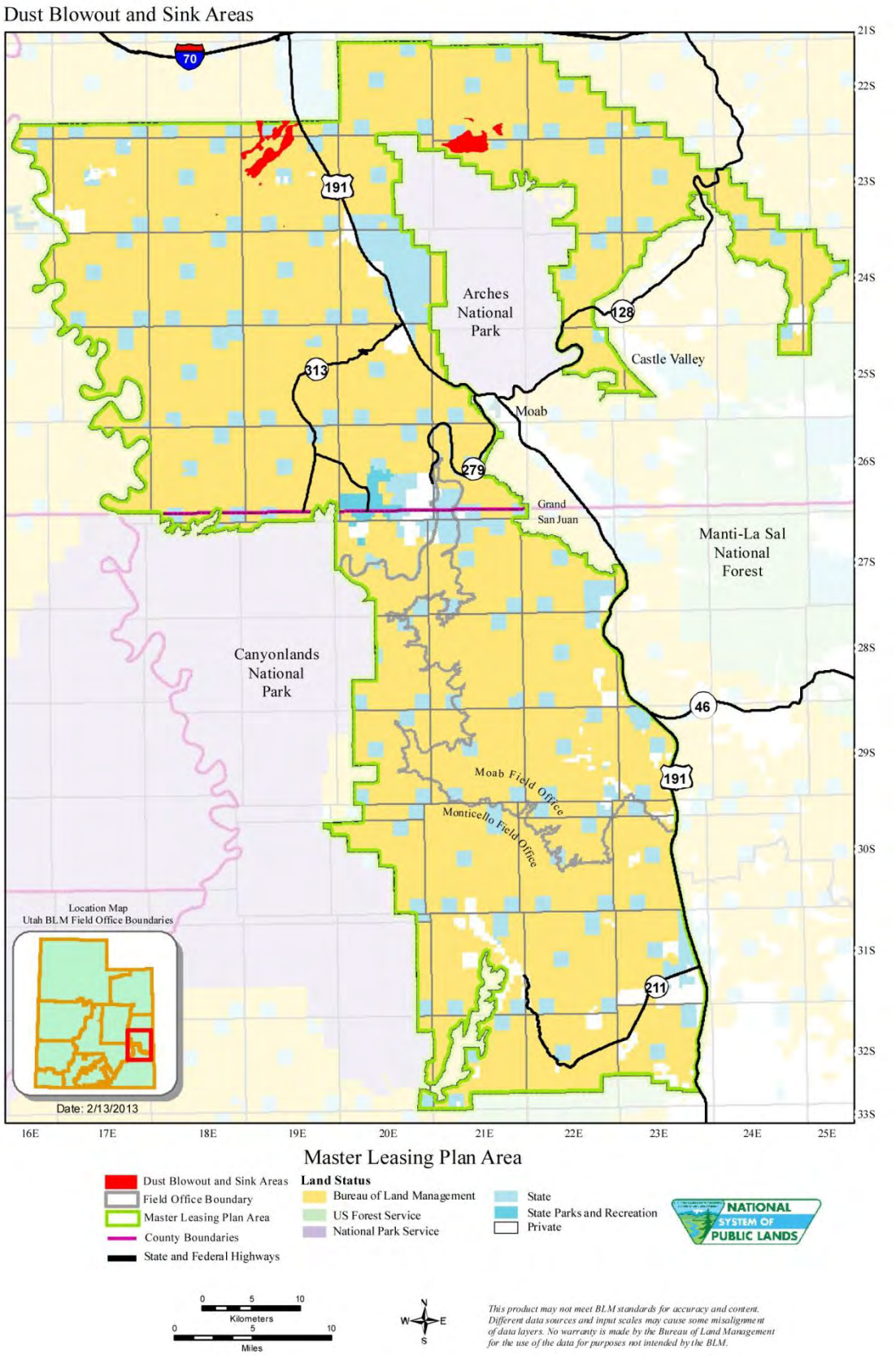

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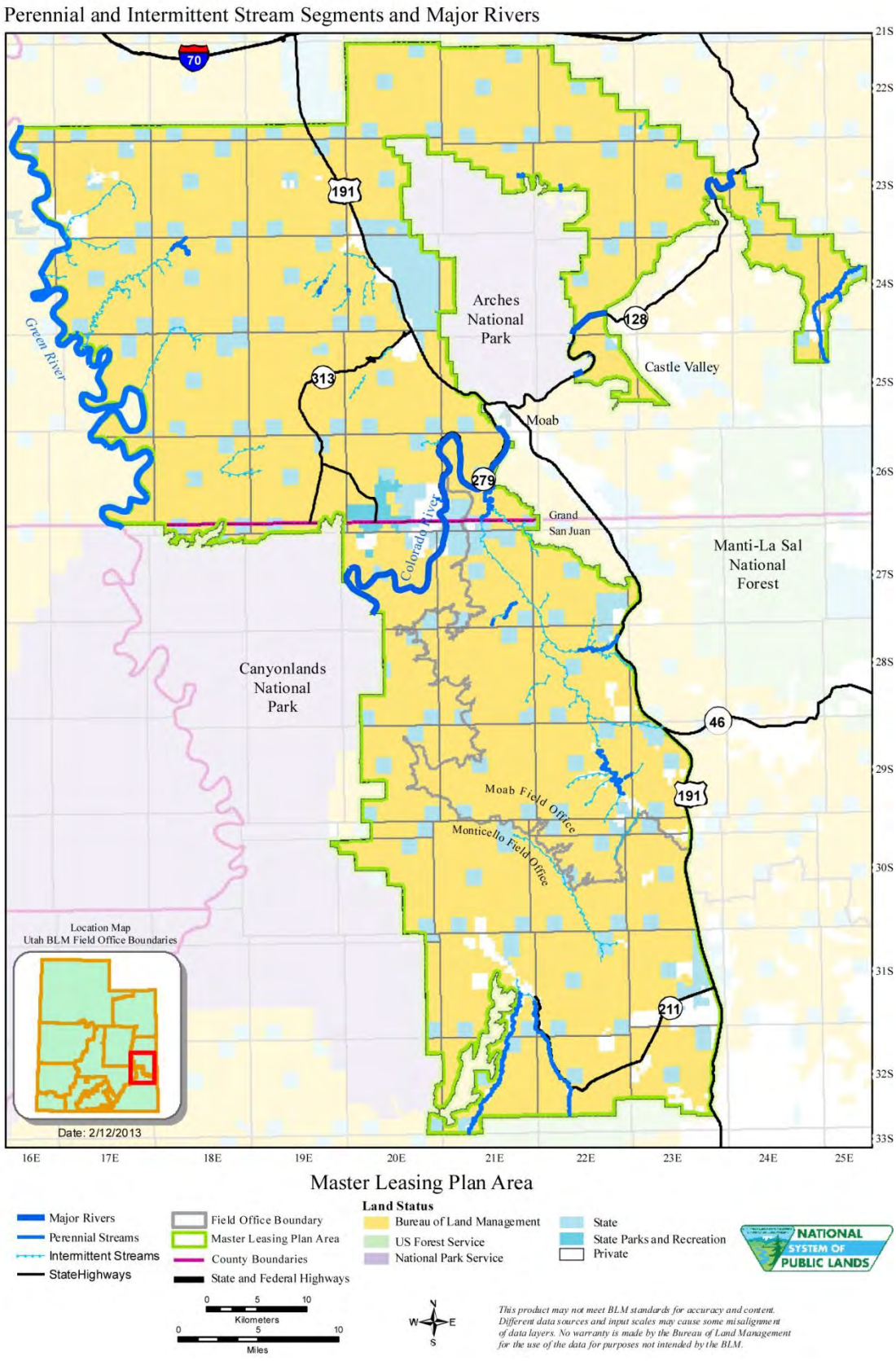

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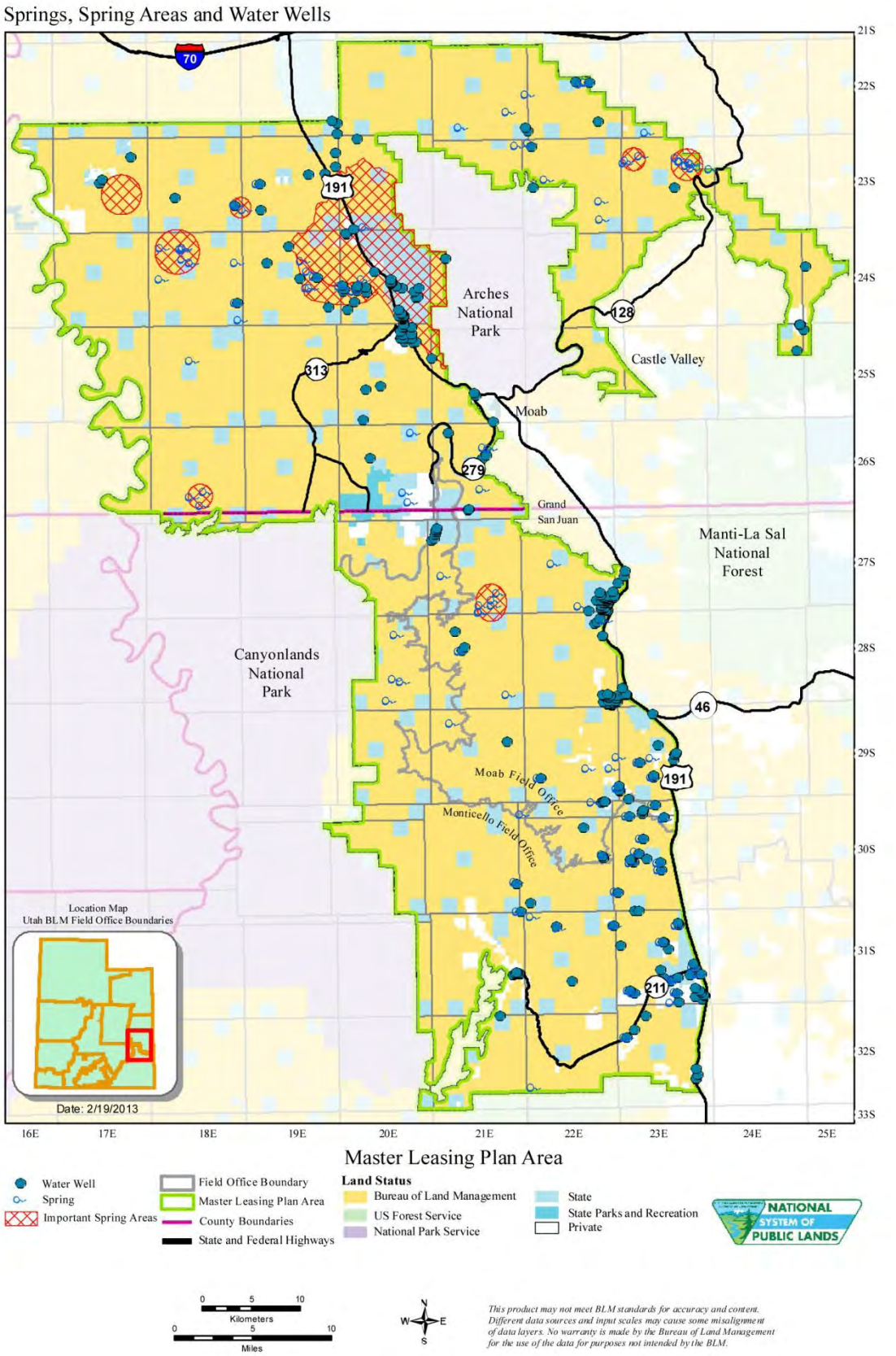

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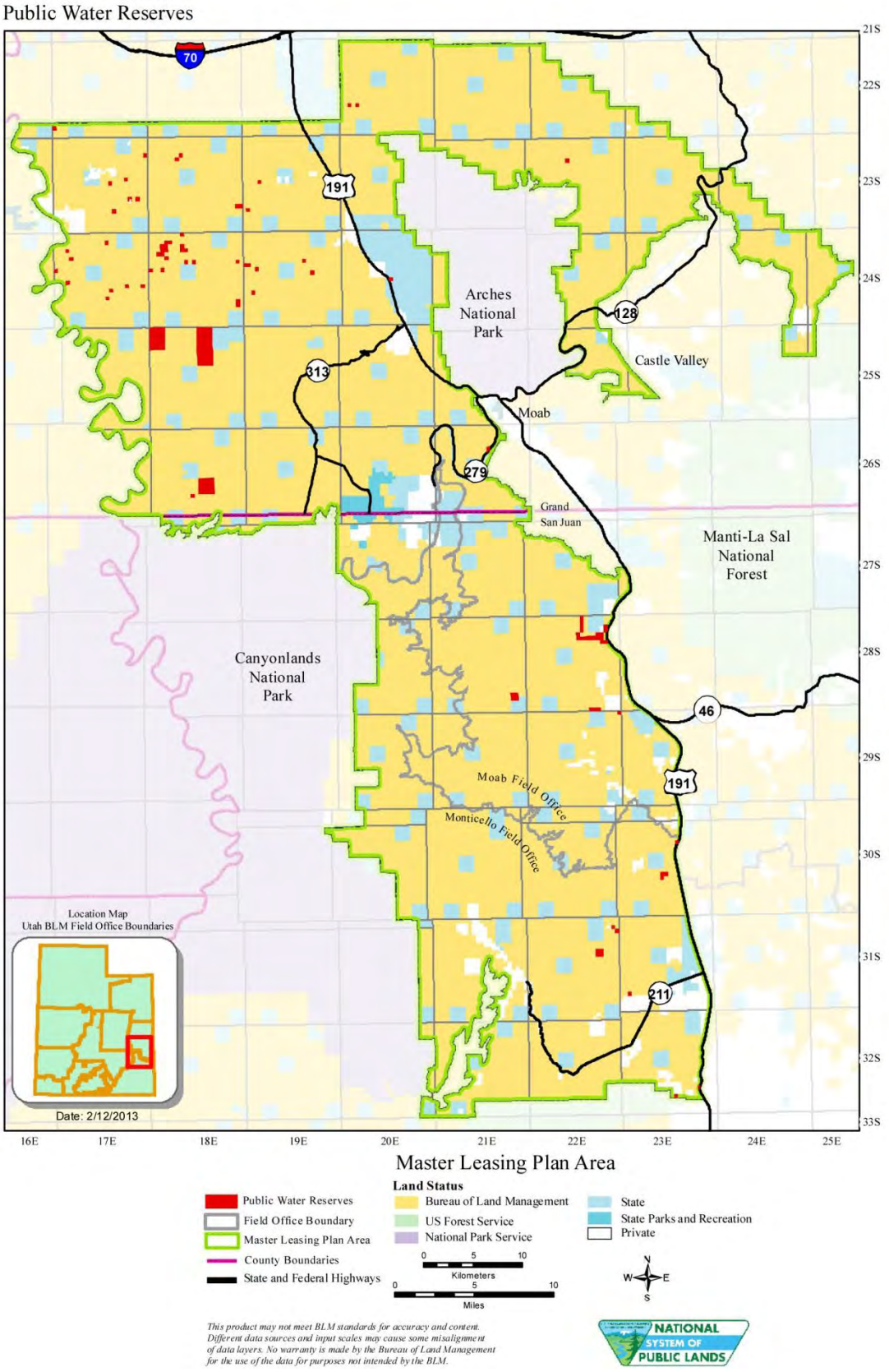

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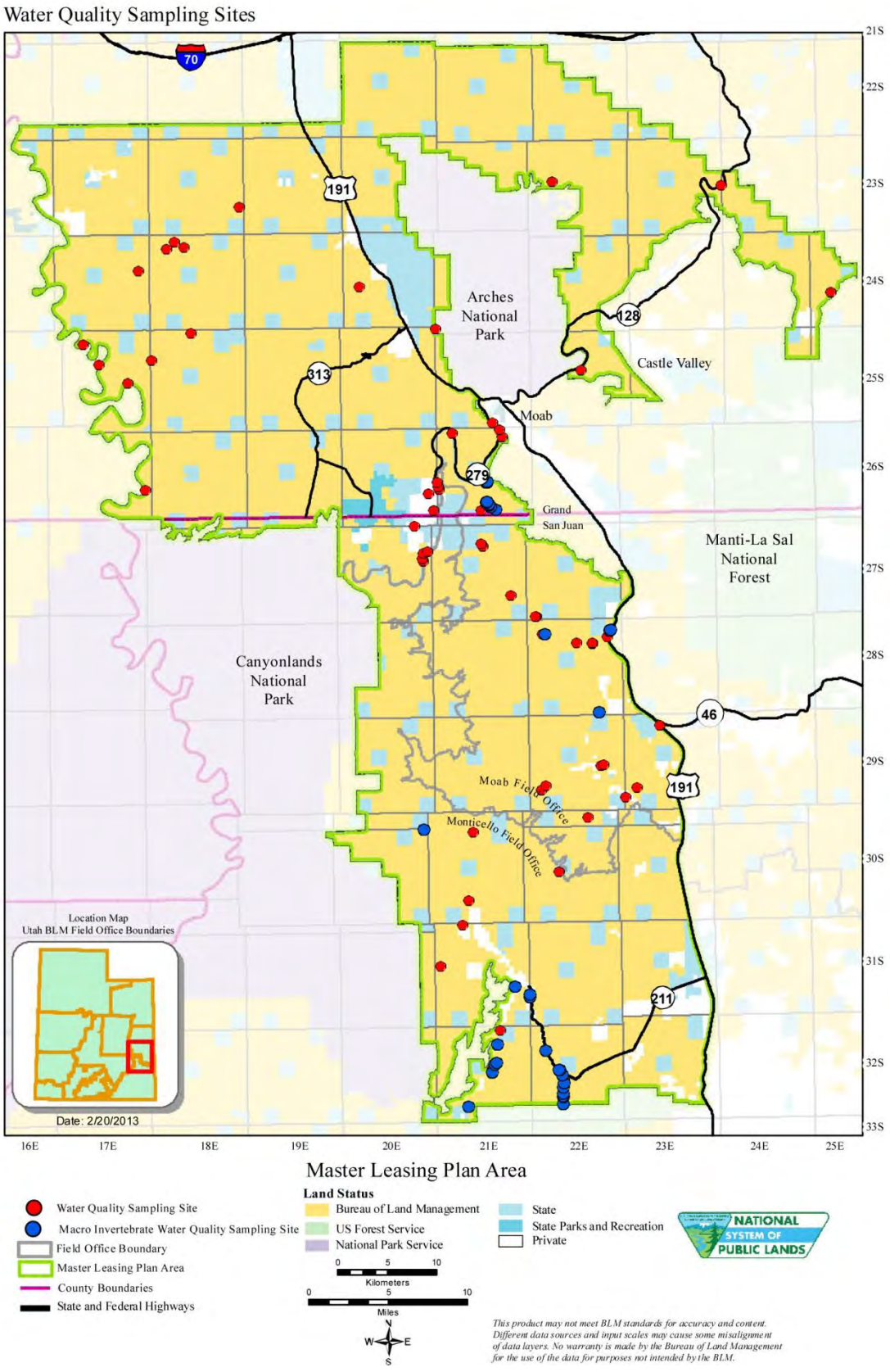

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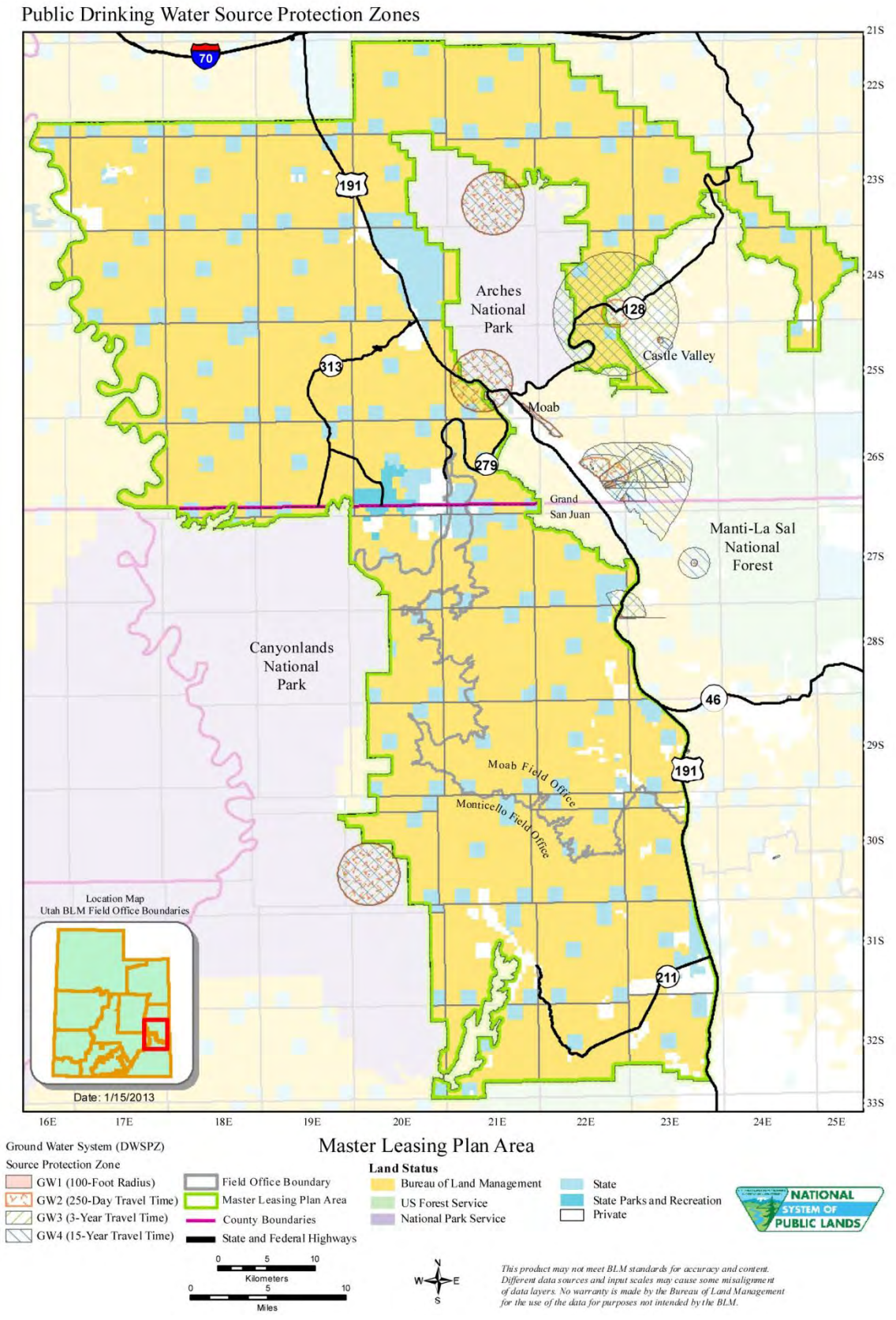

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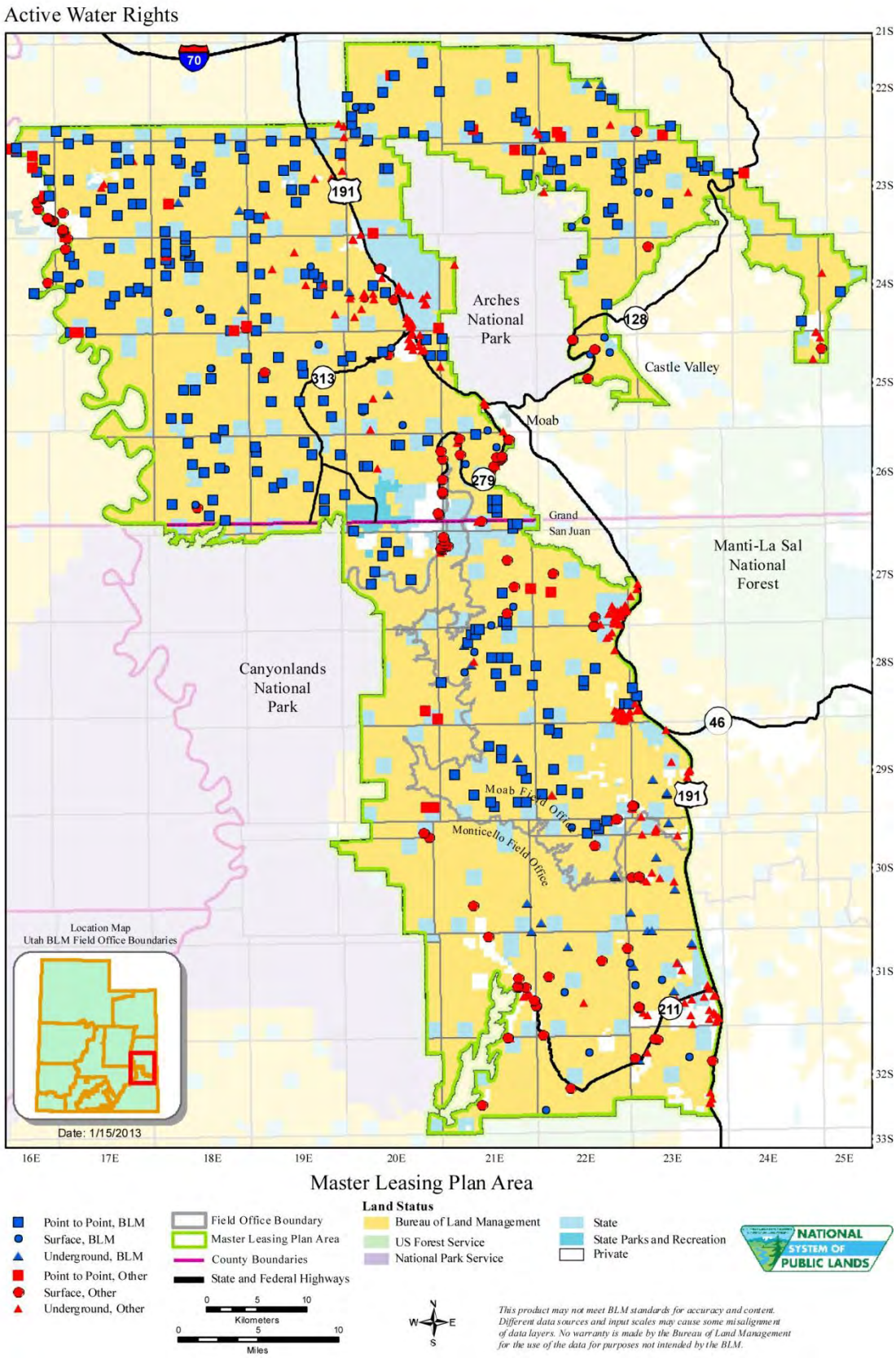

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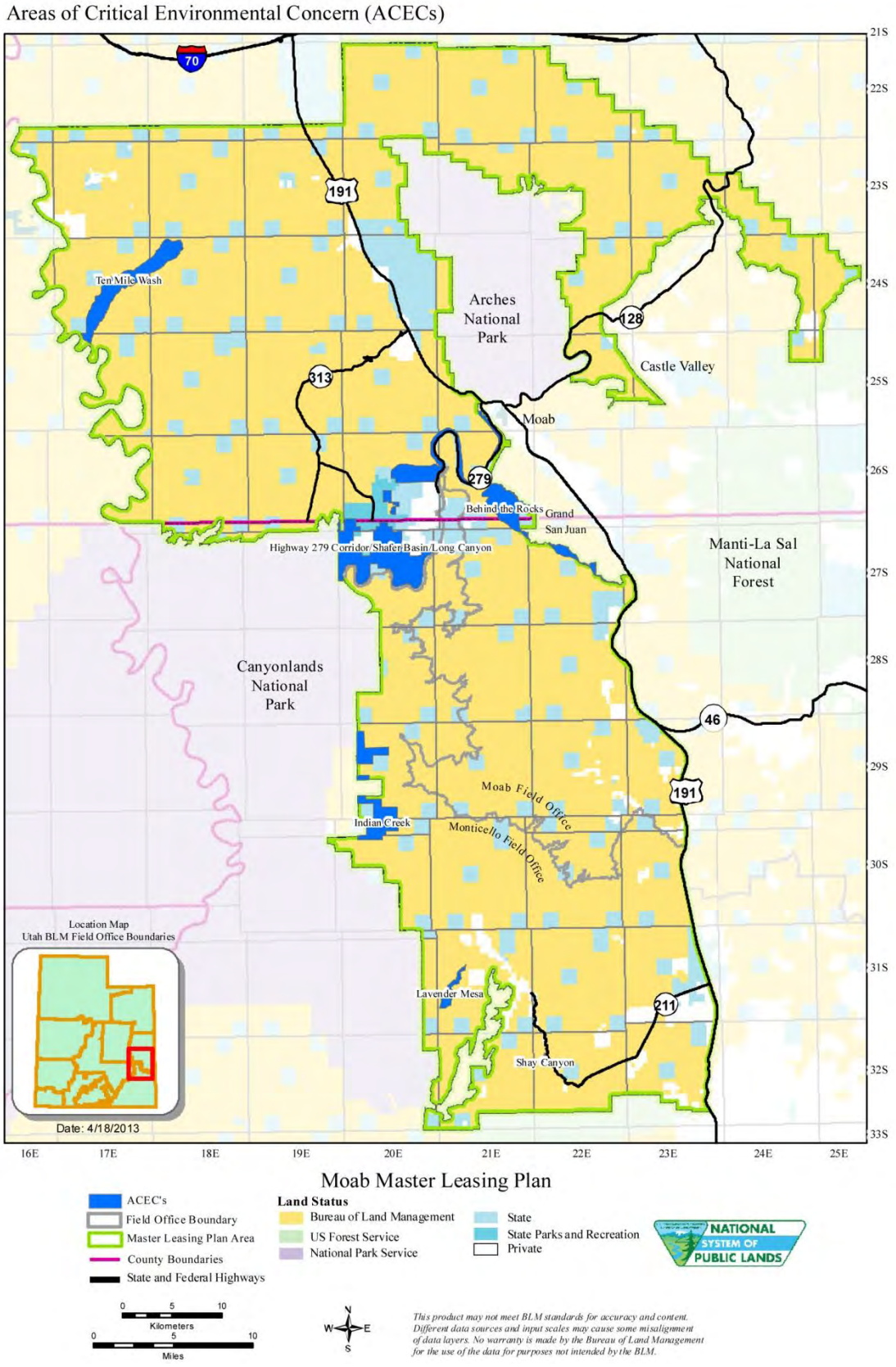

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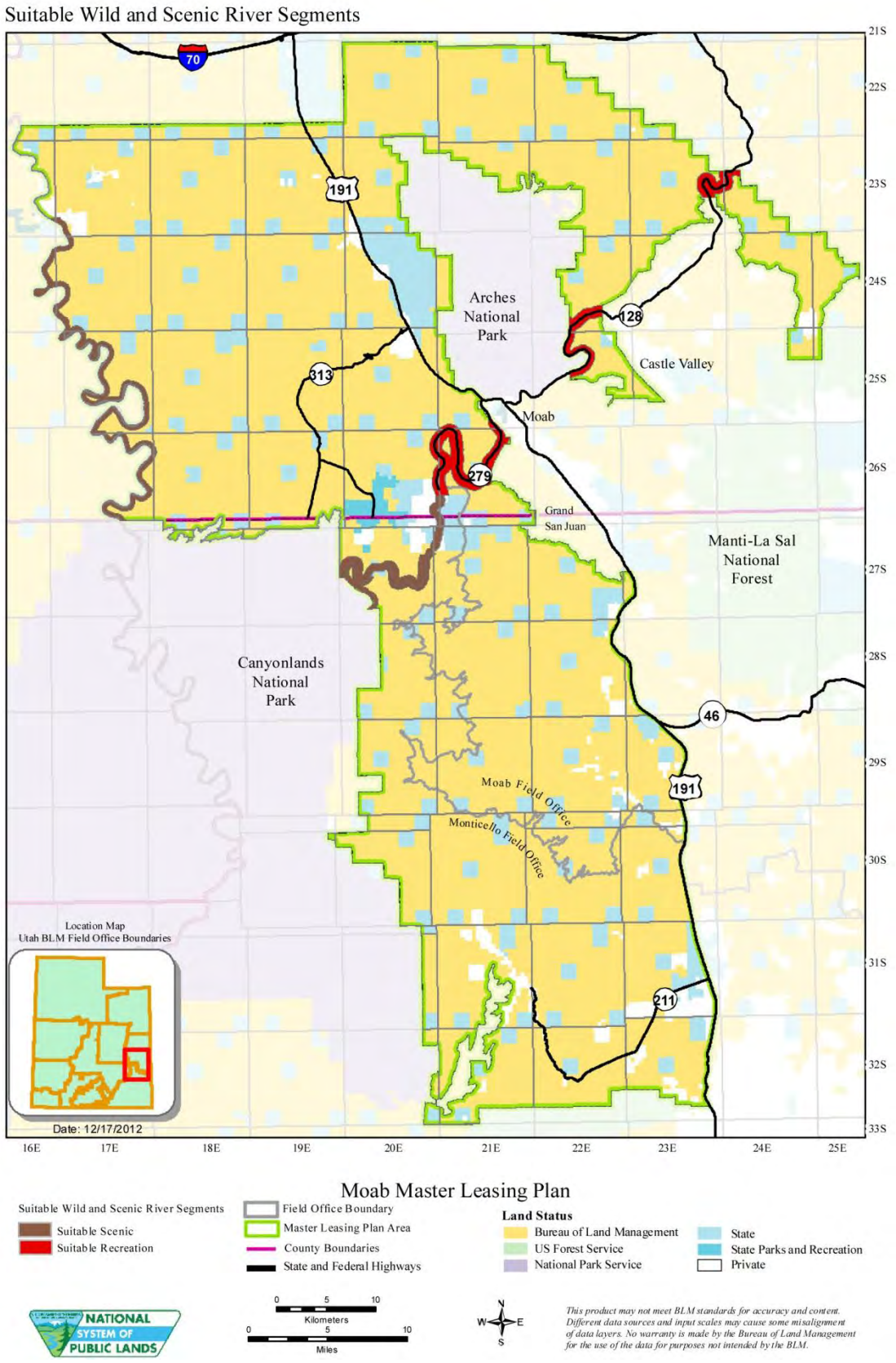

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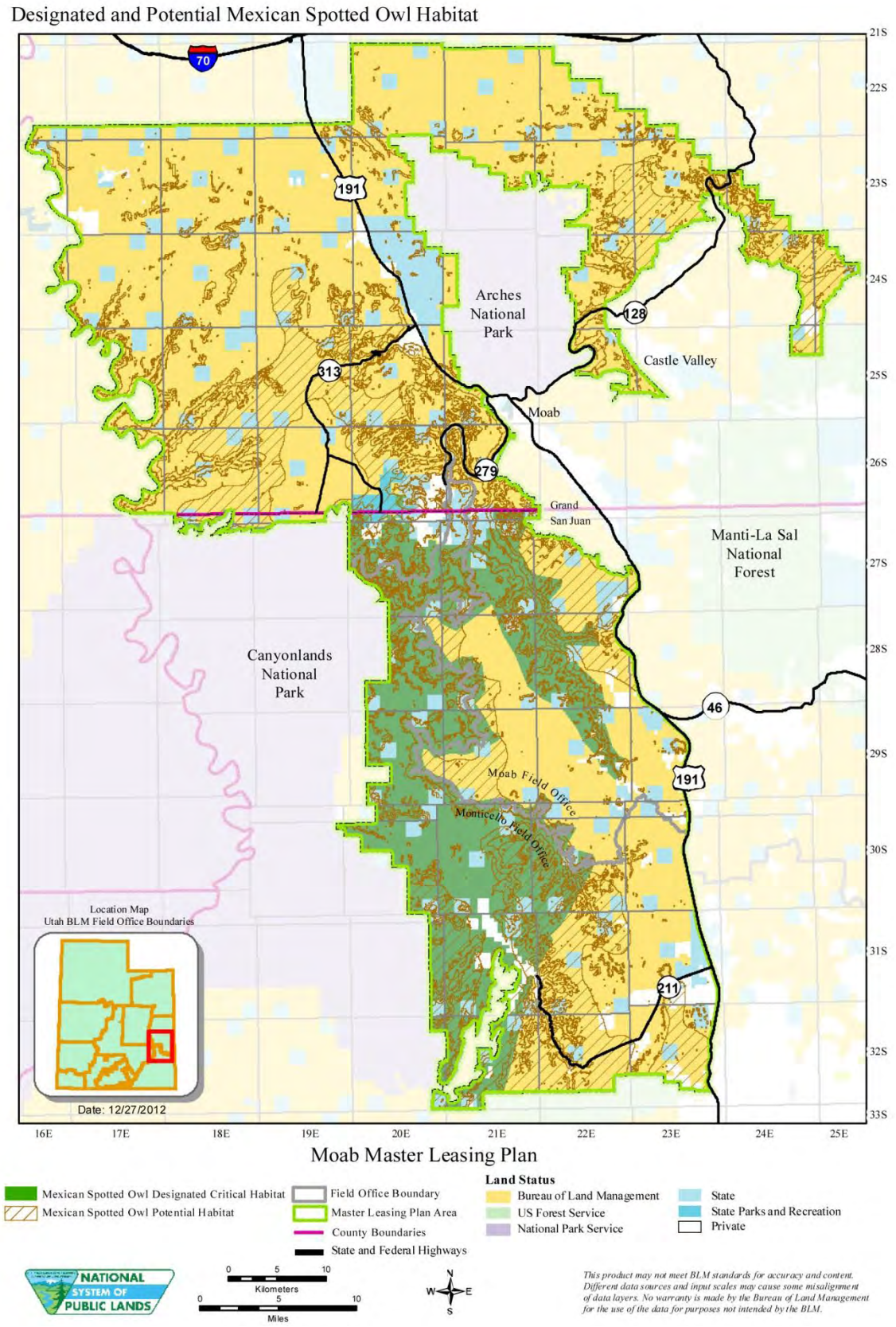

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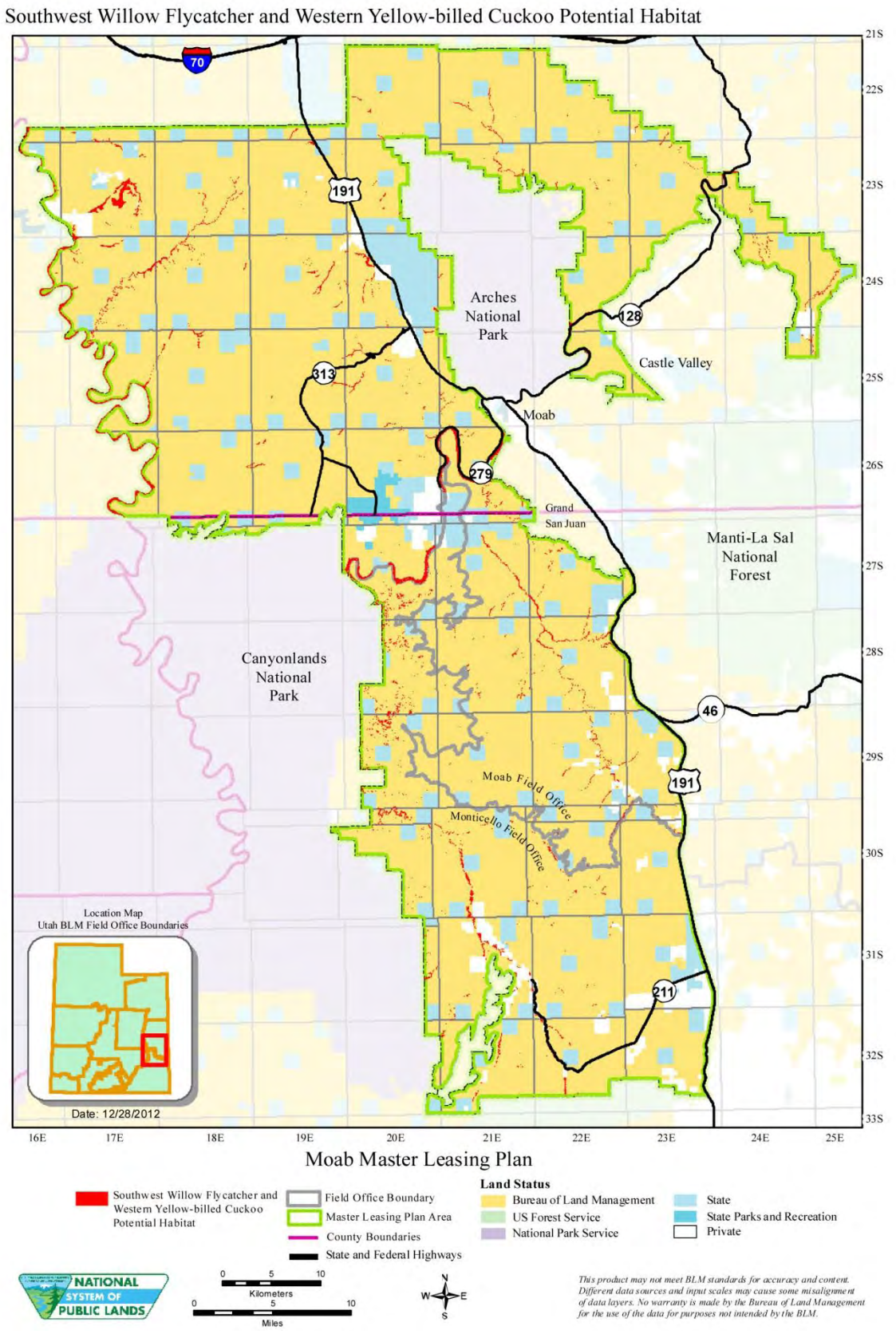

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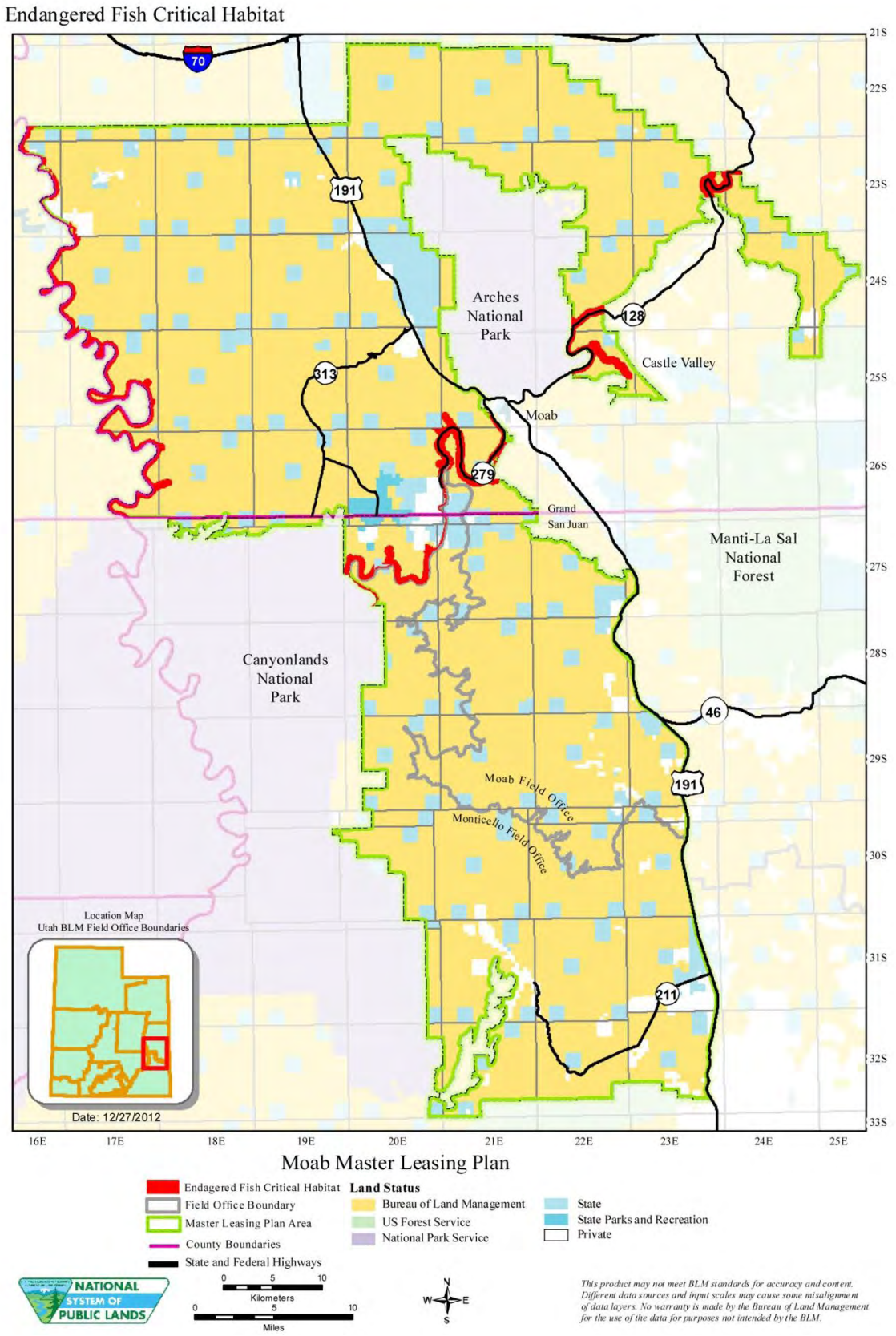

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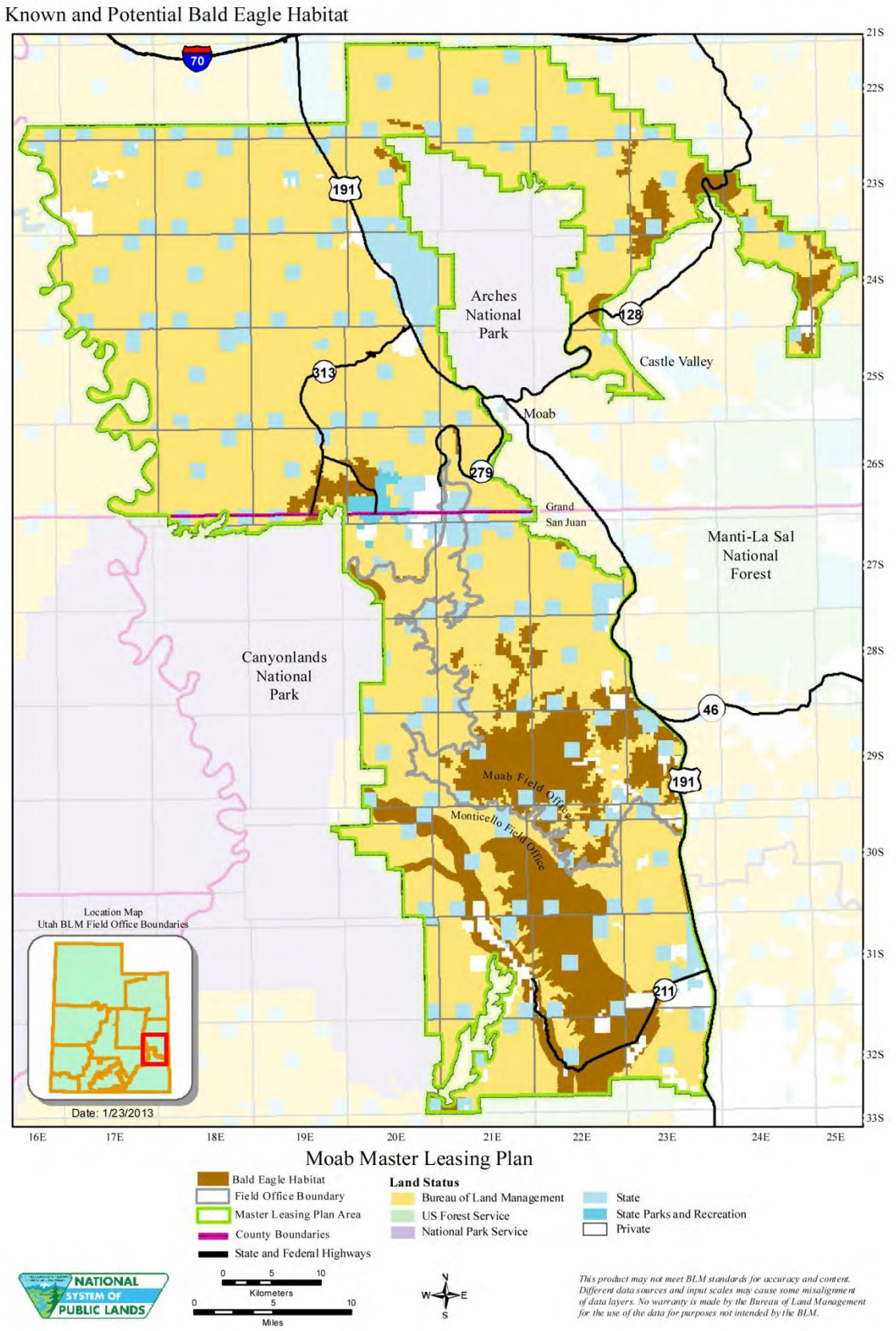

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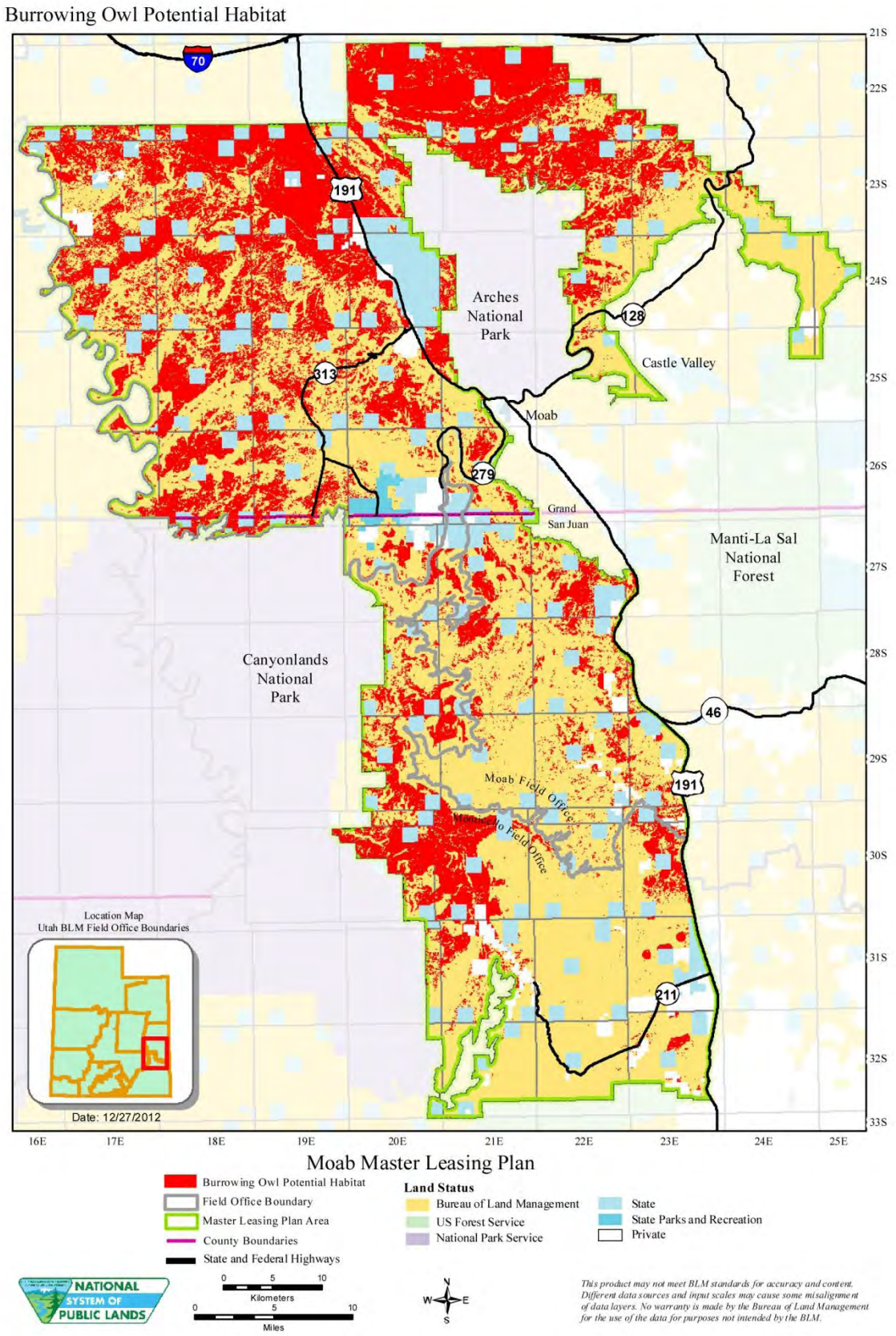

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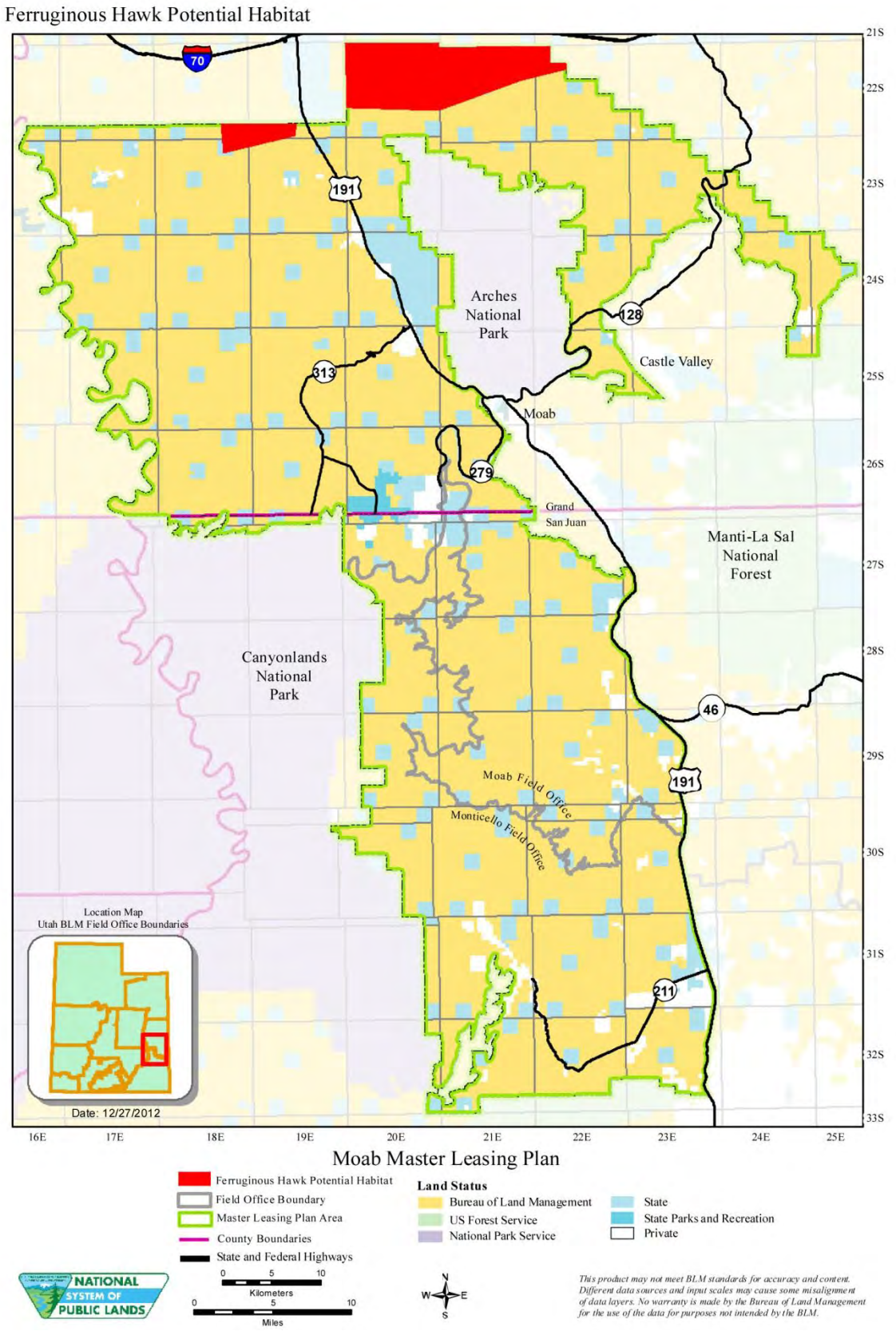

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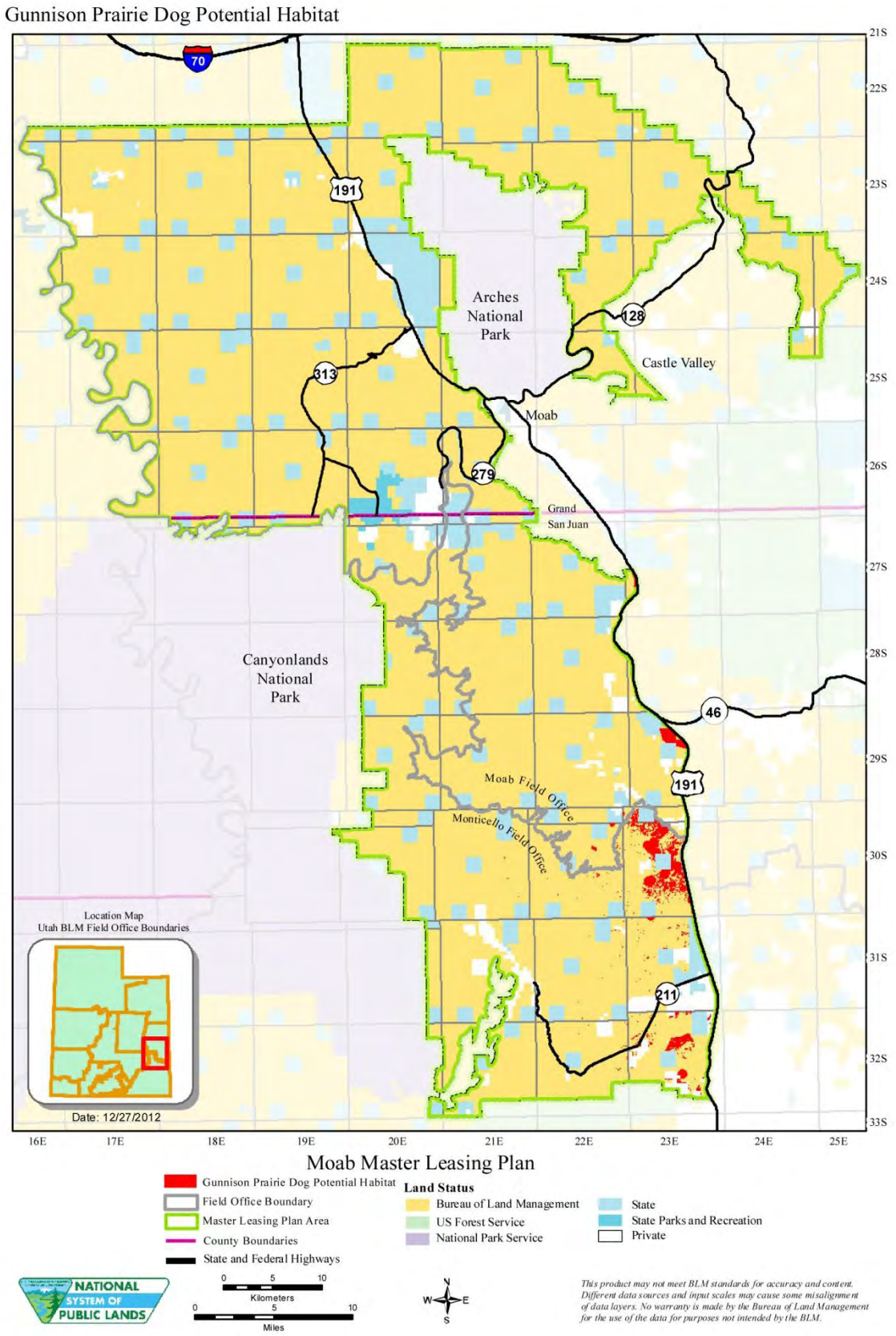

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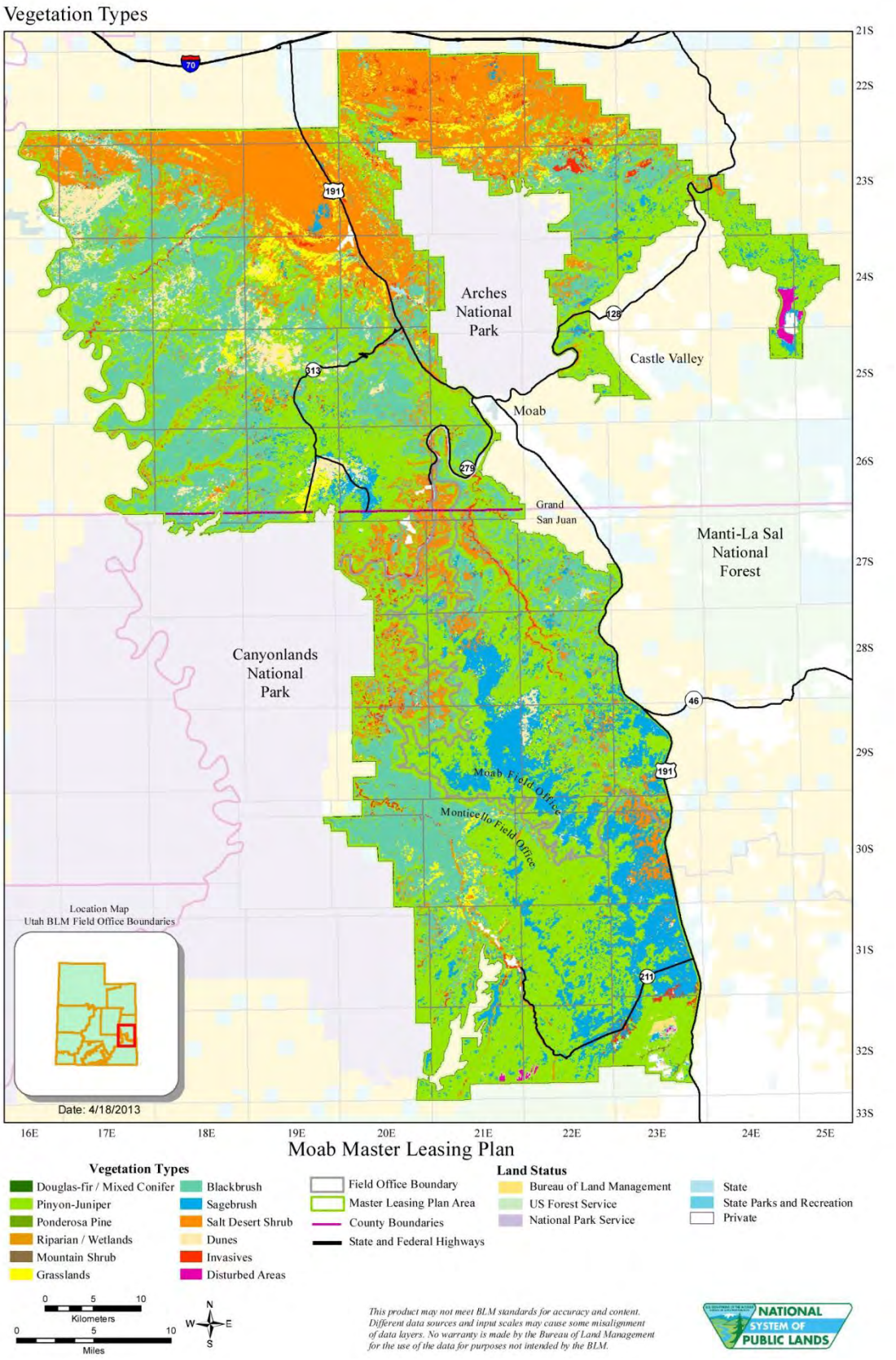

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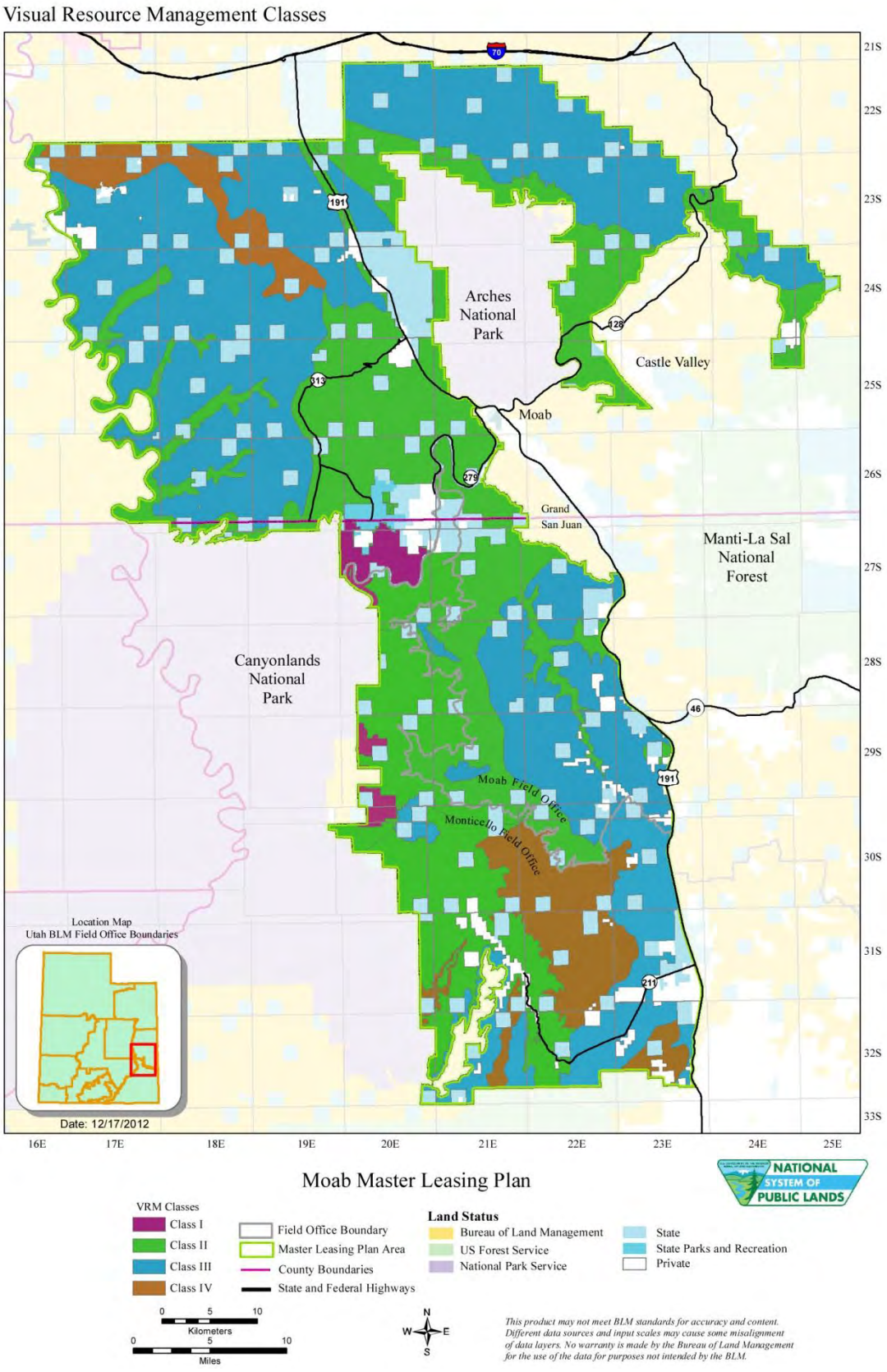

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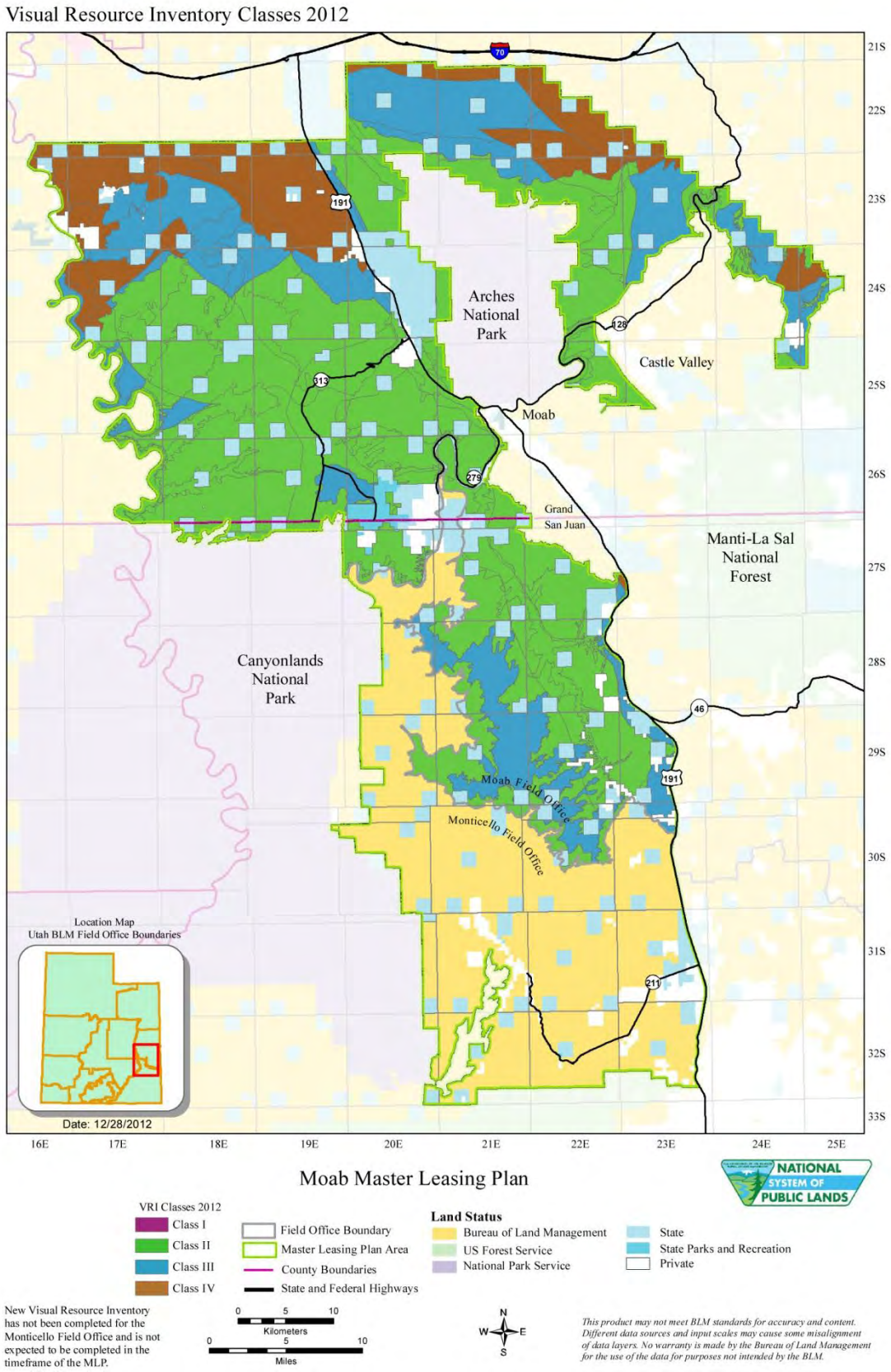

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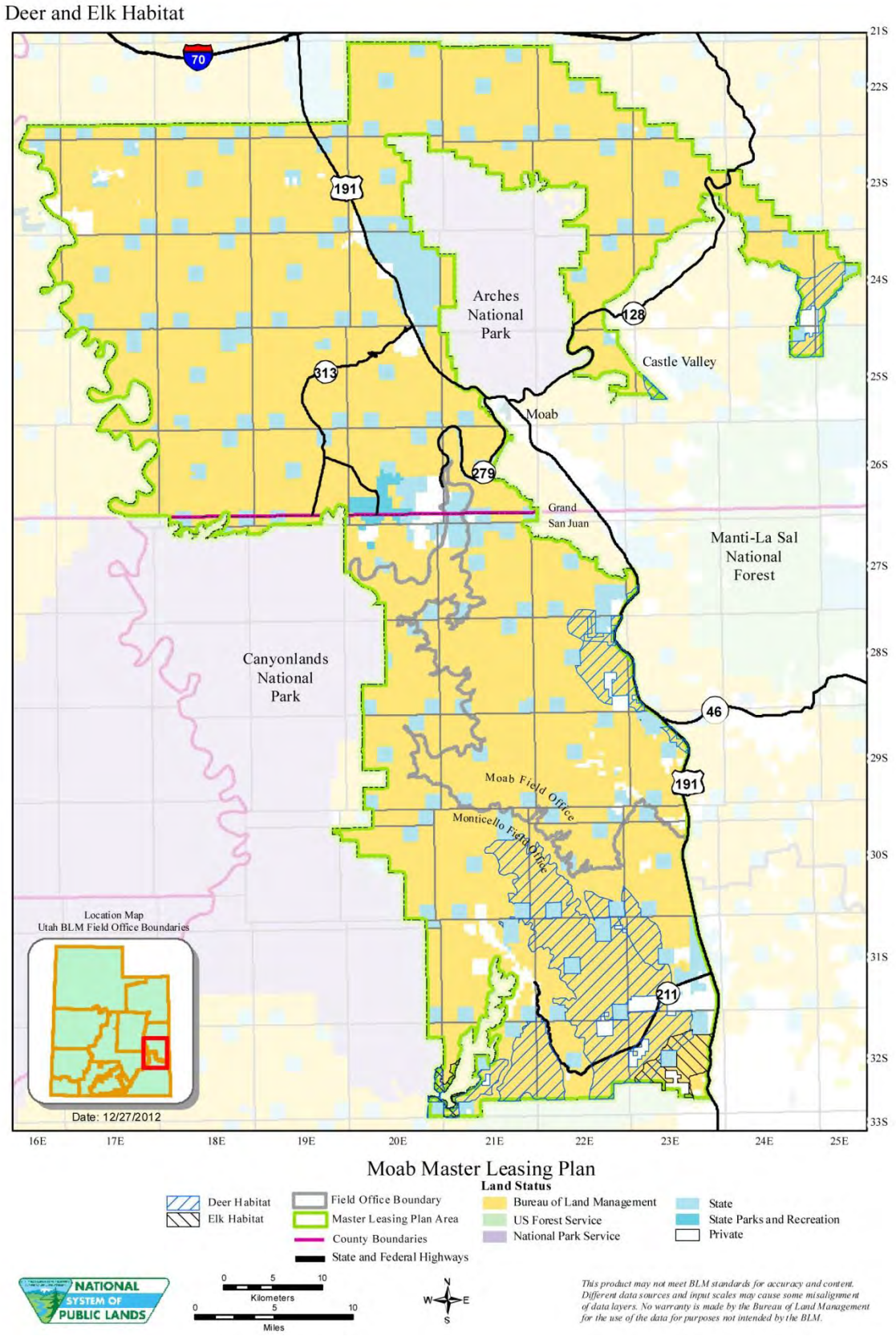

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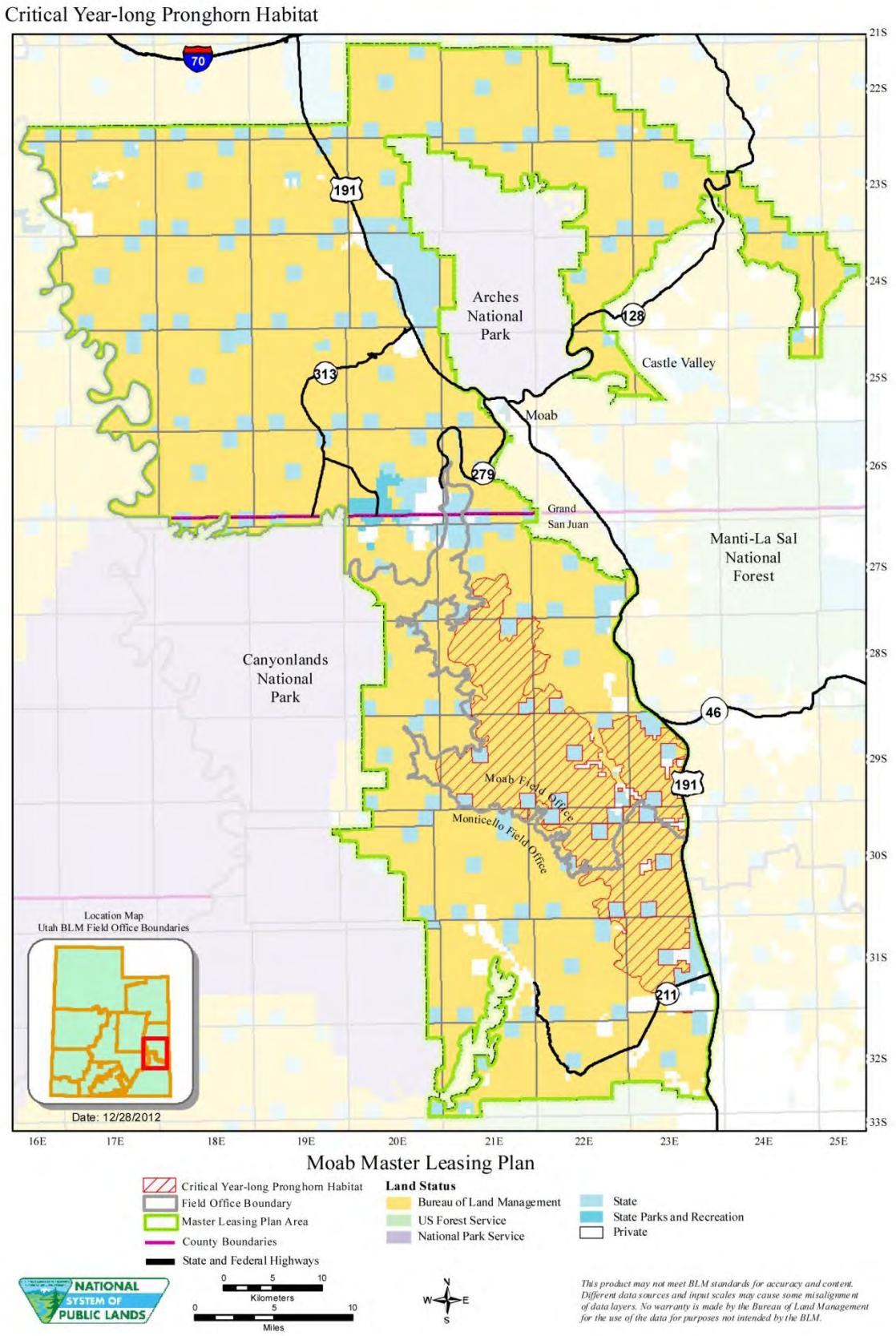

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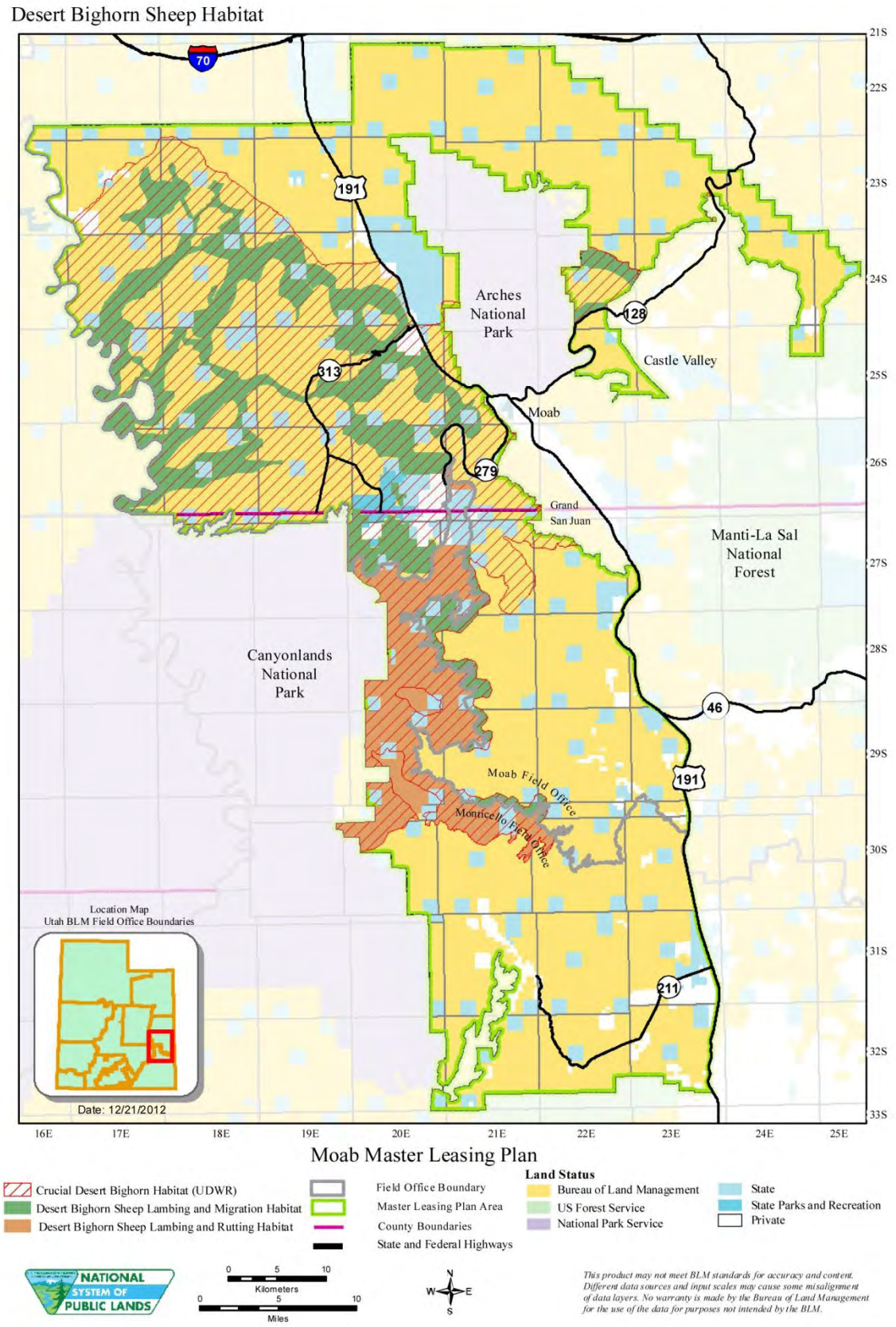

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