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# Chapter 3



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### 3.3 RESOURCE USE CONDITIONS

This section contains a description of the human uses of resources in the GJFO planning area and follows the order of topics addressed in Chapter 2:

- Forestry
- Livestock Grazing
- Energy and Minerals
- Recreation and Visitor Services
- Comprehensive Travel and Transportation Management
- Lands and Realty

#### 3.3.1 Forestry

BLM manages three million acres of forest and woodland lands in Colorado, including over half a million acres in the GJFO decision area. Tree species used commercially such as Douglas-fir and ponderosa pine make up only a small percentage of this acreage. The majority of woodland forests are dominated by tree species that are not traditionally used in commercial markets, such as pinyon-juniper and gambel oak (*Quercus gambelii*). Wood products harvested from BLM lands include sawtimber, firewood, Christmas trees, post and poles, wildings (live trees), and biomass. BLM management emphasizes forest health restoration and reducing the risk of catastrophic wildfire rather than production of commercial timber.

#### **Current Conditions**

##### *Woodland and Forest Plant Communities*

The GJFO decision area includes 586,000 acres of forest and woodland vegetation, covering approximately 55 percent of the decision area. Pinyon-juniper woodlands account for the majority of this area, covering approximately 539,900 acres or 51 percent of the decision area. Woodland and forest vegetation types are described below and in **Section 3.2.6, Vegetation**.

##### Woodland

The pinyon-juniper type is found at elevations of 4,800 to 7,500 feet. Stands at lower elevations tend to be primarily juniper, while stands at higher elevations tend to be primarily pinyon pine. The pinyon-juniper type usually gives way to the mountain shrub type at elevations above 7,500 feet. Pinyon-juniper woodlands have varying degrees of stand health. Woodlands have been altered by historic livestock grazing, vegetation treatments, roads, and fire suppression. Disease has increased, likely due to mild winters and drought-stressed pinyon. Understory herbaceous species composition has also been altered, with an increase in introduced nonnative plant species and invasive plant species such as cheatgrass.

### Forests

Forested areas are located within the mountainous areas of the Uncompahgre Plateau, Grand Mesa, areas accessed by Douglas Pass, and the extreme northern areas of the Book Cliffs. These areas cover approximately 46,200 acres, or four percent of the decision area. The majority of commercial forest land is in isolated stands on slopes greater than 60 percent and with limited access. The main plant community types within this category are Douglas fir, aspen, and ponderosa pine, described below.

Douglas fir is generally found on the northern and eastern aspects of the Book Cliffs and the Roan Plateau and occupies around 31,800 acres, or approximately three percent of the decision area. This species is found on steep slopes at elevations between 7,000 and 9,000 feet. Timber sales have been proposed in Douglas-fir stands; however, due to the stands' remoteness and steep slopes, the sales were not economically feasible. The predominance of mid- to late-seral-stage stands of Douglas fir in the region increase the susceptibility to insect outbreak and stand-replacing wildfire (US Forest Service 2007).

The aspen forest type accounts for 7,800 acres, or less than one percent of the decision area. Aspen occurs in areas above 8,000 feet on northern and eastern slopes with high moisture content. Within the decision area, aspen can be found on Douglas Pass, Mud Springs, and Uncompahgre Plateau. Aspen forests across Colorado have experienced widespread severe and rapid dieback and mortality, termed Sudden Aspen Decline. One cause of Sudden Aspen Decline is drought stress, which makes trees more susceptible to disease and insect infestation. The majority of aspen in the region are in later seral stages, between 80 and 120 years old, and an increasing amount of mortality due to fungal pathogens is expected in the future (US Forest Service 2007). Conifer species will become the dominant tree species in a significant portion of the current aspen cover type if succession continues.

Ponderosa pine occurs on the higher mesas and mountains of the decision area at about 8,000 feet. The ponderosa pine forest type accounts for 6,700 acres, or less than one percent of the decision area. These stands are found on Uncompahgre Plateau, Douglas Pass, and other scattered areas, and occupied areas tend to be small. Frequent (less than 30-year interval), usually low-intensity wildland fires have burned through many ponderosa pine stands, removing competing understory vegetation and downed material. Core samples taken from the ponderosa pine stands on the Uncompahgre Plateau detected no fire history in the present stand.

### *Current Management and Use*

**Table 3-27**, Woodland and Forest Acreage by Dominant Species, shows acreage for woodland and forest lands, regardless of suitability for harvest. Productive woodland or forestland is defined as an area capable of bearing vegetative products of commercial character and economically available now or

prospectively for commercial use and not otherwise withdrawn from use. Woodland and forest acreage is classified as either productive and suitable for management and harvesting on a 180-year rotation or unsuitable for management.

**Table 3-27**  
**Woodland and Forest Acreage by Dominant Species**

<b>Vegetation Type</b>	<b>Species</b>	<b>BLM Acreage</b>	<b>Percent of Decision Area</b>
Woodland	Pinyon-Juniper	539,900	51
Forest	Douglas Fir	31,800	3
	Aspen	7,800	less than 1
	Ponderosa Pine	6,700	less than 1

Source: BLM 2010a

Pinyon-juniper woodlands are classified as unsuitable for management if they have the following site conditions or occur in the following locations:

- Steep slopes;
- Fragile soils;
- WSAs;
- Recreation sites;
- Wildlife areas;
- Areas containing sensitive species; and
- Areas of high cultural sensitivity.

Forest lands are classified as unsuitable for management if they occur in the following locations:

- Municipal watersheds;
- WSAs;
- Recreation areas;
- Wildlife areas;
- Special status species habitat; and
- Areas of high cultural sensitivity.

An estimated 1,300 acres of commercial forest and 111,200 acres of woodland were classified as land productive and suitable for management in the 1987 RMP. Approximately 37,800 acres of commercial forest and 424,900 of woodland were classified as nonproductive and unsuitable for management.

The BLM has developed management zones for areas likely to have forestry product harvesting, and future site-specific management actions will be organized by management zone. Areas with defined management zones include the following:

- Bangs Canyon: 59,100 acres;
- Book Cliffs: 214,300 acres;
- Gateway: 194,300 acres;
- Glade Park: 67,100 acres;
- Grand Mesa Slopes: 60,700 acres;
- Grand Valley: 155,600 acres;
- Plateau Valley: 66,800 acres; and
- Roan Creek: 243,300 acres.

Current forestry uses in the project area include personal and commercial harvest of fuel wood, poles and posts for fence building, wildings (live trees), and Christmas trees. Pinyon pine has historically been the preferred species for fuelwood harvest, though juniper and other species are also collected. Poles and posts are generally collected from pinyon-juniper woodlands, and Christmas trees and wildings are harvested throughout the project area. The GJFO authorizes approximately 1,100 personal use permits per year, the majority of which are for Christmas trees. Based on permits issued over the past four years, current demand for Christmas trees is approximately 848 trees per year, demand for personal use firewood is 564 cords per year, and demand for juniper fence is 1,844 posts per year (see **Table 3-28**, Permits Issued for Forestry Products Fiscal Years 2007-2010). Demand for large-scale commercial harvest has been declining over the past two decades; however there is still a steady demand for small scale commercial wood harvesters.

**Table 3-28**  
**Permits Issued for Forestry Products Fiscal Years 2007-2010**

<b>Category</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
Fuelwood (cords)	584	745	511	416
Posts	1,703	1,400	2,180	2,095
Wildings (feet)	624	567	425	80
Christmas Trees	852	795	930	813

#### *Biomass*

Biomass resources are a byproduct of BLM actions on public lands and are not specifically cultivated for feedstock production. The BLM defines woody biomass as “the woody plants and portions of the trees, including limbs, tips, needles, leaves, and other woody parts, or rangeland environment, that are the byproducts of the management, restoration, and/or hazardous fuel reduction

treatment.” Biomass can be collected and harvested from BLM lands through timber sales, stewardship, and hazardous fuels reduction.

#### Current Management and Use

Biomass harvest and utilization has not been a part of existing management actions within the GJFO and is not addressed in the current GJFO RMP (BLM 1987).

#### Resource Potential

The BLM/NREL study (BLM and DOE 2003) evaluated the long-term sustainability to support biomass plants using the monthly Normalized Difference Vegetation Index computed from National Aeronautics and Space Administration’s Advanced Very High Resolution Radiometer Land Pathfinder satellite program.

The GJFO is not in the top 25 BLM planning areas having the highest potential for biomass resources. For an area to have biomass development potential, it must meet the following criteria (BLM and DOE 2003):

- Having a Normalized Difference Vegetation Index of 0.4 for at least four months between April and September;
- Having a slope of less than 12 percent;
- Being located no more than 50 miles from a town with at least 100 people; and
- Having BLM compatible land use.

Biomass potential for any given area is dependent upon: (1) vegetation type and productivity, which is determined by soil and microclimate conditions; and (2) BLM management actions that may result in the production of biomass as byproduct. Wooded landscapes have a greater potential to produce biomass than shrublands, which in turn have a greater potential to produce biomass than grasslands and barren areas. Vegetation types available for biomass production are as follows (**Figure 3-12, Biomass Energy Potential**):

- Pinyon-juniper – 520,100 acres;
- Saltbush – 174,500 acres;
- Mountain shrub – 159,300 acres;
- Sagebrush – 83,200 acres;
- Douglas-fir and white Fir – 31,700 acres;
- Greasewood – 25,500 acres;
- Riparian – 9,800 acres;
- Aspen – 7,700 acres;

- Blackbrush – 7,000 acres;
- Ponderosa pine – 6,400 acres; and
- Barren land – 10 acres.

#### Existing Activity

There are no current or historical biomass energy facilities on public lands within the GJFO decision area, nor has the GJFO received any ROW applications for such facilities (GeoCommunicator 2009).

#### **Trends**

There is evidence that woodland tree species, especially pinyon and juniper, are spreading and becoming established in areas that are below their historic elevation limits as a result of fire suppression and climate variation (Miller and Taucsh 2001). Should this trend continue, the availability of fuel wood and other products may continue to increase. However, the trend towards more frequent and more severe wildfire in denser stands may counter some of this increase.

The demand for Christmas tree, firewood, and posts/poles is expected to remain at current levels. However, there has been a slight increase in the demand for forestry related products. Firewood demand largely decreased over the past 15 years due to burning limitations and the availability of relatively cheap electricity and natural gas. This trend may reverse itself should further increases in natural gas and fuel oil prices occur. The supply of firewood and wood fiber for other uses is expected to increase in response to fuel management and forest health projects.

A new sector of forestry use is biomass materials. There is little potential for providing renewable biomass fuel within woodlands. Removal of forest and woodland materials as a result of energy development is expected to increase and create the greatest demand on forest and woodland products. Growth of this market sector is anticipated to continue, placing higher demand on small sawlogs and woodlands. Numerous projects and programs have been developed to identify and promote the use of small sawlogs and woody biomass in Colorado (BLM 2009g). The US DOI collaborates with the Departments of Energy and Agriculture to encourage the use of woody biomass by-products from restoration and fuel treatment projects. Legislation in 2003 expanded and extended the use of stewardship contracting by the BLM and US Forest Service (Section 323 of Omnibus Appropriations bill, Public Law 108-7). These contracts will allow private companies, communities, and others who engage in contracts to retain forest and rangeland products in exchange for the service such as thinning trees and brush and removing dead wood. Long-term contracts foster a public-private partnership to restore forest and rangeland health by giving those who undertake the contracts the ability to invest in equipment and infrastructure needed to productively utilize material generated from forest thinning, such as brush and other woody biomass, to make wood products or to produce biomass energy, all at savings to taxpayers.

Past decisions regarding forest and woodland products management emphasized wood products, but forest management policy on federal lands has changed, emphasizing forest health and hazardous fuel reduction. Much of the current forest management is guided by the National Fire Plan (US DOI 2000) and the Healthy Forests Restoration Act of 2003 (16 USC at 1611-6591). The National Fire Plan established an intensive, long-term hazardous fuels reduction program and provisions to hasten hazardous fuel reduction. In fiscal year 2009 alone, more than 16,000 acres of fuels on BLM-managed lands in Colorado were treated by prescribed fire and mechanical methods in part as a result of this directive. Direction for forest restoration projects is provided for in the Healthy Forests Restoration Act, which also emphasizes retaining larger trees and removing in-growth to promote healthy forests that are more resistant to fire, insects, and disease.

### 3.3.2 Livestock Grazing

In 1997, the BLM and the three Resource Advisory Councils, in close coordination with permittees, the environmental community, and interested members of the public, completed land health standards and grazing guidelines specifically for BLM-administered lands in Colorado (**Appendix E**). These standards and guidelines are designed to provide specific measurements of land health and to identify best management practices in keeping with the characteristics of a region, such as climate and vegetation types. These standards describe conditions needed to sustain public land health for soil, riparian systems, upland vegetation, wildlife habitat, threatened and endangered species, and water quality. They relate to all uses of public lands, including livestock grazing. Standards are integrated into the BLM's land management through incorporation into land use plans, as a basis for environmental assessments and through NEPA analysis, and as a basis for monitoring. Guidelines are integrated into land management by applying them to livestock grazing authorizations.

#### **Current Conditions**

##### *Level of Use*

Approximately 978,600 acres of BLM-administered lands are open to grazing within grazing allotment boundaries and are managed by the GJFO in accordance with the 1987 RMP (**Figure 2-II**, Alternative A: Grazing Allotments). Approximately 13,000 acres of BLM-administered lands are not currently allocated. Approximately 48,800 acres of BLM-administered lands are closed to livestock grazing on Sewemup Mesa and the LBCWHR. The establishment of allotments is a result of the grazing districts and permitting system established to manage livestock grazing in these districts by the 1934 Taylor Grazing Act.

In some cases, to make grazing management more efficient, allotment boundaries cross field office boundaries. Therefore, the GJFO administers allotments outside of its administrative boundary, and, conversely, there are

allotments within the GJFO administrative boundary that are administered by other field offices under an MOU with the parent field office. These agreements are as follows:

- The Buckhorn, Bar-X, and San Arroyo Allotments are within the GJFO planning area but are managed by the Moab Field Office and are included in the Moab Field Office RMP;
- Portions of the Prairie Canyon, Mountain Island (Lost Canyon, Lost Horse, and Fish Park pastures), Spring Creek, Hubbard, and Dolores Point allotments are within the Moab Field Office but are administered by the GJFO and are covered in this RMP;
- The Cathedral Bluff Allotment is within the GJFO planning area but is managed by the White River Field Office and is included in the White River Field Office RMP; and
- A portion of the West Salt Allotment (East Evacuation) is within the White River Field Office planning area but is administered by the GJFO; it is covered under this RMP.

#### *Allotments/Animal Unit-Months*

There are 207 allotments managed by the GJFO in the RMP planning area. Of these allotments, 186 are permitted for livestock grazing and 21 are vacant. Allotments that are vacant have been relinquished to the BLM and involve small amounts of public land, are not suitable for grazing, or have resource concerns that make repermitting undesirable. In addition to BLM-administered land, these allotments may contain National Forest System, Bureau of Reclamation, municipal, state, and private lands. There are 145 permits authorizing grazing on these allotments. Total active preference (permitted use) is 61,360 animal unit-months (AUMs), with an additional 24,344 AUMs in suspension. Total permitted numbers adjust occasionally due to conversions of the class of livestock, changes in allotment boundaries or livestock management, and changes to meet carrying capacities, as determined by vegetative inventories and monitoring. Between 2000 and 2009, an average of 36,125 AUMs were grazed annually in the RMP planning area. Some permit holders used 100 percent of their permitted use every year, while others used zero percent during the 10 year period. The reasons for partial or full non-use include but are not limited to: personal convenience, resource protection, economic conditions, and public lands access issues.

Of the 207 grazing allotments managed within the RMP planning area, 203 are used for cattle grazing, primarily cow/calf operations. The Woods and Snyder Flats allotments are used for both sheep and cattle, and the 4-A Mountain and Upper Brush Mountain allotments also include a small amount of domestic horse use. The 1987 RMP allowed sheep grazing on 30 allotments. **Appendix J, Allotments and Allotment Management Levels**, lists all of the grazing allotment names and numbers, the type of livestock, the season of use, the acres of private

and public lands, the management category, and the amount of AUMs and public land acres by alternative within the RMP planning area.

#### *Land Health Assessments*

Land health assessments use ecological site potential and interdisciplinary site evaluations to determine the current state and health of the land. For over a decade, the GJFO has been working to complete its land health assessment for the entire field office (see **Figure 3-13**, BLM Land Health Assessments). These assessments have identified concerns with land health in areas below 6,000 feet in elevation. Generally referred to as desert country, these areas receive less than 10 inches of annual precipitation. While livestock grazing (current or historical) is often not the sole factor in the cause for this land health condition, it is often a contributing factor.

There are 42 allotments with all or a portion of their area below 6,000 feet. Of these allotments, 26 have more than one-quarter of the allotment area that does not meet land health or that meets land health but with problems. In most cases, the areas not meeting or meeting with problems are suitable for grazing (e.g., they have gentle slopes and vegetation types with herbaceous forage). Areas that are meeting land health standards often are unsuitable for grazing (e.g., they have steep slopes, badlands, pinion-juniper, and shrub communities with limited herbaceous components). **Table 3-29**, Grazing Allotments Below 6,000 Feet Not Meeting Land Health or Meeting With Problems, displays the acres and percentage of allotments below 6,000 feet that are struggling to meet or that do not meet land health standards. These areas are displayed on **Figure 3-14**, Land Health Assessment Below 6,000 Feet.

**Table 3-29**  
**Grazing Allotments Below 6,000 Feet Not Meeting Land Health or Meeting With Problems**

<b>Allotment</b>	<b>Acres Below 6,000 Feet</b>	<b>Acres with Land Health Concerns</b>	<b>Ratio with Land Health Concerns</b>
Ames	257	189	73.54%
Badger Wash	7,687	5,356	69.68%
Beaver Mesa	969	132	13.62%
Berry Homestead	2,510	1,155	46.02%
Big Park	11,236	1,583	14.09%
Big Salt	5,758	3,808	66.13%
Blue Mesa	7,272	308	4.24%
Bull Draw Common	3,127	118	3.77%
Casto-Lines Common	1,634	225	13.77%
Coon Hollow Common	14,845	6,456	43.49%
Cottonwood	2,646	213	8.05%
Davis Amp	4,273	1,160	27.15%
Dolores River	3,086	328	10.63%
Dry Canyon-Demaree	3,983	1,852	46.50%
EastSalt	29,877	15,446	51.70%
EHL	193	182	94.30%

**Table 3-29**  
**Grazing Allotments Below 6,000 Feet Not Meeting Land Health or Meeting With Problems**

<b>Allotment</b>	<b>Acres Below 6,000 Feet</b>	<b>Acres with Land Health Concerns</b>	<b>Ratio with Land Health Concerns</b>
Garr Mesa	6,077	3,066	50.45%
G-M-L	3,176	1,240	39.04%
Hamilton	635	131	20.63%
Highway 50	884	882	99.77%
Hunter Wash	12,784	4,885	38.21%
Jerry Gulch	1,133	184	16.24%
J.L.	164	38	23.17%
Kannah Creek Common	14,319	12,390	86.53%
Little Salt	27,330	14,327	52.42%
Logan Gulch	3,466	964	27.81%
Lower Rapid-Cottonwood	2,080	37	1.78%
Lyons/Anderson	1,836	211	11.49%
Mogensen	1,396	196	14.04%
Mt. Garfield	25,527	17,876	70.03%
Mule Trail Draw	179	161	89.94%
North Fork Kannah Creek	454	194	42.73%
Salt Wash	1,349	36	2.67%
Sinbad Valley Common	5,707	3,173	55.60%
Sunnyside Common	5,195	1,424	27.41%
Tom Casto	79	79	100.00%
Ute Creek Common	4,566	3,143	68.83%
West Salt Common	15,036	7,355	48.92%
West Spears	3,599	662	18.39%
Whitewater Common	18,327	8,918	48.66%
Wild Country	3,910	531	13.58%
Winter Flats-Deer Park	20,840	13,597	65.24%
<b>Total (rounded to nearest 100)</b>	<b>279,400</b>	<b>134,200</b>	

Source: BLM 2010a

#### *Management Categories and Allotment Management Plans*

The three selective management categories for allotments are custodial, maintain, and improve. The initial categorization occurred before the 1987 RMP and was updated in 2000. Custodial allotments in the planning area are generally small parcels of public land intermingled with larger tracts of private land. These allotments generally have few sensitive resources. They generally have few issues with low controversy, and the range condition is satisfactory. Maintain category allotments generally contain more public lands than custodial allotments, as well as more diverse resources. These allotments are generally in satisfactory condition with few resource issues. Improve category allotments are either in unsatisfactory condition or contain significant sensitive resources or issues that may require investments of time and money. These allotments have the highest priority for monitoring and range improvement development. In

addition, management changes have occurred as needed on a case-by-case basis as circumstances deem necessary.

As of 2008, 42 allotments are part of implemented allotment management plans (AMPs) or grazing use agreements that identify a change in livestock management or more intensive management. Thirty-four of these allotments are in the improve category, three are in the maintain category, and five are in the custodial category. Changes in management may be due to conflicts with other uses or resources, adjustment in authorized active AUMs based on ecological site inventory, or a land health assessment where livestock grazing has been determined to be a causal factor. Although in general, improve category allotments have priority for completing AMPs, new resource issues or conflicts may require the development of an AMP for specific maintain or custodial allotments before the AMPs are completed for all improve category allotments.

#### *Monitoring and Inventories*

Monitoring continues to be an important component of the livestock management program. All allotments within the GJFO have some sort of monitoring study. Study methods include photo points, nested frequency transects, utilization, apparent trend, actual use, big game transects, allotment supervision, and land health assessments. Each allotment has one or more of these studies, depending on the issues and concerns and prioritization category. Monitoring data are analyzed during the grazing permit renewal process or as needed.

#### **Trends**

Trends in livestock grazing reflect changes in livestock types, changes in permittees and their perspectives, changes in permitted use or season of use, and changes in other resource uses and priorities. Since the early 1970s, sheep producers in the area have been converting to cattle, which has caused a conversion of sheep grazing to cattle grazing in most allotments in the planning area. Absentee ownership of many of the allotments has increased, as has the number of permittees that do not rely on livestock grazing for their primary source of income. Changes in the types of permittees that graze livestock have resulted in diversification of perspectives. Some permittees value other resources on their grazing allotments as much if not more than livestock grazing.

Results from the land health assessments and ecological site inventories have led to changes in livestock management. Changes in permitted use (active use), livestock numbers, and season of use are in response to changes in rangeland condition, socioeconomics, and other factors. Variations in the condition of the land are in response to climatic factors, wildlife, past and present livestock use, oil and gas development, recreational use, insect infestations, and population increases. The increases in all activities are competing for resources that limit livestock grazing. If rangeland conditions deteriorate, the BLM can reduce the

number of permitted AUMs, manage plant communities that provide forage and browse through vegetation treatments, change the season of use, require deferment and pasture rotations, and install range improvements, such as fences, water pipelines, spring developments, and reservoirs. These range improvements often enable more intensive grazing systems and encourage better livestock distribution and grazing utilization, but they also require more management on the part of the grazing permittee. Range improvement and permittee involvement may become more crucial in sustaining future resource demands. The BLM's traditional goal in managing livestock grazing is to provide sustainable forage for livestock and habitat for wildlife, which is likely to remain the primary focus of its management of livestock.

Urbanization of rural areas within the GJFO has caused conflicts with livestock grazing. New landowners are often unfamiliar with state livestock laws and associated fencing requirements. Conflicts develop when livestock authorized on public land drift onto private land. This is largely the result of public/private land boundaries that are not fenced or that are poorly fenced, or where fences have not been maintained. It is BLM policy not to fence or be responsible for maintaining boundaries bordering public land. In most instances the BLM has determined that it is not in the public interest to construct these fences, largely because it would not be practical or economical.

Increasing elk populations have been an issue for many grazing permittees and are often in direct competition with livestock for forage resources. This resource competition occurs primarily on private lands and wintering habitat during the winter months. Further increases in elk populations may increase the potential for these forage competitions to occur on public lands as well. The level of concern varies among grazing permittees. Those who own land where concentrated elk use occurs typically express the most concern over distributional problems. On the other hand, many grazing permittees are engaged in guiding and outfitting activities as another source of income and do not express the same concern as their neighbors.

Increased gas development and activity in the northern portion of the GJFO planning area has increased conflicts with livestock operations on public lands. As new roads are constructed and use of existing roads increases, control of livestock has become more difficult.

Increasing recreation is also leading to conflicts with livestock operations in terms of range improvement damage, gates being left open, livestock harassment, and in some cases shooting of livestock.

### **3.3.3 Energy and Minerals**

Energy and minerals are discussed in four separate subsections: leasable minerals (both solid and fluid), locatable minerals, mineral materials (salables), and renewable energy.

- **Leasable minerals** include oil and gas, coal, oil shale, humate, uranium, and potash. Leasable minerals are governed by the Mineral Leasing Act of 1920, as amended, which authorized specific minerals to be disposed of through a leasing system. The BLM additionally has the authority to lease federal lands under the Right-of-Way Leasing Act of 1930 and the Mineral Leasing Act for Acquired Lands of 1947. Geothermal heat is also considered a leasable mineral and is governed by the Geothermal Steam Act of 1970. Underground gas storage agreements and injection/disposal wells are also considered leasable minerals. All federal leasable minerals are managed and regulated through 43 CFR 3100 including On Shore Orders:
  - Order #1: Approval of Operations
  - Order #2: Drilling
  - Order #3: Site Security
  - Order #4: Measurement of Oil
  - Order #5: Measurement of Gas
  - Order #6: Hydrogen Sulfide Operations
  - Order #7: Disposal of Produced Water
  - Order #8: Well Completions/Workovers/Abandonment (Proposed Rule)
  - Order #9: Waste Prevention and Beneficial Use of Oil and Gas
- **Master Leasing Plan** includes the Shale Ridges and Canyons area.
- **Locatable minerals** include uranium, vanadium, gold, alabaster/gypsum, copper, silver, tungsten, gem minerals (amethyst, fluorite), limestone, and zeolite. Locatable minerals can be located and claimed under the Mining Act of 1872.
- **Mineral materials** include sand and gravel, limestone aggregate, building stone, moss rock, cinders (clinker), clay, decorative rock, and petrified wood. Mineral materials are sold or permitted under the Mineral Materials Sale Act of 1947.
- **Renewable energy** resources include wind, solar, biomass, and hydropower.

Figures showing oil and gas development potential in the GJFO can be found in the Reasonably Foreseeable Development Scenario for Oil and Gas Grand Junction Field Office, Colorado (BLM 2012a). Figures showing resource potential for other minerals in the GJFO including coal, oil shale, uranium/vanadium, placer gold, copper, silver, dimension stone, potash and salt

can be found in the Mineral Potential Report for the Grand Junction Resource Area, Grand Junction Field Office (BLM 2010d). Both documents are available on BLM's RMP Web site (<http://www.blm.gov/co/st/en/fo/gjfo/rmp.html>).

### **Current Conditions**

The BLM was established as the responsible agency for the administration of leasing and development of the federal mineral estate in the Mineral Leasing Act of 1920. In the Planning Area, subsurface mineral estate administered by the BLM (i.e., federal mineral estate) totals 1.2 million acres. The mineral estate acres are greater than BLM surface acres (1,061,400 acres) because BLM manages federal mineral estate underlying some privately owned and State-owned lands. The BLM also manages the federal mineral estate underlying National Forest System Lands. The US Forest Service has the authority and responsibility (Federal Onshore Oil and Gas Leasing Reform Act, 1987) to determine which National Forest System lands are available for oil and gas leasing and identify the specific lands which BLM may offer to lease. Additionally, for National Forest System lands, the US Forest Service is the surface management agency responsible for prescribing lease terms that provide reasonable protection to surface resources and values, and for implementing the terms of the leases. The BLM is responsible for all subsurface activities related to exploration and development.

The GJFO manages mineral estate underlying National Forest system lands within portions of the White River National Forest and the Grand Mesa, Uncompahgre and Gunnison National Forests. Lease parcels within the Planning Area are reviewed for conformance with Oil and Gas Leasing EISs issued by those forests (see **Section I.10.1**). The review includes a process whereby the lease parcel is reviewed to determine if it was identified as administratively open to leasing in the relevant Forest Plan and the identification of stipulations included in the plan which the US Forest Service, as the surface management agency, identified as necessary for protection of surface resources. Both forests are revising their oil and gas leasing plans and BLM is a cooperating agency. Should the plans be finalized, the BLM would adopt those documents and refer to the decisions reached to review parcels for availability for leasing subject to the stipulations identified in the plan.

Management coordination between the US BOR and the BLM on US BOR acquired and withdrawn lands (BOR lands) is spelled out in the Interagency Agreement Between the Bureau of Reclamation and the Bureau of Land Management signed March 25, 1983 (BOR and BLM 1983). Within the GJFO planning area, the US BOR administers approximately 3,700 acres of acquired lands, and approximately 4,883 acres of withdrawn lands associated with 3 constructed and active Reclamation projects (Collbran Project, Grand Valley Project, and the Grand Valley Unit of the Colorado River Basin Salinity Control Project). These lands are classified as 5A lands by the 1983 IA; the US BOR has full management jurisdiction on these lands. Approximately 3,073 acres are

withdrawn by the US BOR for the Dominguez Project, which was not authorized for construction. These lands are classified as 5B lands; the BLM has the jurisdiction for these lands, subject to coordination with the US BOR. The US BOR has identified the Dominguez Project withdrawal for revocation.

Management of BOR lands and associated resources is pursuant to BOR law, policy and regulations; other federal laws, policies and regulations; and various agreements. All US BOR withdrawn lands are withdrawn from mineral entry, but not necessarily mineral leasing. On 5A lands the US BOR determines whether federal mineral or geothermal leasing is permissible; the BLM issues such leases only upon the US BOR's consent and concurrence on all conditions and stipulations. BOR lands within Vega State Park, Highline State Park, and Horsethief Canyon State Wildlife Area are managed under agreements with the State of Colorado.

The US DOE Office of Legacy Management currently administers the US DOE's Uranium Leasing Program, managing two lease tracts containing approximately 5,800 acres within the GJFO planning area. These lands are withdrawn from mineral entry and leased by US DOE for the management of uranium and vanadium resources. The US DOE has the jurisdiction for these resources, and the surface management of other resources, such as grazing and recreation, is under GJFO's jurisdiction. The US DOE Uranium Leasing Program is managed under the authority and in accordance with Title 10 CFR Part 760, in cooperation with the BLM and the State of Colorado.

#### *Leasable Minerals*

Leasable minerals defined by the Mineral Leasing Act (February 1920; and 43 CFR 3000-3599, 1990) include the subsets leasable solid and leasable fluid minerals. Leasable solid minerals include coal, oil shale, native asphalt, phosphate, sodium, potash, potassium, uranium, and sulfur.

Leasable fluid minerals include oil, gas, and geothermal resources. The rights to explore for and produce these minerals on public land may only be acquired through leasing.

#### Solid Leasable Minerals

Solid leasable minerals in the planning area include coal, oil shale, potash, and uranium.

Coal. There is one idle underground coal mine operating within the GJFO along Highway 139 in the Book Cliffs. Another larger underground coal mine is proposed in the Book Cliffs near the McClane Canyon mine and is going through the NEPA/permitting process.

There are two geologic intervals of coal-bearing rocks in the GJFO planning area: The Dakota Sandstone and the Mesaverde Group. The Dakota Sandstone coals consist of localized shallow coal outcrops in bluffs above the Dolores and

Gunnison rivers. The Dakota is exposed and partly eroded on the flanks of the Uncompahgre Uplift west of Delta, Colorado.

The Mesaverde Group coals are exposed in the cliff edge of the Book Cliffs north of Grand Junction. The majority of the coal resources in this study are located in the Book Cliffs Region north of Grand Junction.

The coals present in the GJFO planning area vary from semi-bituminous to bituminous B and C in apparent rank. The coal is non-coking, non-agglomerating in nature.

The closed Cameo Mine is east of the Colorado River in the Grand Mesa coal field as are several old coal mines just east of Palisade. The Dakota Sandstone contains coal up to six feet thick in the BLM Grand Junction area. Mostly, it is an impure coal with high ash content. Small pockets of Dakota Sandstone coal represent Low to Moderate potential for mineable coal because they are on geologic trend with the New Horizon mine (BLM 2012a).

Oil Shale. Oil shale is an organic-rich sedimentary rock consisting of calcareous shale with a large amount of organic material known as kerogen. The kerogen likely originated as decaying algae and bacteria that thrived in the nutrient-rich waters of Lake Uinta. It is present throughout the lower Parachute Creek Member and the underlying Garden Gulch Member of the Green River Formation. Oil shale can be found at or near the surface within parts of 20 townships in the northeastern part of the area. Within this area resource grades can be as high as one billion barrels of oil in-place per square mile (Bbbl/sqmi) and average approximately 0.33 Bbbl/sqmi. This is lower than the resources found to the north of the planning area, where grades can exceed two Bbbl/sqmi in places. The entire Piceance Basin is estimated to contain as much as 1,525 billion barrels of oil in place (BLM 2012a).

The oil shale resources in the GJFO planning area occur in mesas that are erosional remnants of a formerly larger area of extent. While this means that the total resource may be lower on a township by township basis, the resources are well exposed and more accessible by surface or underground mining methods (BLM 2012a).

There are no active or proposed oil shale projects as of May 2010. A Final EIS was completed and a Record of Decision was issued in November 2008 amending the 1987 RMP to make lands available for oil shale leasing, but leases have not yet been issued. A NEPA analysis would be conducted prior to lease issuance (BLM 2009d).

Potash. There is a potential undefined potash resource underneath Sinbad Valley, and in 2008 a company expressed interest in exploring the area for potential development via solution mining. Prior to 2008 there had been no exploration activity for potash within the planning area (BLM 2009d).

Potash and salt (sodium chloride) are known to occur in the Paradox Formation, outcropping in the Sinbad Valley at the extreme southwest corner of the GJFO planning area. The probability of occurrence in the Sinbad Valley area is considered High (BLM 2012a).

Uranium. Uranium is considered both a leasable and locatable mineral. It is discussed in detail under Locatable Minerals, below.

#### Liquid Leasable Minerals

Liquid leasable minerals in the planning area include oil, natural gas, and geothermal fluids.

Oil and Gas. The GJFO planning area contains approximately 1,444,000 acres of federal oil and gas estate. Of these acres, there are 1,273,000 acres of BLM-managed surface, 166,000 acres of privately owned surface, 2,000 acres of State lands, and 7,900 acres of BOR-managed lands. In addition, there are approximately 3,580 acres of BLM-managed surface overlying private minerals.

Private surface lands, where there is no federal oil and gas mineral estate, account for 554,000 acres (BLM 2009d).

Annual leasing of oil and gas since 1992 has varied from 0 acres in 2011 to 122,937 acres in 2006, with an average of 29,522 acres per year (**Table 3-30**, Federal Oil and Gas Acreage Leased By Year). Existing mineral leases for oil and gas are shown in **Figure 3-15**, Oil and Gas – Leases and Wells. The planning area has 820 active leases containing 690,100 acres. The average size of these leases is 840 acres. Currently, there are 961,600 acres open to leasing within the planning area. The GJFO has approved an average of 13 wells per year in the past 20 years (**Table 3-31**, Wells Approved and Drilled By Year).

**Table 3-30**  
**Federal Oil and Gas Acreage Leased By Year**

<b>Year</b>	<b>Acres Leased</b>	<b>Year</b>	<b>Acres Leased</b>
1992	17,596	2002	20,441
1993	17,202	2003	48,839
1994	44,169	2004	61,085
1995	32,990	2005	42,810
1996	14,893	2006	122,937
1997	13,894	2007	12,404
1998	7,927	2008	10,517
1999	5,665	2009	2,060
2000	38,395	2010	4,513
2001	72,094	2011	0
		Average Acres:	29,522

Source: BLM 2009d, 2010a

**Table 3-31**  
**Wells Approved and Drilled By Year**

<b>Year</b>	<b>Wells Approved</b>	<b>Wells Drilled</b>	<b>Year</b>	<b>Wells Approved</b>	<b>Wells Drilled</b>
1992	20	23	2002	4	3
1993	7	7	2003	11	10
1994	17	17	2004	20	13
1995	7	7	2005	16	19
1996	8	8	2006	43	39
1997	4	4	2007	25	18
1998	6	3	2008	35	25
1999	3	6	2009	13	3
2000	3	2	2010	0	2
2001	5	6	2011	10	5
<i>Total</i>	<i>257</i>	<i>220</i>	<i>Average</i>	<i>13</i>	<i>11</i>

Source: BLM 2009d, 2010a

As of January 2011 there were 30 BLM-approved multi-well pads that contain an average of five to six federal wells per pad. These pads are located on federal and private surface. A majority of the multi-well pads have been approved since 2005 and are necessary to efficiently develop high well density areas. Two underground gas storage agreements are currently leased for a total of 2,404 acres. Five injection/disposal wells have been permitted since 1987.

The BLM has approved 170 federal wells on the multi-well pads. In some cases, additional private wells are located on each multi-well pad. On average there are seven wells located on each multi-well pad. This number may be low, as additional wells are added to private surface pads without any required approval or notification to the BLM.

In the Collbran area, where wells are being drilled at a density of 10 acres per well (downhole locations), the pads may contain as many as 21 wells. See **Table 3-32**, Status of Existing Federal Mineral Estate Wells, for the status of wells in the GJFO.

**Table 3-32**  
**Status of Existing Federal Mineral Estate Wells**

<b>Status of Well Development</b>	<b>No. of Wells</b>
Currently completed – producing or shut in	521
Approved applications, but not drilled	35
Plugged and abandoned	68
Abandoned – surface reclamation is pending acceptance	67
Drilling or not completed	7
<i>Total</i>	<i>698</i>

Source: BLM 2009d

*Geothermal.* The BLM has statutory authority for leasing geothermal mineral rights under the Geothermal Steam Act of 1970 (PL 91-581; 30 USC §§ 1001-1027, December 24, 1970, as amended, 1977, 1988, and 1993). Geothermal resources are a source of energy that uses the natural heat of the earth's interior, carried to the surface by steam and/or hot water. Geothermal resources have been used in Colorado since the early 1900s.

In cooperation with the National Renewable Energy Laboratory (NREL), the BLM assessed renewable energy resources on public lands in the western US (BLM and DOE 2003). The BLM reviewed the potential for geothermal energy on BLM, Bureau of Indian Affairs, and US Forest Service lands in the western US, except Alaska. In May 2008, the BLM signed a ROD for the Geothermal Leasing Programmatic EIS (BLM 2008d). This document serves as the baseline for the assessment of geothermal resources in the GJFO decision area.

Renewable energy potential within the planning area, excluding right-of-way exclusions, WSAs, and no-lease areas under oil and gas stipulations, are discussed below under Current Management. Geothermal energy potential for all lands within the planning area, including lands excluded under the Current Management discussion, are discussed below under Resource Potential.

*Current Management.* The GJFO RMP (BLM 1987) does not address geothermal energy; however, the RMP was amended by the 2008 Programmatic EIS for Geothermal Leasing in the Western US (BLM 2008d). The ROD for the PEIS identified 420,106 acres as being open to geothermal leasing, and 66,622 acres as being closed to geothermal leasing. The open areas generally encompass the eastern half of the GJFO.

*Resource Potential.* The GJFO decision area, excluding WSAs and areas closed to oil and gas leasing, has 397,500 acres of federal mineral estate identified as having geothermal potential. As shown in **Figure 3-16**, Geothermal Energy Potential, all of this acreage lies within the mid-to-eastern portion of the planning area.

The Programmatic EIS for Geothermal Leasing in the Western US (BLM 2008d) evaluated 12 states for geothermal energy potential. It focused on areas where there may be underground reservoirs of hot water or steam created by heat from the earth or that have subsurface areas of dry hot rock. These areas are where the BLM would mostly likely receive geothermal lease nominations and applications in the future. The Programmatic EIS used GIS data from the Colorado Geological Survey and included areas of both direct (non-electrical) use and indirect (electrical power) applications. This information was based on data from known hot springs combined with oil and gas basins that have potential for geothermal resources by virtue of bottom-hole temperatures. Colorado Geological Survey considered geothermal heat flow and gradient data from other sources in creating the potential area.

*Existing Activity.* There are no geothermal facilities, leases, or pending lease applications in the GJFO decision area (BLM 2009d; GeoCommunicator 2009). No existing hot springs or other geothermal features have been identified within the planning area (BLM 2009d).

#### Master Leasing Plan

The Shale Ridges and Canyons Master Leasing Plan (MLP) in Appendix P of the Draft RMP/EIS has been revised and incorporated in the Proposed RMP/Final EIS in Chapters 1, 2, 3, and 4. The condition and trend of the natural and human environments of the MLP area are the same as those described for the planning area, described in the fluid minerals discussions, below.

The MLP concept, introduced in May 2010 via the Washington Office's Oil and Gas Leasing Reform IM 2010-117, promotes a proactive approach to planning for oil and gas development. Generally, the 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 and reasonably foreseeable oil and gas development scenarios. However, this policy acknowledged that additional planning and analysis may be necessary in some areas prior to new oil and gas leasing because of changing circumstances, updated policies, and new information.

*Master Leasing Plan Proposal.* In August 2010, the Wilderness Society and the Center for Native Ecosystems submitted recommendations that the BLM prepare a Shale Ridges and Canyons MLP. This proposal encompasses 908,600 acres, including 640,700 acres of BLM-administered surface land and 700,900 acres of federal mineral estate (see **Figure 3-21**, Master Leasing Plan Surface Management and Split Estate). The externally recommended MLP is within the GJFO boundary and overlaps with most of the northern half of the RMP planning area.

To determine whether or not circumstances warrant additional planning and analysis, IM 2010-117 lists numerous criteria to be considered. Specifically, the BLM must prepare an MLP when all four of the following criteria are met:

- A substantial portion of the area to be analyzed in the MLP is not currently leased.
- There is a majority federal mineral interest.
- The oil and gas industry has expressed a specific interest in leasing, and there is a moderate or high potential for oil and gas confirmed by the discovery of oil and gas in the general area.
- Additional analysis or information is needed to address likely resource or cumulative impacts if oil and gas development were to occur where there are:
  - multiple-use or natural/cultural resource conflicts;

- impacts on air quality;
- impacts on the resources or values of any unit of the NPS, national wildlife refuge, or National Forest wilderness area, as determined after consultation or coordination with the NPS, the US Fish and Wildlife Service, or the Forest Service; or
- impacts on other specially designated areas.

The BLM has the discretion to complete an MLP for areas that do not meet the MLP criteria. For example, even though a substantial portion of an area is already leased or lacks a majority federal mineral interest, additional analysis of measures to resolve potential resource conflicts may benefit future leasing decisions.

The MLP process entails analyzing likely development scenarios and varying levels of protective design features and mitigation measures in a defined area with greater detail than a traditional RMP allocation analysis but at a less site-specific level than a development plan that has been fully defined by an operator.

Chapter 3 of the RMP/EIS, Affected Environment, describes the existing biological, physical, and socioeconomic characteristics of the planning area, including human uses that could be affected by implementing the alternatives described in Chapter 2. Resource and resource use discussions include a description of current conditions and a characterization of trends expressing the direction of change between the present and some point in the past.

Master Leasing Plan Nominated Areas Criteria Analysis

**Criterion #1: A substantial portion of the area to be analyzed in the MLP is not currently leased.**

The externally recommended Shale Ridges and Canyons MLP area does not meet this criterion. There are 648,900 acres currently open to leasing within the externally recommended MLP area. As shown in **Figure 3-17**, Master Leasing Plan Oil and Gas Leases, 482,200 of those acres (74 percent) are currently leased for oil and gas development.

**Criterion #2: There is a majority federal mineral interest.**

The externally recommended Shale Ridges and Canyons MLP area meets this criterion. The GJFO has jurisdiction over 640,700 surface acres (71 percent of the externally recommended MLP area), and 700,900 acres of federal mineral estate (77 percent of the externally recommended MLP area).

**Criterion #3: The oil and gas industry has expressed a specific interest in leasing, and there is a moderate or high potential for oil and gas confirmed by the discovery of oil and gas in the general area.**

The externally recommended Shale Ridges and Canyons MLP area meets this criterion. Approximately 686,300 acres (98 percent) of the federal mineral estate within the externally recommended MLP area is considered to have development potential for oil and gas (see **Figure 4-1**, Master Leasing Plan Oil and Gas Potential). Of that area, 211,900 acres (31 percent) is unleased and would be subject to the stipulations proposed in the RMP/EIS and discussed below.

There are 400 producing federal wells within the externally recommended MLP boundary. Industry continues to express interest in leasing within the externally recommended MLP area.

**Criterion #4: Additional analysis or information is needed to address likely resource or cumulative impacts if oil and gas development were to occur where there are multiple use or natural/cultural resource conflicts; impacts on air quality; impacts on the resources or values of any unit of the NPS; or impacts on other specially designated areas.**

The externally recommended Shale Ridges and Canyons MLP meets this criterion. The external MLP proposal focused primarily on concerns regarding fish and wildlife, special status species, recreation, Citizen Wilderness Proposals, ACECs, and CNHP Potential Conservation Areas (PCAs). According to IM 2010-117, other important national and local resource issues that should be considered when developing an MLP include air quality; Special Recreation Management Areas; nearby state, tribal, or other federal agency lands; cultural resources; paleontological resources; visual resources; watershed conditions, including steep slopes and fragile soils; municipal watersheds; public health and safety; and the ability to achieve interim and final reclamation standards.

Potential Resource Conflicts. The external proposal identified a series of potential resource conflicts, displayed in **Table 3-33**, Potential Resource Conflicts. In addition, the BLM identified other resource concerns and values present in the MLP analysis area. All of those resources and uses are fully addressed in this MLP.

**Table 3-34**, Selected Leasing Constraints in the MLP Area (Alternative B), displays some allocations and designations in the MLP area that would restrict fluid mineral activities. Restrictions to be applied in these areas are displayed in the Master Leasing Plan section in Table 2-2. This list is not exhaustive; the impacts on fluid mineral development from these restrictions and additional stipulations and COAs is described in Section 4.4.5, Energy and Minerals. In addition to the areas listed in the table, the MLP analysis area is home to the Dinosaur Diamond Prehistoric Highway and the Grand Mesa Byway.

**Table 3-33  
Potential Resource Conflicts**

<b>Resource/Use</b>	<b>Not Present</b>	<b>Present/Not Protected</b>	<b>Present/May be Protected</b>
<b>Identified in External Proposal</b>			
Land Ownership			X
Recreation and Tourism			X
Greater Sage-Grouse			X
Aridlands Burrowing Mammal Communities			X
Big Game and Wide-ranging Mammals			X
Raptors			X
Fish			X
Rare Plants			X
Citizen Wilderness Proposals			X
<b>Identified by BLM</b>			
ACECs			X
Air Quality			X
Cultural Resources			X
Watersheds			X
Fragile Soils			X
Steep Slopes			X

**Table 3-34  
Selected Leasing Constraints in the MLP Area (Alternative B)**

<b>Areas</b>	<b>Acres</b>
Areas of Critical Environmental Concern	70,500
Special Recreation Management Areas	21,000
Extensive Recreation Management Areas	133,300
Wildlife Emphasis Areas	66,000
VRM Class I and II	230,100
National, State, and BLM Byways	15,000
Wilderness Study Areas	52,000
Closed to Fluid Mineral Leasing and Currently Unleased	54,600
NSO Stipulations (federal mineral estate)	374,800
CSU Stipulations (federal mineral estate)	378,800
TL Stipulations (BLM surface lands)	281,400
ROW Exclusion	104,500
ROW Avoidance	508,000

*Locatable Minerals*

Locatable minerals (metallic and non-metallic) are those that can be located and claimed under the Mining Act of 1872. Placer and lode gold, limestone (special quality/special use variety), alabaster, copper, silver, gemstones (amethyst and fluorite), and uranium are further discussed below.

### Gold

Gold has been mined within the GJFO planning area from both lode and placer deposits. Most of the placer gold activity in the GJFO planning area has occurred on and off for 135 years, mainly in the terrace gravels along the Dolores River corridor in the far southwest portion of the area, with additional interest in the Gunnison and Colorado River areas.

Lode gold was reported in the copper deposits in both the Unaweep Canyon and Sinbad Valley. The deposits are reported to occur in “fissure veins” mainly in sandstone (BLM 2012a).

There are no large-scale mining operations or dredging activities within the planning area. There has been recreational small-scale placer activity along the Dolores River south of Gateway (BLM 2009d).

### Alabaster/Gypsum

Historically there has been one small-scale surface mining operation south of Gateway along Highway 141. There are no active operations underway (BLM 2009d).

### Uranium/Vanadium

Uranium and vanadium are considered together, because they occur together in the ores of the GJFO planning area. Within the GJFO planning area, uranium and vanadium are known to occur primarily in the Salt Wash Member of the Jurassic Morrison Formation, although mineralization has been reported from both the Chinle Formation and the overlying Wingate Sandstone and Kayenta Formation of the Glen Canyon Group.

The Chinle Formation hosts uranium deposits that have been mined in Utah and in other areas of the Uravan Mining District in Colorado; however no mining has taken place within the GJFO planning area in this formation. Uranium has been found in the Wingate and Kayenta Formations on the Colorado Plateau, but none within the GJFO planning area (BLM 2012a).

There has been extensive exploration and mining for uranium and vanadium in the Uravan mineral belt since the early 1900s. The first underground uranium/vanadium mine permitted in the planning area since implementation of the BLM 3809 regulations occurred in September 2008. There have been approximately 15 exploration drilling projects and 3 to 4 bulk sampling projects conducted between 2005 and 2008 (BLM 2009d).

### Copper

Early descriptions of copper in southwest Colorado, observed that copper mineralization in the area was associated with faults and fissure-filling dikes that cut both the Paleozoic redbeds and the underlying crystalline Precambrian rocks. Copper mineralization has been found mainly at the base of the Triassic Wingate Formation (Glen Canyon Group), although it has been reported from

the Chinle Formation, the Entrada Sandstone, and even in the Salt Wash Member of the Jurassic Morrison Formation. Copper (and minor gold) mineralization was also found associated with veins in Precambrian rocks in Glade Park.

The occurrence potential for copper in the Sinbad Valley, in the extreme southwest corner of the GJFO planning area, is considered to be High as well as areas of historic small-scale copper mining in the Unaweep District northeast of Gateway. In the Unaweep Canyon area, areas away from the historic mines have a Moderate potential, as do other geologic strata in the south of the GJFO planning area that contain redbed copper deposits in adjacent states (BLM 2012a).

There is one Notice of Intent on file for collection of hand specimen quality copper minerals (azurite and malachite) from an existing underground mine. Copper was produced from some of the historic uranium/vanadium mines in the Uravan mineral belt within the GJFO (BLM 2009d).

#### Silver, Tungsten, Zeolite, Limestone

Silver has been found sporadically within the GJFO planning area, commonly associated with copper. The copper deposits of the Sinbad Valley have yielded silver, associated with faulting and fracturing. In the Unaweep Canyon area, silver has been described as occurring in “fissure veins in sandstones” (BLM 2012a).

The documented occurrence of silver deposits in the southwest end of the GJFO and adjacent areas of the Colorado Plateau leads to an assessment of Moderate occurrence potential for silver in the Sinbad Valley. Small, localized deposits containing silver in the Unaweep Canyon provide a Low occurrence potential (BLM 2012a).

There currently is no interest or activity related to these minerals within the GJFO (BLM 2009d).

#### Gemstones (Amethyst and Fluorite)

There are no approved mining operations for these minerals at the current time, but the public has been mineral collecting at a few abandoned underground mines along Highway 141 southwest of Whitewater, Colorado (BLM 2009d).

#### *Mineral Materials*

Mineral materials include sand and gravel, and construction materials that are sold or permitted under the Mineral Materials Sale Act of 1947. The mineral materials program on BLM-administered lands within the GJFO planning area centers mainly around the use of sand and gravel for concrete aggregate, road base and coverings, construction fill, and rock for aggregate, riprap, and decorative purposes (flagstone and moss rock). Other mineral materials, such as

silica sand, are also produced in Colorado but not in the GJFO planning area. Mineral materials are sold at a fair market value or through free use permits to governmental agencies. Local government agencies and non-profit organizations may obtain these materials free of cost for community purposes. County and state road construction divisions are the significant users of gravel and sand resources (BLM 2009d).

Sand and gravel, as construction aggregate, is an extremely important resource. The extraction of the resource varies directly with the amount of development nearby – road building and maintenance, and urban development, as sand and gravel is necessary for that infrastructure development. Even more so than other resources, however, the proximity of both transportation and markets are key elements in the development of a deposit.

Generally the most valuable is the gravel component, so commonly deposits are sought that contain higher proportions of gravel. Stream channel deposits are commonly sought. Flood plain and older terrace deposits are commonly utilized, along with alluvial fans. In general, flood plain areas are privately owned, including both surface and mineral estate, and not under the administration of the GJFO.

Eight areas within the GJFO planning area contain sand and gravel deposits – the Colorado River flood plain, the Gunnison River valley, upland deposits in the Whitewater area, the Plateau Creek area, the Upper Grand Valley (north of the Colorado River and south of the Book Cliffs), the Uncompahgre Plateau area, the Dolores River area, and the Roan Creek area (BLM 2012a).

There are two active commercial sand and gravel operations and three common use areas identified for disposal of decorative rock (moss rock, flagstone, and basalt boulders), bentonite clay, adobe fill, and red gravel via over-the-counter permit sales. Three common areas were closed due to a new NCA designation (BLM 2009d).

Dimension stone is a general term for rock products that are finished to specific shape and size for building, monuments, industrial applications, or other end use. Other stone of similar characteristics is sold “raw,” and uncut and later sorted into shapes and sized. Flagstone consists of thin slabs of stone used for paving. Fine-grained sandstone is the most popular and common type, and the principle rock type found in the GJFO planning area.

The Wingate Sandstone, in particular, has been a popular source of dimension stone as flagstone. Quartzite within the Burro Canyon Formation tends to break into angular blocks and shows some potential for use as building stone. Boulders within glacial deposits from the Grand Mesa, just south of the GJFO planning area, can be utilized as decorative stone. In the GJFO planning area, the most common type is termed “moss rock,” for the covering with lichens that give the rock an aged appearance.

Salable varieties of clay are widespread in the GJFO planning area and present in several stratigraphic units. None of the clays present have been defined or described as locatable varieties. The Brushy Basin Member of the Morrison Formation contains abundant bentonite but its occurrence is sporadic. The Mancos Shale contains layers of clay and the weathered products of clay-rich zones of the Mancos have been used in the area as adobe bricks.

The Dakota Sandstone is known to contain usable clay in other areas of Colorado, including refractory clay that has been mined commercially.

The existing Little Park Road community pit has a High occurrence potential, while the remainder of the Morrison Formation has a Moderate occurrence potential (BLM 2012a).

#### *Renewable Energy*

Renewable energy includes solar, wind, geothermal, and biomass resources. Geothermal resources are discussed under Leasable Minerals, above. Biomass resources are discussed under **Section 3.3.1**, Forestry. As demand has increased for clean and viable energy to power the nation, consideration of renewable energy sources available on public lands has come to the forefront of land management planning.

In cooperation with the NREL, the BLM assessed renewable energy resources on public lands in the western US (BLM and DOE 2003). The BLM reviewed the potential for concentrated solar power, photovoltaics, and wind energy on BLM, Bureau of Indian Affairs, and US Forest Service lands in the western US, except Alaska. In December 2005, the BLM signed a ROD for the Wind Programmatic EIS (BLM 2005b). These documents will serve as the baseline for the assessment of renewable energy resources in the GJFO decision area.

Renewable energy potential for solar and wind within the planning area is broken down into subcategories below. The potential for these resources are described below under *Current Management*, and excludes the following areas:

- Solar: areas designated as right-of-way exclusion areas and WSAs; and
- Wind: areas designated as right-of-way exclusion areas and WSAs.

The renewable energy potential for all lands (i.e., regardless of ownership) within the planning area, including lands excluded under the section *Current Management*, are discussed below under the section *Resource Potential*. Geothermal energy is discussed under the following section, *Leasable Minerals*.

#### Solar

*Current Management*. Solar energy development on BLM-administered lands is managed through ROW authorization under Title V of the FLPMA and 43 CFR

2800. The GJFO RMP does not address the development of solar energy resources (BLM 1987). The Office of Energy Efficiency and Renewable Energy, Department of Energy, and the BLM have completed a Programmatic Environmental Impact Statement to evaluate utility-scale solar energy development, to develop and implement Agency-specific programs or guidance that would establish environmental policies and mitigation strategies for solar energy projects, and that amended relevant BLM land use plans with the consideration of establishing a new BLM Solar Energy Program.

Resource Potential. Excluding unsuitable public utility areas (ROW exclusions) and WSAs, the GJFO planning area has solar potential as follows:

- 220,569 acres with moderate concentrated solar power potential or very good photovoltaic potential (five to six kilowatt-hours per square meter per day).
- 589,660 acres with good concentrated solar power potential or excellent photovoltaic potential (six to seven kilowatt-hours per square meter per day) (BLM 2012a).

Based on resource availability, portions of the GJFO have potential for utility-scale solar energy development; however, based on feasibility for industrial production, the planning area did not rank among the top 25 BLM planning areas in the US having the highest concentrated solar power or photovoltaic potential. An area was considered to have high potential as a solar emphasis zone if it met the following criteria (BLM and DOE 2003):

- A minimum direct solar resource of six kilowatt-hours per square meter per day;
- Terrain slope of less than or equal to five percent for concentrated solar power or one percent for photovoltaic;
- Within 50 miles of 115- to 345-kilovolt transmission lines;
- Within 50 miles of a major road or railroad;
- A minimum parcel size of 40 contiguous acres;
- On Bureau of Indian Affairs, BLM, or US Forest Service lands; and
- BLM and US Forest Service compatible land use.

While strong solar resources are available across the planning area, there are limited areas with the above-listed appropriate conditions for utility-scale solar emphasis zones. As shown in **Figure 3-17**, Solar Energy Potential, the area with the most notable appropriate conditions for utility-scale solar energy development is the desert north of Grand Junction, from Mt. Garfield to the Utah state line. The Solar Energy Development Programmatic EIS (PEIS; BLM 2012e) has been prepared for solar energy on BLM-administered lands.

The PEIS identified 285,000 acres in 17 Solar Energy Zones (SEZs) that allow for development of projects that would produce more than 20 megawatts (MW) of power. Under the PEIS projects that would produce more than 20 MW of power are allowed unless they are located in SEZs. BLM has determined that development of new SEZs will be necessary in order to meet the reasonably foreseeable development scenario for solar energy. The RFDS for Colorado identifies the need to provide an additional 2,194 MW by 2030, which would require approximately 19,746 acres of public land managed by the BLM.

Criteria for adding creating new SEZs are outlined in the PEIS ROD (BLM 2012e). The BLM will use the following criteria when considering whether to identify new or expanded SEZs. In most situations, SEZs should be:

- Relatively large areas that provide highly suitable locations for utility-scale solar energy development;
- Locations where solar energy development is economically and technically feasible;
- Locations where there is good potential for connecting new electricity-generating plants to the transmission distribution system; and
- Locations where there is generally low resource conflict (BLM 2012e).

Existing Activity. No applications for solar power have been received by the GJFO (GeoCommunicator 2009), though several parties have made inquiries and BLM held one pre-application meeting in 2009.

### Wind

Current Management. Wind energy development on BLM-administered lands is managed through ROW authorization in accordance with the terms and conditions of BLM's Wind Energy Development Policy (IM 2009-043 [BLM 2009h]). This policy provides guidance on processing ROW applications for wind energy site testing and monitoring facilities, as well as applications for wind energy development projects on BLM-administered lands. The GJFO RMP does not address the development of wind energy resources (BLM 1987) and it was not amended by the Wind Programmatic EIS (BLM 2005b).

Resource Potential. The Wind Programmatic EIS (BLM 2005b) categorizes public lands into areas having a low, medium, or high potential for wind energy development from 2005 through 2025. Wind resources in Class 3 and higher areas could be developed economically with current technology over the next 20 years. Class 3 resources have medium potential; Class 4 and higher resources have high potential. The Wind Programmatic EIS (BLM 2005b) identifies public land parcels in the following areas with medium or high wind

resource potential that might be developed economically with current technology:

- Cow Ridge, approximately 10 miles northwest of the town of DeBeque;
- Garfield Mesa, approximately 21 miles west of DeBeque;
- Pike Ridge, approximately 33 miles northwest of DeBeque;
- Unnamed mountain ridge around the town of Atchee; and
- Upper 4A Mountain, approximately 23 miles northwest of DeBeque.

These areas, which are concentrated along ridgetops, are shown in **Figure 3-18, Wind Energy Potential**.

In general, lands within the GJFO do not have high potential for wind energy. The GJFO planning area has 106 acres identified as having excellent (500 to 600 W/m<sup>2</sup>) wind energy potential and 10 acres identified as having outstanding (600 to 700 W/m<sup>2</sup>) wind energy potential (BLM 2005b). These areas are concentrated along Cow Ridge towards the eastern side of the ridge. Other areas with marginal (200 to 300 W/m<sup>2</sup>), fair (300 to 400 W/m<sup>2</sup>), and good (400 to 500 W/m<sup>2</sup>) wind energy potential are concentrated on ridges along either side of Route 139 in the northwest portion of the planning area (acreages provided below). Additionally, ridges along the Colorado-Utah border in the southwestern corner of the planning area also have areas with marginal and fair energy potential.

Acreages by wind power potential class in the GJFO planning area, excluding unsuitable public utility areas (ROW exclusions) and WSAs, are as follows:

- Class 1 (unsuitable for utility-scale wind development) (0 to 200 W/m<sup>2</sup>) – 803,516 acres
- Class 2 (marginal) (200 to 300 W/m<sup>2</sup>) – 3,130 acres
- Class 3 (fair) (300 to 400 W/m<sup>2</sup>) – 1,930 acres
- Class 4 (good) (400 to 500 W/m<sup>2</sup>) – 458 acres
- Class 5 (excellent) (500 to 600 W/m<sup>2</sup>) – 106 acres
- Class 6 (outstanding) (600 to 700 W/m<sup>2</sup>) – 10 acres

Existing Activity. A 2,620-acre wind energy testing site in the Horse Mountain area south of Palisade, authorized under COCO 73717, has been approved and one meteorological tower was constructed in 2009.

## **Trends**

### *Solid Leasable Minerals*

#### Coal

The Mesaverde Group coals in the GJFO planning area are the main source for potential future development. The development potential for Mesaverde coals at less than 3,000 foot depth is High; for Mesaverde coals at greater than 3,000 feet is Moderate. The development potential for coals in the Dakota group is Low. Coal development activity is expected to result in three new underground mines in the Book Cliffs near the now active McClane Canyon coal mine (BLM 2012a).

#### Oil Shale

The potential for increasing prices for petroleum and the constantly developing technological advances are interpreted to give the area a Moderate level of probability for development. This development will probably involve small, experimental pilot operations (BLM 2012a).

#### Potash

Recent inquiry about an exploration permit for the area supports the conclusion that development potential within the next twenty years is High (BLM 2012a).

### *Fluid Leasable Minerals*

#### Oil and Gas

Swings in the natural gas market price are the likely driver in the industry's interest for oil and gas leases and the resulting requests for drilling permits. As prices rise, more interest in oil and gas development is expected (BLM 2009d).

Recently there has been increasing interest in horizontal drilling in the Mancos/Mowry shale play. Approximately 50 percent of the drilling proposals received by the GJFO since 2010 have been for horizontal wells targeting the shale formation. GJFO mineral lessees indicate there will be little interest in development of conventional or shale gas at current prices. However, exploration is expected to continue.

#### Geothermal

There is some potential for geothermal energy throughout the eastern part of the planning area. The potential for geothermal energy may be of interest to commercial developers, depending on economic factors. No interest has been shown for geothermal development.

### *Locatable Minerals*

It is unlikely that any significant metallic (gold or other metallic minerals) mining, except uranium, will be present in the planning area in the next 20 years. Casual

use and recreational gold mining activities have increased and will likely increase more in the future (BLM 2009d).

#### Gold

The occurrence potential for gold in the GJFO planning area is High (High D) as placer deposits along the Dolores River corridor. The development potential on the alluvial plain and the benches above the Dolores River is considered High also. There is considered to be No potential for occurrence or development of lode gold within the GJFO planning area (BLM 2012a).

#### Uranium/Vanadium

The areas of historical mining are considered to have a High potential for development, the NURE Favorable Area has a Moderate potential for development, and the Morrison Formation in the GJFO planning area, outside those two areas, is considered to have Low potential.

The assumption is made that the price of uranium will encourage mine development in the GJFO planning area in the next twenty years (BLM 2012a).

#### Copper

Copper resource development potential in the Sinbad Valley is Moderate and development potential is Low in the other areas (BLM 2012a).

#### Silver, Tungsten, Zeolite, Limestone

There is considered to be no reasonably foreseeable development for silver alone. It is more likely that silver would be a by-product of copper mining, noted above (BLM 2012a).

#### *Mineral Materials*

As the population of the Grand Valley and surrounding areas continues to grow, demand for mineral material resources will increase from current conditions. Increased emphasis on xeriscaping will also likely increase demand. The GJFO planning area will be the best source for the regional market since it is the closest source (BLM 2009d).

The potential for sand and gravel development is Moderate for any specific area within the GJFO planning area.

Decorative stone development potential for the Glen Canyon Group (and specifically the Wingate Sandstone) is Moderate, as are the glacial deposits. The development potential of the Burro Canyon Formation is Low.

Clay resources development potential at the existing pit is High, while it is Moderate for the rest of the Morrison Formation and Mancos Shale in the planning area (BLM 2012a).

*Renewable Energy*

The demand for renewable energy-related ROWs should increase nationally, although within the GJFO planning area, the potential for wind and solar energy is low.

Based on available acreage, the potential for solar energy is greater than for wind energy, although the only project application received to date from the GJFO has been for wind energy.

**3.3.4 Recreation and Visitor Services**

The following section describes recreation and visitor services on BLM-managed lands in the GJFO planning area.

***Current Conditions***

The primary recreational activities in the GJFO are mountain biking, trail running, all-terrain vehicle use, off-road motorcycling, motorized vehicle touring, hiking, big and small game hunting, backpacking, horseback riding, sight-seeing, rock climbing, and river boating. Recreation-based visitor use in the GJFO has increased in most areas, with the greatest increase in the North Fruita Desert, Bangs Canyon area, and most recently, the Gateway area. In accordance with BLM's multiple-use mandate, per the FLPMA, the agency seeks to provide recreational opportunities that include dispersed, organized, competitive, and commercial uses.

*Recreation-Tourism Elements*

Western Colorado is a world-renowned destination for outdoor recreation enthusiasts. Recreation visitors to the GJFO planning area come from not only the local Grand Valley area (which includes the City of Grand Junction, as well as other smaller communities such as Fruita and Palisade) and other regions of Colorado, but also from other national and international locations.

Grand Valley Visitors

An increasing number of people are living near or seeking local public lands for diverse recreational opportunities. The Grand Valley area is visited by recreationists year-round resulting in increased recreational demands on BLM lands. Grand Junction, Fruita, Loma, Mack, Palisade, Whitewater, Gateway, and DeBeque all have public lands bordering them that are used as community-based recreation assets by local residents. Due to the proximity of these lands to local communities and the heavy use by their residents, these public lands experience the greatest use on a daily basis. In local communities where populations are increasing rapidly, such as Grand Junction and Fruita, recreation demands on public lands are also intensifying.

Visitors From Outside Grand Valley but Within Colorado

During the spring and fall, many Colorado residents who seek relief from the long winters come to the Grand Valley to recreate on public lands in the GJFO planning area. The Grand Valley's relatively mild climate allows recreationists to

participate in outdoor activities that are otherwise not possible due to unfavorable weather conditions in other regions. While visitors to the area come from all parts of the state, a large portion come from the Denver metropolitan area and other Front-Range Colorado communities because it is easily accessible via Interstate 70.

#### National (Outside Colorado) and International Visitors

The GJFO planning area is located in a popular tourist corridor that connects Moab, Utah to the high country of the Rocky Mountains via Interstate 70. Visitors outside of Colorado are attracted to this area because of the first-class recreation opportunities it provides. The range of year-round recreation opportunities in the GJFO includes mountain biking, horseback riding, OHV use, hiking, rock climbing, camping, skiing, and water-sports, such as kayaking, fishing, and rafting.

#### *Recreation Management Areas*

##### Special Recreation Management Areas

Current BLM guidance identifies SRMAs as administrative units where the existing or proposed recreation opportunities and recreation setting characteristics are recognized for their unique value, importance and/or distinctiveness, especially as compared to other areas used for recreation. SRMAs are managed to protect and enhance a targeted set of activities, experiences, benefits, and desired recreation setting characteristics. SRMAs may be subdivided into recreation management zones (RMZs) to further delineate specific recreation opportunities. Within SRMAs, recreation and visitor service management is recognized as the predominant land use planning focus, where specific recreation opportunities and recreation setting characteristics are managed and protected on a long-term basis. SRMAs/RMZs must have measurable outcome-focused objectives. Supporting management actions and allowable use decisions are required to: 1) sustain or enhance recreation objectives, 2) protect the desired recreation setting characteristics, and 3) constrain uses, including non-compatible recreation activities that are detrimental to meeting recreation or other critical resource objectives (e.g., cultural or threatened and endangered species).

The 1987 GJFO RMP identified the Gateway area (41,000 acres) and Grand Valley area (176,000 acres) as Intensive Recreation Management Areas<sup>1</sup> (IRMAs) to protect high value recreation sites and sensitive areas. Since that time, approximately 58,106 acres of the Grand Valley IRMA was carved out to create Bangs Canyon SRMA (**Figure 2-18**, Alternative A: Special Recreation Management Areas) and 72,656 acres as the North Fruita Desert Planning Area. Plans written for both of these areas provided for enhanced recreational

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<sup>1</sup> The term “Intensive Recreation Management Area” is no longer used by BLM. An area where recreation is the management focus is now referred to as a “Special Recreation Management Area (SRMA).”

opportunities, made travel management decisions, and took a community-based planning approach.

The Bangs Canyon SRMA management plan designated six recreation management zones, which collectively provide opportunities for a diverse set of recreation opportunities and outcomes. The Lunch Loop Trail System provides mountain biking, hiking and trail running opportunities in close proximity to Grand Junction. Multiple trails, including Butterknife, Third Flats, the Tabeguache, and Billings Canyon, provide routes designated for motorcycles, ATVS, rock crawlers and 4x4 OHVs. Parts of Rough Canyon and Bangs Canyon are managed for non-motorized/non-mechanized recreation opportunities.

The North Fruita Desert area plan designated three distinct recreation management zones, one focused on mountain biking opportunities (18 Road), one on foot and horse use, and one on motorized OHV recreation.

#### Extensive Recreation Management Areas

Current BLM guidance defines Extensive Recreation Management Area (ERMAs) as administrative units that require specific management consideration in order to address recreation use, demand or recreation and visitor service program investments. ERMAs are managed to support and sustain the principal recreation activities and the associated qualities and conditions of the ERMA. Management of ERMA areas is commensurate with the management of other resources and resource uses. Supporting management actions and allowable use decisions must facilitate the visitors' ability to participate in outdoor recreation activities and protect the associated qualities and conditions. Non-compatible uses, including some recreation activities, may be restricted or constrained to achieve interdisciplinary objectives.

More than half of the lands within the GJFO planning area are managed as the GJFO ERMA, which is characterized by a diverse range of natural resource settings and variety of recreation opportunities (**Figure 2-15**, Alternative A: Extensive Recreation Management Areas). This area is managed under previous BLM guidance for ERMAs, where recreation is unstructured and does not require intensive management or significant investments in trails or facilities. Within the ERMA, recreation management is reactive and custodial, addressing visitor health and safety, resource protection, and use and user conflicts. This type of undirected, or dispersed, recreation management affords visitors the opportunity to create their own adventure. Visitors receive little in the way of services or developed recreational facilities.

#### *Use Figures*

Most public land use and activity participation estimates depend on a mix of computerized trail counter data, field observations, and professional judgment of the recreation staff and hence are not scientifically based. The general trend across the GJFO has been a 3-7 percent increase in visitation each year. Recreation data are recorded in the BLM's Recreation Management Information

System, which is a web-based application used to track, store, and retrieve data. Estimated recreation-related visits during fiscal year 2002 (October 1, 2001 to September 30, 2002) totaled 502,860, and increased to 839,252 for fiscal year 2011 (October 1, 2010 to September 30, 2011) (BLM 2009j), resulting in an approximately 4 percent annual increase. In 2011, there were an estimated 30,117 visits at the Bangs Canyon Trailhead in Bangs Canyon SRMA and 67,156 visits at the Tabeguache Trailhead for the Lunch Loops Trail System (also in Bangs Canyon SRMA). There were an estimated 68,029 visits to the North Fruita Desert SRMA (BLM 2009j).

#### *River Recreation Management*

The GJFO has management responsibilities on the Gunnison River from the Whitewater river access to its confluence with the Colorado River, and the Dolores River from the Montrose-Mesa County line to the Colorado-Utah state line. The third river is the Colorado River, the majority of which crosses private land in the GJFO planning area.

#### Management and Use – Gunnison River

The section of the Gunnison River within the planning area is primarily used by private boaters for day use boating from Whitewater to Redlands Dam and from Redlands Dam to the confluence with the Colorado River. The Whitewater public river access is just upriver from the Highway 141 bridge and is co-managed by the GJFO, Dominguez-Escalante NCA, and Mesa County. It consists of a basic boat ramp, parking lot and restroom. There are two other public river access points, one just upriver and one just downriver of the Redlands Dam, but no developed public facilities are provided. The section of the Gunnison River managed by the GJFO is approximately 15 miles long and is mostly Class I with a few sections of Class II water. Most of the six commercial outfitters currently permitted on the lower Gunnison River exit the river at the Whitewater access, only occasionally utilizing the final two segments within the GJFO planning area.

#### Management and Use – Dolores River

The Dolores River is less developed than the Gunnison River and receives much less use. There are no official put-ins or identified campsites and the river use is generally limited to 2-3 weeks per year. River flow is regulated by releases at the McPhee Reservoir. The GJFO manages approximately 23 miles of the Dolores River between the Montrose-Mesa County line and the Colorado-Utah state line. There are no designated launches on this section of river due to its irregular and unpredictable flow (i.e., it is dam controlled and not floatable in relatively dry years). There is one undesignated launch on county highway property near the bridge on Highway 141 in Gateway that is suitable for trailer and raft use, although most recreational use of this section is via kayak or canoe. Many people put in at this location and float to Dewey Bridge in the BLM's Moab Field Office.

There is a diversion dam west of Gateway that requires a portage in all but the highest flow, and the Stateline Rapids are generally Class III or Class IV depending on water volume. Recreational use in low water is virtually impossible; however, the river receives light use between May and July during high water years.

Management challenges exist on both the Dolores and Gunnison Rivers because recreation sites (e.g., campgrounds and picnic areas) have not been developed to meet the activity demands of the users. Additional infrastructure and maintenance resources may be required to meet the additional recreation demand created by residents and visitors.

#### *Developed Recreation Facilities*

Developed recreation sites and facilities have been constructed to enhance recreation opportunities, protect resources, manage activities, or reduce recreation use conflicts. These infrastructure developments range from designated campgrounds to trailheads with simple bulletin boards. The GJFO manages more than 30 developed sites that provide a wide variety of recreation opportunities. Among these sites are two campgrounds, 13 trailheads, 19 restrooms, three river access points, two developed shooting ranges, two picnic areas, and two scenic overlooks (**Figure 3-19**, Developed Recreation Sites).

BLM upgrades recreation facilities as demand for such upgrades increases. These upgrades will be managed in accordance with the prescribed setting character for each particular area. The need for any upgrades or development of additional facilities is overshadowed by a shortfall in maintenance and rehabilitation funds for existing facilities and the high cost of construction for new facilities. Developed recreation sites are maintained by BLM park rangers, seasonal staff, and volunteers.

#### Developed Campgrounds

Within the GJFO planning area, the GJFO manages two developed campgrounds that contain 53 individual campsites and three group campsites (**Table 3-35**, GJFO Developed Campgrounds). Some of the campgrounds receive heavy use during the shoulder seasons (spring and fall). Most of the developed campgrounds have basic infrastructure, including toilets and picnic tables.

**Table 3-35**  
**GJFO Developed Campgrounds**

<b>Name</b>	<b>Location</b>	<b>Number of Sites</b>	<b>Fee (2011)</b>
18 Road	North of Fruita	35	None
Mud Springs	South of Glade Park	18	\$10

Mud Springs Campground typically has a volunteer host and collected fees of approximately \$2,500 each of the past two years from between 800 and 1,100 recreational visits annually. While the fees collected are used for maintenance, the maintenance costs far exceed the revenue collected.

#### *Recreation Administration*

##### Special Recreation Permits

As authorized by 43 CFR 2932, the following four types of uses require Special Recreation Permits (SRPs): commercial use, competitive events, organized groups, and recreation use in special areas. The BLM can issue SRPs for noncommercial use in certain special areas, including rivers, backcountry and camping areas. Most SRPs issued by the GJFO are related to big game and mountain lion hunting outfitters, and mountain bike and OHV tours. Requests for competitive event SRPs are on the rise as well. No permanent camps and facilities are authorized by SRPs on BLM-administered public lands.

The GJFO administers an average of 80 to 85 SRPs (approximately 55 for activities within the planning area) each year. Approximately 40 percent of those permits are for upland guide and outfitter services, including mountain bike and OHV tours and training, rock climbing, horseback riding, and educational tours. Approximately 30 percent of the GJFO permits are issued for big game and mountain lion hunting, 25 percent for competitive events and organized groups, and five percent for river outfitters. Demand for SRPs on public lands within the GJFO has been steadily increasing over the past 20 years, and this trend is expected to continue.

The GJFO currently collects about \$30,000 to \$35,000 per year in SRP fees from permittees operating in the planning area. Roughly 15 percent of this revenue is expended in program administration with the remainder spent on visitor services, monitoring, and maintenance.

#### *Accessibility*

Participation in outdoor recreation can be restricted by age, disabilities, poor health, lack of appropriate facilities within an accessible distance, undesirable recreation settings, lack of information about recreation opportunities, poor transportation, or lack of convenience.

The BLM continually improves facilities to make them more accessible to people with disabilities, and to provide easier access to public lands and better information about recreation opportunities. All construction is reviewed for compliance with Uniform Federal Accessibility Standards and the Americans with Disabilities Act Guidelines. As newer Accessibility Guidelines for Outdoor Developed Areas become final, those standards will also be followed.

### *Environmental Education and Interpretation*

#### Marketing and Tourism

For many communities within the GJFO planning area, tourism provides a significant portion of the economic base. Typically, BLM staff does not directly market recreation activities on public lands, but recreation and heritage tourism opportunities available on public lands are often marketed by the local communities to increase visitation, which in turn increases dollars spent in their communities.

It is incumbent upon the BLM to identify information and marketing service providers and educate those providers how the BLM is managing an area for recreation opportunities so that the providers can identify the niche they inhabit to produce beneficial personal outcomes. Marketing is not simply the act of increasing use, it is putting people in the right place so they can achieve their desired recreation experiences.

#### Interpretation and Education

No formal education or interpretation program exists in the GJFO. Education and interpretation on recreational opportunities and land stewardship is conducted informally through brochures, signs, and the GJFO web site. The GJFO staff participates in school programs, attends user groups/club meetings, and participates in the Grand Junction Convention and Visitors Bureau.

#### *Recreation Monitoring and Evaluation*

The GJFO recreation staff and law enforcement officers monitor all forms of recreation activities and public use for user conflicts, recreation effects on natural and cultural resources, visitor health and safety issues, and conflicts with adjacent private landowners. In addition, recreation staff monitors implementation of recreation management actions and the attainment of management objectives.

#### *Recreation Setting Character Conditions*

Recreation Setting Characteristics (RSCs) are an expression of recreation setting conditions in the future that are expected to result if objectives are achieved and land use plan and implementation decisions are executed. Three recreation setting components are considered: a) the desired future recreational qualities of the landscape (physical), b) the qualities associated with use (social), and c) the conditions created by management (operational). These components influence the kinds of recreation activities that are emphasized and recreation outcomes realized. The BLM establishes these criteria in the land use plan to guide management action and allowable use decisions as well as the identification of site-specific use levels for activities during plan implementation (BLM H-1601-1, Page 13). Proposed initial allocations are provided in **Appendix K**, Recreation and Visitor Services Management Framework. RSCs

can be adjusted over time to meet recreation objectives as a result of monitoring and evaluation.

#### Physical Setting Character Conditions

The fundamental physical setting character trends for the GJFO planning area are clear and predictable, realizing the physical changes in the region. The Grand Valley has experienced rapid growth since the 1987 RMP. During this time, the natural resource recreation settings have generally become physically less remote due to many factors, including energy development, urban growth, and mechanized/motorized use on public lands.

This change in the physical setting has accelerated change in the social setting character of GJFO public lands.

#### Social Setting Character Conditions

Public visitation to BLM-administered lands has increased over the past 25 years. This is especially true near communities and around popular destinations like the Gunnison River, LBCWHR, the North Desert, and Bangs Canyon. On weekends and in the evenings, interactions with other people are very common in the more popular recreation areas.

Many upland areas (e.g., Glade Park, LBCWHR, Uncompahgre Plateau) receive low levels of visitation (especially weekdays) and offer uncrowded social settings. However, many residents and nonresident hunters utilize GJFO public lands during big game hunting seasons, and the number of contacts with other visitors dramatically increases throughout the GJFO. In addition, more people are seeking out these less-visited areas for relief from some of the crowded areas and are modifying the social setting of the less crowded areas. With use levels growing, the evidence of visitation is also increasing. Evidence of alteration, including vehicle use, litter, manmade structures, tree damage, surface vegetation impacts, vandalism to cultural resources, hardened campsites, human-caused wildfires, and compacted soils, can be found in more and more places.

#### Administrative Setting Character Conditions

The GJFO has rules and regulations in place to assist in achieving the following goals: maintain natural resource settings; direct recreation use; and protect resources. To achieve these goals, the GJFO has also implemented administrative tools such as limiting motorized use in specific areas and by season, increasing signage, increasing field staff, and improving visitor services by creating new brochures and maps. Many of these actions were precipitated by increased accessibility and crowding. Within some recreation areas and in urban-interface areas, new issues such as social trails, domestic animals, noise, and visual aesthetics have necessitated additional administrative remedies to address recreation-related use. No individual user fees for recreational activities are charged on public lands within the GJFO.

### User Interactions

In addition to the recreational settings described above, interactions between visitors during an outing can also influence visitor experiences. How visitor experiences are influenced by other visitors can be subjective and varies between individuals. Some user interactions are positive (i.e., visitor experiences are enhanced), and some interactions are negative (i.e., visitor experiences are degraded).

Research on the topic of recreational user interactions has been conducted for more than 30 years. The most commonly used definition of user interaction focuses on user conflict. Jacob and Schreyer (1980) defined user conflict as goal interference that can be attributed to other recreational users. Using this definition, negative user interactions (i.e., conflict) occur when one visitor's expectation or experience is diminished, and that visitor can attribute the negative impact to another visitor's behavior.

Other definitions of user interactions are broader and include not only negative interactions (conflict), but also positive interactions where interactions with other users enhance visitor experiences (complementary interactions). See Marcouiller, Scott, and Prey (2008).

The research literature suggests visitor perceptions about other users influence whether interactions are complementary or conflicting. Perceptions about a variety of factors (e.g., use of technology, modes of travel, environmental ethics, etc.) influence whether interactions with other visitors have a positive or negative impact on a visitor's experience.

Not only are the results of user interactions complementary, conflicting, or something in between, they can also be asymmetrical. That is, a visitor that interacts with another visitor might see the interaction as complementary, while the other visitor might see the interaction as conflicting. For example, a motorcycle rider that is enjoying a ride at high speeds might encounter a family riding ATVs. The motorcycle rider might enjoy seeing the family out enjoying time together which enhances his/her experience. On the other hand, the family riding ATVs might see the motorcycle traveling at high speeds as a threat to the safety of younger riders. In this case, the motorcycle rider experiences a complementary user interaction and the ATV family experiences a conflicting user interaction. The bulk of the past studies related to user interactions suggests this asymmetry occurs with many types of user interactions.

“...there is a tendency for one group (mostly traditional and nonmotorized users) to perceive more problems than the other group with whom they are in conflict. This other group, which typically holds an asymmetrical view of the level of conflict, is typically composed of nontraditional, mechanized or motorized users. This finding of differential levels of perceived conflict holds for cross-country skiing versus snowmobiling in Minnesota (Knopp and Tyger 1973), for oar-

powered versus motor-powered whitewater boating in the Grand Canyon (Shelby 1980), for anglers versus water-skiers on Midwest reservoirs (Gramann and Burdge 1981), for paddling canoeists versus motor boaters in the Boundary Waters Canoe Area (Adelman et al. 1982), and for hikers versus mountain bikers in the Rattlesnake National Recreation Area (Watson et al. 1991). Ramthun (1995) found that one-third of hikers on a trail near Salt Lake City, Utah, sensed conflict with mountain bikers, while less than 6 percent of bikers perceived conflict. Gibbons and Ruddell (1995) found that helicopter skiers in the Wasatch National Forest in Utah reported no conflict, while nonmotorized backcountry users reported high levels of conflict.”

The research also shows visitors adapt when they encounter conflicting situations (Kuss et al. 1990). They may 1) re-evaluate their perceptions about what is acceptable; 2) change their behavior (visit the area less frequently or visit at different times); or 3) stop using the area.

The BLM considers different recreational uses non-compatible when conflicting user interactions reach a point where visitors choose to stop recreating in an area and decide to find other areas where the conflicting interactions do not occur (i.e., displacement).

During public scoping for the planning process, the BLM received comments from the public about the desired future condition of recreation within the planning area. The BLM received comments from the public supporting recreation areas that did not include motorized uses to protect specific types of recreation opportunities. The BLM also received comments to manage recreation for all types of activities (motorized and non-motorized), so the public would have to opportunity to share “multiple-use” trails. The BLM interpreted these comments as 1) an indicator that some user interactions in the planning area are conflicting and 2) there is a desire from the public to develop management that provides recreational opportunities that promotes positive user interactions and reduces conflict.

Based on the literature, the BLM understands complementary user actions are occurring where visitors are participating in similar activities (e.g. ATV riding and jeeping or hiking and backpacking) or where asymmetrical user interactions occur with complementary results for one group of users.

Conversely, the BLM generally assumes conflicting user interactions are likely to occur where activities have a greater degree of difference (e.g. motorcycle riding and hiking), and the BLM assumes some of these interactions are asymmetrical. In the case of a motorcycle rider and a hiker, only the hiker might see the interaction with the motorcycle rider as a conflicting interaction; the hiker may not have any impact on the motorcycle rider.

The BLM also assumes in some parts of the planning area different uses are non-compatible and visitor displacement is occurring.

#### *Outcomes Focused Management*

Landscape attributes affect recreational activities and the outcomes for people, communities, economies, and the environment. For example, an area's remoteness, naturalness, or facilities may facilitate different opportunities for hiking, wildlife viewing, or camping. The outcome of engaging in one of those opportunities in a particular setting may have an impact on the individual, the community, the economy, and the environment. The BLM focuses on providing specific, positive outcomes while at the same time attempting to minimize negative outcomes by engaging recreation-tourism participants, non-participating but affected community residents, and national and international visitors. This holistic approach attempts to satisfy the ever increasing and competing demands which are difficult to manage utilizing a traditional activity-based recreation management model (Driver 2008).

#### **Trends**

Five key issues are causing the setting character of the GJFO to change:

1. Increased urbanization as a result of population growth and changing demographics;
2. Changing public expectations and demand for outdoor recreation opportunities, especially for dispersed recreation;
3. Increased energy development in portions of the GJFO;
4. Close proximity of BLM public lands to private property, specifically in the Grand Valley, and the growing use of public lands as a community-based recreation asset; and
5. Technological advances, such as all-terrain vehicles (ATVs) and mountain bikes, affordable GPS units, as well as better outdoor equipment and clothing.

All of these natural resource setting trends are likely to continue. At the broadest level, the physical, social, and administrative recreation character of BLM public lands is potentially changing from natural to more developed, from less crowded to more contacts with others, and from less restrictive to more rules and regulations. These changes will impact the activity opportunities that can be offered and the recreation experience and benefit opportunities that can be produced by land managers and partners.

#### **3.3.5 Comprehensive Travel and Transportation Management**

Transportation is an integral part of virtually every activity that occurs on public lands. Comprehensive Travel and Transportation Management (CTTM) is the BLM's proactive interdisciplinary planning, on-the-ground management, and administration of roads and trails for both motorized and non-motorized travel

to ensure that public access, natural and cultural resources, and regulatory needs are considered. The CTTM process must address variability among landscapes, users' interests, equipment options, and cultural and biological resource constraints. The primary goal of the CTTM process is to develop a systematic network of routes with appropriately designated uses that provides opportunities for a diverse set of activities to occur on public lands, such as recreation, energy development, grazing, and wildlife management.

Traditionally, the BLM's travel management program focused primarily on motor vehicle use. However, the introduction of CTTM significantly expanded the planning scope to include all forms of travel, including travel by foot, horseback and other livestock, mechanized vehicles (e.g., bicycles), motorized vehicles (e.g., two-wheeled, such as motorcycles, and four-wheeled, such as ATVs, cars, and trucks), and travel by motorized and non-motorized boats.

There is considerable overlap between travel management and all other uses on BLM lands. For example, many people visit public lands for recreation purposes. For these visitors, a route system may serve as either a means to reach a destination where the activity occurs (e.g., a road to a trailhead or parking area) or as the focus of the recreation activity itself (e.g., a four-wheel driving, hiking, or horseback riding trail).

To reduce the duplication of narrative between travel management and the other sections of this document, this section addresses only public travel and access (i.e., management area designations, route designations, types of travel, and seasonal area limitations).

#### **Off-highway Vehicle Management Areas**

Off-highway vehicle is synonymous with off-road vehicle. Off-road vehicle is defined in 43 CFR 8340.0-5(a): Off-road vehicle means any motorized/battery-powered vehicle capable of, or designed for, travel on or immediately over land, water, or other natural terrain, excluding: 1) Any non-amphibious 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. Types of OHVs commonly used on public lands include dirt motorcycles, dune buggies, sand rails, jeeps, four-wheel drive vehicles, snowmobiles, and ATVs.

In the context of the BLM planning process, it is important to note definitions of the most common OHV types. A four-wheel drive vehicle is a passenger vehicle or light truck having power available to all wheels. A Utility Type (or Terrain) Vehicle (UTV) refers to any recreational motor vehicle other than an ATV, motorbike, or snowmobile, designed for and capable of travel over designated unpaved roads, traveling on four (4) or more low-pressure tires, maximum width less than seventy-four (74) inches, usually a maximum weight less than

two thousand (2,000) pounds, or having a wheelbase of ninety-four (94) inches or less. UTV does not include vehicles specially designed to carry a person with disabilities. An ATV is a wheeled vehicle, other than a snowmobile, which has a wheelbase and chassis of 50 inches in width or less, is steered with handlebars, generally has a dry weight of 800 pounds or less, travels on three or more low-pressure tires, and has a seat designed to be straddled by the operator. A motorcycle is defined as a motorized vehicle with two tires and with a seat designed to be straddled by the operator.

The BLM's regulations for OHV management, 43 CFR 8342.1, stipulate "the authorized officer shall designate all BLM lands as either open, limited, or closed to [OHVs]." As such, all BLM lands within the planning area have been designated in one of three OHV designation categories, as follows:

Open area designations are used for intensive OHV or other transportation use areas where there are no special restrictions or where there are no compelling resource protection needs, user conflicts, or public safety issues to warrant limiting cross-country travel.

Limited area designations are used where travel must be restricted to meet specific resource and/or resource use objectives. In accordance with BLM Travel and Transportation Manual 1626, areas classified as limited, the BLM must consider a full range of possibilities, including travel that will be limited to types or modes of travel, such as foot, equestrian, bicycle, and motorized; limited to existing roads and trails; limited to time or season of use; limited to certain types of vehicles (e.g., motorcycles, ATVs, high clearance); limited to licensed or permitted vehicles or users; limited to BLM administrative use only; or other types of limitations. In addition, the BLM must provide specific guidance about the process for managing motorized vehicle access for authorized, permitted, or otherwise approved vehicles for those specific categories of motorized vehicle uses that are exempt from a limited designation.

Closed area designations prohibit any and all motorized travel and transportation. Areas or trails are designated closed if closure to all vehicular use is necessary to protect resources, promote visitor safety, or reduce use conflicts. Non-motorized uses are permitted in these areas.

#### ***Emergency Closures***

Emergency closures are sometimes necessary to protect public health and safety or prevent unnecessary or undue resource degradation due to unforeseen circumstances. Where off-road vehicle travel is causing or will cause considerable adverse effects upon soil, vegetation, wildlife, wildlife habitat, cultural resources, historical resources, threatened or endangered species, wilderness suitability, other authorized uses, or other resources, the affected areas shall be immediately closed to the type(s) of use causing the adverse effect until the adverse effects are eliminated and measures implemented to prevent recurrence.

Per IM 2010-028, Change I (Requirements for Processing and Approving Temporary Public Land Closure and Restriction Orders) (BLM 2009k), temporary closures and restrictions should be implemented for the shortest time and in the smallest area necessary to protect resources, public health, and safety.

#### **Existing Route Systems**

Many routes within the planning area were created to access BLM lands for timber/vegetation management projects, gas/mineral development, range management, and various ROWs. Some of these routes are maintained by the authorized permittee to access the improvement, such as a livestock/wildlife pond or fence. Over the years, many of these routes have become part of the roads and trail system frequently used by visitors who are engaged in recreation activities.

Many more recreation-based routes have been created, or pioneered, by users themselves. Open travel designations that allow cross-country travel, coupled with high levels of use and improvements in mechanized and motorized technology, have allowed users to gain access through rough terrain. The repeated passage of users creates and maintains these routes. Because these routes were not designed, but rather created by consistent use, these routes often cause conflict with public land resources and other public land uses.

#### **Current Conditions**

Emerging travel management issues within the GJFO planning area include:

- Rapid expansion of recreational use and visitation on public lands outstripping the travel planning framework in the 1987 GJFO RMP (BLM 1987);
- User-created, non-system routes causing adverse impacts on other resources;
- Routes and areas open to public use but are accessible only to adjacent landowners; and
- Increasing conflicts among recreational users over route use.

#### *Motorized Travel*

Approximately 43 percent of the planning area is designated as open to cross-country travel, 44 percent is limited to existing or designated roads and trails, 11 percent has seasonal limitations, and 3 percent is closed to motorized use. Travel Management designations for the planning area are summarized in **Table 3-36**, Off-Highway Vehicle Designations in the GJFO Planning Area, and depicted on **Figure 2-22**, Alternative A, Comprehensive Travel and Transportation Management.

**Table 3-36**  
**Off-Highway Vehicle Designations in the GJFO**  
**Planning Area**

<b>OHV Designations</b>	<b>Acres</b>
Closed	35,300
Limited to designated roads and trails	220,000
Limited to existing roads and trails	234,700
Seasonal limitations (existing routes only)	108,000
Seasonal limitations (designated routes only)	5,500
OHV Intensive Use Areas	12,500
Open	445,400
<b>Total</b>	<b>1,061,400</b>

Source: BLM 2010a

Foot and horse travel is not limited to existing or designated routes, except within the Bangs Canyon and North Fruita Desert SRMAs. Areas closed to motorized use and seasonal limitations currently do not apply to foot, horse, or bicycle travel.

#### *High Use/Interest Areas*

The following information provides a basic profile of high use areas in the GJFO planning area.

#### 27<sup>1</sup>/<sub>4</sub> Road

This area is very popular for OHV use, recreational target shooting and hiking/dog walking by neighboring residents. A portion of the area east of 27<sup>1</sup>/<sub>4</sub> Road is open to cross-county travel, while travel in the area west of 27<sup>1</sup>/<sub>4</sub> Road and north of the open area is limited to existing routes. 27<sup>1</sup>/<sub>4</sub> Road is heavily used as the only access to two developed shooting ranges at the base of the Book Cliffs. Also, due to its location adjacent to an open area, this area sees frequent illegal cross-county use. Although an entrance kiosk was constructed near the BLM boundary on 27<sup>1</sup>/<sub>4</sub> Road, very little additional signage has been installed.

#### Bangs Canyon SRMA

The Bangs Canyon SRMA provides for multiple uses in close proximity to the urban center of Grand Junction. The Lunch Loops is a heavily used system of non-motorized singletrack trails. These trails are highly valued for their location only minutes away from downtown Grand Junction and are used by mountain bikers, hikers, trail runners, and dog walkers. The Free Lunch trail is open to mountain bikes only. There are also several non-mechanized trails in this area, including East Creek, Bangs Canyon, Rough Canyon, and Ladder Canyon. Rough and Ladder Canyons are very popular, year-round recreation destinations and are accessed from the Bangs Canyon trailhead on Little Park Road. The Mica Mine in Ladder Canyon is the primary destination in that area for hiking, especially for family groups.

The Bangs Canyon Management Plan (BLM 1999b) is the implementation-level plan written to manage the Bangs Canyon SRMA. The plan established a system of designated travel routes and called for a significant amount of trail construction and rehabilitation (specific projects are outlined in the Bangs Canyon Management Plan Implementation EA [BLM 2004b]). The Tabeguache Trail is an important recreation route that crosses public land for 142 miles, from Montrose to Grand Junction. A portion of the route is located within Bangs Canyon SRMA, including a non-motorized section from Monument Road to Little Park Road and a motorized section from Little Park Road to Highway 141. The existing trail crosses private property at Highway 141 and the BLM has identified acquisition of an access easement as a priority.

#### DeBeque Area and Coal Canyon

This high-use area has experienced a significant increase in use in recent years. The DeBeque area is designated as open to cross-country travel, and the predominant recreation activities are OHV, mountain bike, and equestrian use. There is moderate ATV and equestrian use in Coal Canyon. However, this area has seasonal limitations (motorized use is prohibited between December 1 and May 1), and during the remainder of the year (between May 2 and November 30), motorized vehicles are limited to existing roads and trails.

Castle Rock, an area southwest of DeBeque, has become a popular destination for those seeking singletrack motorcycling or mountain biking opportunities, or a trials motorcycle riding experience. The Castle Rock travel network is comprised mainly of user-created routes, some of which are in conflict with cultural resources and/or threatened and endangered plant species sites. The area has high value cultural resources, Tribal concerns, and sensitive plants that would require avoidance or other mitigation. In addition, oil and gas exploration and development is prevalent in the area. Recreationists have expressed interest in a diverse mix of recreation activities and experiences, including intermediate to expert level singletrack motorcycling and mountain biking, motorcycle trials riding, 4x4 and ATV touring, utilizing the area's unique natural topography and scenery to enhance users' experiences. There has also been interest in shared compatible uses such as 4x4 and ATV touring, hiking, and horseback riding.

#### North Fruita Desert SRMA

Visitation is highest mid-March to May and mid-September to mid-November with OHV use and mountain biking as the predominant uses. The North Fruita Desert Management Plan (BLM 2004a) outlined a multiple use trail system that features many loop routes, most of which are signed. The mountain bike emphasis area (approximately 4,000 acres) contains approximately 35 miles of singletrack mountain bike trails. This area also has a 400-acre designated open OHV area, designated staging area, a system of designated motorized loop routes, and several routes open to administrative use only. The plan also identified a polygon east of Q.5 Road for non-motorized, non-mechanized uses.

#### North Desert

This high-use area is in close proximity to Grand Junction, located east of the North Fruit Desert Planning Area and south of the Book Cliffs. Similar to the North Fruita Desert Planning Area, this area receives the highest use during the shoulder seasons (i.e., spring and fall). The North Desert draws visitors for a wide variety of activities. The Grand Valley OHV Area, an 11,400-acre OHV open area, has the highest use of any area in the GJFO planning area, over 250,000 visitor days per year. The Grand Valley OHV Area is highly valued by the local community and visitors from around the region for motorcycle and ATV use. It contains a large, unofficial motocross area that is maintained by a local motorcycle club. There is also a fair amount of mountain bike use in this area, which is influenced by local guidebooks advertising routes. Most of the non-mechanized use is from area residents who enjoy the close-to-home location for dog walking or daily exercise. There is also light equestrian use in this area, most of which also originates from the nearby residents.

#### Grand Mesa Slopes

The 1995 Grand Mesa Slopes RMP amendment addressed travel management and recreation issues in the Grand Mesa Slopes area. This RMP amendment was intended to curtail the proliferation of new roads and trails, provide continued motorized access, and provide specific management for motorized and non-motorized recreation and travel (BLM 1995a).

#### Gateway

The Gateway area is a popular multiple-use recreation destination. Travel management in this area consists of designations of open, closed, limited to existing roads and trails, and limited to designated roads and trails. There is light non-mechanized use in the area mostly consisting of climbing in the Palisade WSA or hiking from the nearby Gateway Canyons Resort. A stacked loop trail system (currently eight miles in length) designed for mountain biking and hiking lies immediately south of Gateway Canyons Resort at the mouth of Lumsden Canyon.

In the area east of Highway 141, there is an extensive system of old mining routes, many of which receive light to moderate recreational use. The major constraint in this area is the potential for future mineral exploration and effective management of existing routes due to the density. This area is popular during hunting season but is also becoming a year-round recreation destination. Gateway Canyons Resort rents ATVs and Jeeps for visitors to tour this area and facilitates climbing, equestrian, and float trips.

John Brown Canyon provides motorized access into Utah BLM's Moab Field Office and receives heavy recreation use. Uranium exploration and development has the potential to increase truck traffic that can present a safety hazard to recreational users. There is existing motorized access into the Palisade WSA via

Bull Draw and Wright Draw, which has resulted in some illegal cross-country use within the WSA.

*Seasonal Travel Limitations*

Seasonal limitations are in place on several areas and routes within the GJFO planning area. OHV travel is subject to seasonal limitations on existing routes on 108,833 acres and on designated routes on 5,496 acres. **Table 3-37**, Seasonal Travel Management Limitations, summarizes the roads within the planning area that have restrictions.

**Table 3-37  
Seasonal Travel Management Limitations**

Type of Limitation	Area or Road
Limited: Between December 1 and May 1, motorized vehicle use is prohibited. Between May 2 and November 30, motorized vehicle use is limited to existing roads and trails.	<ul style="list-style-type: none"> <li>• Coal Canyon portion of LBCWHR</li> </ul>
Limited: Between December 1 and May 1, motorized vehicle use is prohibited, except on county-maintained roads. Between May 2 and November 30, motorized vehicle use is limited to existing roads and trails.	<ul style="list-style-type: none"> <li>• The Beehive</li> <li>• Lands End/Grand Mesa Slopes</li> <li>• Chalk Mountain</li> <li>• Sunnyside</li> <li>• Big Salt Wash/Coal Gulch/16 Road</li> <li>• Blue Mesa</li> <li>• Demaree</li> </ul>

*Types of Routes*

The majority of the existing route system in the GJFO was not built with consideration for sustainability, resource concerns or conditions, or recreation experiences. Most routes either follow historic routes, such as those for grazing, mining, or administrative access, or were user created. As a result, these trails do not always provide desirable recreation experiences and can have unmitigated impacts on natural or cultural resources.

There are approximately 3,996 miles of routes in the planning area. Approximately 94.5 percent of those are open to motorized travel.

*Mechanized Travel*

Mountain biking is becoming increasingly popular on public lands, and several areas in Colorado are considered top national destinations. Mountain bike use is occurring on old motorized routes, game trails, and user-created mountain bike trails, as well as on planned singletrack routes. Popular mountain bike areas for both community and destination visitors in the GJFO include the North Fruita Desert Trailhead (18 Road north of Fruita), the Gateway area, areas near the Town of Palisade, and areas around Grand Junction, such as the Lunch Loops trail system. The Lunch Loops trail system includes the BLM's first designated mountain bike-only trail, Free Lunch, which was constructed with challenging features for downhill-specific travel.

#### *Non-Mechanized Travel*

Hiking and horseback riding has been increasing on BLM lands bordering municipalities within the GJFO. The communities of Grand Junction, Fruita, Loma, Mack, Palisade, Whitewater, Gateway, and DeBeque have all experienced population growth and, consequently, the BLM lands adjacent to them have become community-based recreation assets.

Popular hiking trails and areas include Gunnison Bluffs/Old Spanish Trail, Mt. Garfield, Book Cliffs, Little Book Cliffs Wild Horse Area, the North Desert, and Bangs Canyon. Horseback riding is common but dispersed throughout the GJFO on existing trails and roads.

#### **Trends**

Local population growth and an increasing awareness of the GJFO as a recreation destination are expected to drive the trend toward additional recreational use and accompanying requests for improved access.

In the past, comprehensive and proactive transportation planning has not been an emphasis area for the BLM in RMPs. The development of transportation routes, whether planned through projects such as oil and gas developments or created by recreation users, has traditionally been viewed as an acceptable part of the development of BLM lands. Research from the past 20 years on the impacts of roads to resources, wildlife, and other users, and actual experience by the BLM on these impacts, is increasing the need for well-designed and integrated transportation planning.

Mountain biking has continued to increase in popularity over the past 15-20 years. Trail systems within the North Fruita Desert and Bangs Canyon SRMAs are expected to experience a continued increase in mountain bike use. New trails in the Palisade and Gateway areas will also likely increase mountain bike use in those areas. At the same time, advances in mountain bike technology have resulted in riders' ability and desire to access more remote and technically challenging terrain throughout the GJFO, sometimes contributing to the widening, deepening, braiding, and eroding of existing routes, and the creation of new social trails. Increasing mountain bike use is also resulting in the displacement of other trail users (primarily pedestrians and equestrians) in some locations as those other users seek to avoid frequent encounters with mountain bikers.

Hiking, trail running and dog walking continue to grow in popularity, especially on BLM lands in close proximity to the local communities of Grand Junction, Fruita, Palisade and Gateway. Pedestrian use is highest in the Bangs Canyon SRMA at the trailheads off of Monument Road and Little Park Road. Other popular hiking destinations include the Mount Garfield trail and the Palisade Rim trail. The increasing use of these close-to-home areas frequently results in the proliferation of undesignated social trails as pedestrians seek easy access from adjacent residences and neighborhoods, or as they seek alternative routes and experiences. These social trails typically do not meet BLM design criteria or

management objectives. Increasing congestion and user conflicts on popular trails has also resulted in shifting use patterns. For example, hiking and dog walking use has increased at the Little Park Trailhead as trail users seek to avoid traffic and congestion at the Tabeguache Trailhead.

Equestrian use in the GJFO is light to moderate, and demand for equestrian opportunities has not grown significantly over the past 20 years. A flat or declining trend in equestrian use is expected to continue. Most local equestrian use is concentrated in the adjoining McInnis Canyons NCA and Dominguez-Escalante NCA. The exception is the LBCWHR, which is a popular riding destination for local equestrians. Many trails in that area do not meet BLM design criteria, and exhibit deepening, widening, braiding and erosion. Other equestrian use is generally scattered throughout the field office and tends to avoid areas where other recreation use is concentrated. The North Fruita Desert SRMA receives some equestrian use away from the bicycle trail system and the OHV Open Area. The Gunnison Bluffs Area receives a moderate amount of equestrian use as well. Much of the equestrian use in the GJFO is local in nature, versus users seeking this area as an equestrian destination. Some use conflicts have arisen as horse owners with property adjoining BLM-managed lands seek riding opportunities on trails not designed or managed for equestrian use (i.e., the Lunch Loop trail system).

There are several paragliding and hang gliding sites in the planning area that are flown year-round by pilots from across the western United States. Popular sites include Otto's Ridge, Reeders Mesa, and Peanut Point. These sites are expected to continue to be used throughout the life of the plan.

Current OHV use exceeds historic levels and new, more-powerful vehicles are capable of accessing steeper and rougher terrain. In the past, visitors drove principally Jeeps, trucks, and motorcycles. Today the BLM has seen an increase in use of OHVs of all types and sizes. As with all types of use, increased visitation has contributed to the widening, deepening, braiding, and eroding of some existing routes. The increased demand for cross-country opportunities has also led to an increasing number of hill-climb, play, and camping areas. The Grand Valley OHV area is the most heavily used area in the GJFO planning area; use is expected to continue increasing, as is OHV use in the Bangs Canyon area, the Gateway area, and near DeBeque.

Some of the key drivers for the increase in travel in the GJFO planning area include:

- Increasing visitation on all public lands within the GJFO planning area;
- A longer season of use in comparison to many Colorado locations; and
- Increasing urban and suburban populations proximate to the planning area.

### 3.3.6 Lands and Realty

Lands and realty actions can be divided between land tenure adjustments and land use authorizations. Land tenure adjustments focus primarily on land acquisition and disposal (including easement acquisition), while land use authorizations consist of ROWs, communication sites, and other leases or permits. Lands and realty actions help ensure that BLM-administered lands are managed to benefit the public.

BLM public lands are used for a variety of purposes. Major focus areas for the lands and realty program include land tenure adjustments, federal mineral estate, ROWs, other leases or permits, ROW corridors, and communication sites. Wind and solar renewable resource production is also permitted by ROWs through the lands and realty program.

The goals of the lands and realty program are to manage public lands to support the goals and objectives of other resource programs, provide for uses of public lands in accordance with regulations and compatibility with other resources, and improve management of public lands through land tenure adjustments.

The following section describes the current conditions and characterization of lands and realty within the planning area.

#### **Current Conditions**

##### *Land Tenure*

Surface land ownership within the planning area is summarized in **Table I-1**, Land Status within the GJFO Planning Area (refer to **Section 1.3**, Description of the Planning Area). Acreages for the McInnis NCA, Dominguez-Escalante NCA, and Colorado National Monument are not included in this table because they are not within the planning area boundary and will be managed under separate land use plans.

##### *Land Tenure Adjustments*

Land tenure adjustments are used to consolidate the BLM's land ownership patterns through various disposal and acquisition authorities:

- **Disposal.** Public lands have potential for disposal when they are isolated or difficult to manage or are suitable for public purposes or community expansion. Disposals result in a title transfer, wherein the lands leave the public domain. **Figure 2-30**, Alternative A: Land Tenure Adjustments, shows lands in the planning area that are designated for disposal. Lands may be disposed of via sale or exchange, as discussed below. In addition, the Recreation and Public Purposes Act of 1926 was established as a means for state and local government or non-profit organizations to acquire or lease public lands at a reduced or no cost. The transferred land must be used

for an established or proposed public project, need, historic monument, or recreational purposes.

- Sale. The BLM's general sale authority for public land is Section 203 of FLPMA, which requires that public land be retained in public ownership, unless, as a result of land use planning, disposals of certain parcels are warranted (refer to Chapter 2, Table 2-2, Lands and Realty, Disposals). Public land must be sold at not less than fair market value and must meet the disposal criteria of FLPMA.
- Acquisition. Acquisition of lands can be pursued to facilitate various resource management objectives. Acquisitions, including easements, can be completed through exchange, Land and Water Conservation Fund purchases, donations, or receipts conducted in accordance with other Congressional Acts and special legislation.
- Exchange. Land exchanges are initiated in direct response to public proposals, or by the BLM to improve management of public lands. Lands need to be formally determined as suitable for exchange. In addition, lands considered for acquisition through exchange would be those lands that meet specific land management goals identified in the RMP. Non-federal lands are considered for acquisition through exchange of suitable public land, on a case-by-case basis, where the exchange is in the public interest and where the non-federal lands to be acquired contain higher resource or public values than the public lands for which they are exchanged.
- Withdrawal. Withdrawals are used to preserve sensitive environmental values, protect major federal investments in facilities, support national security, and provide for public health and safety. Withdrawal segregates a portion of public lands and suspends certain operations of the public land laws, such as mining claims. Federal policy now restricts all withdrawals to the minimum time and acreage required to serve the public interest, maximize the use of withdrawn lands consistent with their primary purpose, and revoke all withdrawals that are no longer needed.

Since approval of the RMP in 1987, the GJFO has disposed of 2,271 acres and acquired 2,253 acres through exchange, issued patents for 440 acres through the Recreation and Public Purposes Act, purchased 2,096 acres, and acquired 375 acres through donation. The RMP placed 14 tracts in a cooperative management agreement (CMA) category, which offers the tracts to qualified federal, state, or local agencies or entities for management, transfer, or exchange. Nine CMA tracts totaling approximately 500 acres in the Horsethief State Wildlife Area have been withdrawn to US BOR and are managed by CPW under a CMA.

The BLM and the Grand Junction Regional Airport (GJRA; previously known as Walker Field Airport) entered into a Memorandum of Understanding (MOU) in July 1991 to recognize the airport's need to acquire public lands in their long-term expansion plans, and to acknowledge BLM's intent to make such lands available to the airport when needed. The MOU encompasses 2,163 acres north of the airport. The area was withdrawn from location and entry under the mining laws in January 1994. This withdrawal expired in January 2014 and an application for a new withdrawal is not expected to be filed until after the GJRA master plan is approved by the Federal Aviation Administration.

Over 23,000 acres of public lands within the GJFO planning area are managed as withdrawn from mineral entry through BLM protective withdrawals and other Federal agency withdrawals. Approximately 7,900 acres are withdrawn by the US BOR. Of these 7,900 acres, approximately 4,900 acres are within three active US BOR projects operated and maintained for primary BOR project purposes under agreements with the Collbran Water Conservancy District (Collbran Project), the Grand Valley Water Users Association and the Orchard Mesa Irrigation District (Grand Valley Project and Grand Valley Unit, Colorado River Basin Salinity Control Project), and the Western Colorado Wildlife Habitat Association (Grand Valley Unit, Colorado River Basin Salinity Control Project wildlife mitigation lands). Approximately 3,000 acres are withdrawn by the US BOR for the Dominguez Project, which was not authorized for construction. The US BOR has identified the Dominguez Project withdrawal for revocation. Other US BOR withdrawn and acquired lands are within the Grand Mesa National Forest and managed under agreement with the US Forest Service, and within Vega State Park, Highline State Park, and Horsethief Canyon State Wildlife Area and are managed under agreements with the State of Colorado.

The BLM has moved toward the consolidation of BLM-administered public lands to benefit the public. To achieve this goal, candidates for land ownership adjustment through disposal, sale, exchange, or acquisition include parcels that are difficult to manage or that do not have public access, relatively small parcels adjacent to other federally or state-managed lands, parcels that would increase conservation of natural resources, and parcels that increase access and use of public lands.

The enactment of the Federal Land Transaction Facilitation Act of 2000 placed an increased emphasis on public land sales. Until it expired in 2011, the Act, which may be reauthorized in the future, authorized a portion of revenue generated from the sale of public lands identified for disposal to fund acquisition of land in federally designated areas, and for administrative expenses necessary to carry out the transactions.

*Land Use Authorizations*

The most common form of authorization to permit uses of public lands by commercial, private, or governmental entities is the ROW, which is used to permit private and public roads that cross public lands, pipelines not eligible for authorization under oil and gas lease rights, public utilities, communications facilities, reservoirs, and a variety of other purposes (**Table 3-38**, Active Right-of-Way Authorizations in the GJFO Planning Area). Short-term permits (not to exceed three years), and long-term leases for uses such as agricultural, industrial, and commercial, are authorized under 43 CFR 2900. Leases are also issued to federal, state, and local governments, special district or non-profit groups under the authority of the Recreation and Public Purposes Act of 1926.

**Table 3-38**  
**Active Right-of-Way Authorizations in the GJFO Planning Area<sup>1</sup>**

<b>Facility Type</b>	<b>Number of Authorizations</b>
Roads	275
Power Lines	104
Telephone/Fiber Optic Lines	62
Irrigation Ditches/Canals	88
Water Facilities (e.g., spring development, water pipelines, salt water disposal wells)	62
Communication Sites	55
Natural Gas Pipelines	220
Oil and Gas Facilities (e.g., meter stations, compressor stations)	38
Other Pipelines	5
Short-term Authorizations (short-term ROW and temporary use permits)	19
Wind Facilities	1
Railroad	16
Easements (FLPMA)	16
Other	31
<b>Total</b>	<b>992</b>

Source: BLM 2010g

<sup>1</sup>Data may include some ROWs within the GJFO but outside the planning area, and may include small acreages of non BLM-administered lands. There may be additional pre-FLPMA facilities (such as historic irrigation ditches) that are not recorded or accounted for in this table.

The planning area covers 2.2 million acres of federal, state, and private land in Mesa, Delta, Montrose, and Garfield Counties in northwestern Colorado. Eighty-six percent of BLM-administered public lands in the planning area border private land. Authorizations to permit uses on BLM-administered public lands are in high demand.

In the GJFO planning area, the placement of major linear facilities depends on meeting the following location criteria:

- Concentrate linear facilities within or next to existing ROW corridors where possible;
- Avoid locations in sensitive wildlife habitat;
- Avoid steep topography, poor soils, or other fragile areas such as threatened and endangered species habitats; and
- Avoid cultural sites that are listed on or eligible for listing on the NRHP.

#### Designated ROW Corridors

Many electricity, telephone, water, and railroad corridors (above and below ground) serve the public throughout the planning area (**Table 3-39**, Right-of-way Corridors in the GJFO Planning Area). ROW applicants are encouraged to use these designated corridors.

**Table 3-39**  
**Right-of-way Corridors in the GJFO Planning Area**

<b>Location</b>	<b>Type of Utility</b>	<b>Approximate Corridor Width</b>
Unaweep Canyon	Telephone and small electrical lines	0.50-mile
Between Colorado National Monument and Black Ridge WSA (most of this corridor is located outside the planning area)	Small water, telephone, and electrical lines	0.25-mile
Along Mid-American pipeline company pipeline in West Salt Creek	Major pipelines and power lines	0.50-mile
Along Northwest Pipeline and State Highway 139	Major pipelines and power lines	0.50-mile
Coal Canyon	Major power lines	0.50-mile
From DeBeque to Southern Boundary of Resource Area*	Major power lines	4.0 miles
Along Roan Creek from DeBeque to the Community Center*	Railroads; power lines; major water and oil and gas pipelines	1.0 mile
Along Clear Creek from Community Center to Northern Resource Area Boundary*	Major power lines and pipelines	0.50-mile
Westwide Energy Corridor (US DOE and BLM 2009) along I-70 and Highway 50 to Delta	Oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities	0.50- to 4.0 miles

Source: BLM 1987 (Table 21)

\* These corridors are part of the West-wide Energy Corridor

Additionally, Section 368 of the Energy Policy Act of 2005 directs the Secretaries of Agriculture, Commerce, Defense, Energy, and the Interior to designate corridors on federal land in 11 western states for oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities. In accordance with that act, the Approved RMP Amendments/ROD for Designation of Energy Corridors on BLM-Administered Lands in the 11

Western States was published in January 2009 (US DOE and BLM 2009). The approved RMP amendments designate multiple-use corridors within the planning area that vary only slightly from the corridor designations of the 1987 Grand Junction RMP. Near the northern boundary of the planning area, the corridor designated in US DOE and BLM 2009 was moved a few miles east of the 1987 RMP location to follow the TransColorado pipeline route.

A total of 234,113 acres in the planning area are designated unsuitable (exclusion) for ROWs, and proposals in these zones are denied on the basis that project impacts could not be mitigated to prevent undue damage to the resources of concern. Another 606,456 acres are designated sensitive (avoidance) to development, and ROW and projects in these zones are designed to protect resources of concern from undue damage. Remaining public lands are suitable for consideration for ROW authorizations, and proposals are considered in these zones. In sensitive (avoidance) and suitable zones, use of existing corridors or upgrading of existing facilities is encouraged.

#### Communication Sites

Communication site applications, on both existing and new sites, have increased on BLM-administered lands within the planning area. Communications facilities are authorized under the 43 CFR 2800 ROW regulations, and the authorizations are granted through a Communications Use Lease.

Several sites within the planning area host communications equipment for various public and private tenants such as telephone companies, cellular and internet service providers, local utilities, and local, state, and federal agencies. There are three multiple-facility communication sites on BLM-administered land within the planning area: Lands End, Nine Mile Hill, and Lee's Point. Individual communication site plans have been written and approved for each of these sites. In addition, the GJFO has issued communication site authorizations for six single-facility communication sites within the planning area. **Table 3-40**, Communication Sites in the GJFO Planning Area, lists the communication sites authorized by the GJFO.

**Table 3-40**  
**Communication Sites in the GJFO Planning Area**

<b>Site Name</b>	<b>Site Type</b>	<b>Township, Range, Section</b>
Lands End	Multiple facility	11 South, 97 West, 15
Nine Mile Hill	Multiple facility	13 South, 99 West, 19 and 30
Lee's Point	Multiple facility	51 North, 19 West, 32
Crawford Point	Single facility	14 South, 103 West, 27
DeBeque	Single facility	8 South, 97 West, 24
Douglas Pass	Single facility	5 South, 101 West, 26
East Orchard Mesa	Single facility	1 South, 2 East, 30
Gunnison Bluffs	Single facility	2 South, 1 East, 6
Highway 50	Single facility	2 South, 1 East, 3

### *Rights-of-Way*

The BLM issues ROWs, permits, and leases under the authority of FLPMA (Section 302 and Title V) for surface-disturbing activities on public lands that are not eligible for authorization under mining laws and regulations. The GJFO manages approximately 1,000 ROWs on public lands within the planning area.

ROWs are the most common form of land use authorizations issued to permit the use of public land by private, commercial, and governmental entities. ROWs are authorized under 43 CFR 2800 and 2880. ROWs are most often granted for private and public roads, natural gas pipelines, water pipelines, power lines, telephone lines, communication facilities, reservoirs, and irrigation ditches and canals. Facilities located within an oil and gas lease are authorized under the NEPA analysis of the proposed action to develop the lease (if the point of sale or custody transfer point is within a lease boundary, a ROW is required for the portion of the pipe past the transaction point).

Land use permits authorized under 43 CFR 2800 and 2880 are another form of land use authorization that permits the use of public land. Land use permits are often used to authorize short-term uses that are temporary in nature. Temporary Use Permits are authorized under the Mineral Leasing Act or 43 CFR 2880. Temporary Use Permits and short-term ROWs are used to authorize temporary workspace during the construction of facilities that are authorized under ROW grants. Permits comprised approximately 20 percent of the new land use authorizations in the GJFO during 2007 and 2008.

Increased exploration and development of natural gas resources, along with increased land development and population growth within the GJFO, have increased the number of land use authorization applications received for commercial and private uses. The GJFO has processed approximately 30 applications annually for new land use authorizations over the past few years. The types of new applications typically received included those for new facilities, changes or amendments to existing facilities, and short-term or temporary authorizations for short-term use or construction. Applications for new facilities typically accounted for 50 percent of the new authorizations granted each year. Approximately 13 percent of the applications for new authorizations received each year were from private parties. The remaining 87 percent of these types of applications were from commercial parties. Over the last five years, the majority of the ROW applications received have been for roads and pipelines. Other common ROW applications received were for power lines, telephone lines, and water pipelines. Applications for saltwater disposal wells were also received in 2008. An application for a carbon sequestration facility was received in 2009.

The majority of the ROWs are in the northern portion of the GJFO, as shown in **Figure 3-21**, Right-of-Way Locations. Two of the ROW corridors extend across the full width of the GJFO and provide a continuous route. Approximately 300 ROWs are currently contained by these corridors, and

approximately 120 ROWs are partially within or pass through these corridors. The GJFO has strived to co-locate multiple facilities in adjacent locations when possible to reduce the amount of new surface disturbance in previously undisturbed areas. The majority of ROWs in the GJFO are located in the West Salt Creek Corridor, Highway 139 Corridor, and the West-wide Energy Corridor. These corridors are in the northwest and southeast portions of the GJFO. The corridors that were identified in the 1987 RMP, and amendments thereto, are shown in **Figure 2-26**, Alternative A: Right-of-Way Corridors, Exclusion and Avoidance Areas.

Trespasses are unauthorized use of public land that require the removal of facilities and reclamation, or authorization for continued use. The GJFO has worked to resolve trespass cases as they have been identified through removal and reclamation or authorization. A current inventory of trespasses within the field office has not been completed, but the GJFO has been working to develop a list of existing trespasses. Trespass cases are prioritized based upon human health and safety and severity of resource damage.

### **Trends**

As with other BLM field offices in Colorado, the GJFO is consolidating its lands to benefit the public. To achieve this, candidates for land ownership adjustment through disposal, sale, exchange, or acquisition include parcels that are difficult to manage or that do not have public access, parcels that are relatively small and are adjacent or of special importance to local communities or other federally or state-managed lands, parcels that would increase conservation of natural resources, and parcels that increase access to and use of BLM land.

Under current management, parcels eligible for disposal through sale, exchange, or transfer have been limited to those identified for disposal in the 1987 RMP. Lands available for disposal in this RMP, and the criteria used to determine eligibility for disposal are identified in Table 2-2. Considerations for disposal are also continuing to account whether the action would adversely affect or conflict with existing uses or management of renewable resources.

Other federal, state, and local governments have indicated a continued interest in cooperative management agreement tracts which are offered for management, transfer, or exchange to qualified agencies or entities for purposes such as riparian and wildlife habitat management, community open space, and recreation.

Many of the management decisions related to lands and realty in the GJFO are increasingly driven by growth and urbanization issues. Other driving issues include the interface between private landowners and the demands on BLM-administered lands to locate the facilities (e.g., access roads, communication sites, pipelines, and water tanks) needed to support the fast-growing infrastructure.

Most utility type ROWs and associated facilities have been in place over 30 years, so it is likely that the infrastructure would require replacement or upgraded technology. There are many ROWs throughout the GJFO that could be utilized to upgrade existing infrastructure. As communities continue to expand in the planning area, it is likely that requests for the use of BLM-administered land for facilities would increase.

### 3.4 SPECIAL DESIGNATIONS

This section is a description of the special designation areas in the GJFO planning area and follows the order of topics addressed in Chapter 2:

- Wilderness Study Areas
- Areas of Critical Environmental Concern
- Wild and Scenic Rivers
- National Trails
- National, State, and BLM Byways

Special Recreation Management Areas and Extensive Recreation Management Areas are discussed in **Section 3.3.4**, Recreation and Visitor Services.

#### 3.4.1 Wilderness Study Areas

In 1964, Congress passed the Wilderness Act, thereby establishing a national system of lands for the purpose of preserving a representative sample of ecosystems in a natural condition for the benefit of future generations. Until 1976, most land considered for, and designated as, wilderness was managed by the NPS and the US Forest Service. With the passage of FLPMA in 1976, Congress directed the BLM to inventory, study, and recommend which public lands under its administration should be designated wilderness. Section 603 of FLPMA specifically required the BLM to provide Congress with recommendations as to the suitability or non-suitability of roadless areas greater than 5,000 acres and roadless islands for wilderness designation. Congress gave the BLM 15 years to complete the wilderness inventory, which was done on a state-by-state basis. Only Congress can ultimately decide which areas, if any, will be designated as wilderness and added to the National Wilderness Preservation System.

In 1989, the BLM Grand Junction Resource Area issued its Final Wilderness Environmental Impact Statement that included analysis and recommendations for seven WSAs within the GJFO (BLM 1989). Three areas have since been designated as wilderness and are not within the planning area for this RMP. The recommendations were based on the findings of the 15-year wilderness study process (from 1976 to 1991) that included each area's resource values, present and projected future uses, and manageability as wilderness; the environmental consequences of designating or not designating the areas as wilderness; mineral surveys; and public input. Until Congress acts on the recommendations and

either designates them as wilderness or releases them for other uses, these areas are managed consistent with BLM Manual 6310 to preserve their wilderness values. Activities that would impair wilderness suitability are prohibited in WSAs. There are six primary provisions of FLPMA with regard to interim management of WSAs:

- WSAs must be managed so as not to impair their suitability for preservation as wilderness;
- Activities that are permitted in WSAs must be temporary uses that create no new surface disturbance nor involve permanent placement of structures;
- Grazing, mining, and mineral leasing uses that existed on October 21, 1976, may continue in the same manner and degree as on that date, even if this would impair wilderness suitability of the WSAs;
- WSAs may not be closed to appropriation under the mining laws to preserve their wilderness character;
- Valid existing rights must be recognized; and
- WSAs must be managed to prevent unnecessary or undue degradation.

In summary, WSAs must be managed in a manner that would not impair the suitability of the area for preservation as wilderness and to prevent unnecessary or undue degradation. Except for grandfathered uses and valid existing rights, permitted activities in WSAs are temporary uses that create no new surface disturbance and don't involve placement of permanent structures.

The BLM's authority to conduct wilderness reviews, including establishing new WSAs, expired in 1991. However, BLM has authority under Section 201 and 202 of FLPMA to maintain an inventory of all BLM lands and their resources, including wilderness characteristics, and to consider such information during land use planning. Through the land use planning process, BLM will consider all available information to determine the mix of resource use and protection that best serves the FLPMA multiple-use mandate. Wilderness characteristics findings are discussed in **Section 3.2.14, Lands with Wilderness Characteristics**.

#### **Current Conditions**

Three WSAs within the GJFO have been designated as Wilderness. The Black Ridge Canyons and Black Ridge Canyons West were combined and designated as the Black Ridge Canyons Wilderness Area in 2000 (Public Law 106-353) and are managed as part of the McInnis Canyons NCA. In 2009, Congress designated the Dominguez Canyon Wilderness Area (Public Law 111-11), which is managed as part of the Dominguez-Escalante NCA. These areas are outside of the planning area for this RMP.

Four WSAs totaling 96,400 acres are within the GJFO RMP decision area: Demaree Canyon, Little Book Cliffs, the Palisade, and Sewemup Mesa (**Figure 2-69**, Alternatives A, B, C, and D: Wilderness Study Areas). In 1991, the BLM recommended as nonsuitable for wilderness designation all of Demaree Canyon, Little Book Cliffs, and the Palisade WSAs. Sewemup Mesa WSA was recommended as suitable for wilderness designation except for approximately 130 acres (BLM 1991). It should be noted that the Sewemup Mesa WSA extends into the Uncompahgre Field Office to the south. The acreages discussed here are only for the portion of the WSA in the GJFO. As such, acreage figures differ slightly from the 1991 study report and recommendation.

A description of each WSA is provided in **Table 3-41**, Wilderness Study Area Characteristics. All WSAs are managed according to BLM Manual 6310 which recognizes valid existing rights and grandfathered uses. Grandfathered uses include grazing, mining, and mineral leasing conducted in the manner and degree in which these uses were being conducted on October 21, 1976, as long as they do not cause unnecessary or undue degradation of the lands under wilderness review.

**Table 3-41**  
**Wilderness Study Area Characteristics**

<b>Demaree Canyon WSA</b>	
<b>Location:</b>	Approximately 25 miles northwest of Grand Junction in Garfield County.
<b>Size:</b>	22,700 acres
<b>Natural Values:</b>	<ul style="list-style-type: none"> <li>• A series of north-south-trending canyons separated by narrow ridges.</li> <li>• The southern boundary of the WSA is defined by the base of the Book Cliffs.</li> <li>• Vegetation is scattered pinyon-juniper on the canyon slopes and ridges.</li> <li>• Sagebrush, saltbrush, and various grasses are found in the five major canyon bottoms.</li> <li>• Outstanding opportunities for solitude.</li> </ul>
<b>Current Uses/ Management Prescriptions:</b>	<ul style="list-style-type: none"> <li>• Very light hiking and equestrian use except for during hunting season.</li> <li>• Energy development.</li> <li>• Big game hunting and outfitting.</li> </ul>
<b>Valid Existing Rights and Grandfathered Uses:</b>	<ul style="list-style-type: none"> <li>• Cattle grazing.</li> <li>• As of October 1990, there were 20 oil and gas leases and 220 acres of a coal leases all dating from before FLPMA. Two of the leases expired in June 2009 due to lack of production, leaving 18 held by production leases. There are three active wells within the WSA boundary.</li> </ul>
<b>Current Management Issues:</b>	<ul style="list-style-type: none"> <li>• Increasing energy and road development may begin to threaten opportunities for solitude and recreation.</li> <li>• Illegal OHV incursions into the WSA from illegal social routes beginning at Colorado Highway 139 and adjacent private land.</li> </ul>
<b>Little Book Cliffs WSA</b>	
<b>Location:</b>	West of DeBeque in Mesa County.
<b>Size:</b>	29,300 acres

**Table 3-41  
Wilderness Study Area Characteristics**

<b>Natural Values:</b>	<ul style="list-style-type: none"> <li>• The WSA is a gently upward sloping plateau dissected by four major canyon systems.</li> <li>• The canyons are characterized by steep cliff walls up to 1,000 feet high.</li> <li>• The base of the Little Book Cliffs defines the southern boundary of the WSA.</li> <li>• Vegetation is scattered pinyon-juniper on the canyon slopes and ridges. Sagebrush, saltbrush, and rabbitbrush are found in the canyon bottoms.</li> <li>• Outstanding opportunities for solitude except in the area of oil and gas development.</li> <li>• Outstanding opportunities for primitive and unconfined recreation.</li> </ul>
<b>Current Uses/ Management Prescriptions:</b>	<ul style="list-style-type: none"> <li>• Hiking, backpacking, camping, equestrian use, wildlife viewing, photography.</li> <li>• Energy development.</li> <li>• LBCWHR overlaps much of the WSA.</li> </ul>
<b>Valid Existing Rights and Grandfathered Uses:</b>	<ul style="list-style-type: none"> <li>• Two miles of roads have been built inside the WSA to support pre-FLPMA oil and gas leases having valid existing rights.</li> <li>• As of October 1990 there were 25 oil and gas leases and 1,934 acres in three coal leases all dating from before the passage of FLPMA. Currently there are 17 authorized oil and gas leases within or partially within the WSA boundary and four producing or shut-in wells within the WSA boundary.</li> </ul>
<b>Current Management Issues:</b>	<ul style="list-style-type: none"> <li>• Motorized and mechanized incursions into the WSA from private property near Cameo.</li> <li>• Proliferation of social trails at the southern access point near Cameo.</li> <li>• The northern access to the WSA consists of a series of cherry-stemmed roads, off of which branch social trails that provide illegal motorized access into the WSA.</li> <li>• Main Canyon has been temporarily closed to motorized use as the way has deteriorated such that the way is no longer passable by most motorized vehicles.</li> <li>• Management of horses (e.g., fences and structures) and the vegetation community (e.g., vegetation treatments) while complying with BLM Manual 6310.</li> </ul>
<b>The Palisade WSA</b>	
<b>Location:</b>	North of Gateway and approximately 60 miles south of Grand Junction in Mesa County.
<b>Size:</b>	26,700 acres
<b>Natural Values:</b>	<ul style="list-style-type: none"> <li>• Vertical cliffs, deep rugged canyons, and rolling to flat desert valley bottoms varying from rolling terrain to flat terrain dissected by gulches. The most prominent feature is the Palisade, which is a three-mile-long, rocky, butte-like spine that cuts the unit north and south.</li> <li>• Higher elevations consist of open sloping-to-flat grasslands varying from rolling terrain to flat terrain and meadows with moderate to heavy stands of intermixed pinyon-juniper and oak brush; lower elevations are characterized by pinyon-juniper and desert shrub vegetation.</li> <li>• Upper drainages contain aspen and ponderosa pine, while the North Fork of West Creek and Fish Creek have riparian vegetation.</li> </ul>

**Table 3-41  
Wilderness Study Area Characteristics**

<b>Current Uses/ Management Prescriptions:</b>	<ul style="list-style-type: none"> <li>• Hiking, climbing, camping, equestrian use, photography.</li> <li>• Moderate ATV use.</li> <li>• Big game hunting and outfitting.</li> <li>• Power line ROW.</li> <li>• 1,920 acres closed to OHV use.</li> </ul>
<b>Valid Existing Rights and Grandfathered Uses:</b>	<ul style="list-style-type: none"> <li>• Cattle grazing.</li> <li>• Motorized use on Bull Draw and Wright Draw roads.</li> </ul>
<b>Current Management Issues:</b>	<ul style="list-style-type: none"> <li>• Motorized use of Bull Draw and Wright Draw ways.</li> <li>• The area is seeing an increase in recreational rock climbing. There is one permit for guided climbing trips into the area, and safety and access issues are increasing in prominence. Wilderness characteristics of this area are threatened by the increase in use and the desire of some climbers to add permanent bolts within the WSA. Depending on the future amount of use that occurs, the main Palisade climbing route may require a permit system with use restrictions to protect wilderness character and experiences.</li> </ul>
<b>Sewemup Mesa WSA</b>	
<b>Location:</b>	Approximately ten miles south of Gateway in Mesa County.
<b>Size:</b>	17,800 acres
<b>Natural Values:</b>	<ul style="list-style-type: none"> <li>• Sewemup Mesa (approximately 73 percent of the WSA) is an isolated mesa top surrounded by sheer 500- to 700-foot cliffs on three sides.</li> <li>• The southern edge of the mesa has a broken, rocky slope rather than a solid cliff face.</li> <li>• The Sinbad Valley portion of the WSA is part of a collapsed salt dome which, over geologic time, has created a deep valley nearly circular in shape.</li> <li>• Numerous parallel canyon systems create a complex and varied topography.</li> <li>• Mostly pinyon-juniper woodland on the mesa top, with relatively high tree density.</li> <li>• Outstanding opportunities for solitude.</li> <li>• Outstanding opportunities for primitive and unconfined recreation.</li> </ul>
<b>Current Uses/ Management Prescriptions:</b>	<ul style="list-style-type: none"> <li>• Light hiking and backpacking use.</li> <li>• Big game hunting.</li> <li>• 17,775 acres closed to OHV use.</li> <li>• 17,775 acres designated as unsuitable for public utilities.</li> </ul>
<b>Valid Existing Rights and Grandfathered Uses:</b>	None.
<b>Current Management Issues:</b>	<ul style="list-style-type: none"> <li>• Montrose County has a Colorado Revised Statute (RS) 2477 claim to improve an old route that runs along the western boundary of the WSA. This improved access route, coupled with an overall increase in use in the Gateway area, may lead to a significant increase in visitation to this area.</li> </ul>

### 3.4.2 Areas of Critical Environmental Concern

An ACEC is defined in FLPMA, Public Law 94-579, Section 103(a), as an area “within the public lands where special management attention is required (when such areas are developed or used or where no development 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.” The BLM prepared regulations for implementing the ACEC provisions of FLPMA. These regulations are found at 43 CFR 1610.7-2(b).

Restrictions that arise from an ACEC designation are determined at the time the designation is made and are designed to protect the values or serve the purposes for which the designation was made. In addition, ACECs are protected by the provisions of 43 CFR 3809.1-4(b)(3), which requires an approved plan of operations for activities resulting in more than five acres of disturbance under the mining laws.

#### **Existing Areas of Critical Environmental Concern**

There are five ACECs totaling 32,208 acres on BLM-managed land in the planning area: Badger Wash ACEC, the Palisade ACEC/Outstanding Natural Area (ONA), Pyramid Rock ACEC/Research Natural Area (RNA), Rough Canyon ACEC/RNA, and Unaweep Seep ACEC/RNA (**Figure 2-65**, Alternative A: Areas of Critical Environmental Concern). The size of each area and the values it is designed to protect are listed in **Table 3-42**, Existing Areas of Critical Environmental Concern. The values for which the ACECs were designated to protect are still present and require continued management attention.

Each of the five existing ACECs is also a designated Natural Area under the CNAP. Such areas are designated through voluntary land management agreements between the CNAP and a landowner (in this case, the BLM) who agrees to work cooperatively with the state to assure the protection of the site’s significant features.

**Table 3-42**  
**Existing Areas of Critical Environmental Concern**

<b>Badger Wash ACEC</b>	
<b>Location:</b>	Approximately nine miles northwest of Loma in Mesa County.
<b>Size:</b>	1,900 acres
<b>Natural Values:</b>	<ul style="list-style-type: none"> <li>• Small drainage system entirely within the desert.</li> <li>• Contains one of the best condition sites in the state of a remnant saltbush community, gardner saltbush/salina wildrye.</li> <li>• Provides important habitat for two rare plant species, grand buckwheat (<i>Eriogonum contortum</i>) and Ferron’s milkvetch (<i>Astragalus musiniensis</i>).</li> <li>• Provides habitat for sensitive wildlife, including burrowing owl and kit fox.</li> </ul>

**Table 3-42  
Existing Areas of Critical Environmental Concern**

<b>Current Uses/ Management:</b>	<ul style="list-style-type: none"> <li>• The ACEC has been used for USGS hydrologic studies since the 1950s. The study area within the ACEC is comprised of four paired watersheds, 1A and 1B to 4A and 4B. The study examines sediment and erosion impacts of cattle grazing between the four pairs of grazed (unfenced) and ungrazed (fenced) watersheds.</li> <li>• Cattle grazing exists, except within the fenced portions of the paired watersheds.</li> <li>• Light to moderate recreational use (e.g., hiking, OHV use).</li> <li>• No Surface Occupancy (NSO) stipulation within the hydrologic study area (685 acres).</li> <li>• Closed to mineral materials disposal.</li> </ul>
<b>Valid Existing Rights:</b>	<ul style="list-style-type: none"> <li>• No private in-holdings (surface or subsurface) within the ACEC.</li> <li>• As of January 2010, there were three permitted wells. The status of these wells are: <ul style="list-style-type: none"> <li>○ East Bar X-2: drilled and abandoned in 1956.</li> <li>○ Government #2-A: completed and currently shut-in.</li> <li>○ Federal #5: producing gas well.</li> </ul> </li> <li>• Eleven valid federal leases.</li> <li>• One road ROW.</li> <li>• Two pipelines for wells within the ACEC and one pipeline ROW running through the far northeastern corner of the ACEC.</li> <li>• One telephone ROW.</li> </ul>
<b>Current Management Issues:</b>	<ul style="list-style-type: none"> <li>• Increasing new energy exploration, development, and access roads may threaten native plant communities and long-term hydrologic studies.</li> <li>• The ACEC spans two grazing allotments with different management and permittees.</li> <li>• Partial NSO oil and gas stipulation does not cover the entire ACEC.</li> </ul>
<b>The Palisade ACEC/ONA</b>	
<b>Location:</b>	North of Gateway and approximately 60 miles south of Grand Junction in Mesa County.
<b>Size:</b>	23,600 acres
<b>Natural Values:</b>	<ul style="list-style-type: none"> <li>• Vertical cliffs, deep rugged canyons, and rolling to flat desert valley bottoms dissected by gulches; the most prominent feature is The Palisade, which is a three-mile-long, rocky, butte-like spine that cuts the unit north and south.</li> <li>• Higher elevations consist of open sloping to flat grasslands and meadows with moderate to heavy stands of intermixed pinyon-juniper and oak brush; lower elevations are characterized by pinyon-juniper and desert shrub vegetation.</li> <li>• Upper drainages contain aspen and ponderosa pine, while the North Fork of West Creek and Fish Creek have riparian vegetation.</li> <li>• Contains peregrine falcon and golden eagle breeding areas and Gunnison Sage-Grouse habitat.</li> <li>• Contains Horseshoe milkvetch, Fisher milkvetch, Kachina daisy, Dolores River skeleton-plant, Utah beardtongue, and Osterhout cat's eye.</li> </ul>

**Table 3-42**  
**Existing Areas of Critical Environmental Concern**

<b>Natural Values (continued):</b>	<ul style="list-style-type: none"> <li>• Contains numerous rare plants including Osterhout's cryptantha, Dolores River skeletonplant, horseshoe milkvetch, and Fisher Tower's milkvetch.</li> </ul>
<b>Current Uses/ Management Prescriptions:</b>	<ul style="list-style-type: none"> <li>• Hiking, climbing, camping, equestrian use, photography.</li> <li>• 1,920 acres closed to OHV use.</li> <li>• 1,920 acres designated as VRM Class I.</li> <li>• 17,258 acres designated as VRM Class II.</li> <li>• Big game hunting and outfitting.</li> <li>• Cattle grazing.</li> <li>• No Surface Occupancy stipulation.</li> </ul>
<b>Valid Existing Rights:</b>	None.
<b>Current Management Issues:</b>	<ul style="list-style-type: none"> <li>• The Palisade ACEC/ONA falls within the Palisade WSA, deemed nonsuitable for wilderness based on marginal manageability (BLM 1987).</li> </ul>
<b>Pyramid Rock ACEC/RNA</b>	
<b>Location:</b>	Approximately two miles west-southwest of DeBeque in Mesa County.
<b>Size:</b>	550 acres
<b>Natural Values:</b>	<ul style="list-style-type: none"> <li>• Eroded sandstone pinnacle.</li> <li>• Important habitat for the federally-listed Colorado hookless cactus (formerly Uinta Basin hookless cactus, federally-listed DeBeque phacelia, adobe thistle (<i>Cirsium perplexans</i>), Naturita milkvetch, aromatic Indian breadroot (<i>Pediomelum aromaticum</i>), and DeBeque milkvetch.</li> </ul>
<b>Current Uses/ Management:</b>	<ul style="list-style-type: none"> <li>• Conservation area for the federally-listed Colorado hookless cactus.</li> <li>• Proposed critical habitat for DeBeque phacelia.</li> <li>• Rare plant monitoring and study site.</li> <li>• Cattle grazing.</li> <li>• Closed to mineral material disposal.</li> <li>• No Surface Occupancy stipulation.</li> <li>• Closed to motorized vehicles.</li> <li>• Closed to public utilities.</li> </ul>
<b>Valid Existing Rights:</b>	<ul style="list-style-type: none"> <li>• V.20 Road along west side of ACEC boundary.</li> <li>• Natural gas pipeline ROW east of V.20 Road.</li> </ul>
<b>Current Management Issues:</b>	<ul style="list-style-type: none"> <li>• Open areas surround the ACEC, making OHV incursions a continuous problem.</li> <li>• Cheatgrass invasion of adjacent landscape.</li> <li>• Current and future energy development.</li> <li>• Current boundary does not fully include adjacent cultural resources.</li> </ul>

**Table 3-42  
Existing Areas of Critical Environmental Concern**

<b>Rough Canyon ACEC/RNA</b>	
<b>Location:</b>	Seven miles south of Grand Junction in Mesa County.
<b>Size:</b>	2,700 acres
<b>Natural Values:</b>	<ul style="list-style-type: none"> <li>• Habitat for two BLM special status plants: Grand Junction milkvetch and Osterhout's cryptantha.</li> <li>• Significant breeding area for the canyon tree frog and red-spotted toad (<i>Bufo punctatus</i>).</li> <li>• Habitat for peregrine falcon and midget faded rattlesnake.</li> <li>• Visual and geologic resources including the Ladder Creek Monocline, Ladder Canyon fault, and a portion of the Bangs Canyon fault.</li> <li>• Historic quartz/mica mine.</li> <li>• High concentration of prehistoric archaeological sites.</li> </ul>
<b>Current Uses/Management:</b>	<ul style="list-style-type: none"> <li>• Hiking, mountain biking, equestrian use, photography, camping.</li> <li>• Motorized vehicles allowed only on the Tabeguache Trail.</li> <li>• Cattle grazing.</li> <li>• Designated as VRM Class II.</li> <li>• Unsuitable for public utilities.</li> <li>• No Surface Occupancy.</li> <li>• Closed to mineral material disposal.</li> <li>• Withdrawn from locatable mineral entry.</li> </ul>
<b>Valid Existing Rights:</b>	None
<b>Current Management Issues:</b>	<ul style="list-style-type: none"> <li>• Continued increase in use, braiding of routes in canyon bottom, and lack of interpretive educational efforts puts protected resources at risk.</li> <li>• ACEC boundaries are not depicted on any of the BLM 1:100,000 maps.</li> </ul>
<b>Unawep Seep ACEC/RNA</b>	
<b>Location:</b>	In Unawep Canyon, eight miles northeast of Gateway in Mesa County.
<b>Size:</b>	80 acres
<b>Natural Values:</b>	<ul style="list-style-type: none"> <li>• Habitat for the Great Basin silverspot butterfly (<i>Speyeria nokomis nokomis</i>) and 67 other species of butterflies.</li> <li>• Large hillside spring complex consisting of at least 22 springs and seeps.</li> <li>• Riparian plant species including the giant helleborine (<i>Epipactus gigantea</i>).</li> <li>• Designated as a Colorado "Important Bird Area" by Audubon Colorado.</li> <li>• Bordered on the south by the Unawep-Tabeguache Scenic and Historic Byway (Highway 141) (see Section 3.4.5, National Byways).</li> </ul>
<b>Current Uses/Management:</b>	<ul style="list-style-type: none"> <li>• Sightseeing, fishing, photography.</li> <li>• Cattle grazing.</li> <li>• Designated as VRM Class II.</li> <li>• No Surface Occupancy stipulation.</li> <li>• Withdrawn from mineral entry.</li> <li>• Closed to mineral material disposal.</li> </ul>

**Table 3-42**  
**Existing Areas of Critical Environmental Concern**

<b>Valid Existing Rights:</b>	None
<b>Current Management Issues:</b>	<ul style="list-style-type: none"> <li>• Spread of noxious weeds, particularly Canada thistle and bull thistle.</li> </ul>

**Potential Areas of Critical Environmental Concern**

In accordance with BLM Manual 1613, Areas of Critical Environmental Concern (BLM 1988), the GJFO ID Team reviewed all BLM-managed land in the planning area to determine whether any areas should be considered for designation as ACECs. The BLM reviewed both internal and external nominations, as well as areas identified through inventory and monitoring, and adjacent designations of other federal and state agencies. Areas determined to meet the relevance and importance criteria, as defined by 43 CFR 1610.7-2(a)(1) and 43 CFR 1610.7-2(a)(2), and guidance in BLM Manual 1613 (BLM 1988), are provided temporary management to protect human life and safety or significant resource values from degradation until the area is fully evaluated through the RMP process.

The review found 24 proposed ACECs (167,400 acres) to meet the relevance and importance criteria. Upon further review of the Rapid Creek ACEC, it was determined that the fish species initially thought to be present and meet the relevance and importance criteria do not occur within the creek that crosses BLM-administered land. As such, 23 ACECs totaling 168,000 acres were brought forward for analysis. **Table 3-43**, Potential Areas of Critical Environmental Concern, displays such proposed ACECs. Where an expansion of an existing ACEC is proposed, the total acres presented includes the existing ACEC. See **Figure 2-67**, Alternative C: Areas of Critical Environmental Concern, for the location of all ACECs that met the relevance and importance criteria for at least one value. More information on the evaluation of proposed ACECs, including methodology for analysis, can be found in **Appendix D**, Summary of Areas of Critical Environmental Concern Report on the Application of the Relevance and Importance Criteria. Each of the potential ACECs is evaluated for designation in at least one alternative of the EIS (see **Chapter 2**, Alternatives, and **Chapter 4**, Environmental Consequences).

**Table 3-43**  
**Potential Areas of Critical Environmental Concern**

<b>ACEC</b>	<b>Natural Values</b>	<b>Acres</b>
Atwell Gulch	Plants, Wildlife, Scenic, Cultural	6,100
Badger Wash ACEC and Expansion	Plants, Wildlife, Hydrological	2,200 <sup>1</sup>
Colorado River Riparian ACEC	Wildlife, Fish, Scenic, Riparian Habitat	880
Coon Creek ACEC	Fish	110
Dolores River Riparian ACEC	Plants, Wildlife, Fish, Scenic, Riparian Habitat	7,400
Glade Park-Pinyon Mesa ACEC	Wildlife	27,100

**Table 3-43  
Potential Areas of Critical Environmental Concern**

<b>ACEC</b>	<b>Natural Values</b>	<b>Acres</b>
Gunnison River Riparian ACEC	Plants, Wildlife, Fish, Riparian Habitat	460
Hawxhurst Creek ACEC	Fish	860
Indian Creek ACEC	Cultural	1,700
John Brown Canyon ACEC	Wildlife	1,400
Juanita Arch ACEC	Plants, Geologic	1,600
Mt. Garfield ACEC	Scenic	5,700
Nine-mile Hill Boulders ACEC	Paleontological	90
The Palisade ACEC/ONA and Expansion	Plants, Wildlife, Scenic	32,300 <sup>1</sup>
Plateau Creek ACEC	Fish	220
Prairie Canyon ACEC	Plants, Wildlife	6,900
Pyramid Rock ACEC/RNA and Expansion	Plants, Cultural	1,300 <sup>1</sup>
Reeder Mesa ACEC	Plants	470
Roan and Carr Creeks ACEC	Fish, Riparian Habitat	33,700
Rough Canyon ACEC/RNA and Expansion	Plants, Wildlife, Cultural, Geologic	2,800 <sup>1</sup>
Sinbad Valley ACEC	Plants, Scenic, Cultural, Geologic	6,400
South Shale Ridge ACEC	Plants <sup>3</sup> , Wildlife, Scenic	28,200
Unawep Seep ACEC/RNA and Expansion	Wildlife, Fish, Plants, Riparian Habitat, Hydrologic	85 <sup>1</sup>
<b>Total</b>		<b>168,000</b>

Source: BLM 2010a

<sup>1</sup>Acreage includes existing ACEC

<sup>2</sup>During BLM's initial review of the proposed ACEC, the BLM identified fish species that met the relevance and importance criteria. Upon further review of the area, it was determined that the fish species are not present but that the area does provide habitat that supports the presence of riparian-obligate bird species.

<sup>3</sup>Plant value includes federally threatened DeBeque phacelia, which was inadvertently omitted from the ACEC report (BLM 2010c).

### 3.4.3 Wild and Scenic Rivers

Wild and Scenic Rivers are rivers or river sections designated by Congress under the authority of the WSR Act of 1968 (Public Law 90-542, as amended; 16 USC 1271-1287) to protect outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values and to preserve the river or river section in its free-flowing condition.

Designation affords certain legal protection and prevents development that would impact the outstandingly remarkable values, free-flowing nature, or classification of the stream segment. Where private lands are involved, the federal managing agency works with local governments and owners to develop protective measures. Section 5(d)(1) of the WSR Act directs federal agencies to consider potential WSRs in their land and water planning process. To fulfill this requirement, the BLM inventories and evaluates rivers when it develops an RMP for BLM lands in a specified area.

To be eligible for inclusion in the National Wild and Scenic Rivers System, a river segment must be free flowing and contain at least one river-related value considered to be outstandingly remarkable (BLM Manual 6400) (BLM 2012h). Eligible segments are tentatively classified as wild, scenic, or recreational based

on the current level of human development and activity within the corridor. The general definitions provided by the WSR Act are as follows:

- Wild river areas. Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.
- Scenic river areas. Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.
- Recreational river areas. Those rivers or sections of rivers 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.

Following the eligibility phase, BLM-managed river segments that have been determined to meet the eligibility criteria for WSR are evaluated for suitability. The purpose of the suitability study is to determine whether eligible rivers would be appropriate additions to the National Wild and Scenic Rivers System. The study includes an evaluation of each eligible segment in regards to the 12 suitability criteria factors. **Appendix C**, Final Wild and Scenic River Suitability Report, describes the methodology, data, and determinations made during the suitability phase.

Activities that would adversely affect eligible and suitable WSR stream segments include those that would diminish the outstandingly remarkable values or impair the free-flowing nature of the segment. Because many outstandingly remarkable values rely on a certain instream flow, activities that decrease instream flow may have an adverse effect on eligible and suitable WSR segments. Similarly, activities that affect the tentative classification of a stream segment, such as construction of a road in a segment with a wild classification, would impact the segment.

It is BLM policy to manage all eligible segments to preserve their free-flowing nature and identified outstandingly remarkable value(s) and tentative classification to the extent that the BLM has the authority to do so (BLM Manual 6400) (BLM 2012h). Should a nonsuitable determination be made in the RMP process, then the river shall be managed in accordance with management objectives as outlined in the plan document.

#### **Current Conditions**

There are no designated WSR streams in the GJFO planning area. Twenty BLM-managed segments in the GJFO were identified as eligible in the Wild and Scenic River Eligibility Report for BLM, GJFO (BLM 2009c). On March 30, 2009, after the release of the eligibility findings, Congress designated the Dominguez-Escalante NCA, which includes the Dominguez Canyon Wilderness. All or

portions of five segments identified as eligible fall within the Dominguez-Escalante NCA: Dominguez Creek, Big Dominguez Creek, Little Dominguez Creek Segments 1 and 2, and Gunnison River Segment 1. These segments will be considered for suitability during development of the RMP for the Dominguez-Escalante NCA. In addition, the Little Dolores River was removed from further consideration due to land status that was verified through an updated cadastral survey. This was addressed in an amendment to the eligibility report in September 2011.

A suitability study was done for the remaining 14 eligible stream segments, resulting in a preliminary suitability determination for each segment. The methodology and detailed analysis are in **Appendix C**, Final Wild and Scenic River Suitability Report.

**Table 3-44**, Summary of Wild and Scenic River Study Segments, lists the 14 eligible segments, their preliminary classification assigned during eligibility, lengths, and acreages (**Figure 2-70**, Alternatives A and C: Stream Segments Eligible [Alternative A] or Suitable [Alternative C] for Inclusion in the National Wild and Scenic Rivers System). While there are no management measures currently in place to specifically protect the free-flowing nature and outstandingly remarkable value(s) of eligible stream segments, overlapping ACECs, Wilderness or WSAs, SRMAs, and stipulations for oil and gas leasing (i.e., no surface occupancy, controlled surface use, and timing limitation) provide protection to some areas. For more details, refer to **Appendix C**, Final Wild and Scenic River Suitability Report.

#### ***Interim Protection***

All eligible stream segments must be managed to protect the preliminary classification (wild, scenic, or recreational), free-flowing nature, and outstandingly remarkable values related to the segment to the level that they existed when the segment was found eligible. The preliminary classification restricts certain types of development depending upon the classification. Proposed developments must comply with those permitted by the WSR Act. Through regular monitoring of the outstandingly remarkable values, the BLM can assess whether or not they are present at the same level that they were when the segment was found eligible.

**Table 3-44**  
**Summary of Wild and Scenic River Study Segments**

<b>River or Creek</b>	<b>Total Segment Length (miles)</b>	<b>Length on BLM Land (miles)</b>	<b>Total Wild and Scenic River Study Corridor (acres)</b>	<b>Area on BLM Land (acres)</b>	<b>Tentative Classification</b>	<b>Outstandingly Remarkable Values</b>
Blue Creek	11.2	10.0	3,200	2,900	Scenic	Scenic, Fish, Cultural
Carr Creek	9.8	5.1	3,100	1,700	Scenic	Fish
Colorado River Segment 1	17.8	7.3	5,600	2,200	Recreational	Scenic, Fish, Wildlife
Colorado River Segment 2	3.5	1.3	1,200	100	Recreational	Fish
Colorado River Segment 3	19.7	19.1	6,400	5,700	Scenic	Scenic, Recreation, Fish, Wildlife, Geologic, Historic
Dolores River	32.0	18.6	9,600	6,100	Recreational	Scenic, Fish, Recreation, Geologic, Paleontological
East Creek	18.9	9.0	5,800	2,900	Recreational	Geologic
Gunnison River Segment 2	6.0	3.8	1,900	1,000	Recreational	Fish, Historic
North Fork Mesa Creek	2.1	2.1	700	900	Scenic	Vegetation
North Fork West Creek	3.3	3.3	1,100	1,100	Wild	Scenic
Roan Creek	15.8	6.5	4,500	2,000	Scenic	Fish
Rough Canyon Creek	4.2	4.2	1,400	1,200	Scenic	Scenic, Wildlife, Geologic
Ute Creek	4.2	4.2	1,400	1,400	Scenic	Scenic, Vegetation
West Creek	5.8	4.9	1,900	1,700	Recreational	Scenic, Wildlife, Geologic, Vegetation

Source: BLM 2010a

#### 3.4.4 National Trails

National Scenic Trails and National Historic Trails are congressionally designated under the authority of the National Trails System Act of 1968. National Scenic Trails are extended trails that provide maximum outdoor recreation potential and for the conservation and enjoyment of the various qualities – scenic, historical, natural, and cultural – of the areas through which they pass. The BLM currently manages land along 5 National Scenic Trails, none of which are within the GJFO planning area.

National Historic Trails are extended trails that closely follow a historic trail or route of travel of national significance. Designation identifies and protects historic routes, historic remnants, and artifacts for public use and enjoyment. Nationwide, the BLM currently manages 11 National Historic Trails. They must meet the following three criteria listed in Section 5(b)(11) of the National Trails System Act:

- They must follow actual documented route of historic use;
- They must be of national significance; and
- They must possess significant potential for public recreation and/or interpretation.

The Old Spanish National Historic Trail was designated on December 4, 2002, by the Old Spanish Trail Recognition Act of 2002 (Public Law 107-325). The northern branch of the trail passes through a portion of the GJFO (**Figure 2-91**, Alternative A: National Historic Trails and State and BLM Byways). The interim nature and purpose of the trail is to afford the public the opportunity to connect to the trail resources and the trail story.

The Old Spanish National Historic Trail was a 2,700-mile trade route linking Santa Fe, New Mexico, and Los Angeles, California, passing through New Mexico, Colorado, Utah, Arizona, Nevada, and California. The trail had brief but heavy use between 1829 and 1848. During that period, Mexican and American traders took woolen goods west over the trail by mule train and returned eastward with California mules and horses for the eastern US and Mexican markets (Old Spanish Trail Association 2009).

Spanish traffic was fairly constant between 1765 and 1821 to trade with the Ute. Some trail users chose to trade with the Utes as far north as Salt Lake, and followed a path now labeled the “North Branch,” which led to Grand Junction, Colorado before heading south to rejoin the other major route from Santa Fe via Green River, Utah. Mexican trader Antonio Armijo made the first commercial, round-trip journey along a southern variant of the route in 1829 to 1830. William Wolfskill and George Yount’s commercial pack train of 1830 to 1831 inaugurated consistent use of the entire route from 1830 to 1848. Use lapsed after the end of the Spanish American War in 1848, and by 1853, the Old Spanish National Historic Trail had been abandoned as a principal trade route

(NPS 2001). The various historical routes together make up what is today known as the Old Spanish National Historic Trail.

#### **Current Conditions**

BLM and NPS jointly administer the Old Spanish National Historic Trail. The Old Spanish Trail Association serves as the primary non-federal partner. A strategy is being developed by the BLM and NPS which will guide how the agencies achieve trailwide comprehensive plan and agency policy requirements and which will provide strategic direction for administration and management of the Old Spanish NHT. The trail-wide comprehensive plan does not make land use allocations and does not direct the actions of National Trail managers.”

Fifty-one miles of the Old Spanish National Historic Trail fall within the GJFO field office boundary, and 40 miles are within the GJFO planning area. However, only 6.9 miles of the congressionally designated route are under BLM jurisdiction, as the remaining portions are on land with other surface ownership (**Figure 2-91**, Alternative A: National Historic Trails and State and BLM Byways). On-the-ground surveys and additional archival work will help the BLM identify the location of the OSNHT more precisely.

Within the planning area, the Old Spanish National Historic Trail was classified as VRI Class IV during a 2009 visual resource inventory except for a short stretch of VRI Class III on private land (Otak 2009). Much of the Old Spanish National Historic Trail corridor within the planning area has been greatly impacted by residential, commercial and transportation developments in the past 10-20 years. This change in character is especially evident near Whitewater, where the expanding urban and suburban footprint has curtailed visitors’ ability to experience the historic trail in a relatively unaltered landscape. Between Whitewater and Grand Junction a recreation route (approximately 4.5 miles in length) has been identified as the Old Spanish Trail. However, the historic alignment of the trail is likely further north and east along the Highway 50 corridor. The recreation route provides an opportunity for visitors to experience the general area of the historic trail in a slightly less developed setting.

#### **Trends**

The trail-wide comprehensive plan will examine trail resources along the entire route of the Old Spanish National Historic Trail. At the local level, the BLM will continue to work with the local branch of the Old Spanish Trail Association to manage trail use and provide educational opportunities in a manner that safeguards the nature and purposes of the trail.

### **3.4.5 National, State, and BLM Byways**

#### **Background**

Byways and backways are routes that range from multilane freeways to narrow, graded roads open part of the year. Designations include All American Roads,

National Scenic Byways, Colorado Scenic Byways, and BLM Back Country byways. Designation as a byway or backway can occur at the national level by the US Secretary of Transportation, at the state level, or at the BLM Field Office level. There are three designated byways or backways in the GJFO planning area.

#### *National Scenic Byways*

The National Scenic Byways Program was established under the Intermodal Surface Transportation Efficiency Act of 1991 and was reauthorized in 1998 under the Transportation Equity Act for the 21st Century. Under the program, the US Secretary of Transportation recognizes certain roads as National Scenic Byways or All American Roads based on their archaeological, cultural, historic, natural, recreational, and scenic qualities. For a highway to be considered for inclusion in the National Scenic Byways Program, it must provide safe passage for passenger cars year-round, it must be designated a State Scenic Byway, and it must have a current corridor management plan in place. To receive an All American Road designation, a road must possess multiple intrinsic qualities that are nationally significant and contain one-of-a-kind features that do not exist elsewhere. The road must also be considered a “destination unto itself.” That is, the road must provide an exceptional traveling experience so recognized by travelers that the primary reason for their trip would be to drive along the byway (National Scenic Byways Program 2009).

#### *Colorado Scenic Byways*

Similar to National Scenic Byways, Colorado Scenic Byways are paved highways that have been designated by official state declaration for their scenic, historic, recreational, cultural, archaeological, or natural qualities. The byways are paved roads that are generally safe, year-round, for passenger cars.

#### *BLM Back Country Byways*

The BLM Back Country Byways Program was developed by the BLM to complement the National Scenic Byways Program. Back Country Byways highlight the spectacular nature of the western landscapes. Back Country Byways vary from narrow, graded roads, passable only during a few months of the year, to two-lane paved highways providing year-round access.

#### **Current Conditions**

There are two National Scenic Byways that cross through the GJFO planning area: Dinosaur Diamond National Scenic and Historic Byway and the Grand Mesa National Scenic and Historic Byway. In addition, there is one State Scenic byway, the Unaweep-Tabeguache State Scenic and Historic Byway, that crosses through the GJFO planning area. Refer to **Figure 2-91**, Alternative A: National Historic Trails and State and BLM Byways, for the location of the byways. The BLM serves as a project partner for each of these byways and is committed to making decisions that focus on thoughtful marketing and comprehensive resource protection. There are no BLM Back Country Byways in the GJFO planning area.

*Dinosaur Diamond Scenic and Historic Byway*

The Dinosaur Diamond National Scenic and Historic Byway is a 480-mile, two-state byway that provides opportunities to see dinosaur bones being excavated and prepared by paleontologists for museum display. Visitors can also visit museums along the byway that showcase reconstructed skeletons and fleshed-out re-creations of dinosaurs found in the area. In addition to dinosaur sites, archaeological areas are scattered throughout the region that encompasses Dinosaur Diamond, and visitors can observe prehistoric Native American petroglyphs and pictographs that cover rock cliffs across the northern edge of the Colorado Plateau. It was designated a National Scenic Byway in 2002. The Dinosaur Diamond Partnership is currently preparing an application to be considered by the National Scenic Byways Program for All American Road listing (Dinosaur Diamond Partnership 2009).

There are existing oil and gas leases off of the byway and, under the current plan, the area is open for oil and gas leasing. The proposed Red Cliff Mine and the McClane Canyon coal mine are also adjacent to this byway.

*Unaweep-Tabeguache Scenic and Historic Byway*

Since its designation, the Unaweep-Tabeguache State Scenic and Historic Byway has experienced a more active motorized tourist industry. The byway travels through Unaweep Canyon from Whitewater to Gateway, then along the Dolores and San Miguel Rivers to Uravan, Naturita and Placerville. The Unaweep section follows the ancient path of the Gunnison River as it carved a deep channel in the earth to expose dramatic walls of pre-Cambrian granite. Unaweep Canyon has a unique geological feature—a divide in the middle that causes water to flow “out of two mouths” (the roughly translated meaning of the word Unaweep). The waters that fall on the east side of Unaweep’s divide flow to the Gunnison River via the seasonal East Creek. The western waters flow to the Dolores River via the year-round-flowing West Creek.

Nine-Mile Hill is a legendary wagon route once used for hauling supplies into and radium ore out of Gateway during the radium boom of the early 1900s. During this time, Nine-Mile Hill’s grueling 18 percent grade often exhausted the stock teams pulling wagonloads up and was equally treacherous coming down. The infamous hill even proved too steep for early motor-powered vehicles, and passengers frequently had to climb the hill on foot. This route, which is now Colorado Highway 141, was once known as Uranium Road. It served as the only access between the ore-rich mines in Gateway, Uravan, Naturita, and Nucla and the processing mills in Grand Junction. Today, Nine-Mile Hill is only five miles long and less steep than before.

The Tabeguache section runs south from Gateway to the communities of Nucla and Naturita in the Uncompahgre Field Office of the BLM. The Dolores River cuts a dramatic path through the sandstone as the byway winds its way alongside, sometimes hundreds of feet above the river. Here in this section

visitors find a world-famous hanging flume and recently closed Uravan mining site, both evidence of the area's rich history of mining and mineral extraction.

#### *Grand Mesa Scenic and Historic Byway*

The 63-mile Grand Mesa National Scenic and Historic Byway was designated a scenic byway in 1996. The byway begins at Interstate 70 and follows Colorado Highway 65 up Plateau Canyon to an elevation of more than 11,000 feet and leads visitors to a variety of year-round outdoor recreation opportunities. Less than four miles of the Grand Mesa Scenic and Historic Byway actually cross GJFO-managed land, but the byway provides several points at which visitors can access BLM lands for recreational purposes.

#### **Trends**

Driving for pleasure is expected to increase through the GJFO planning area, particularly along the existing scenic byways. Development pressures are likely to increase both on private and public lands adjacent to the byways. It is likely that increased development proposals on current private ranch lands will increase over time as population increases. As both the Dinosaur Diamond and the Unaweep-Tabeguache byways traverse BLM lands with both existing mineral leases and the opportunity for future mineral exploration and development, development pressure is also expected to increase on public lands. The BLM continues to work with partnership groups such as the Dinosaur Diamond Prehistoric Highway Partnership (Dinosaur Diamond Scenic and Historic Byway) to enhance and promote the scenic byways in the project area.

## **3.5 SUPPORT**

This section is a description of the support conditions in the GJFO planning area and follows the order of topics addressed in Chapter 2:

- Cadastral
- Interpretation and Environmental Education
- Transportation Facilities

### **3.5.1 Cadastral**

Cadastral survey is one of the BLM's basic responsibilities as the keeper of over 200 years of federal survey records and plats. In addition, the cadastral program supports all other functions by conducting land surveys and resurveys to identify public/private land boundaries. These surveys are often needed where there are unauthorized uses, land tenure adjustments, or BLM projects near a public/private land boundary. The costs of cadastral surveys are borne by the federal program or private interest that benefit from the boundary identification.

#### **Current Conditions**

Cadastral survey has been used extensively throughout the GJFO over the past 20 years primarily with trespass issues related to lands and realty. Unauthorized

agricultural and mineral development, residential development, fence construction, and road development have been the primary uses for cadastral survey. Cadastral has also been used to survey boundaries related to legislative actions and boundaries associated with land acquisitions, exchanges, and disposals throughout the GJFO.

### **Trends**

As development of urban areas adjacent to BLM lands increases throughout the planning area, so will the need for cadastral efforts. The need for accurate surveys will be critical in areas of mixed federal and private ownership, such as Whitewater, the Grand Mesa Slopes, DeBeque, and Glade Park. The need for boundary surveys related to land tenure adjustments will also continue. The current capacity of the cadastral program is not sufficient to meet the increasing survey needs in the planning area associated with urban interface development.

### **3.5.2 Interpretation and Environmental Education**

Interpretation is the voice for all BLM resource management programs. A well-developed program supports the goals and objectives of all resources and programs by serving customers; promoting land health; and enhancing the public's enjoyment, understanding, and appreciation of the public lands' natural and cultural resources and their management. An interpretive program reaches out to dispersed visitors across varied landscapes and serves visitors who are exploring many facets of public lands.

Management issues are addressed within the interpretive story in a way that relates those issues to the visitors' experiences. Interpretive planning is done collaboratively with internal and external groups, and clear measurable objectives are established to gauge the cost/benefit and the program's effectiveness. The BLM's interpretive program aims to respect and serve people with diverse backgrounds and abilities.

### **Current Conditions**

Interpretation and education opportunities in the decision area have not been extensively developed. Only a handful of small interpretive sites and a variety of single interpretive signs are scattered throughout the decision area. Currently, visitors receive information on opportunities in the decision area, as well as on safety concerns, from both off-site and on-site sources. Off-site sources include assorted resource brochures distributed throughout the area, maps, programs given by resource specialists or local historians, teacher information packets, fact sheets, and various Internet web sites. Many program- or area-related brochures have been automated and are available on the Internet. Informational tours for volunteer groups and the general public are periodically given by BLM specialists.

On-site information is obtained from directional signs, road markers, ranger patrols, and interpretive signs. An integral part of the BLM's recreation outreach is the GJFO visitor center in Grand Junction, with an average of 75 visits per

day. The visitor center provides interpretation, education, and information to visitors interested in route conditions, recreation opportunities available in the region, and current events.

The GJFO visitor center coordinates with other providers locally and regionally to provide the public with current, accurate information. Brochures and other information are sent to the Chamber of Commerce and Visitor Centers in Grand Junction and Fruita, Colorado, and in Moab, Utah. Other BLM partnerships have been developed with the Unaweep-Tabeguache State Scenic and Historic Byway and Dinosaur Diamond National Scenic Byway.

### ***Trends***

A developed interpretive program will focus on the GJFO's public lands and the interrelationship between the physical elements, biological systems, and cultural and historical events. Many of these efforts are accomplished in partnership with other land-management agencies and involve local communities. The BLM will continue to partner with other organizations and government agencies, thereby sharing costs and more effectively delivering interpretive products and services to the public. Making interpretive and educational resources available electronically on the Internet also furthers this goal.

### **3.5.3 Transportation Facilities**

The BLM's transportation system represents one of the most critical assets to the accomplishment of the BLM's mission to manage public lands. It affords entry for public access and provides the infrastructure that supports uses ranging from recreation to commercial activity and is the primary means of access to public lands under BLM GJFO jurisdiction.

### ***Current Conditions***

#### *Federal, State, and County Roads*

A network of federal, state, and county roads provides access throughout the planning area. Interstate 70 bisects the planning area, bringing traffic to the region from throughout the US.

Traffic volumes on the road network are highly variable. The highest volume counts are found on major roadways in or near the largest communities. Interstate 70 and state highways (Highway 6/50, 141, and 139) carry the largest traffic volumes, followed by county roads.

#### *BLM Roads*

BLM roads provide public and administrative (agency and permittee) access to public lands, through public lands, and to inholdings of private land within the planning area. The BLM responds to public requests for land use authorizations. Reasonable administrative access is made available to persons engaged in valid uses, such as mining claims, mineral leases, livestock grazing, and energy development. Most use of BLM roads would be described as casual.

Related to transportation planning is travel management. Travel management (**Section 3.3.5, Comprehensive Travel and Transportation Management**) is the identification, through RMP planning, of areas where foot, pack stock, and mechanized and motorized vehicle travel is appropriate, restricted, or not allowed, depending on resource objectives and use considerations. Refer to **Section 3.3.5, Comprehensive Travel and Transportation Management**, for more information.

#### Road System Maintenance

The BLM maintains roads under standards set forth in the BLM 9100 series manuals and the GJFO 1987 RMP (BLM 1987). Maintenance provides for resource protection, accommodation of users, and protection of the BLM's investment. The BLM uses the road maintenance intensities described in **Table 3-45, Road Maintenance Intensity Levels**. Road system maintenance has focused on maintaining major recreational access roads, which generally receive most of the traffic volume. The BLM annually maintains approximately 100 miles of road within the planning area, depending on road conditions and funding availability; approximately 95 miles are planned for maintenance in Fiscal Year 2010. Road maintenance generally consists of blading or grading and is usually performed in the summer or fall. Additional corrective maintenance or water drainage work (installation of culverts, drains, or other water-management devices) is performed as needed, such as after periods of heavy rainfall. Snow is not removed.

The BLM has changed from "Maintenance Levels" to "Maintenance Intensity" and simplified the standards for consistency across all linear features. The old "Maintenance Levels" definitions addressed both the type of road (road geometry or construction material) and the level of use but did not provide a clear standard for the actual maintenance level. As a result, they were used inconsistently across the BLM as a means for describing everything from road construction type through appropriate maintenance standards. BLM route maintenance intensities provide guidance for appropriate "standards of care" (e.g., appropriate intensity, frequency, and type of maintenance activities that should be undertaken) for recognized routes. Recognized routes by definition include roads, primitive roads, and trails carried as Assets within the BLM Facility Asset Management System. It includes four primary "Maintenance Intensity" levels that allow for low, medium, and high maintenance intensities, irrespective of the type of route (road, primitive road, or trail) (BLM 2006b).

Maintenance intensities must be consistent with land use planning management objectives (for example, natural, cultural, recreation, and visual settings).

**Table 3-45  
Road Maintenance Intensity Levels**

<b>Maintenance Intensity Level</b>	<b>Maintenance Description, Objectives, and Funds</b>
Level 0	<p><i>Maintenance Description:</i> Existing routes that will no longer be maintained and no longer be declared a route. Routes identified as Level 0 are identified for removal from the Transportation System entirely.</p> <p><i>Maintenance Objectives:</i></p> <ul style="list-style-type: none"> <li>• No planned annual maintenance</li> <li>• Meet identified environmental needs</li> <li>• No preventive maintenance or planned annual maintenance activities</li> </ul> <p><i>Maintenance Funds:</i> No annual maintenance funds</p>
Level 1	<p><i>Maintenance Description:</i> Routes where minimum (low intensity) maintenance is required to protect adjacent lands and resource values. These roads may be impassable for extended periods of time.</p> <p><i>Maintenance Objectives:</i></p> <ul style="list-style-type: none"> <li>• Low (Minimal) maintenance intensity</li> <li>• Emphasis is given to maintaining drainage and runoff patterns as needed to protect adjacent lands. Grading, brushing, or slide removal is not performed unless route bed drainage is being adversely affected, causing erosion.</li> <li>• Meet identified resource management objectives</li> <li>• Perform maintenance as necessary to protect adjacent lands and resource values</li> <li>• No preventive maintenance</li> <li>• Planned maintenance activities limited to environmental and resource protection</li> <li>• Route surface and other physical features are not maintained for regular traffic</li> </ul> <p><i>Maintenance Funds:</i> Maintenance funds provided to address environmental and resource protection requirements. No maintenance funds provided to perform preventive maintenance.</p>
Level 2	<p>The BLM has reserved this level for possible future use; no current description or objective.</p>
Level 3	<p><i>Maintenance Description:</i> Routes requiring moderate maintenance due to low volume use (e.g., seasonally or year-round for commercial, recreation, or administrative access). Maintenance Intensities may not provide year-round access but are intended to generally provide resources appropriate to keep the route in use for the majority of the year.</p> <p><i>Maintenance Objectives:</i></p> <ul style="list-style-type: none"> <li>• Medium (Moderate) maintenance intensity</li> <li>• Drainage structures will be maintained as needed. Surface maintenance will be conducted to provide a reasonable level of riding comfort at prudent speeds for the route conditions and intended use. Brushing is conducted as needed to improve sight distance when appropriate for management uses. Landslides adversely affecting drainage receive high priority for removal; otherwise, they will be removed on a scheduled basis.</li> </ul>

**Table 3-45  
Road Maintenance Intensity Levels**

<b>Maintenance Intensity Level</b>	<b>Maintenance Description, Objectives, and Funds</b>
	<ul style="list-style-type: none"> <li>• Meet identified environmental needs</li> <li>• Generally maintained for year-round traffic</li> <li>• Perform annual maintenance necessary to protect adjacent lands and resource values</li> <li>• Perform preventive maintenance as required to generally keep the route in acceptable condition Planned maintenance activities should include environmental and resource protection efforts, annual route surface</li> <li>• Route surface and other physical features are maintained for regular traffic</li> </ul> <p><i>Maintenance Funds:</i> Maintenance funds provided to preserve the route in the current condition, perform planned preventive maintenance activities on a scheduled basis, and address environmental and resource protection requirements.</p>
Level 4	The BLM has reserved this level for possible future use; no current description or objective.
Level 5	<p><i>Maintenance Description:</i> Routes for high (Maximum) maintenance due to year-round needs, high volume traffic, or significant use. Also may include routes identified through management objectives as requiring high Intensities of maintenance or to be maintained open on a year-round basis.</p> <p><i>Maintenance Objectives:</i></p> <ul style="list-style-type: none"> <li>• High (Maximum) maintenance intensity</li> <li>• The entire route will be maintained at least annually. Problems will be repaired as discovered. These routes may be closed or have limited access due to weather conditions but are generally intended for year-round use.</li> <li>• Meet identified environmental needs</li> <li>• Generally maintained for year-round traffic</li> <li>• Perform annual maintenance necessary to protect adjacent lands and resource values</li> <li>• Perform preventive maintenance as required to generally keep the route in acceptable condition</li> <li>• Planned maintenance activities should include environmental and resource protection efforts, annual route surface</li> <li>• Route surface and other physical features are maintained for regular traffic</li> </ul>

Source: BLM 2006b

Functional Road Classification Types for BLM System Roads

Based on BLM Manual Section 9113 (Roads) (BLM 1985), roads on BLM lands are classified into three classes based on the amount of traffic movement: collector, local, and temporary resource roads.

Collector Roads—These BLM roads normally provide primary access to large blocks of land and connect with or are extensions of a public road system. They accommodate mixed traffic and serve many uses. They generally receive the

highest volume of traffic of all roads in the BLM road system. User cost, safety, comfort, and travel time are primary road management considerations. Collector roads usually require application of the highest standards used by the BLM.

**Local Roads**—These BLM roads normally serve a smaller area than collectors and connect to collectors or public road systems. Local roads receive lower volumes, carry fewer traffic types, and generally serve fewer users. User cost, comfort, and travel time are secondary to construction and maintenance cost considerations. Low volume local roads in mountainous terrain, where operating speed is reduced by terrain, may be single-lane roads with turnouts. Environmental impacts are reduced because steeper grades, sharper curves, and lower design speeds than would be permissible on collector roads are allowable.

**Resource Roads**—These BLM roads are spur roads that provide point access and connect to local or collector roads. They carry very low volume and accommodate only one or two types of use. Use restrictions are applied to prevent conflicts between users needing the road and users attracted to the road. The location and design of these roads are governed by environmental compatibility and minimizing bureau costs with minimal consideration for user cost, comfort or travel time.

#### *Mineral and Energy Development-related Transportation Issues*

Road capacity, maintenance, and safety issues from mineral and energy development-related traffic are an issue in the GJFO planning area in areas where mineral and energy resources are being developed. A short-term increase in the volume of both heavy and light traffic occurs during the construction, well drilling, and completion phases of developing mineral and energy resources. Temporary conflicts (including a potential for delays, dust, road degradation, and increased vehicle safety) occur during the construction/drilling phase and recompletion/workover activities. County roads also are affected by heavy equipment use, fugitive dust, and traffic-related noise. All associated impacts are lower after gas wells are in operation because traffic levels drop.

Many existing unimproved roads have been repaired and improved to accommodate the increase traffic and heavy equipment. Many new roads have also been created to facilitate gas production by providing access to the many gas wells. These new roads across public lands are often only open to gas development personnel for administrative vehicle access.

#### *Airports and Railroads*

Grand Junction Regional Airport is the only public airport in the planning area. There are a number of locations throughout the GJFO that are commonly known and consistently used for aircraft landing and departure activities that, through such casual use, have evolved into backcountry airstrips. The major rail line that serves the planning area is the Union Pacific. However, this rail line

operates mostly within the McInnis Canyons and Dominguez-Escalante NCAs, which are outside of the GJFO planning area.

#### ***Trends***

Road system maintenance in the GJFO has focused on maintaining major recreational access roads, which generally receive most of the traffic volume. For the past 8 to 10 years, the GJFO has annually maintained approximately 100 miles of road.

### **3.6 SOCIAL AND ECONOMIC CONDITIONS**

This section is a description of the support conditions in the GJFO planning area and follows the order of topics addressed in Chapter 2:

- Native American Tribal Uses
- Public Health and Safety
- Socioeconomics
- Environmental Justice

#### **3.6.1 Native American Tribal Uses**

##### ***Current Conditions***

Contemporary Native American tribes with interests in the planning area include the Northern Ute, Ute Mountain Ute, and Southern Ute Tribes. The Northern Ute Tribe resides on the Uintah and Ouray Indian Reservation in northeastern Utah. Three bands of Utes comprise the Northern Ute Tribe: the Whiteriver Band, Uncompahgre Band, and Uintah Band. The Ute Mountain Ute Tribe and Southern Ute Tribe have separate reservations in the extreme southwestern corner of Colorado. The Ute's aboriginal homelands encompassed large areas of Utah, New Mexico, Arizona, and Colorado, including the entire GJFO. The ancestors of the Uncompahgre and White River Ute bands are associated with the GJFO planning area in particular and were forcibly removed to the reservation lands in eastern Utah in 1881. How this has affected the Utes own view of themselves, their history and their culture is critical to understanding the concept of Traditional Cultural Properties and establishing continuity in cultural significance. In consultation Ute elders and traditional leaders have identified that this event, when they were disenfranchised from their ancestral homeland, is considered by them to be a recent event and the psychological trauma experienced in those events persists to the present day. There is an effort to move toward reconciliation and participate in projects intended to reconnect the Ute to their homeland. Whether a traditional community has visited an area for traditional culture practices is especially relevant for the planning area because of this recent event. (Ott 2010).

Shoshone and Comanche populations were also present in northwestern Colorado during various historic periods, primarily north of the GJFO. The Hopi and Zuni Tribes, as well as the Navajo Nation, also connected to the planning area through past use or evidence from oral traditions.

Potential Native American interests in planning area lands include a wide range of overlapping economic, social, traditional, and religious practices and uses. Because the BLM manages lands ceded under treaties, or that are within historical and traditional aboriginal use areas, the agency has the responsibility to consult with tribes to consider the conditions necessary to satisfy any economic or resource access rights and to continue traditional uses in interest areas. Currently, tribal members may be using public lands for subsistence and cultural purposes. Tribes having traditional or economic interests in the planning area need to be considered during land use and project planning under treaties (if applicable), the tribal trust relationship, various federal laws, US DOI and BLM regulations and guidance, and executive orders. These requirements are sometimes further interpreted through specific court decisions, agreements, and regulations.

Treaty rights are not rights granted from the US, but rather are rights specifically reserved or retained by tribes under the terms of treaties or agreements. Several treaties and agreements affecting the planning area were initiated by the federal government beginning in 1849. The level of participation and understanding by the Utes in these treaties varied, as did federal ratification, appropriations, protections, and compliance (Burns 2004). The result of these treaties was the loss of Ute lands in the planning area.

Indian Trust Assets are legal interests in property, physical assets, or intangible property rights held in trust by the US for Indian tribes or individual Indians. Common examples of trust assets may include lands, minerals, hunting and fishing rights, water rights, other natural resources, and money. This trust responsibility requires that all federal agencies ensure that their actions protect Indian Trust Assets.

The planning area is not contiguous to any tribal lands. There are no programmatic agreements, MOUs, or plans that are co-signed between the BLM and the Tribes. There are no known off-reservation treaty rights or Indian Trust Assets present in the planning area.

### **Characterization**

There is little information available on specific economic, traditional, and sacred uses or locations within the planning area. Because of the long displacement of the Ute bands to reservations and boarding schools and the subsequent ownership and management by others, it has been difficult to maintain relationships with the sites, natural resources, and landscapes of ancestral lands. Tribal concerns regarding natural resource management and economic uses of resources are only beginning to be documented, but generally these include

expanding the understanding of cultural sites to include the physical setting, vistas, landscapes, and plants. It is anticipated that there are documented and unrecorded cultural use areas, traditional cultural properties, rock art, trails, wickiups, camps, eagle traps, burials, battle locations, and ceremonial sites that are of interest to tribes. These are discussed primarily in **Section 3.2.11, Cultural Resources**.

The 1987 RMP does not contain any specific decision guidance relating to Native American issues or concerns. There was no documented Native American Consultation for the 1987 RMP. Consultation with the tribes between 1987 and 2000 was not documented. Native American consultation on both a programmatic and project-specific basis to identify any traditional cultural properties, sacred/religious sites, and special use areas began through letters, phone calls, presentations to Tribal Councils, and on-site visits with Ute tribal members in a systematic manner in 2001. Field site visits were conducted to share the results of compliance projects where sites that are affiliated to the Ute Tribes are recorded. In 2006 the BLM became a partner in the Ute Ethnobotany Project, bringing Ute elders and students to reconnect with traditional lands, the project resulted in the development of the Ute Learning Garden and this project continues in partnership with the Ute Indian Tribe.

The Ute Ethnohistory Project is a long-term partnership and research project with the Ute Tribes dedicated to identifying areas and sites of cultural and religious importance to the Ute people. The Ute Ethnohistory Project coordination meeting between the BLM managers and the Ute cultural representatives was in November 2007 with follow-up field and office meetings in 2008 and 2009.

On April 8, 2006, the GJFO invited the Southern Ute Indian Tribe, the Northern Ute Indian Tribe, and the Ute Mountain Ute Tribe to become cooperating agencies for the RMP revision process. To date, none of the Tribes have signed an MOU with the BLM to become a cooperating agency.

### **3.6.2 Public Health and Safety**

The BLM's mission to sustain public lands for the use and enjoyment of present and future generations includes efforts to minimize and reduce threats from releases of hazardous substances that could have an impact on the health, diversity, and productivity of the public lands as well as on the health and safety of the individuals who utilize and work on these lands. In addition, the Federal Land Policy and Management Act of 1976 require that BLM actions comply with approved standards for public health and safety. Of particular concern to BLM are the safety impacts related to abandoned mines, debris flows, and hazardous materials.

The goals public safety management are to (1) protect public health and safety and environmental resources by minimizing environmental contamination from past and present land uses (i.e., abandoned mine lands) on public lands and on

BLM owned and operated facilities; (2) comply with Federal, State, and local hazardous materials management laws and regulations; (3) maintain the health of ecosystems through assessment, cleanup, and restoration of contaminated lands; (4) manage the costs, risks, and liabilities associated with hazardous materials so that the responsible parties and not the government bear the brunt of financial liabilities; and (5) integrate environmental protection and compliance with all environmental statutes into BLM activities.

Public health and safety topics include law enforcement, hazardous materials and sites, illegal dump sites, target shooting, abandoned mines, energy development, hydrogen sulfide wells, motor vehicle operations, and remoteness and natural hazards.

### ***Current Conditions***

#### *Law Enforcement*

The BLM law enforcement officers and rangers enforce federal laws and regulations governing the public lands and resources. They conduct high-priority investigations and enforcement actions that focus on resource protection and public health and safety, ensuring compliance with both federal laws and land use regulations on public lands.

The mission of the Colorado BLM law enforcement program is as follows:

- Enforcing federal laws and regulations related to the use, management, and development of the public lands and their resources, including activities related to the administration of the public lands;
- Public education of laws, policies, regulations and user ethics;
- Protecting critical resources from being removed, damaged, or destroyed; and
- Providing a public service on public lands in a manner that is complementary to the proprietary jurisdictional nature of such lands (BLM 2010h).

Implementation of the law enforcement program ensures that:

- Critical resources are protected from being removed, damaged, or destroyed without authorization or in violation of environmental requirements or restrictions;
- The lands and waters are free from illegal dumping or pollution;
- The users of the public lands will have a safe and enjoyable experience that is not impacted by the illegal acts or inappropriate conduct of others;

- The revenues owed to the government for authorized or unauthorized uses are paid and collected;
- Unauthorized use is prevented and discouraged through termination, investigation, and appropriate resolution;
- Authorized or unauthorized users of the public lands or their resources are held accountable for any required repairs or reclamation;
- Criminal activities are reported, investigated, or referred to appropriate agencies (BLM 2010h).

#### *Hazardous Materials and Sites*

Hazardous materials can be defined as any item or chemical that has the potential to cause harm to humans, natural resources, or the environment when spilled, released, or contacted. Hazardous wastes are hazardous substances that have been discarded (e.g., spilled, released, dumped, etc.). The US Environmental Protection Agency (EPA) classifies hazardous materials as toxic, corrosive, ignitable, or reactive, and some materials may exhibit multiple characteristics.

The primary regulators of hazardous wastes and hazardous waste sites in Colorado are, the EPA and the Colorado Department of Public Health and Environment (CDPHE). Other state agencies regulate specific types of hazardous waste sites, such as the Colorado Oil and Gas Conservation Commission (oil and gas development waste materials) and the Colorado Department of Labor and Employment, Division of Oil and Public Safety (leaking petroleum storage tanks).

#### *Illegal Dump Sites*

Illegal dumping is defined as the disposal of waste in an unpermitted area (US 21 EPA 1998). Illegally dumped wastes are primarily nonhazardous materials that are dumped to avoid disposal fees or to avoid the time and effort required for proper disposal. Illegal waste dump sites commonly contain the following materials:

- Construction and demolition waste such as drywall, roofing shingles, lumber, bricks, concrete, and siding;
- Abandoned automobiles, auto parts, and scrap tires;
- Appliances, containing harmful refrigerants;
- Furniture;
- Yard waste;
- Household trash; and
- Medical waste.

If not addressed, illegal dumps often attract more waste, potentially including hazardous wastes, such as asbestos containing materials, household chemicals and paints, automotive fluids, and commercial or industrial wastes (US EPA 1998). Sites used for illegal dumping vary but may include abandoned industrial, residential, or commercial buildings, vacant lots on public or private property, and infrequently used roadways (US EPA 1998). Because of their accessibility and poor lighting, areas along rural roads and railways are particularly vulnerable.

#### *Target Shooting*

Littering, unsafe target shooting, and illegal dumping have become major issues on federal lands where recreational shooting occurs (Responsive Management 2009). Some shooters leave behind fragments of clay pigeons and spent shotgun shells, as well as metal, plastic, and glass objects brought out for use as targets. Environmental and property damage (release of refrigerants the atmosphere, the shooting of trees and signs) is also a significant problem.

Outdoor shooting ranges provide recreational facilities for shooting sports enthusiasts. Recently, there has been a growing public concern about the potential negative environmental and health effects of range operations. In particular, the public is concerned about potential risks associated with past and continued use of lead shot and bullets at outdoor ranges. Historically, the three major sources for human exposure to lead are lead-based paint, lead in dust and soil and lead in drinking water. The main human exposure to lead associated with shooting ranges is through lead contaminated soil. However, other pathways are discussed below, along with lead's detrimental effects on humans and animals. Lead can be introduced into the environment at shooting ranges in one or more of the following ways. Each of these pathways is site-specific and may or may not occur at each individual range:

- Lead oxidizes when exposed to air and dissolves when exposed to acidic water or soil.
- Lead bullets, bullet particles, or dissolved lead can be moved by storm water runoff.
- Dissolved lead can migrate through soils to groundwater.

The GJFO manages two developed target shooting ranges and one undeveloped shooting area, and many other sites are historically known for dispersed target shooting. The GJFO has made attempts in certain areas to make target shooting safer for the public and environment, often by encouraging target shooting in places where other recreational use is low. The GJFO relies on the public to encourage safe shooting practices.

Open OHV Areas (i.e., Grand Valley, 18 Road, and 34 and C) have experienced safety issues and user conflicts associated with dispersed target shooting due to high use by OHV users seeking cross-country travel experiences. The 1987

RMP closed the Grand Valley Open OHV area to target shooting but did not close the 34 and C area.

BLM-administered lands near 34 and C Roads outside of the open OHV area are within close proximity to residential areas, industrial areas, and Federal Aviation Administration infrastructure. As a result, recreational shooting in those areas directly conflicts with state and federal use and conduct laws. BLM law enforcement personnel as well as the Mesa County Sheriff's Office receive multiple complaints each week regarding unsafe shooting behaviors within the 34 & C Roads area. Federal Aviation Administration infrastructure has been subject to shooting vandalism raising concerns about Federal Aviation Administration communications outages. This area of public land is utilized by OHV users, off-road enthusiasts, target shooters, and hikers. There is a lack of adequate backstops and screening within these areas.

Portions of the Bang's Canyon and North Fruita Desert SRMAs, the Gunnison River Bluffs area, and developed recreation sites (e.g., Mud Springs Campground, trailheads, wildlife viewing areas, picnic areas, day use areas, etc.) have high, concentrated use. Much of these areas also lack adequate topographic screening that has resulted in user conflict and safety concerns. Portions of the Bang's Canyon SRMA (i.e., the Little Park road corridor) and North Fruita Desert SRMA (i.e., the open OHV area) are closed to recreational shooting. Bang's Canyon is within close proximity to residential and industrial areas, causing recreational shooting in this area to be in direct conflict with state and federal use and conduct laws, which could result in serious safety issues due to the lack of backstops and screening within the areas identified. The current shooting closure areas have been very effective in providing a safe environment for public land users.

The GJFO agreed to close the Gunnison River Bluffs area to target shooting through a cooperative agreement with the City of Grand Junction and Mesa County. This area has a patchwork of public, private, and county lands, and the parties agreed that closure was necessary for public safety and to protect important county infrastructure (e.g., the landfill and county buildings). While the county lands (including trailheads to BLM-administered lands) have been closed, the GJFO has not formalized closure of the BLM-administered lands with an RMP amendment or Federal Register Notice. Shooting is not a popular activity in this area.

Coal and Main Canyons provide the primary public access to the Little Book Cliffs Wild Horse Range from the Grand Valley. Visitation is very high. The local tourism industry directs tourists to visit this area to see wild horses and has advocated for a shooting ban due to conflicts with tourism. Many of the visitors access the horse area on horseback. The close proximity to Grand Junction also makes this location very popular for recreational shooting, and unauthorized recreational shooting occurs on private lands adjacent to the trailhead as well. It

is anticipated that when this trespass situation is stopped by the private landowner, shooting activity will increase on public lands in the trailhead area. Several incidents have occurred in the past ten years where riders and/or horses were injured due to the sound of gunfire. Riders have been thrown from their horses and in one incident the horse ran into a wire fence with rider aboard. Two wild horses were killed from gunshots in 1982 and 1998.

#### *Abandoned Mine Lands (AML)*

Increased population growth is reflected in higher demand for outdoor recreation on public lands. Recreation areas and campground facilities on public lands can be located in proximity to AML sites. Use of Off-Highway Vehicles can lead to AML sites and increases the exposure risks to dangerous mine shafts or old dilapidated buildings. Fishing can place anglers in proximity of AML sites, and is impacted by decreased fish population among polluted waters stemming from AML sites, and available fish may pose a significant source of contaminants when consumed.

Abandoned mine sites may pose hazards to the environment, employee and/or visitors health and safety. Changes in the chemical composition or soil loss near abandoned mines can result in alterations or loss of natural habitat for native wildlife. Environmental problems stemming from AML sites include: contaminated/acidic surface and ground water; and stockpiled waste rock and mill tailing piles. Many affected watersheds are in arid climates in the West, where water is scarce, and the need to improve water quality for human and aquatic resources use is critical. Some watersheds may be significantly impacted by widespread mercury contamination. In addition to abandoned mine sites, there are abandoned smelter sites where remaining tailings piles from past milling operations continue to impact the environment through air pollution caused by dust. Exposure to radiation, particularly radon gas, can be a hazard, especially in abandoned uranium mines.

Open mines are unstable; openings or tunnels may collapse, internal supports may fail, and mine shafts (vertical openings) may be obstructed or unseen. Oxygen levels can be at lethally low levels, or toxic gases could be present at high concentrations. Hazardous wastes, such as containers of explosives, and chemicals used in milling or drilling operations could be present. Illegal dumping of hazardous wastes within abandoned mines is also a possibility.

#### *Energy Development*

Energy development can include oil, gas, geothermal, wind, and solar energy sites. Oil and gas development is often associated with concerns over public health and safety. The BLM requires all oil and gas operators to comply with applicable regulations designed to protect the environment and the public (e.g., COGCC rules for waste and BLMs Onshore Orders 1, 2, and 7), and with additional requirements imposed by the BLM as part of the drilling permit or lease or ROW grant.

Hazardous chemicals are used and produced by oil and gas extraction processes (Witter et al. 2008). Spills of oil and gas wastes and/or chemicals used in production can contaminate surface water, groundwater and soil. Active wells can produce hazardous chemical emissions through well control valves (e.g., venting of pressurized well gas), leaking equipment (e.g., well heads), water or condensate tanks (e.g., entrained gas can flash or evaporate), and gas compressors. Well work over operations can also result in the release of hazardous chemicals.

Certain waste materials from oil and gas exploration and production activities have been exempted from standards created to protect health under a number of federal statutes, including provisions of the Clean Air Act, the Clean Water Act, the Safe Drinking Water Act, the Resource Conservation and Recovery Act, the Superfund Act, and the Emergency Planning and Community Right to Know Act (the Toxics Release Inventory) (Witter et al. 2008). These exemptions, however, do not preclude these wastes from control under state regulations, under the less stringent Resource Conservation and Recovery Act Subtitle D solid waste regulations, or under other federal regulations. In addition, although they are relieved from regulation as hazardous wastes, the exemption does not mean these wastes could not present a hazard to human health and the environment if improperly managed. In general exempted waste is that which comes from down-hole or was brought to the surface from the well, and waste that has otherwise been generated by contact with the oil and gas production stream during the removal of produced water or other contaminants from the product

Local government efforts to chart and guide energy development within the GJFO planning area are underway. Mesa County has developed an Energy Master Plan that identifies the following:

1. The known energy resources and opportunities within Mesa County;
2. The potential impacts on the community associated with the development of those resources;
3. An analysis of current energy-related policies in Mesa County; and
4. A set of recommended clear and understandable policies that will guide reasonable regulation and development of energy resources and mitigation of the impacts (Mesa County 2011).

The Energy Master Plan is a policy document implemented in coordination with the community and with energy industries through the planning and development review processes.

Topics of recent and growing public concern, both nationally and within the GJFO, include hydraulic fracturing to enhance recovery of natural gas and

associated liquid hydrocarbons and emissions to the atmosphere of natural gas (methane) and other gaseous constituents.

#### Potential Risks from Spills and Releases during Transport of Natural Gas, Condensate, and Produced Water

Companies are responsible for understanding and abiding by all applicable hazardous materials transportation laws and regulations. The potential exists for a pipeline carrying natural gas, liquid condensate, or produced water to develop leaks or ruptures during natural gas extraction, transport, and processing. Data from the US Department of Transportation indicate that an average of one rupture annually should be expected for every 5,000 miles of pipeline (Office of Pipeline Safety, as cited in BLM 2014). More than 50 percent of pipeline ruptures occur as a result of heavy equipment striking the pipeline. Such ruptures would potentially cause a fire or explosion if a spark or open flame ignited the natural gas escaping from the pipeline. Pipeline design, materials, maintenance, and abandonment procedures are required to meet the standards set forth in US Department of Transportation regulations (49 CFR Part 192, Transportation of Natural Gas by Pipelines). In the GJFO, oil owners and operators are required to maintain and implement Spill Prevention, Control, and Countermeasure plans, including such cleanup and mitigation measures as required by BLM or the state.

#### Potential Risks from Hydraulic Fracturing

Hydraulic fracturing has been used for more than 50 years to enhance the recovery of oil and gas hydrocarbons from bedrock by creating small fractures that function as preferential flowpaths of fluids toward the borehole. The fractures are generally more permeable to fluid flow than the interstices (pore spaces) within sedimentary rocks containing the hydrocarbons, because the pore spaces are filled with a natural cementing agent (typically calcite or silica). Recent advances in hydraulic fracture technology have opened to development large reserves of domestic natural gas reserves that previously could not be extracted from the rock. This advance has been realized primarily in “tight” formations, particularly deep marine shales and marlstones that have very low permeability due to very small grain size in addition to the pressure from thousands of feet of overlying strata.

Public concern about the use of hydraulic fracturing has been focused on the potential for contamination of freshwater aquifers and impacts to domestic and municipal water wells. An associated concern has involved the potential for “mini-earthquakes” caused by the creation of enough pressure within the formation to cause fractures. For decades, oil and gas companies and independent geophysicists have used state-of-the-art equipment to monitor microseismic activity—defined as a “faint” or “very slight” tremor—during hydraulic fracturing to optimize well completions and gather information about fracture dimensions and propagation (Warpinski 2009, as cited in BLM 2014). These data give an indication about the magnitude of seismic activity associated

with hydraulic fracturing, dimensions of resultant fractures in geologic formations, and probability for induced fractures to extend into nearby aquifers, if present. Research indicates that microseismic activity created by hydraulic fracturing occurs at Richter magnitude 1 or less (Warpinski and Zimmer 2012, as cited in BLM 2014). In comparison, a magnitude 3 earthquake is the threshold that can be felt at the ground surface. The Richter magnitude scale is base-10 logarithmic, meaning that a magnitude 1 tremor is 1/100th the amplitude of a magnitude 3 tremor. The National Academy of Sciences reviewed more than 100,000 oil and gas wells and waste water disposal wells around the world and concluded that “incidences of felt induced seismicity appear to be very rare,” with only one such documented occurrence (National Academy of Sciences 2012, as cited in BLM 2014).

The magnitude of induced fractures has been measured with field monitoring equipment (including microseismic “listeners”) and in laboratory tests and compared with three-dimensional hydraulic fracture models. Researchers have successfully validated these models for fracturing in “tight gas” reservoirs including those in the Piceance Basin. Results of the analyses show that fractures resulting from completions of oil and gas wells can be predicted (Zhai and Sharma 2005, Green et al. 2009, and Palisch et al. 2012, as cited in BLM 2014) and that the lengths of induced fractures can be estimated.

Based on a review of available information on microseismic monitoring and fracture dimensions, Fisher and Warpinski (2011) (as cited in BLM 2014) concluded that fractures from deep horizontal wells are not a threat to propagate across the long distances (thousands of feet) needed to reach freshwater aquifers much closer to the surface. This conclusion applies to the GJFO area, and is also applicable to much shallower potable groundwater sources consisting of unconsolidated alluvium (streambed deposits) associated with the Colorado River and major tributaries. In general, alluvial water wells in the GJFO extend to depths of less than 200 feet, with few in the range of 400 feet. Impacts to water quality of these shallow freshwater wells are highly improbable as a result of hydraulic fracturing, which occurs at depths of 5,000 to 11,000 feet below ground surface.

In addition to vertical separation of several thousand feet between the upper extent of fractures and freshwater aquifers, the BLM and COGCC impose requirements for proper casing and cementing of wellbores to isolate the aquifers penetrated by a wellbore. The BLM requires that surface casing be set from 800 to 1,500 feet deep, based on a geological review of the formations, aquifers, and groundwater. Cement is then pumped into the space between the casing and surrounding rock to prevent fluids from moving up the wellbore and casing annulus and coming in contact with shallow rock layers, including freshwater aquifers. BLM petroleum engineers review well and cement design and final drilling and cementing logs to ensure that the cement has been properly placed. When penetration of groundwater and freshwater aquifers is

anticipated, BLM inspectors may witness the cementing of surface casing and subsequent pressure testing to ensure that the annular space between the casing and borehole wall is properly sealed.

No single list of chemicals currently used in hydraulic fracturing exists for western Colorado, and the exact combinations and ratios used by operators are considered proprietary. However, the general types of compounds and relative amounts used are well known and relatively consistent (**Table 3-46**, Typical Hydrofracturing Chemical Additives). Since fracture jobs are tailored to the downhole environment and companies are aware of the concerns involving hydraulic fracturing, the chemicals listed in **Table 3-46**, Typical Hydrofracturing Chemical Additives, may or may not be used, and the information is provided solely as general information. Although a variety of chemicals additives is used in hydraulic fracturing (the examples in the table being drawn from a total of 59 listed on the FracFocus website), the vast bulk of fluid injected into the formation during the process is water mixed with sand, representing 99.51 percent of the total by volume in the typical mixture shown in **Table 3-46**, Typical Hydrofracturing Chemical Additives. The sand is used as a proppant, or propping agent, to help keep the newly formed fractures from closing.

**Table 3-46**  
**Typical Hydrofracturing Chemical Additives**

<b>Additive Type<sup>1</sup></b>	<b>Typical Example<sup>1</sup></b>	<b>Percent by Volume<sup>2</sup></b>	<b>Function<sup>1</sup></b>	<b>Common Use of Example Compound</b>
Acid	Hydrochloric acid	0.123	Dissolves minerals and initiate cracks in the rock	Swimming pool chemical and cleaner
Biocide	Glutaraldehyde	0.001	Eliminates bacteria in the water that produces corrosive by-products	Disinfectant; sterilizer for medical and dental equipment
Breaker	Ammonium persulfate	0.010	Allows delayed breakdown of the gel	Used in hair coloring, as a disinfectant, and in manufacture of household plastics
Clay stabilizer	Potassium chloride	0.060	Creates a brine carrier fluid that prohibits fluid interaction with formation clays	Used in low-sodium table salt substitutes, medicines, and intravenous fluids
Corrosion inhibitor	Formic acid	0.002	Prevents corrosion of the pipe	Used as preservative in livestock feed; used as lime remover in toilet bowl cleaners
Crosslinker	Borate salts	0.007	Maintains fluid viscosity as temperature increases	Used in laundry detergents, hand soaps, and cosmetics

**Table 3-46**  
**Typical Hydrofracturing Chemical Additives**

<b>Additive Type<sup>1</sup></b>	<b>Typical Example<sup>1</sup></b>	<b>Percent by Volume<sup>2</sup></b>	<b>Function<sup>1</sup></b>	<b>Common Use of Example Compound</b>
Friction reducer	Polyacrylamide	0.088	“Slicks” the water to minimize friction	Used as a flocculant in water treatment and manufacture of paper
Gelling agent	Guar gum	0.056	Thickens the water to help suspend the sand	Used as a thickener, binder, or stabilizer in foods
Iron control	Citric acid	0.004	Prevents precipitation of metal oxides	Used as flavoring agent or preservative in foods
Surfactant	Lauryl sulfate	0.085	Increases the viscosity of the fracture fluid	Used in soaps, shampoos, detergents, and as foaming agents
pH adjusting agent	Sodium hydroxide, acetic acid	0.011	Adjusts pH of fluid to maintain the effectiveness of other components, such as crosslinkers	Sodium hydroxide used in soaps, drain cleaners; acetic acid used as chemical reagent, main ingredient of vinegar
Scale inhibitor	Sodium polycarboxylate	0.043	Prevents scale deposits in the pipe	Used in dishwashing liquids and other cleaners
Winterizing agent	Ethanol, isopropyl alcohol, methanol	--	Added as necessary as stabilizer, drier, and anti-freezing agent	Various cosmetic, medicinal, and industrial uses
<b>Total Additives</b>		<b>0.49</b>		
<b>Total Water and Sand</b>		<b>99.51</b>		

<sup>1</sup>FracFocus Chemical Disclosure Registry, [fracfocus.org/chemical-use/what-chemicals-are-used](http://fracfocus.org/chemical-use/what-chemicals-are-used), as cited in BLM 2014

<sup>2</sup>US Department of Energy 2009, as cited in BLM 2014

Following completion of fracturing activities, the pressure differential between the formation and the borehole (a result of the weight of thousands of feet rock above the formation) causes most of the injected fluids to flow toward the borehole and then upward to the surface along with the hydrocarbon fluids released from the formation. The composition of this mixture, called flowback water, gradually shifts over a period of several days to a few months as injected fluids that have not yet migrated back to the wellbore or reacted with the native rock are carried out of the formation.

In 2011, the COGCC published an analysis of hydraulic fracturing technology use in Colorado and potential risks to human health and the environment. The introduction to that report states this:

“Hydraulic fracturing has occurred in Colorado since 1947. Nearly all active wells in Colorado have been hydraulically fractured. The COGCC serves as first responder to incidents and complaints concerning oil and gas wells, including those related to hydraulic fracturing. To date, the COGCC has not verified any instances of groundwater contaminated by hydraulic fracturing.”

Although public awareness of hydraulic fracturing has heightened public concern about contamination of freshwater aquifers and water wells, similar concerns have been expressed more generally in relation to oil and gas developments. A non-peer-reviewed “white paper” by Witter et al. (2008) (as cited in BLM 2014) addressed the chemicals used or produced during oil and gas development but made little reference to health or environmental statistics. However, the authors did note two situations relative to environmental exposures. One was the reported occurrence of detectable levels of methane in 135 of 184 water wells, springs, seeps, ponds, and rivers sampled during a hydrogeologic (groundwater) investigation conducted for Garfield County in 2006 (Papadopoulos 2007, as cited in BLM 2014). That study noted that methane may have been present due to natural levels in some of the bedrock formations penetrated by the water wells or recharging the seeps, springs, and surface water, and that it may also be generated by a natural (bacterial) process within the water wells. Because the study could not identify the sources of methane, Witter et al. (2008) (as cited in BLM 2014) were unable to conclude whether any of the methane in wells and natural waterbodies sampled by Papadopoulos (2007) (as cited in BLM 2014) resulted from oil and gas related activities or from secondary generation of methane by natural bacterial processes unrelated to oil and gas.

Measures currently required by the BLM and COGCC for protecting groundwater aquifers, water wells, and surface waters are described in **Section 3.2.5, Water Resources**. These measures include isolating deeper, hydrocarbon-producing horizons from shallower bedrock and alluvial layers that communicate with surface waters and within which freshwater wells are completed. Examples include requiring setting casing to a depth below the deepest freshwater aquifer encountered and water wells in the vicinity, and cementing the casing to prevent flow of saline waters, natural gas, and associated fluids moving up the borehole from contacting the freshwater zones. In general, the GJFO requires surface casing deeper than the deepest water wells in the area.

#### Hydrogen Sulfide Wells

Hydrogen sulfide is a poisonous gas that can occur in association with oil and gas operations. Hydrogen sulfide (H<sub>2</sub>S, CAS#7783-06-4) is an extremely hazardous, toxic compound. It is a colorless, flammable gas that can be identified in relatively low concentrations, by a characteristic rotten egg odor. The gas occurs naturally in coal beds, sulfur springs, gas wells, and as a product of

decaying sulfur-containing organic matter, particularly under low oxygen conditions. Industrial sources of hydrogen sulfide include petroleum and natural gas extraction and refining, hydrogen sulfide can be present at AML sites. Hydrogen sulfide has a very low odor threshold, with its smell being easily perceptible at concentrations well below 1 part per million (ppm) in air. The odor increases as the gas becomes more concentrated, with the strong rotten egg smell recognizable up to 30 ppm. Above this level, the gas is reported to have a sickeningly sweet odor up to around 100 ppm. However, at concentrations above 100 ppm, a person's ability to detect the gas is affected by rapid temporary paralysis of the olfactory nerves in the nose, leading to a loss of the sense of smell. This means that the gas can be present at dangerously high concentrations, with no perceivable odor.

Hydrogen sulfide is classified as a chemical asphyxiant, similar to carbon monoxide and cyanide gases. It inhibits cellular respiration and uptake of oxygen, causing biochemical suffocation. Typical exposure symptoms include:

- LOW 0 - 10 ppm: Irritation of the eyes, nose and throat.
- MODERATE 10 - 50 ppm: Headache, dizziness, nausea and vomiting, coughing and breathing difficulty.
- HIGH 50 - 200 ppm: Severe respiratory tract irritation, eye irritation, acute shock, convulsions, coma, death in severe cases.

#### *Motor Vehicle Operations*

Except for approximately 35,300 closed acres, Off Highway Vehicle (OHV) travel is allowed on an open or limited basis in the entire GJFO planning area (BLM 1987).

Motorized vehicle operations consist of two and four-wheel-drive vehicles, large and small commercial vehicles used in mineral resource extraction and development of natural resources (e.g., oil shale and natural gas) as well as an assortment of OHV's used for recreation, hunting activities, sightseeing, and firewood gathering. Motorized and, non-motorized vehicles, horses and pedestrians all share and concurrently utilize a large portion of the Field Offices resource areas.

All users have the ability to impact natural habitats, land features, travel routes, and outdoor structures located near travel corridors in a variety of ways:

- Travel conditions change due to elevation, terrain, and weather. All users must adapt to changing travel route conditions, resource damage along a travel route corridor is expensive to repair, damages habitat, and is unsightly.
- Wet conditions make roads and trails muddy and often impassable. Continued use of these travel routes will cause destruction.

- Gouging of dirt roads, ATV/motorcycle and bicycle routes occurs when wheels spin while traveling uphill, and hard braking when descending steep grades or turning sharply.
- Noxious weed spread; seeds are caught in the mud caked to tires, wheel wells and fenders. Caution needs to be practiced especially when coming from another geographical area.
- Encounters between motorized and non-motorized or equestrian users in the field; slow down or stop, signal or announce your intentions before passing. In general, downhill traffic yields to uphill traffic, and motorized traffic yields to non-motorized traffic.

#### *Remoteness and Natural Hazards*

Exposure to natural hazards such as inclement weather, rough terrain, and dangerous animals is an inherent risk in any activity conducted within the GJFO planning area. Proper equipment and adequate planning should be taken prior to conducting activities in order to prepare for the remoteness and natural hazards present in much of the planning area.

#### **Trends**

##### *Law Enforcement*

As the local population increases, the need for BLM law enforcement is expected to increase. It is believed that an increased presence of BLM staff on the ground would help alleviate problems like the creation of social trails by recreationists, trespass on private land, and unauthorized use of seasonally closed trails.

##### *Hazardous Materials and Sites*

The frequency of hazardous materials incidents in the past has mirrored the rate of economic activity and population growth, with economic boom and population growth usually resulting in more illegal dumping and more materials transportation accidents and accidental spills.

##### *Illegal Dump Sites*

Illegal dumping is increasing as the local population grows and as dump fees at permitted sites increase.

##### *Target Shooting*

Requests for shooting closures are expected to increase in high use areas with increasing conflicts between users and concerns over safety.

##### *Abandoned Mines*

If abandoned mines are discovered, they will be addressed in accordance with the Abandoned Mine Lands program.

#### *Energy Development*

Trends in well activity on BLM-administered lands within the GJFO planning area have mirrored economic conditions. Across all surface and mineral ownerships, 964 oil and gas wells have been spud within the GJFO planning area since 1998 (IHS Energy Group 2008). This represents nearly twice the total number of active wells in the GJFO planning area as of December 2011. Approximately 15 percent of the conventional wells and 70 percent of the coalbed natural gas wells drilled since 1998 were drilled on federal mineral interests (BLM 2012a).

In addition, new issues such as enhanced protection of sage-grouse habitat need to be addressed. The BLM has also seen technological advancements like directional drilling and modern drilling rigs used to improve access to energy resources.

#### Hydrogen Sulfide Wells

The release of hydrogen sulfide at well sites on BLM lands in the GJFO planning area is not expected.

#### *Motor Vehicle Operations*

Increased energy development and other factors could cause expansion of the existing road network to allow for construction and maintenance of projected wells and to handle the demands of an increasing population. As a result, traffic and the potential for accidents would likely increase.

#### *Remoteness and Natural Hazards*

The GJFO planning area has become generally less remote due to many factors, including energy development, urban growth, and increased recreational use on public lands. Improvements in equipment will likely mitigate the effects of some natural hazards, but users will continue to accept risk when the chance of encountering a natural hazard is present. Wilderness areas and other places far removed from infrastructure and services will continue to pose risks to unprepared visitors.

### **3.6.3 Socioeconomics**

*This section was prepared for and in cooperation with the GJFO by researchers at Colorado Mesa University. BLM has reviewed and accepted the information contained in the following section.*

In many ways, the communities that adjoin the 1.2 million acres of public lands managed by the GJFO are archetypical of the twenty-first century American west. These lands include the planning area for the GJFO, the McInnis Canyon National Conservation Area and the Dominguez-Escalante National Conservation Area. Their populations include some residents committed to traditional agricultural pursuits, such as ranching and orchard culture, and some who seek to expand into niche markets, such as vineyards and organic farming. These communities seek to balance the benefits of extractive industries against their long experience of boom and bust cycles. They also evince increasing

concern over the potential environmental damage, particularly to water, resulting from extraction. In diversifying their economies away from dependence on extraction, these communities use the recreational opportunities offered by available public lands to entice businesses by highlighting the quality-of-life advantages of the valley's moderate climate and fantastic scenery: scenery which includes the tallest flat-topped mountain in the world (The Grand Mesa), the Colorado National Monument, the Colorado River, the Dominguez-Escalante NCA, Mt. Garfield and the McInnis Canyons National Conservation Area. The diversity of the communities themselves represent contending voices in the discussion of the management of public lands—some raised to preserve traditional agriculture, some raised to encourage tourism, some favoring expansion as medium-sized urban areas, some in favor of the preservation of their small-town character the protection of public lands promises. As a public lands agency supporting multiple-use, the BLM must find an appropriate balance between these contending voices. Many factors—fluctuations in populations, attempts to attract a young professional class, attempts to attract retirees, and increasing infrastructure demands on local governments from residents employed on public lands beyond the GJFO—combine to impact the way in which the communities relate to the management of our public lands.

#### **Social Context**

The largest portion of lands managed by the GJFO, some 938,000 acres or 73 percent of the total, lie within Mesa County, and the remainder of lands are spread between three other counties: Garfield with 322,000 acres (25.2 percent), Montrose with 17,000 acres (1.3 percent), and Delta with 2,000 acres (0.1 percent). Because it contains the largest portion of the GJFO land, and nearly 100 percent of the population, Mesa County is the focus of this description.

#### *Government*

While the planning area overlaps four counties, as mentioned above, the vast majority of the lands managed by the GJFO lie inside Mesa County. Mesa County was incorporated on February 11, 1883, and is governed by a three-member Board of County Commissioners.

#### *Social Context*

Communities in the GJFO resemble a hub and spoke system with Grand Junction acting as the hub and several smaller communities acting as the spokes. Despite their inter-connectedness, each community has its own social context, sense of tradition, and connection to public lands. Some like Glade Park and Palisade are small, tight-knit communities that are intimately tied to public lands through ranching and agriculture; others, like Grand Junction and Fruita are much larger and are marketing their public lands to tourists and potential businesses. Because of their unique attributes, each of these communities is discussed separately. This discussion is taken, in part, from research conducted by the Natural Resource and Land Policy Institute at Colorado Mesa University

in 2009 and summarized in the “GJFO Community Assessment Report.” That report presents the results of 11 focus groups held with citizens and leaders in the seven communities located in the GJFO planning area.

While each has a distinct personality, all the communities share a similar history. Most began as agricultural settlements where ranching and orchards—most famously peach and cherry orchards—dominated. Each community was impacted at the beginning of the twentieth century by the discoveries of first oil and then radium, with each producing its own economic boom. Communities then experienced a subsequent bust, decline in population, and realignment. Cold War demand for uranium and America’s increasing need for energy benefitted each community to varying degrees, and, subsequently, each was subject to extensive environmental remediation (Gulliford 2003).

#### Grand Junction

As the largest city between Denver and Salt Lake City, Grand Junction is the center for regional activity in Mesa County. Ample shops, restaurants, and medical services contribute greatly to the city’s economic role as a regional hub. The city has gone to great lengths to diversify its economy while maintaining a robust extraction industry. To do this, the city seeks to attract a talented pool of professionals eager to expand the area’s economic base. Outdoor recreation is important to the professionals the city seeks to attract. Access to public lands and the variety of recreational opportunities that can be provided on BLM lands play a significant role in the Grand Junction Economic Partnership’s efforts to expand the community’s economic base.

#### Fruita

Like Grand Junction, Fruita has experienced a dramatic population increase over the last 20 years. The community prides itself on its small town atmosphere and its role as “Gateway to our Federal Lands.” Like other Grand Valley locales, citizens of Fruita referenced in the GJFO Community Assessment Report see public lands as a buffer against sprawl. While the community would like to promote its economy, the focus is much more on developing its potential tourism industry. Consequently, residents are somewhat suspicious of growth and support good planning to maintain a small-town atmosphere while promoting economic vitality. The benefit of access to public lands is at the heart of the Fruita community.

#### Palisade

Like Fruita, Palisade is small and very community oriented. It is surrounded by high-end agriculture consisting of orchards and many wineries that cultivate their own grapes. The area is also well known for its stunning scenery and viewscapes. The town’s vision includes further development of its downtown core to promote entertainment and economic activity. Each year the town sponsors a number of festivals—like the Wine and Peach festivals—and events that highlight its heritage and agricultural background.

#### De Beque

Located in the far eastern part of Mesa County along the I-70 corridor, De Beque is a town with a little over 500 residents. Traditional agriculture, such as ranching, and the natural gas industry provide much of the economic base for residents. The town expects rapid growth due to the boom in the natural gas industry. Many think the development of natural gas reserves can be done with minimal environmental consequences, but some fear the community could experience adverse effects.

Community members live in De Beque because the surrounding public lands provide opportunities to observe wildlife, hunt, fish, and enjoy “God’s Country.” They would like to see the BLM continue to promote the family values and the agricultural heritage of the area by providing greater access to public lands, continuing grazing opportunities on public lands, and providing better signs on trails to protect sensitive areas. The town would not mind having more recreational visitors in the area, as this promotes more economic activity for local businesses. However, increased tourism would probably create a need for another road through town to access BLM lands.

#### Glade Park

A part of unincorporated Mesa County, Glade Park is a small community located behind the Colorado National Monument southeast of Grand Junction bordering McInnis Canyon National Conservation Area. Consequently, the area is fairly well isolated from the Grand Valley, a fact that appeals to its residents. Families in the community have strong historical ties to the area. Ranching and traditional agriculture represent the community’s heritage and have always been a major part of the economy. Area residents wish to preserve this lifestyle for the future.

#### Loma/Mack

Like Glade Park, the residents of Loma and Mack have a strong connection to ranching and farming. Located west of Fruita, the traditional agricultural community is in transition to a bedroom community for Grand Junction as more and more residents commute there to work. The rural lifestyle, the quiet, and the lack of local government and its ability to tax were reasons cited for living in the Loma/Mack area. Residents want their community to stay the way it is – based in agriculture and affordable.

#### Gateway

Located in the southern part of Mesa County, Gateway is a small unincorporated community with a strong heritage connected to traditional agriculture and resource extraction, particularly uranium. Since 2005, the community has been changed by the development of Gateway Canyons Resort. Residents are concerned that the resort’s new emphasis on recreation will interfere with future resource-extraction activity, as well as grazing and other

economic activity that have provided a living for generations of family members. The area is almost entirely surrounded by BLM-managed lands.

Collbran: A small town of 708 residents located in the Plateau Valley in northeastern Mesa County. Surrounded by public lands managed by varying agencies, this community is impacted by the planning decisions of public lands agencies.

### ***Demography and Social Indicators***

In many ways the social character of Mesa County resembles that of many western locations whose economic fortunes are tied to the boom and bust cycles so prevalent in communities reliant on extraction industries as their primary economic driver. From the first oil and radium booms a century ago, to uranium mining in the 1950s, to the oil shale boom of the late 1970s and early 1980s, to the most recent natural gas boom of the 2000s the area has dealt with the social challenges presented by an overheated economy as well as the difficulties posed by surviving each subsequent recession. Since 1980, Mesa County has experienced consistent population growth due primarily to immigration. While the boom times created difficulties for local government to keep pace with infrastructure demands, the down cycles encouraged Mesa County communities to diversify their economies. The results have helped stabilize the economy but also create conflict between long-time residents with ties to traditional agriculture and mining and new residents attracted to the area for its natural beauty and recreational opportunities.

#### *Population*

According to the US Census Bureau, Mesa County's population in July 2008 was estimated to be 143,171 (US Census Bureau 2009). A majority of Mesa County's citizens live on the valley floor in the cities of Fruita and Grand Junction, the town of Palisade, and the unincorporated lands in and around these municipalities.

Like the rest of the state of Colorado, Mesa County has experienced dramatic population growth since 1987. In the decade between 1990 and 2000, the county's population grew from 93,145 to 116,255 and was estimated to stand at 143,000 residents in 2008 (US Census Bureau 2010a). This represents a 25 percent increase between 1990 and 2000 with an additional 20 percent growth between 2001 and 2008. Between the years 1980 and 2008, the population of Mesa County has grown approximately 75.6 percent.

As illustrated in **Table 3-47**, Population Totals (1980-2008), dramatic population increases have been widely distributed across population centers. These population centers have exhibited anywhere from 70 to 164 percent growth rate. The three largest incorporated population centers include Grand Junction, Fruita and Palisade. The largest unincorporated area in Mesa County is Clifton, which is located on the eastern periphery of Grand Junction between

**Table 3-47**  
**Population Totals (1980-2008)**

Location	1980	1990	1980- 1990 % Change	2000	1990- 2000 % Change	2008	2000- 2008 % Change	1980- 2008 % Change
State of Colorado	2,889,735	3,294,394	14.0	4,301,261	30.6	4,939,456	14.8	70.9
Mesa County	81,530	93,145	14.2	116,255	24.8	143,171	23.2	75.6
Grand Junction	27,956	29,034	3.8	41,986	44.6	49,688	18.3	77.7
Clifton	not available	12,671	not available	17,345	36.8	not available	not available	not available
Fruita	2,810	4,045	43.9	6,478	60.1	7,418	14.5	164.0
Palisade	1,551	1,871	20.6	2,579	37.8	2,840	10.1	83.1

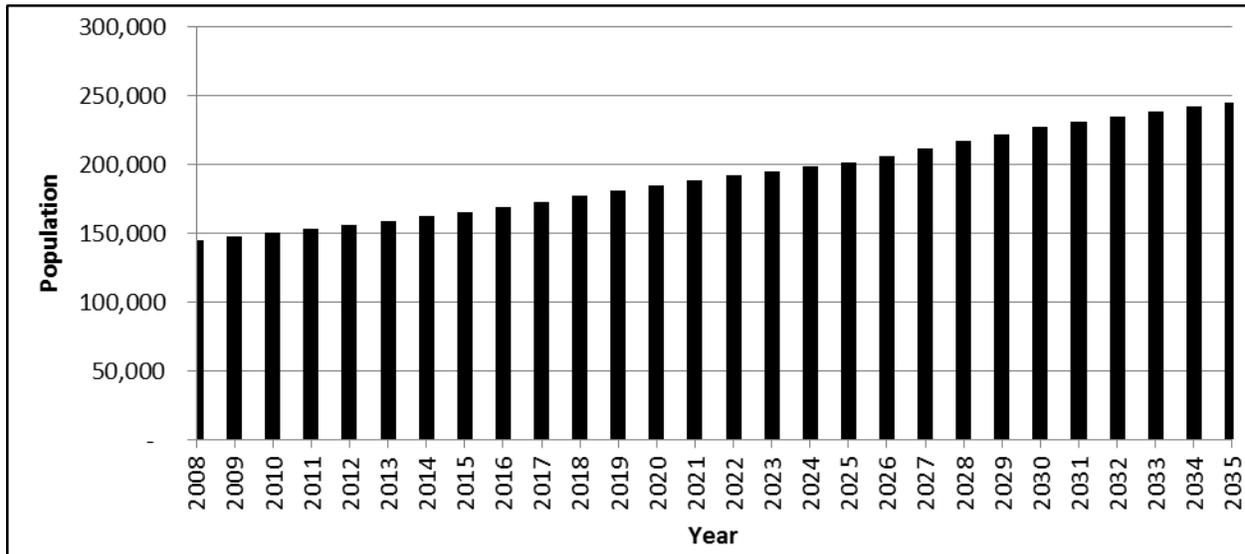
Sources: 1980-2000 Data: Colorado Division of Local Government, State Demography Office 2009a; Clifton Data: US Census Bureau 2010b; 2008 Municipalities and County Data: US Census Bureau 2010a; 2008 State of Colorado Data: US Census Bureau 2009

Grand Junction and Palisade. Growth in these areas has been spurred by increased employment opportunities in Mesa County, especially in the energy and healthcare sectors. A more detailed discussion of the economy can be found in section five in this report.

Growth can also be partly attributed to a growing retirement population. This increase may partly be due to natural aging of the existing population. But efforts to diversify the Mesa County economy after the oil shale bust have had a major impact as well. A significantly deflated housing market during the late 1980s and early 1990s provided a great opportunity for local realtors to attract retirees primarily from California and the Denver metro area. These retirees were referred to as “active seniors” drawn to the area by low housing values, great climate, and plenty of recreational opportunities, much of which occurs on GJ BLM land (Redifer 2010). The recession of 2008 has temporarily halted growth in Mesa County but the upward trend is expected to continue as natural gas prices begin to increase.

As illustrated in **Diagram 3-12**, Mesa County Population Forecast (2008-2035), the population of Mesa County is estimated to steadily increase for the foreseeable future. According to population projections (which account for the 2008-2010 economic recession), the county will grow at an average rate of 2.0 percent per year between 2010 and 2015. The population of Mesa County is projected to reach 200,000 residents by 2025 and 245,000 residents by 2035. Much of the residential growth in the area is continuing to occur in unincorporated areas and puts further stress on county government for services.

**Diagram 3-12**  
**Mesa County Population Forecast (2008-2035)**



Source: Colorado Division of Local Government, State Demography Office 2008

Much of the past and anticipated future growth is due to migration. Net migration added an average of 1,972 persons to Mesa County per year between 1990 and 1999. This number is projected to increase to 2,987 persons per year between 2000 and 2009 and 2,387 between 2010 and 2020. This trend is important because migration is estimated to have contributed an average of 641 more persons per year than births between 1990 and 1999 and is estimated to grow to 1,249 persons between 2000 and 2009 (Colorado Division of Local Government, State Demography Office 2009b). It may also explain some of the tension that has emerged between new (and often transient) arrivals and more established residents.

The median age of Mesa County in 2007 was estimated at 36.9 years of age, which is slightly older than the state median age (35.6) (US Census Bureau 2008a). The largest population gains have historically occurred in the 25 to 44 and 45 to 64 age groups. Gains in these groups are expected to continue between the years 2010 and 2020. The age groups with the smallest population in Mesa County are 15-24 year olds closely followed by citizens 65 years of age and older. However, as more economic opportunities emerge from the rapid economic growth in the region, and the retiree population grows, these numbers are apt to change.

#### *Social Difference*

The racial composition of Mesa County is more homogeneous than the rest of the state. In 1990, white non-Hispanic residents comprised approximately 90 percent of Mesa County's population (US Census Bureau 1990) and decreased to 84 percent of the population by the end of 2008 (US Census Bureau 2008a). Comparatively, white non-Hispanic residents made up 71.2 percent of

Colorado's population in 2008 (US Census Bureau 2008a). In both 1990 and 2008, Hispanics comprised Mesa County's largest racial minority group making up approximately 8 percent (US Census Bureau 1990) and 11.8 percent (US Census Bureau 2008a) of the region's population, respectively. Comparatively, Mesa County's Hispanic population trails the state's where Hispanics accounted for 19.9 percent of the population in 2008 (US Census Bureau 2008a).

#### *Crime Indicators*

Growth has the potential of altering the quality of life in any community. Transient workers and newcomers may be less invested and have little attachment to traditions and history. Changes in economic emphases can displace workers. With population growth in the region, there is concern that there will be a corresponding increase in crime, especially violent crime. The rural nature of Mesa County and surrounding environs raises concerns about the production of methamphetamine. Between 1997 and 2004, violent crime in the county fluctuated between a high of 2,280 reported felonies and a low of 1,307 felonies. From 2005 through 2008, the number of reported felonies trended between 1,900 and 2,100 felonies per year (Colorado Bureau of Investigation 2009).

The number of reported incidents on GJFO land has ranged between 70 and 360 incidents per year. Data illustrated in **Diagram 3-13**, Reported Incidents on BLM-managed Lands (1998-2010), provides two important insights into law enforcement challenges faced by the field office. First, as illustrated in the general upward trend of reported incidents between 1998 and 2010, population growth in the Grand Valley has placed added pressure on public lands. Second, as illustrated in the various spikes of reported incidents in 2004 and 2010, the GJFO has been more effective in managing for this increased pressure when given adequate resources to do so. For a majority of time from 1998 through 2010, the GJFO has had one full-time ranger, except in the years 2004 and 2010 when there were three rangers.

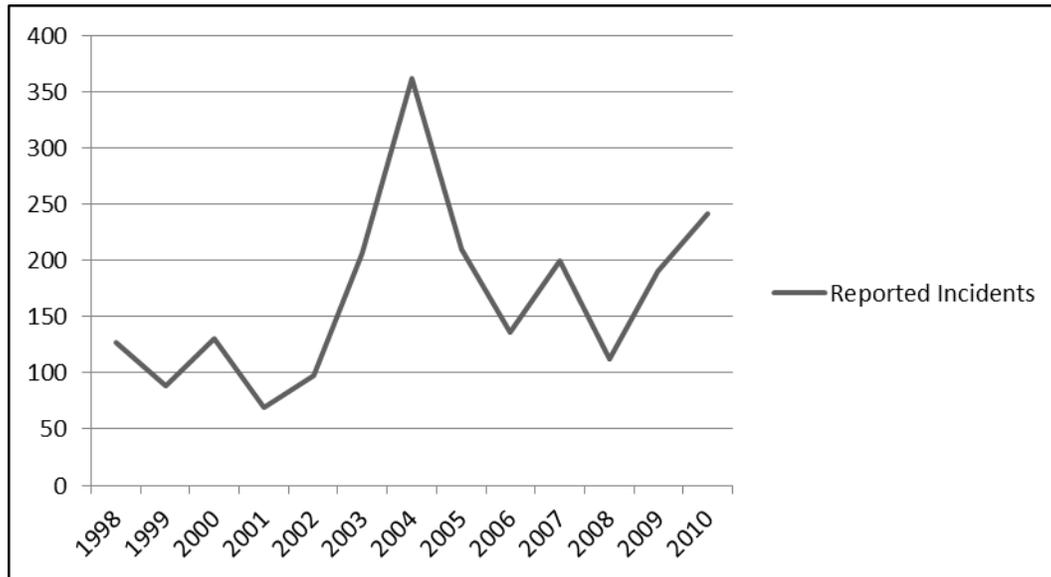
An area of concern for the Sheriff's Department that relates to population growth and increased recreation in Mesa County's backcountry relates to Search and Rescue calls. Since 2000 the Sheriff's Office reports that the Search and Rescue Team has seen calls increase from 10 to 15 per year to 55 calls last year. This is attributed to more visitors with less experience and to the increased capacity of the rescue unit.

#### *Transportation*

Development brings a constellation of problems; this is particularly clear in transportation. Population and economic growth are changing traffic patterns in the Grand Valley.

Transportation growth has also been hampered by previous planning decisions and inadequate funding for transportation. For example, land use decisions that

**Diagram 3-13**  
**Reported Incidents on BLM-managed Lands (1998-2010)**



Source: Boik 2009

place the vast majority of the county's retail industry on the western edge of Grand Junction place a great deal of stress on the county's four east-west routes, particularly Patterson Road and the I-70 Business Loop. As in many Colorado cities and towns, transportation funding is inadequate to meet the needs of future growth in Mesa County. Currently, most of the available federal funding is being spent on the I-70 Business Loop, but projections indicate that more will be needed. A 2008 ballot initiative proposed by the state legislature to secure long-term funding for transportation projects in Colorado was defeated by the voters, leaving the future of transportation funding in limbo (Colorado Mesa University Natural Resource and Land Policy Institute 2009).

#### ***Economic Indicators***

The GJFO is located right in the middle of what the local newspaper calls "Energy Alley." This refers to the 150 mile stretch of I-70 between Rifle, Colorado, and Green River, Utah, where a variety of abundant energy resources can be found. Everything from uranium and coal to oil, oil shale and natural gas has been discovered in this area. More recently methane gas as well as alternative energy sources such as wind, solar and geothermal have generated interest from developers as well (Grand Junction Daily Sentinel 2010). Historically, resource extraction has been a primary economic driver in the communities surrounding the GJFO (Gulliford 2003; Hessler 2010).

The national demand for energy has had dramatic impacts on the economy of Mesa County. Four significant boom and bust cycles associated with energy development include radium and oil at the turn of the last century (Gulliford 2003), uranium mining in the 1950s, oil shale development in the 1970s, and

more recently the explosion in natural gas development, which started in the early 2000s and busted with the national recession in 2008. As a result of these severe economic cycles, communities in Mesa County have put a great deal of effort into diversifying their economy.

*Interrelationships among Producing Sectors*

Between the late 1980s and the 2008 recession, Mesa County had been experiencing steady economic growth. This had been a welcome development given the region's economic troubles following the oil shale bust (Gulliford 2003). During the late 1980s, the recovery was aided by the effort to clean up uranium mill tailings left over from the days when uranium mining had provided its own economic boom. In the early 1990s, expansion continued as the availability of affordable land and a favorable climate assisted the promotion of Mesa County as a retirement community. Low property values, the natural beauty and recreational opportunities found in the area's public lands greatly enhanced efforts to attract retirees. Later in the decade the Mesa County Economic Development Council, the forerunner of the Grand Junction Economic Partnership (GJEP), was successful in helping to diversify the Mesa County economy by encouraging a number of firms to relocate to the area. Access to public lands has been a critical contributor to this recruiting effort by increasing the quality-of-life appeal to potential businesses and their employees (BLM 2009I). Specifically, easy access to recreation and open space has increased the county's ability to recruit qualified professionals in higher education, medicine and business.

Throughout the 1990s and into 2000s, tourism played an important role in the area's economic expansion and diversification. Increased recreational activities, new golf courses, the natural beauty of the surrounding area as well as a growing wine industry encouraged many to visit Grand Junction. The designation of the McInnis Canyons and Dominguez-Escalante NCAs have the potential for increasing tourism to the area. The county's growing role as a regional hub for retail trade, healthcare, and other services also provide incentives for increased visitation. In 2000, Grand Junction was designated as a metropolitan statistical area. This designation has also encouraged many national retail and restaurant chains to locate within the county.

With a diverse economy come some unique challenges for Mesa County that will be affected by land use decisions made by the BLM's GJFO. The economy certainly thrives during periods where there is a high level of resource extraction activity, but most of this has little to do with the Grand Junction BLM lands. For instance, the majority of current natural gas development occurs to the east and northeast in Garfield and Rio Blanco counties outside the GJFO boundaries, but many workers prefer to live in Grand Junction and recreate on public lands managed by the GJFO. As a result, Mesa County has become an important part of northwest Colorado's oil and gas industry. The County provides a central location for industry infrastructure and material stockpiling,

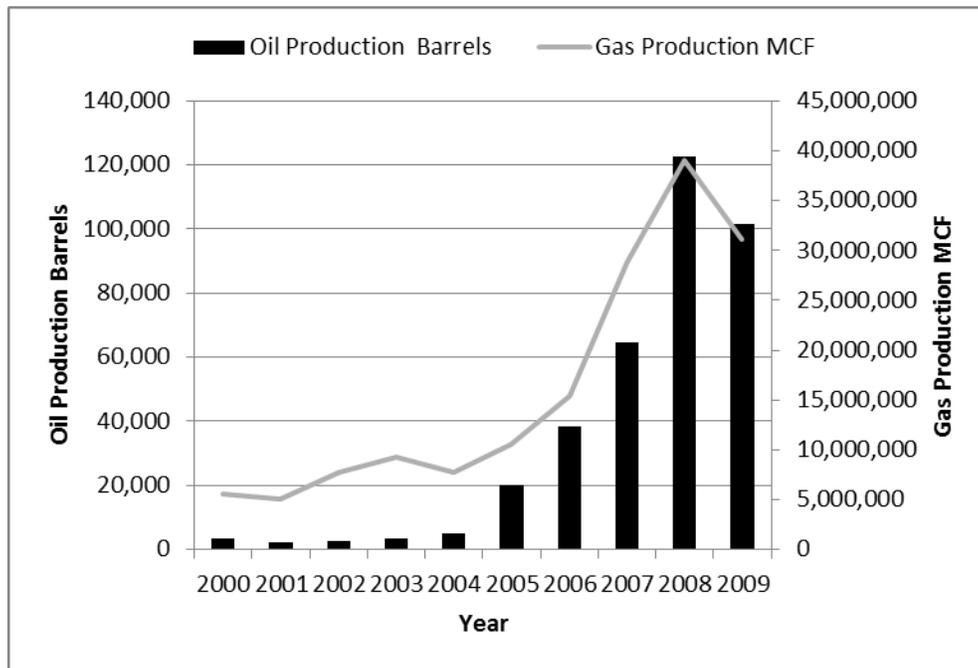
as well as an amenable place for their skilled workers to live. The BLM’s recreational management decisions, on the other hand, have contributed significantly to GJEP’s efforts to attract new industries. These companies see promotion of an active lifestyle as an advantage when competing in the labor market for employees.

*Dependence on BLM Lands and Resources (value of visitor-day expenditures, grazing and mining to the local economy)*

Energy

Energy development is a mandated use for public lands managed by the BLM. Despite efforts to diversify the economy, the energy industry is still seen by many as the primary economic driver in the county (Hessler 2010). Over the past decade Mesa County has consistently been one of the top ten counties in Colorado for active oil and gas wells. In **Diagram 3-14**, Mesa County Annual Oil and Gas Production (2000-2009), the results of the impact of the national recession on oil and gas production can be seen in the drop off in oil production levels in 2009 of approximately 17 percent over 2008 production levels while natural gas production decreased twenty percent.

**Diagram 3-14**  
**Mesa County Annual Oil and Gas Production 2000-2009**



Source: Colorado Oil and Gas Conservation Commission 2010

Despite the significance of oil and gas activity it pales in comparison to other counties in “Energy Alley.” A good indicator of oil and gas activity in a county is the ad valorem tax collected on oil and gas production. The ad valorem tax raised from oil and natural gas production in Mesa County peaked in 2009 with an assessed taxable value of roughly \$2.8 million. By comparison, in the same year, Garfield County’s taxable assessed value \$3.9 billion.

Mesa County’s economic dependence on the energy industry is not driven by energy development within the BLM’s GJFO but by the number of energy industry employees who live in Mesa County but commute to work on drill rigs located outside the county. In the 2008 report, BBC Research Consulting noted the following:

- Fifty percent of energy workers who worked in Garfield County live in Mesa County
- Thirty percent of energy workers who worked in Moffat County lived in Mesa County
- Twenty percent of energy workers who worked in Rio Blanco County lived in Mesa County
- One hundred percent of energy workers who worked in Mesa County lived in Mesa County

Two more recent developments in energy-related activity on BLM lands in the GJFO may also have significant economic impacts on Mesa County. The Red Cliff coal mine north of Loma, Colorado, would increase Colorado’s overall coal production by 6 to 8 million tons a year or 25 percent (Grand Junction Daily Sentinel 2010). Meanwhile efforts by Energy Fuels to build a uranium mill near Naturita may encourage renewed interest in uranium mining in the southern most region of the BLM’s GJFO. If this occurs it could conflict with private efforts to develop tourism in the Gateway area (Grand Junction Daily Sentinel 2010).

#### Tourism and Recreation

Tourism and recreation are becoming increasingly important to the Mesa County economy. The Mesa County Commissioners see opportunities to increase tourism dollars from out of county visitors by increasing recreational attractions on BLM’s GJFO lands. To this end they have appropriated money for a volunteer coordinator to work with BLM and other federal land managers to organize volunteer activity to build or improve trails in the area (Mesa County 2009c).

Recreation and tourism is another economic area that has experienced considerable growth since 2000. The area’s many natural attractions have also been supplemented by efforts to encourage visitors to come to Mesa County. Special events like the Fruita Fat Tire Festival, as well as new and existing mountain bike trails, hiking, and whitewater activities have increased tourism in

the county. Spending by overnight visitors to Mesa County, which can partly be attributed to the prevalence of its public lands, jumped from \$132 million in 2000 to \$259 million in 2007. Increased tourism to Mesa County has increased local tax revenue from \$4 million in 2000 to a projected \$7.2 million in 2007. Moreover, the number of tourism related jobs increased from 2,370 in 2000 to 3,240 in 2007 (Colorado Tourism Office 2008). The BLM's marketing and maintenance of the region's open lands has helped identify the region as a destination hotspot. Additionally, the large expanse of public lands has helped attract the young professionals needed to fill critical regional industries such as education, law, and medicine.

#### Agriculture

Traditional agriculture, while declining, remains an important part of the Mesa County economy.

Residents in the rural parts of the county still rely heavily on BLM grazing permits for their cattle operations (BLM 2009). Many of the residents in communities like Gateway, Glade Park, and Loma are concerned about protecting the agricultural heritage of their area from the pressures of increased recreation and tourism development. This is contrary to the new and growing wine industry in the valley that would like to see increased recreational opportunities as a way to attract more wine enthusiasts.

A traditional and mandated use for BLM land is livestock grazing. Fees are paid by livestock producers that allow them to graze their animals in designated areas on land managed by BLM. Livestock production has an impact on the regional economy but also on the region's social fabric, as it preserves a valued western lifestyle.

Livestock use of public lands is measure in AUMs. One AUM is roughly equivalent to the amount of forage necessary to graze one cow or cow/calf for one month. On GJFO land as well as other BLM managed lands, there is a difference between available AUMs and those actually used over the course of a year. Available AUM's are defined as active AUM's on a permittees grazing permit. Economic impact analysis requires a distinction between these two categories because only those AUMs utilized will have an impact on the regional economy. Actual AUM use has been substantially less than allowed AUM's for the past ten years. There are several factors that contribute to this difference. The primary reason is drought. From 2000 to 2006 the area was experiencing an extended drought that began back in 1998. The drought has been at various levels of severity annually with the greatest impact coming from 1998 to 2004. During these drought years grazing use was reduced, substantially in 2000 through 2004. It took several years for ranchers to restock to pre-drought numbers if they did at all. Other factors that have contributed to using fewer AUMs than allowed are fluctuations in livestock markets and changes in the demographics of permittees.

### **Employment, Income, and Subsistence**

#### *Labor Force, Employment, and Unemployment*

Trends in the labor force, employment, and unemployment help describe the overall health of a region's economy. **Table 3-48**, Labor Force Trends, Mesa County and Colorado (1990-2008), illustrates labor force trends for Mesa County and Colorado. The labor force is defined as the civilian noninstitutional population 16 years old and over who are employed or actively seeking employment. Over the long term, labor force size reflects broader demographic trends. A growing population, for example, will be mirrored by an expanding labor force. Over shorter intervals, labor force participation responds cyclically to economic conditions. By definition the labor force shrinks when discouraged workers abandon their job searches; conversely, the labor force expands when more promising economic conditions draw hopeful job-seekers back into the labor market.

**Table 3-48**  
**Labor Force Trends, Mesa County and Colorado (1990-2008)**

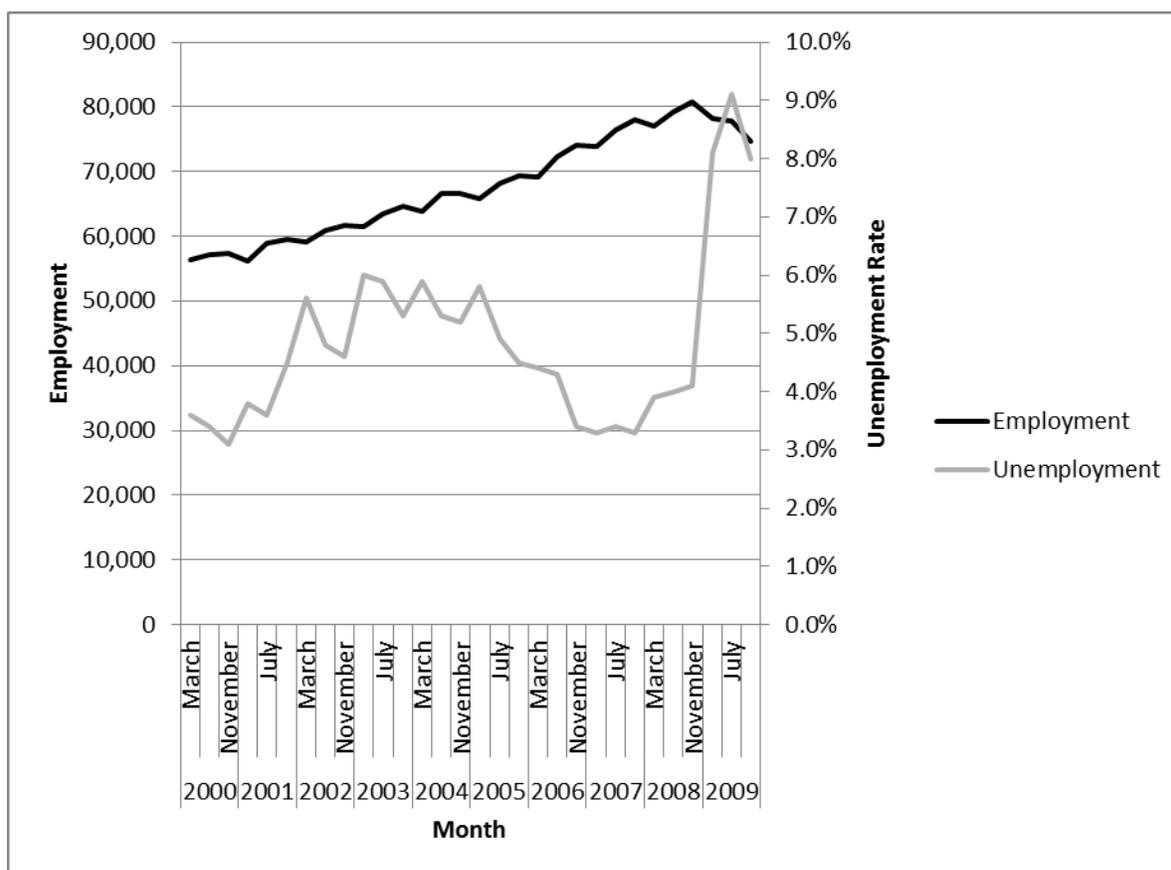
<b>Area</b>	<b>1990</b>	<b>1996</b>	<b>2002</b>	<b>2009</b>	<b>% Change 1990-2009</b>	<b>% Change 1990-1996</b>	<b>% Change 1996-2002</b>	<b>% Change 2002-2009</b>
Mesa	44,840	56,282	63,781	81,627	82	25.5	13.3	28
Colorado	1,770,678	2,175,564	2,455,708	2,701,106	52.5	22.9	12.9	10.0

Source: US Department of Labor, Bureau of Labor Statistics (Bureau of Labor Statistics) 2009a

As can be seen in **Table 3-48**, Labor Force Trends, Mesa County and Colorado (1990-2008), Mesa County's labor force growth rate exceeded that for the state as a whole over the years 1990-2009. The table further shows that Mesa County's accelerated growth relative to Colorado's occurred primarily during the period 2002-2009. A drop in the labor force from 2008 to 2009 didn't negate the overall trend, but it likely reflects the effect of the recession on Mesa County. Those recent years, when Mesa County's labor force growth significantly outstripped Colorado's, correspond to a boom in natural gas production that will be further documented in this section. Most of the increased gas production will be seen to take place outside of Mesa County and outside of the BLM lands overseen by the Grand Junction Field Office.

**Diagram 3-15**, Mesa County Employment and Unemployment Rate (2000-2009), illustrates both the unemployment rate and the level of employment in Mesa County from 2000 to mid-2009. Together these two groups, the employed and the unemployed, are the labor force referred to above. The unemployment rate is likely the most familiar of all economic statistics. It reports the percent of the labor force that is without work and is actively seeking employment. Perhaps counter intuitively, being without work alone does not designate a person as unemployed. A discouraged worker, having given up looking for work, is not counted as unemployed no matter how readily she would take a job were

**Diagram 3-15**  
**Mesa County Employment and Unemployment Rate (2000-2009)**



Source: Colorado Department of Labor and Employment 2009

one available. Looking at **Diagram 3-15**, Mesa County Employment and Unemployment Rate (2000-2009), it is clear that employment in Mesa County steadily increased between 2000 and mid-2008. Beginning late in 2008, employment in Mesa County dipped dramatically, with the loss of approximately 6,000 jobs from November 2008 through November 2009. Beginning in mid-2008, the unemployment rate increased dramatically from a low of 3.2 percent in 2007 to a high of 9.3 percent in July 2009. Trends for total jobs in Mesa County and Colorado for 1990 through 2008 are reported below in **Table 3-49**, Total Employment Trends in Mesa County and Colorado (1990-2008).

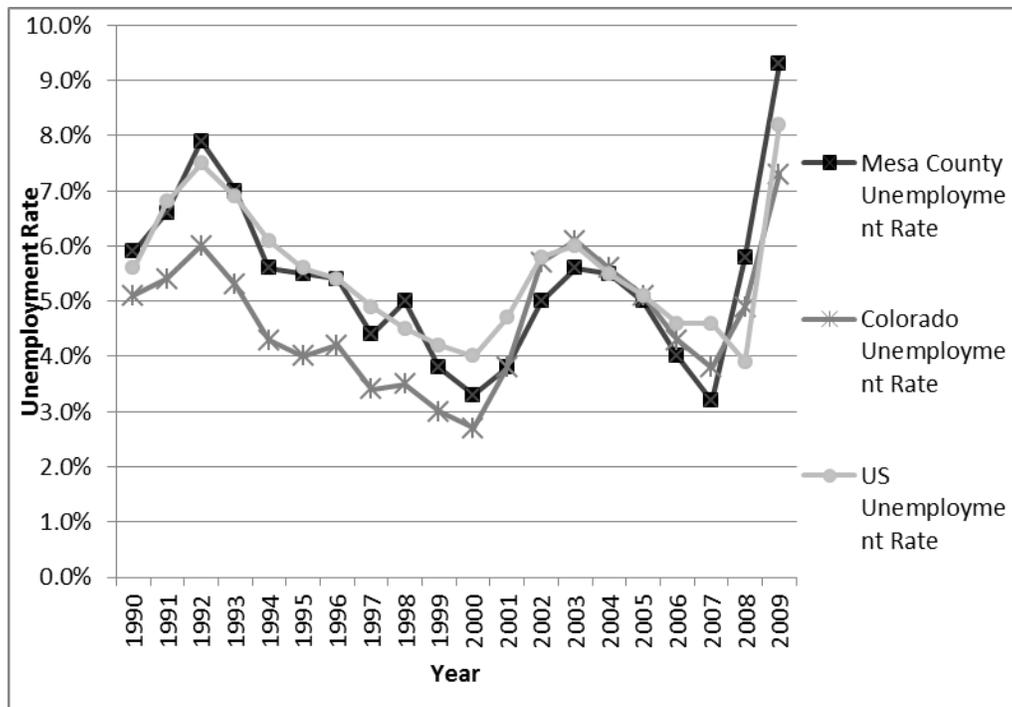
**Table 3-49**  
**Total Employment Trends in Mesa County and Colorado (1990-2008)**

Location	1990	2000	2001	2008	% Change 1990-2000	% Change 2001-2008
Colorado	2,039,626	2,926,410	2,941,343	3,285,413	43.5	11.7
Mesa County	49,479	70,123	70,820	91,728	41.7	29.5

Sources: US Department of Commerce, Bureau of Economic Analysis (BEA) 2010a, 2010b

Comparing the county's unemployment rate with the state and national unemployment rate, it is clear that the County had outperformed the state and nation between 2002 and 2007. However, as illustrated in **Diagram 3-16**, Annual (Not Seasonally Adjusted) Unemployment Rate, since 2008, Mesa County has experienced higher rates of unemployment than the state of Colorado and the United States. Much of the low unemployment rate between 2002 and 2007 can be explained by a boom in the energy sector. With the crash of oil and gas prices in 2008 and 2009, as well as a significant downturn in the national economy, Mesa County employment increased nearly threefold from its low of 3.2 percent in 2007 to 9.3 percent in January, 2009. This far outpaced both the State of Colorado and the United States.

**Diagram 3-16**  
**Annual (Not Seasonally Adjusted) Unemployment Rate**



Sources:

Mesa County and Colorado data: Colorado Department of Labor and Employment 2009

United States Data: Bureau of Labor Statistics 2009a

#### *Employment by Industry*

The US Department of Commerce, Bureau of Economic Analysis (BEA), through its Regional Economic Information System, reports data on total employment and earnings as well as on employment and earnings by industry sector. The data is available for the national, state, and county level. Data from 1990-2008 will be used to describe employment and earnings trends in Mesa County and compare them to state and national trends.

Prior to 2001, BEA reported this data using the Standard Industrial Classification (SIC), which categorizes industries into sectors and then into smaller subgroups. In 2001, the North American Industrial Classification System (NAICS) was introduced to better identify new industries in the changing economy. One outcome is that data often cannot be compared between those different time periods. In this report some data will be reported side by side from the two systems; in most cases data will be reported only for 2001 through 2008.

Trends in total employment for Mesa County and Colorado are reported in **Table 3-49**, Total Employment Trends in Mesa County and Colorado (1990-2008). Total employment includes all jobs, full and part time. A person working two jobs is counted twice. The estimate is intended to count private and public employment as well as self-employment. Over the entire period 1990 through 2008, total employment in Mesa County grew by 85.4 percent compared to 61 percent for Colorado. In **Table 3-49**, Total Employment Trends in Mesa County and Colorado (1990-2008), data is reported for 1990 through 2000 and 2001 through 2008 to avoid mixing data from SIC and NAICS calculations. It shows that from 1990 through 2000 total employment increased at roughly comparable rates in Mesa County and the state as a whole. During the 2001 through 2008 period, which includes the expansion of natural gas production in the region, Mesa's level of employment increased more than two-and-a-half times as fast as did Colorado's.

The largest sector by number of jobs for 2008 was retail trade, followed by health care and social assistance, government (all levels), construction, and accommodation and food services round out the top five sectors by total jobs. **Table 3-50**, Employment by Industry, Colorado and Mesa County (2001-2008), below presents all sectors by percent of jobs from highest to lowest. Mining, identified as the fastest growing sector, ranked tenth by number of jobs in the sector. In the BEA classification system, natural gas drilling and production is included in the mining sector. Two factors not accounted for by this measure of the economy are the incomes generated by the various sectors and the relative number of part-time vs. full-time jobs in each sector. Earnings generated by the various sectors are examined below following the discussion of jobs by industry.

**Table 3-50**, Employment by Industry, Colorado and Mesa County (2001-2008), and **Table 3-51**, Industrial Sectors Ranked by Number of Jobs in Mesa County and Colorado (2008), use data on employment by industry sector to compare Mesa County and Colorado over the years 2001 through 2008. The first, **Table 3-50**, Employment by Industry, Colorado and Mesa County (2001-2008), compares Mesa County with Colorado by sector and shows the percent change in jobs for each sector over the eight year period. The rank of each sector from greatest to least percent change is also shown. This allows easy comparison between Colorado and Mesa County for the different sectors.

**Table 3-50**  
**Employment by Industry, Colorado and Mesa County (2001-2008)**

<b>Industry Employment</b>	<b>Mesa 2001</b>	<b>Mesa 2008</b>	<b>% Change 2001-2008 (rank in % change)</b>	<b>Colorado 2001</b>	<b>Colorado 2008</b>	<b>% Change 2001-08 (rank in % change)</b>
Accommodation & Food Service	5,297	6,913	30.5 (8)	218,280	242,972	11.3 (13)
Administrative & Waste Serv.	4,155	5,122	23.3 (13)	176,777	201,660	14.1 (10)
Arts, Entertain. & Recreation	1,261	1,897	50.4 (3)	71,439	87,434	22.4 (8)
Construction	6,738	9,377	39.2 (4)	237,667	248,081	4.4 (17)
Educational Services	503	637	26.6 (11)	39,125	55,723	42.4 (3)
Farm Emp.	2,016	2,092	3.8 (17)	46,541	45,201	-2.9 (19)
Finance & Insurance	3,061	4,054	32.4 (7)	154,122	185,102	20.1 (9)
Forestry & Ag. Services	282	365	29.4 (9)	8,521	11,033	29.5 (5)
Government	8,460	9,681	14.4 (16)	390,700	435,542	11.5 (12)
Health Care & Social Assist.	8,043	10,177	26.5 (12)	219,627	271,847	23.8 (6)
Information Management of Companies	1,185	1,198	1.1 (19)	118,445	90,030	-24.0 (21)
Manufacturing	4,144	3,719	-10.3 (20)	192,291	158,598	-17.5 (20)
Mining	652	4,532	595.1 (1)	23,210	46,393	99.9 (1)
Other Services	3,904	4,699	20.4 (14)	145,587	163,065	12.0 (11)
Professional & Tech. Services	3,349	4,621	38.0 (5)	232,228	286,147	23.2 (7)
Real Estate & Rental/Leasing	3,025	5,006	65.5 (2)	137,404	190,681	38.8 (4)
Retail Trade	9,499	10,973	15.5 (15)	307,334	324,742	5.7 (15)
Transportation & Warehousing	2,592	3,433	32.4 (6)	84,998	89,503	5.3 (16)
Utilities	234	238	1.7 (18)	8,347	8,828	5.8 (14)
Wholesale Trade	2,265	2,874	26.9 (10)	108,950	112,073	2.9 (18)

Note: Number in ( ) indicates rank from greatest to least change

Sources: BEA 2010b

For Colorado the five fastest growing sectors were mining (which includes natural gas), management, educational services, real estate, and forestry and agricultural services. Only one of these fast growing sectors ranked in the top ten sectors by number of jobs in 2008, but these numbers indicate important trends in Colorado's economy over the period. In Mesa County, mining led growth with an increase of 595 percent. Mining was followed by real estate; arts, entertainment, and recreation; construction; and professional and technical

services. These increases are consistent not only with an increase in resource extraction but with residential development and commercial development overall. For Mesa County, one of its five fastest growing sectors (construction) also shows up in the five largest sectors by jobs. Three more of the five fastest growing sectors (real estate, professional and technical services, and mining) are ranked in the top ten sectors by number of jobs.

Looking at job losses, both Colorado and Mesa County lost significant numbers of manufacturing jobs over the period surveyed, with Colorado suffering a greater rate of loss than Mesa County. Colorado suffered its greatest rate of job loss in the information sector while Mesa County held a little better than even with 1.1 percent growth. Colorado's other job loss area was farm employment (-2.9 percent). Mesa County showed modest growth in farm jobs, but the trend is not clear. From 2001 through 2006 farm employment in Mesa County dropped by 6.4 percent; then in 2007 and 2008 jobs bounced back to show a 3.8 percent increase over the eight year period. Mesa County's greatest rate of job loss (-22.6 percent) occurred in management. By contrast this sector had Colorado's second highest rate of job growth.

**Table 3-51**, Industrial Sectors Ranked by Number of Jobs in Mesa County and Colorado (2008), ranks industrial sectors by total jobs from largest to smallest sector for 2008. This provides one snapshot of the structure of Mesa County's economy and allows comparisons to the economy of the state as a whole for the same year. A few observations follow. For Colorado and Mesa County the top five sectors by number of jobs comprise four of the same sectors (government, retail trade, construction, and health care and social assistance) although the sectors rank in different order for each entity. The top five sectors in Mesa County accounted for about 51.4 percent of the jobs in 2008 while the top five sectors for the state accounted for about 47.8 percent of total jobs. When we compare Mesa County to Colorado, we can see that construction, mining, and farm employment provided higher shares of jobs in Mesa than in Colorado overall. The mining sector includes natural gas drilling and production.

#### *Earnings by Industry*

In addition to data for total employment, BEA reports total earnings and earnings by industry. **Table 3-52**, Total Earnings Trends in Mesa County and Colorado (1990-2008) (Thousands of Real 2008 Dollars), records the trend in total earnings over the years 1990 through 2008 for both Mesa County and Colorado. Earnings are reported in real 2008 dollars to adjust for inflation's effect on purchasing power. Over the full period Mesa County earnings grew by about 121 percent, compared to an increase for Colorado of 91.9 percent. As with total employment, the data in **Table 3-52**, Total Earnings Trends in Mesa County and Colorado (1990-2008) (Thousands of Real 2008 Dollars), are reported in two segments: 1990-2000 and 2001-2008. This avoids mixing data from SIC and NAICS, the two different systems for classifying industries.

**Table 3-51**  
**Industrial Sectors Ranked by Number of Jobs in Mesa County and Colorado (2008)**

MESA COUNTY 2008			COLORADO 2008		
Industry	Jobs	Percent of All Jobs	Industry	Jobs	Percent of All Jobs
Retail Trade	10,973	12.0	Government	435,542	13.3
Health Care & Social Assist.	10,177	11.1	Retail Trade	324,742	9.9
Government	9,681	10.6	Professional & Tech. Services	286,147	8.7
Construction	9,377	10.2	Health Care & Social Assist.	271,847	8.3
Accommodation & Food Service	6,913	7.5	Construction	248,081	7.6
Administrative & Waste Serv.	5,122	5.6	Accommodation & Food Service	242,972	7.4
Real Estate & Rental/Leasing	5,006	5.5	Administrative & Waste Serv.	201,660	6.1
Other Services	4,699	5.1	Real Estate & Rental/Leasing	190,681	5.8
Professional & Tech. Services	4,621	5.0	Finance & Insurance	185,102	5.6
Mining	4,532	4.9	Other Services	163,065	5.0
Finance & Insurance	4,054	4.4	Manufacturing	158,598	4.8
Manufacturing	3,719	4.1	Wholesale Trade	112,073	3.4
Transportation & Warehousing	3,433	3.7	Information	90,030	2.7
Wholesale Trade	2,874	3.1	Transportation & Warehousing	89,503	2.7
Farm Emp.	2,092	2.3	Arts, Entertain. & Recreation	87,434	2.7
Arts, Entertain. & Recreation	1,897	2.1	Educational Services	55,723	1.7
Information	1,198	1.3	Mining	46,393	1.4
Educational Services	637	0.7	Farm Emp.	45,201	1.4
AG. Services	365	0.4	Management of Companies	30,758	0.9
Utilities	238	0.3	AG. Services	11,033	0.3
Management of Companies	120	0.1	Utilities	8,828	0.3

Source: BEA 2010b

**Table 3-52**  
**Total Earnings Trends in Mesa County and Colorado (1990-2008)**  
**(Thousands of Real 2008 Dollars)**

<b>Location</b>	<b>1990</b>	<b>2000</b>	<b>2001</b>	<b>2008</b>	<b>% Change 1990-2000</b>	<b>% Change 2001-2008</b>
Colorado	87,031,272	144,701,087	147,385,632	167,020,895	66.3	13.3
Mesa County	1,655,873	2,471,245	2,482,252	3,662,956	49.2	47.6

Note: Earnings inflated to 2008 dollars using Consumer Price Index for all urban customers for Denver, Boulder, Greeley

Source: BEA 2010c

The data shows that the growth in earnings for Colorado slowed dramatically in 2001 through 2008 compared to 1990 through 2000. Mesa County, on the other hand, grew at a steadier rate over both periods and grew far faster than Colorado in total earnings for 2001 through 2008. This period of earnings growth greater than the state as a whole includes a boom in earnings driven by natural gas production in the region.

Earnings trends in Mesa County and Colorado for the various industry sectors are compared in **Table 3-53**, Earnings by Industry, Colorado and Mesa County (2001-2008) (Thousands of Real 2008 Dollars). In Mesa County earnings from mining grew by more than 1,000 percent for the fastest rate of growth from 2001 through 2008. No other sectors exceeded double digit increases in earnings, but several grew by more than 50 percent.

After mining, the fastest growing earnings in Mesa County came from arts, entertainment, and recreation; wholesale trade; administrative and waste services; professional and technical services; transportation and warehousing; and accommodation and food service. Each of these saw earnings increase by over 50 percent. For Colorado earnings grew fastest in the management sector at 83 percent. Earnings for mining grew next fastest at 74 percent. Mining is the only sector whose earnings growth ranked in the top five for both Mesa County and Colorado. It is important to remember that greater growth in earnings does not imply that an industry sector contributes large earnings overall. A small sector can have a high rate of growth and still remain a small sector.

In **Table 3-53**, Earnings by Industry, Colorado and Mesa County (2001-2008) (Thousands of Real 2008 Dollars), industrial sectors are ranked by earnings for Mesa County and Colorado in 2008. The earnings are expressed in real 2008 dollars. With this data the contribution of various sectors to Mesa County's economy can easily be observed. Retail trade, which ranked highest in number of jobs, ranks only fifth in terms of earnings. Mining, which includes natural gas, ranked only number ten in job numbers but ranks fourth in earnings for the county. Only three of the nine industrial sectors that ranked above mining in jobs exceed it in earnings. The obvious factors at play are wage levels and the

**Table 3-53**  
**Earnings by Industry, Colorado and Mesa County (2001-2008)**  
**(Thousands of Real 2008 Dollars)**

Industry Earnings	Mesa County			Colorado		
	2008	% Change 2001-08	2008 % of All Earnings	2008	% Change 2001-08	2008 % of All Earnings
<b>Total</b>	3,662,956	47.6		167,020,895	13.3	
Government	566,179	36.8	15.5	26,728,385	29.3	16
Health Care & Social Assist.	475,672	35.2	13	13,319,631	33.8	8
Construction	438,915	33.7	12	12,709,238	-7	7.6
Mining	358,445	1173.9	9.8	4,702,866	74	2.8
Retail Trade	307,712	22.4	8.4	9,631,858	1.2	5.8
Transportation & Warehousing	192,697	56	5.3	4,686,388	0.6	2.8
Other Services	177,642	42.2	4.8	6,308,054	22.6	3.8
Professional & Tech. Services	173,303	58.1	4.7	19,949,601	25.8	11.9
Manufacturing	170,275	0.1	4.6	11,312,645	-10.4	6.8
Wholesale Trade	163,920	65	4.5	8,699,206	14.5	5.2
Finance & Insurance	150,327	34	4.1	10,992,623	14.7	6.6
Administrative & Waste Serv.	147,384	60.5	4	6,966,206	16.5	4.2
Accommodation & Food Service	141,789	55.6	3.9	5,631,141	18.4	3.4
Real Estate & Rental/Leasing	65,033	10.8	1.8	4,040,987	-20.8	2.4
Information	56,908	17.1	1.6	11,454,142	-5.1	6.9
Arts, Entertain. & Recreation	21,891	93.8	0.6	2,296,626	15.1	1.4
Utilities	20,311	12.6	0.6	987,841	11.3	0.6
Educational Services	10,268	-22.6	0.3	1,622,323	45.7	1
Farming	7,343	-54.9	0.2	1,004,537	-19	0.6
Forestry and Ag. Services	8,712	-4.5	0.2	243,647	14.4	0.1
Management of Companies	8,230	-24.3	0.2	3,732,950	82.3	2.2

Note: : 2001 values inflated using Consumer Price Index for all urban customers for Denver, Boulder, Greeley  
Source: BEA 2010b

relative number of part-time vs. full-time jobs in different sectors. Mining creates a greater proportion of higher paying, full-time jobs than retail trade, for example. One last finding from this data will be mentioned. Recall that earnings in the arts, entertainment, and recreation sector increased at the second fastest rate (93.8 percent) of any industry from 2001 through 2008, yet at the end of that rapid growth, earnings in the sector ranked only eighteenth out of twenty-one industries in contribution to total earnings for the county. Fast growth in

earnings can identify important trends in a local economy, but the fast growth alone does not indicate a significant impact on total earnings. Again, a small sector can experience a high growth rate and not be a significant contributor to overall earnings.

Comparing Colorado and Mesa County, government is the largest sector as measured by earnings. In addition three of the top five sectors and six of the top ten sectors are common to both entities although not ranked at identical levels. Perhaps the most striking difference between the two economies is that mining ranks fourth in earnings for Mesa County but only thirteenth for Colorado.

Earnings losses were found in four Mesa County sectors (farming, management, educational services, and forestry and agricultural services) from 2001-2008. Colorado saw earnings losses in real estate, farming, manufacturing, construction, and information. Mesa matches a little better with Colorado in earnings losses when it is recalled that, while manufacturing along with real estate showed positive earnings growth over the eight year period in Mesa, they had shown three and four years respectively of earnings losses at the end of the reporting period. They were following the same trend earnings wise as was the state overall.

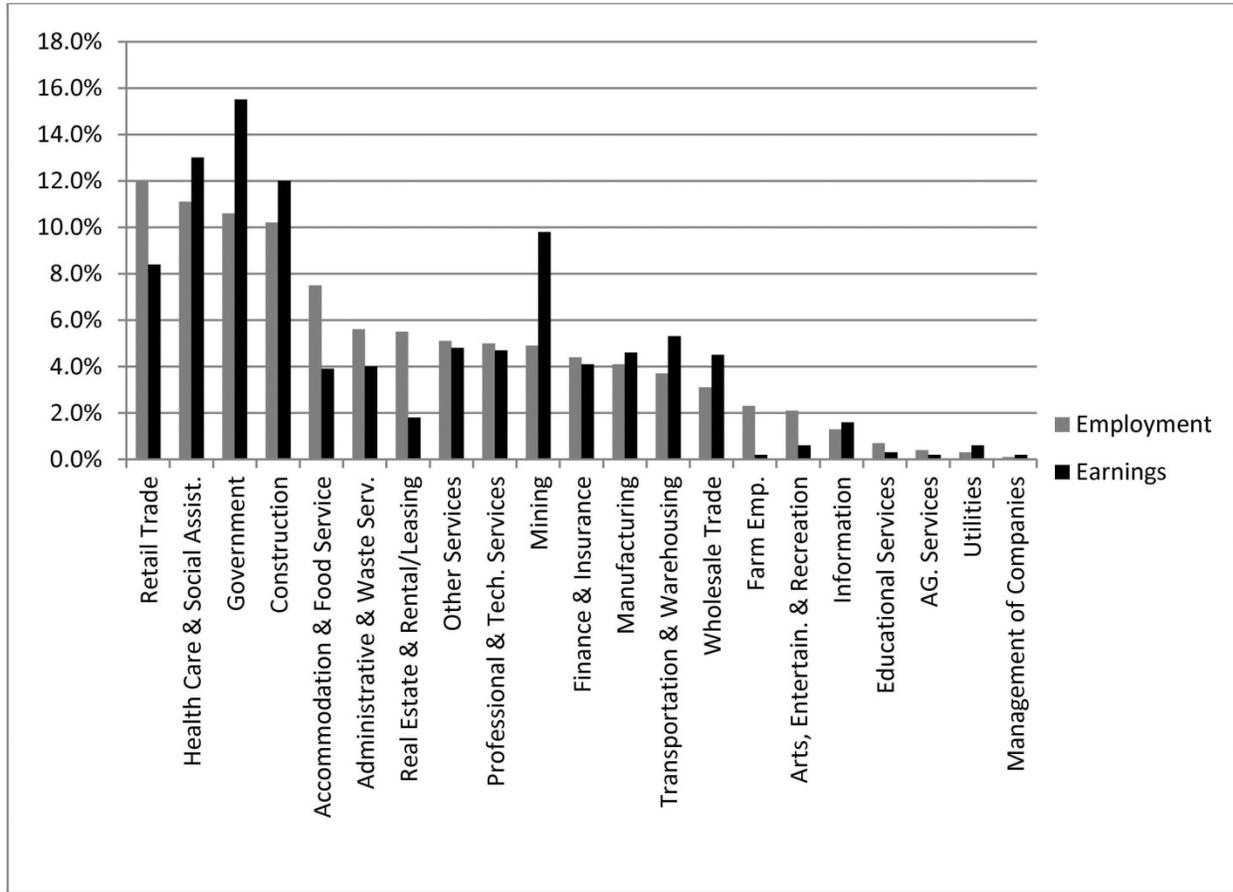
**Diagram 3-17**, Contributions to Jobs and Earnings by Industry Sector, Mesa County (2008), shows the share of jobs and earnings generated by each industrial sector in Mesa County for 2008. One obvious feature of the data is that the four highest contributors to earnings produce a larger share of earnings than of jobs. Meanwhile, retail trade, the largest sector by jobs, ranks only fifth in terms of earnings generated. The mining sector includes natural gas drilling and production.

#### *Cross County Income Flows*

To adjust for cross-county flows of income, The Bureau of Economic Analysis (BEA) reports residence adjustments. Some Mesa county residents commute to other counties to work. These workers earn their incomes in other counties and bring them into Mesa County. Some residents of other counties commute to Mesa County. They earn their incomes in Mesa County but take them to their home county. The residence adjustment accounts for this cross-county flow of income by subtracting the outflow of income from the inflow of income for Mesa County. A positive number indicates that residents of the county earn more income from other counties than non-residents transfer out of the county. **Table 3-54**, Residence Adjustment, Mesa County (1990-2008) (Thousands of Real 2008 Dollars), reports the residence adjustment for Mesa County for 1990 and for 2001 through 2008 in both nominal and real dollars.

The residence adjustment is positive for all those years and increases dramatically after 2004. Over that time natural gas and oil production were increasing significantly in Garfield County and the number of Mesa County employees in oil and natural gas production was increasing as well.

**Diagram 3-17**  
**Contributions to Jobs and Earnings by Industrial Sector, Mesa County (2008)**



Source: BEA 2010b

**Table 3-54**  
**Residence Adjustment, Mesa County (1990-2008) (Thousands of Real 2008 Dollars)**

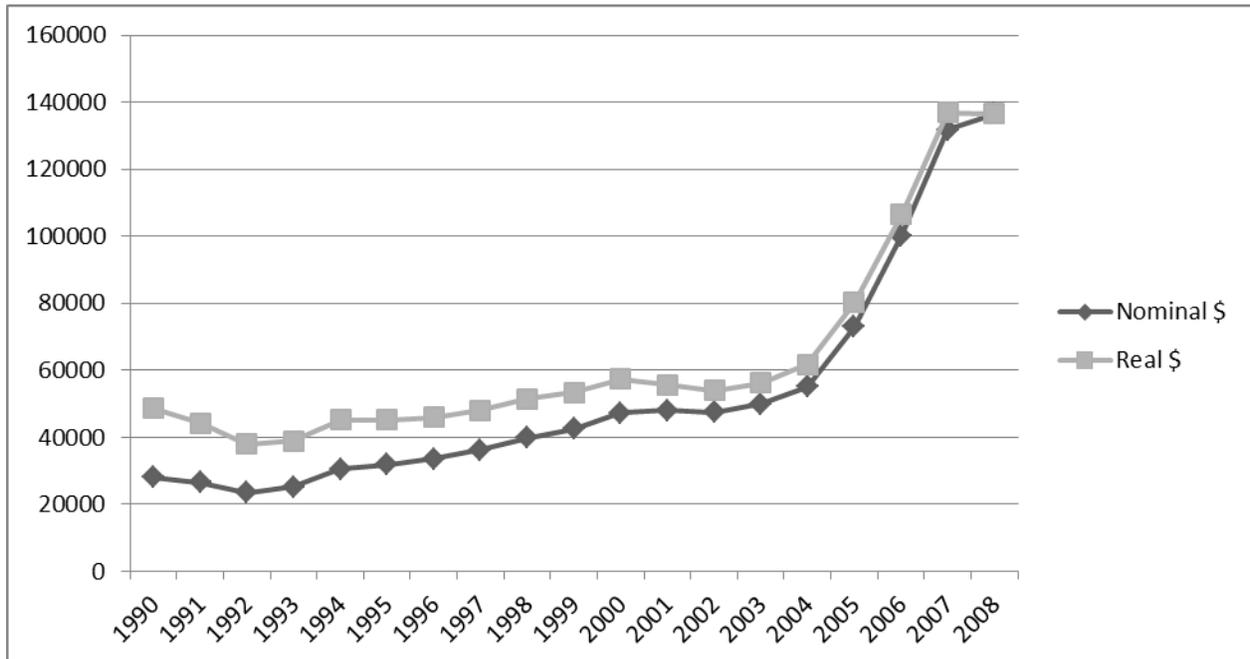
	1990	2001	2002	2003	2004	2005	2006	2007	2008
<b>Nominal \$</b>	27,970	48,035	47,400	50,005	55,033	72,950	100,189	131,734	136,449
<b>Real \$</b>	48,560	55,613	53,838	56,189	61,772	80,211	106,372	136,866	136,449

Note: Values inflated to 2008 dollars using Consumer Price Index for all urban customers for Denver, Boulder, Greeley

Source: BEA 2010d

**Diagram 3-18**, Residence Adjustment, Mesa County (1990-2008) (Thousands of Real 2008 Dollars), graphs the dramatic increase in Mesa County's residence adjustment recorded in **Table 3-54**, Residence Adjustment, Mesa County (1990-2008) (Thousands of Real 2008 Dollars).

**Diagram 3-18**  
**Residence Adjustment, Mesa County, 1990-2008 (Thousands of Real 2008 Dollars)**

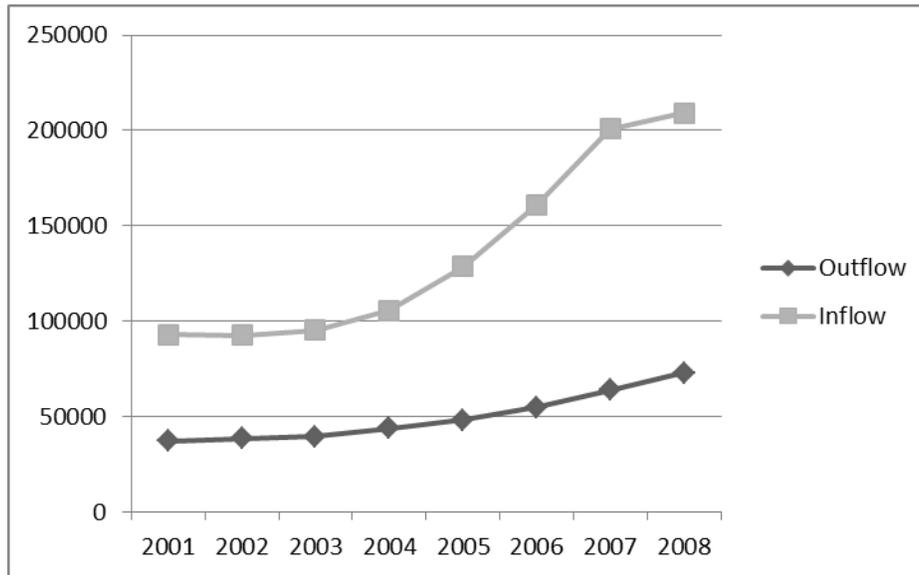


Note: Values inflated to 2008 dollars using Consumer Price Index for all urban customers for Denver, Boulder, Greeley  
 Source: BEA 2010d

**Diagram 3-19**, Earnings Inflow vs. Outflow, Mesa County (2001-2008) (Thousands of 2008 Dollars), and **Diagram 3-20**, Earnings Inflow vs. Outflow, Garfield County (2001-2008) (Thousands of Real, 2008 dollars), represent the earnings inflows and outflows used to calculate the residence adjustment for Mesa County (**Table 3-54**, Residence Adjustment, Mesa County (1990-2008) (Thousands of Real 2008 Dollars)) and for neighboring Garfield County. The difference between the inflow and outflow is the residence adjustment. It can be seen that the increased inflow of incomes for Mesa County coincides with an increase in outflow of incomes for Garfield County. This represents, in part, incomes to Mesa County oil and natural gas workers from oil and natural gas production in Garfield County, which showed substantial increases beginning in 2004.

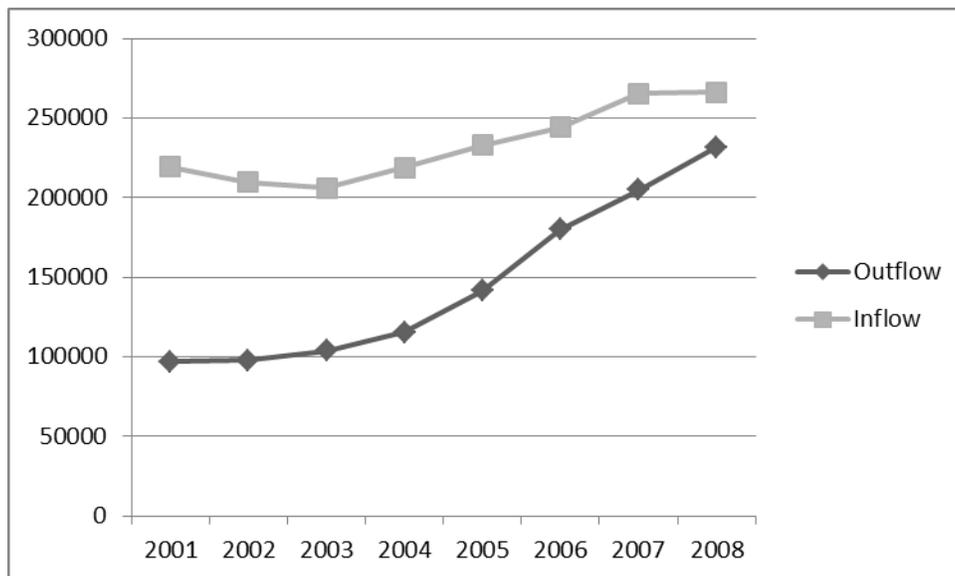
Commuting patterns can help substantiate the connection between Mesa County workers and oil and natural gas production in Garfield County. The US Census Bureau reports data on commuting patterns between counties as part of its Local Employment Dynamics (LED) program. LED uses existing administrative reports from states combined with census, survey, and other administrative records. As such the LED statistics involve some synthetic data.

**Diagram 3-19**  
**Earnings Inflow vs. Outflow, Mesa County, 2001-2008 (Thousands of 2008 Dollars)**



Note: Values inflated to 2008 dollars using Consumer Price Index for all urban customers for Denver, Boulder, Greeley  
 Source: BEA 2010d

**Diagram 3-20**  
**Earnings Inflow vs. Outflow, Garfield County (2001-2008) (Thousands of Real 2008 Dollars)**



Note: Values inflated to 2008 dollars using Consumer Price Index for all urban customers for Denver, Boulder, Greeley.  
 Source: BEA 2010d

**Table 3-55**, Commuting Patterns Mesa County to Garfield County (2002-2008), reports commuting patterns for Mesa County residents working in Garfield County. Data are reported for those who commute for either full or part time jobs as well as those who commute only for their primary job. The number of commuters for each year is reported as well as the share that represents of all jobs held by Mesa County residents. There is a steady increase in both the number of commuters and their share of overall jobs from 2004 through 2007. There is a drop off in both commuters and their share of jobs in 2008, but both numbers are still higher than any other year except 2007.

**Table 3-55**  
**Commuting Patterns Mesa County to Garfield County (2002-2008)**

	2002	2003	2004	2005	2006	2007	2008
Total Full & Part Time Jobs, All Mesa County Residents	49,434	49,144	52,066	53,023	55,716	61,839	64,806
Commuters to Garfield County	903	844	1,050	1,215	1,954	2,644	2,529
Share of All Jobs	1.8%	1.7%	2.0%	2.3%	3.5%	4.3%	3.9%
Total Primary Jobs, All Mesa County Residents	46,450	46,317	48,860	49,505	52,125	57,755	60,709
Commuters to Garfield County	853	793	976	1,133	1,844	2,506	2,389
Share of Primary Jobs	1.8%	1.7%	2.0%	2.3%	3.5%	4.3%	3.9%

Source: U.S. Census Bureau 2008a

#### *Personal Income*

The recent surge in economic activity since 2004, including the increased activity in the energy industry on public and private lands, has helped increase wages in Mesa County (see **Table 3-56**, Annual Average Wage Colorado and Mesa County (2001-2008)). Wages increased 43 percent between 2001 and 2008 which approximates an \$11,800 wage increase during that time. It remains to be determined what impact the economic downturn of 2008 and 2009 will have on annual wages in Mesa County and the state of Colorado.

Low unemployment and subsequent increases in wages has had a positive impact on family income in Mesa County. As illustrated in **Diagram 3-21**, Mesa County Annual Median Household Income (2000-2008), the median household income has increased by nearly 35 percent between 2000 and 2008. Adjusting for inflation, the County has seen approximately a \$7,000 rise in median income between 2001 and 2008. With unemployment over nine percent in 2009 it is expected that median family income has dropped as well.

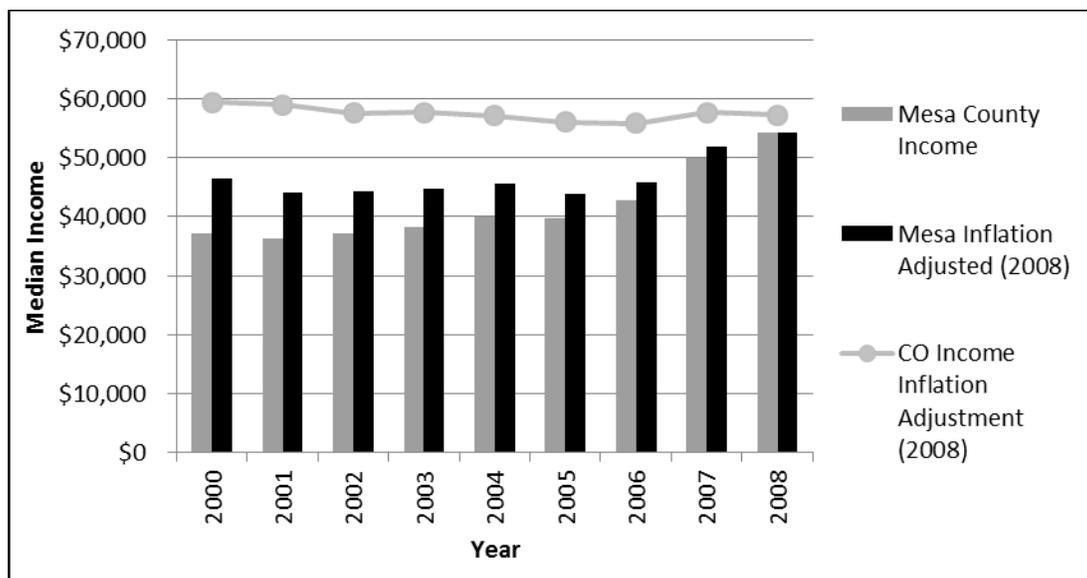
**Table 3-56**  
**Annual Average Wage Colorado and Mesa County (2001-2008)**

Year	Colorado	State % Change	Mesa County	Mesa County % Change	Ratio to State Average
2001	\$37,952	n/a	\$27,426	n/a	0.72
2002	\$38,005	0.1%	\$28,331	3.3%	0.75
2003	\$38,942	2.5%	\$29,053	2.5%	0.75
2004	\$40,276	3.4%	\$29,965	3.1%	0.74
2005	\$41,601	3.3%	\$31,611	5.5%	0.76
2006	\$43,506	4.6%	\$33,729	6.7%	0.78
2007	\$45,396	4.3%	\$36,221	7.4%	0.80
2008	\$46,614	2.7%	\$39,246	8.4%	0.84

Note: The data has not been adjusted for inflation.

Source: Bureau of Labor Statistics 2009b

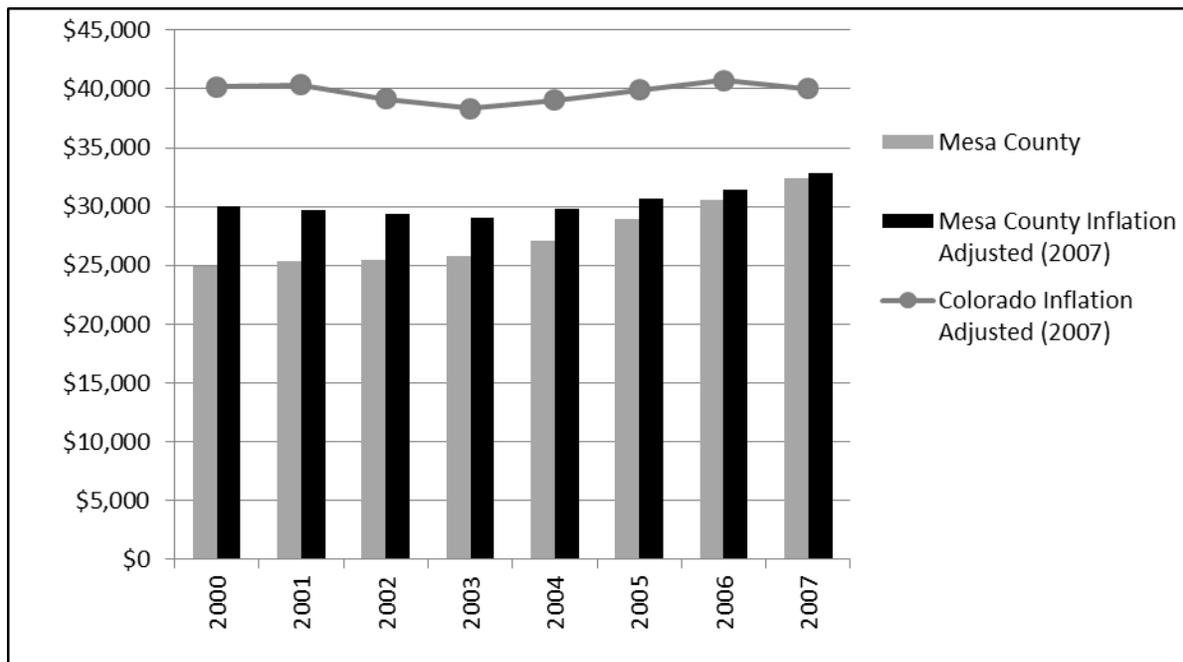
**Diagram 3-21**  
**Mesa County Annual Median Household Income (2000-2008)**



Source: US Census Bureau 2008b

As illustrated in **Diagram 3-22**, Mesa County and Colorado per Capita Personal Income (2000-2007), per capita income in Mesa County has increased approximately 31 percent between 2000 and 2007. Adjusting for inflation, per capita personal income in Mesa County grew approximately 10 percent between 2000 and 2007. Traditionally there has been a relatively large gap between Mesa County and Colorado in per capita income. The data shows that Mesa County residents still earn less than their Colorado counterparts, but this gap has closed almost \$3,000 since 2000. Again it is unclear how the recession of 2008 will impact per capita income, but the expectation is that it will decrease.

**Diagram 3-22**  
**Mesa County and Colorado per Capita Personal Income (2000-2007)**

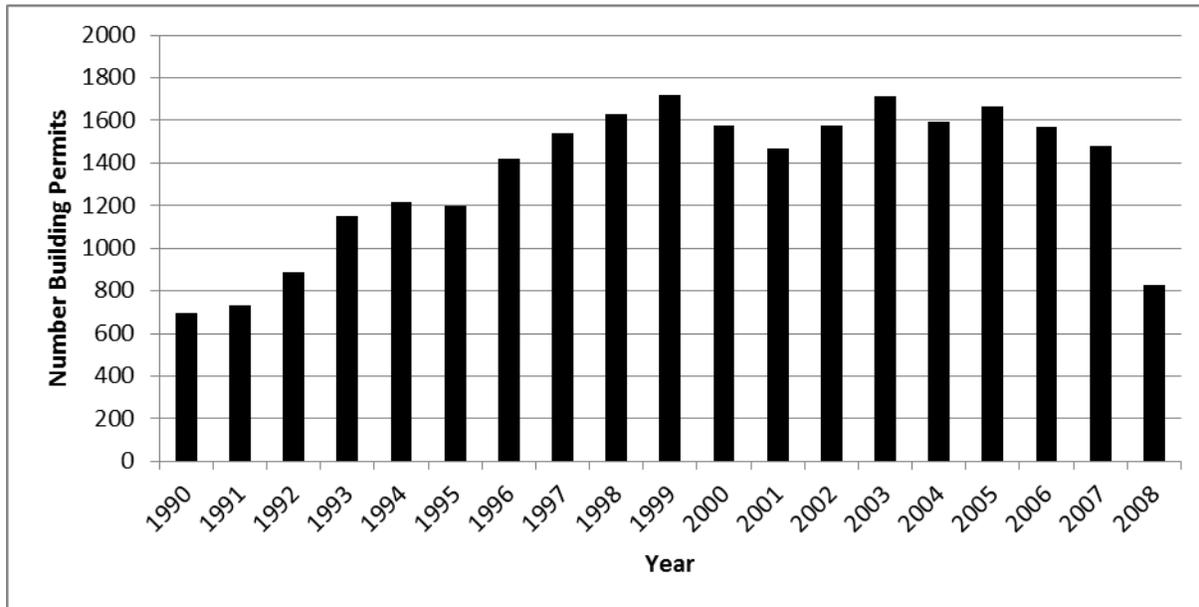


Source for Colorado: BEA 2007

#### *Housing*

As evidenced in **Diagram 3-23**, Residential Building Permits Issued in Mesa County (1990-2008), building in Mesa County has been strong since 1990, evidenced by the doubling of residential permits issued between 1990 and 1995. The increased number of permits can be explained by the County's growing population and healthy economy. In 2008 building permits decreased to 1991 levels thereby illustrating the impact the 2008 and 2009 economic downturn has had on Mesa County.

**Diagram 3-23**  
**Residential Building Permits Issued in Mesa County (1990-2008)**



Note: Data does not include commercial building permits

Source: Mesa County Building Department. 2008.

The expansion of the economy helped maintain a robust real estate market in Mesa County. While higher interest rates and rising defaults on mortgages were driving down housing prices nationally, the median price of a home in the Grand Junction metropolitan area continued to increase. Between 2000 and 2008, the median home sales price in Grand Junction was estimated to nearly double from \$118,900 to \$233,000. In fact, according to a March 2008 report issued by the Office of Federal Housing Enterprise Oversight, Grand Junction ranked number two in the top 20 metropolitan statistical areas with the highest rate of house price appreciation (Housing Colorado 2009). The 2008 and 2009 economic downturn had a significant impact on home sales and prices in Mesa County. According to zillow.com the average home value in Grand Junction plummeted to \$190,000 in January, 2010 (Zillow.com 2010). Foreclosure rates have also risen dramatically in Mesa County increasing 143 percent in the second quarter of 2009 over the previous year while real estate sales dropped from 5568 in 2006 to just 1998 in 2009 (Inside Real Estate News 2009).

The rental market does not provide much of an alternative for those who cannot afford to buy a home. While the housing market was very affordable until 2004, there was very little incentive to build additional rental units. As the housing market became less affordable, the vacancy rate for apartments has dropped dramatically. Grand Junction vacancy rates for multi-family units ranged between 4.1 percent and 1.6 percent between 2007 and the second quarter of 2009 (Colorado Department of Local Affairs 2009a). Since then vacancy rates

have skyrocketed to 7.5 percent for multi-family units (Grand Junction Free Press 2009).

### ***Non-economic Social and Cultural Benefits of Public Lands***

In addition to the economic benefits accrued from tourism and natural resource development on adjacent public lands, gateway communities such as Grand Junction, Fruita, Mack, Loma, Palisade, DeBeque, Colbran, Mesa, Glade Park and Gateway accrue a wide variety of intangible benefits from their proximity to BLM public lands in the Grand Junction Field Office. People move to, or remain in these gateway communities for the quality of life that is impacted and enhanced by the condition of adjacent public lands.

These values of public lands were measured by a series of focus groups conducted by the Redifer Research Institute of Colorado Mesa University for the RMP process of data collection. Between February 23, 2009 and April 22, 2009, eleven focus groups were conducted with community leaders and residents living in the Grand Junction BLM Field Office's (GJFO) area. The communities include: Grand Junction, Fruita, Mesa County, Glade Park, Palisade, De Beque, Gateway, and Loma-Mack. The purpose of the focus groups was to ascertain what participants value about the community they live in and the accompanying public lands (values); their concerns in achieving their community and public lands vision (concerns); the beneficial outcomes their vision would produce (outcomes); and the appropriate role of collaborating partners in planning and managing public lands (collaboration). The results of these focus groups were recorded in a report submitted to the BLM GJFO for inclusion in the RMP process in January of 2010. Included here are the key findings from that report.

### ***The Value of Public Land***

Regardless of the community, public lands are a vital component of what citizens enjoy about living in their community. The most frequently discussed values: wildlife, access, small-town atmosphere, quiet/isolation, open space and recreation, are all related to public lands. The same is true for concerns: health of public lands, social spaces, water, trash, oil and gas development, jobs and economic growth and user conflict on public lands. While some connections to public lands may not be as readily apparent as others, they are nonetheless visible. For example, the small town atmosphere of many communities is protected by surrounding public lands as it prevents significant population increases. It is clear that public lands both attracts and maintains residents and increases the quality of life in the Grand Junction Field Office.

### ***A Tailored Approach to Managing Public Lands***

In most cases the character of a community is shaped by its surrounding public lands. From Fruita's recreation destinations in the Grand Valley Area to Glade Park's ranching community, in the Glade Park Area public lands shape the communities they surround. Because citizens are attracted to the character of

their communities, they have a strong desire to maintain it. The result is a lack of consensus among the communities, which complicates the management of public lands. The different interests and intensity preferences among the communities suggests that a tailored management approach for each community is preferable to a one-size-fits-all management approach. For example, there is more support for oil and gas development in the northern part of the Roan Creek Area than if that development took place in the Grand Valley Area. Agriculture is an emphasis in both the Glade Park and Grand Mesa Slopes Areas, but the type of agriculture differs, with communities favoring ranching in the Glade Park Area, and higher end fruit growing in the Grand Mesa Slopes area. Without a carefully tailored approach, the communities may feel as though the BLM is threatening their quality of life and the character of their community.

#### *Differing Viewpoints*

Within several communities there appear to be conflicts over what they desire. However, because the participants believe that public lands should provide opportunities for multiple users, they expressed a desire for multiple-use management. Specifically, participants expressed a desire for a tailored multiple-use approach that reflects community values, addresses the concerns of community members, and helps the community achieve its desired outcomes. Feedback from group participants and CMU suggest that management should focus on maximizing desired outcomes, while also considering adverse outcomes in order to minimize adverse impacts.

#### *Economic Opportunities*

Given the diversity of communities and public lands in the BLM GJFO, there are a diverse range of economic opportunities directly tied to public lands. These include agri-tourism, (in the Grand Valley and Grand Mesa Slopes Areas) ranching, (in the Glade Park Area) extractive resources development, (in the northern portion of the Roan Creek Area) tourism, (in the Gateway Area) attracting business, (in the Grand Valley Area) recreation services (in the Bangs Canyon Area), and hunting (in the Bookcliffs and Glade Park Areas) (just to name a few). Not all of these economic opportunities appear in each community. In fact, the uniqueness of the local economic opportunities on public land contributes to the unique characteristics of the distinctive communities.

#### *Regional Hub*

Grand Junction is a regional hub and there is recognition that the management of public lands can impact the city and surrounding communities. This impact can be felt in numerous ways, from acting as a natural barrier to growth, to encouraging high-density development, attracting young talent to the region, and attracting businesses. In turn, because Grand Junction is the regional hub, what happens in Grand Junction has an impact on surrounding communities.

#### *Educational Outreach*

There was a desire by participants to see a conscientious effort by the BLM to engage in educational outreach. Educating citizens about public lands, the challenges of managing these lands, and stewardship were important to many communities. Beginning this process with children (in tandem with public schools) will help correct many of the problems witnessed on public lands such as trash and ad-hoc trail building. In turn, this will lessen the burden on the BLM, which is perceived to be stretched as a result of inadequate funding.

#### *Collaboration*

Beyond outreach, there is a clear desire for collaboration between the BLM and various partners. The two groups that received the most support as collaborators are community residents and local governments. There was greater support for collaboration in the planning process than there was in the management of public lands. The BLM has found, in practice that community partners are indeed eager to participate in management as well.

#### *Identifying Areas of Action*

Emphasis should be on collaborating with other jurisdictions and partners to ensure that management actions can have the greatest impact in helping communities achieve their vision

### **Public Finance and Government Services**

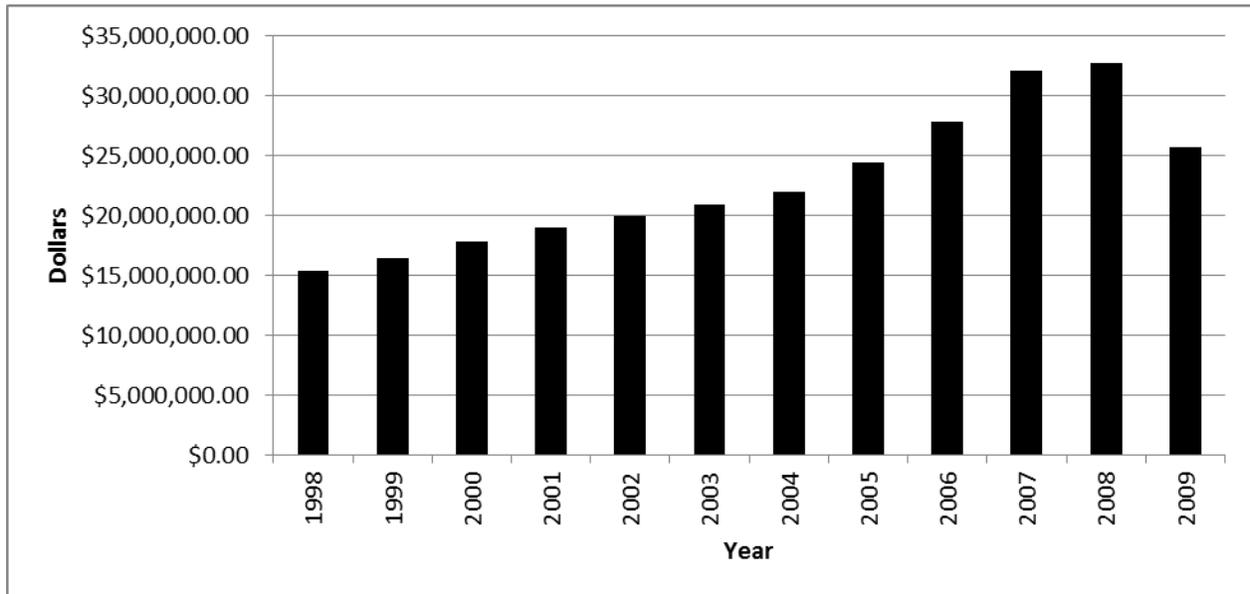
#### *Government Revenues*

As the population and economy of Mesa County has grown over the last twenty years, the county's revenues and expenditures have also grown. The county has experienced increased revenue in three different areas: sales tax revenues, severance taxes, and payment in lieu of taxes (PILT) payments.

First, as illustrated in **Diagram 3-24**, Mesa County Sales Tax Revenues (1998-2009), Mesa County has experienced an increase in its sales tax revenues every year since 1998. While the percent change has ebbed and flowed over this period (with a low of 4 percent increase in sales tax collection to a high of 16 percent increase), the strength of this revenue reflects a healthy Mesa County economy. Sales tax revenues leveled off between 2007 and 2008 with a .01 percent growth rate. By January, 2010 the county's sales tax revenue had dropped 24 percent when compared to the same month in 2009 (Grand Junction Daily Sentinel 2010). This slowing illustrates the significant impact the 2008 and 2009 economic downturn has had on the county.

The second area of revenue growth relates to the energy industry. From 2003 to 2008 applications for permits to drill in Mesa County grew from 27 to approximately 501 (Colorado Oil and Gas Conservation Commission 2009). This represents approximately 6 percent of the total permits issued statewide.

**Diagram 3-24**  
**Mesa County Sales Tax Revenues (1998-2009)**



Note: 2009 data is projected revenue

Source: Mesa County Finance Department 2008

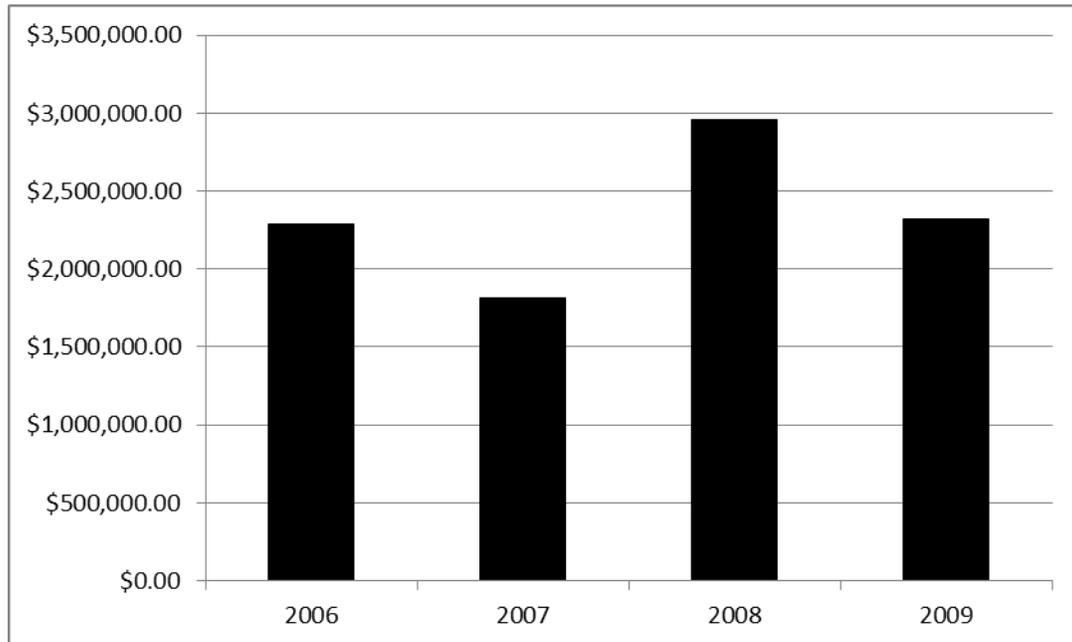
With 805 active wells<sup>2</sup> in 2008, Mesa County ranked eighth in the state for active oil and gas wells (Colorado Oil and Gas Conservation Commission 2009). In 2006 a total of 1,611 oil and gas employees lived in Mesa County (Mesa County 2007).

Growth of the oil and gas industry in Mesa County is best exhibited in **Diagram 3-25**, Federal Mineral Lease Direct Distribution to Mesa County (2006-2009). Between 2000 and 2008, oil production has increased from approximately 3,500 barrels to over 122,000 barrels. Likewise natural gas production has increased six fold between 2000 and 2008. Federal mineral lease payments to Mesa County have contributed significantly to Mesa County's tax base. As illustrated in **Diagram 3-26**, from 2006 through 2009, Mesa County received a low of \$1.8 million to a high of \$2.9 million.

Mesa County severance tax revenues were close to \$3 million in 2006 and were projected to grow to as much \$5 million by 2010 (Mesa County 2007). The decrease in national oil and gas prices in late 2008 had a significant impact on production levels. This decrease has significantly impacted Mesa County's severance tax projections. Revised 2010 severance tax projections after the crash in oil and gas prices anticipated County revenue to drop from \$5 million to a little less than \$1 million (Mesa County 2009c).

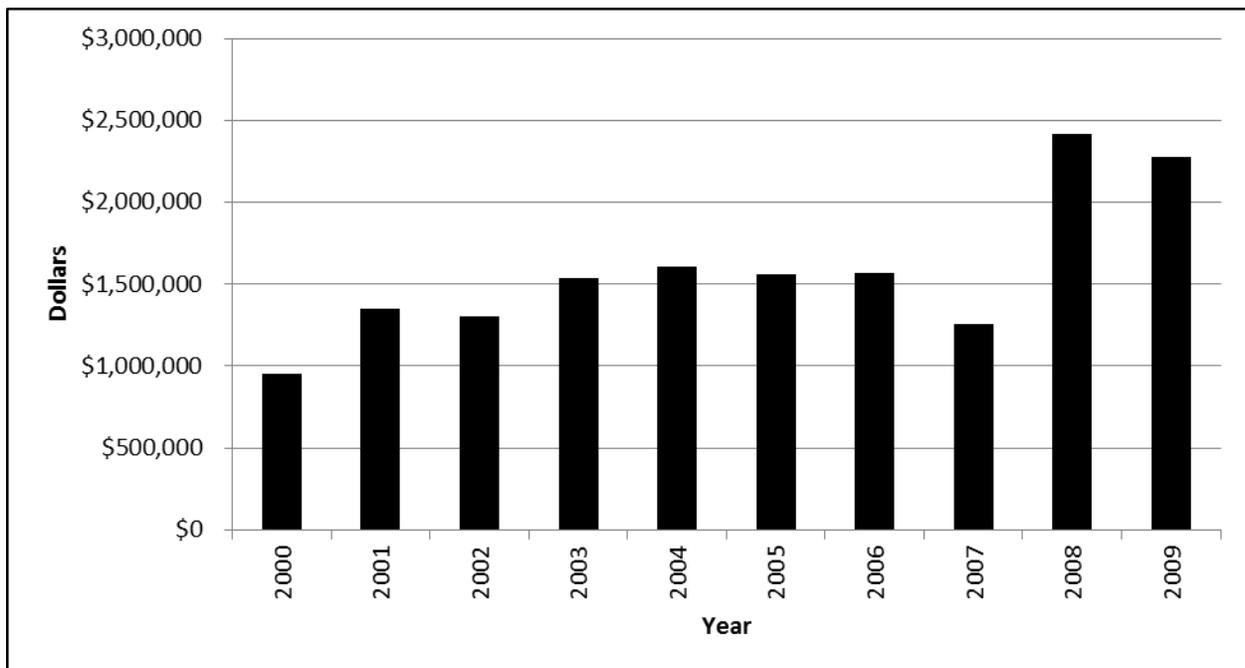
<sup>2</sup> Includes all wells regardless of mineral ownership.

**Diagram 3-25  
Federal Mineral Lease Direct Distribution to Mesa County (2006-2009)**



Source: Colorado Department of Local Affairs 2009b

**Diagram 3-26  
Payments in Lieu of Taxes, Mesa County (2000-2008)**



Source: US Department of the Interior

Mesa County oil and gas taxable assessed value grew from \$.94 million in 2000 to \$2.8 million in 2009. This money helps Mesa County offset the costs of meeting the infrastructure needs of the oil and gas industry. This amount fluctuates based off the price and production of oil and gas.

In total, PILT payments received by Mesa County from the United States have contributed from \$1 million to \$2.5 million annually since the beginning of the program. **Diagram 3-26** shows the payments received from 2000. Annual variations occur, depending on the amount of money the Congress appropriates. If it is less than the full entitlements of the counties nationally the funds are prorated among all of the counties in the United States. PILT funds to counties also vary, depending on how much money a County receives from the United States from other sources such as oil and gas, or coal leasing.

#### 3.6.4 Environmental Justice

*This section was prepared for and in cooperation with the GJFO by researchers at Colorado Mesa University. BLM has reviewed and accepted the information contained in the following section.*

Executive Order 12898 instructs federal agencies to identify “disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.” To comply with Executive Order 12898 on Environmental Justice, this section examines the racial and economic conditions of the planning area.

##### **Assess Potential for Disproportionate Impacts to Environmental Justice Populations**

Exhibited in **Table 3-57**, Mesa County and Colorado Racial Composition (2006-2008 Estimates), below, the racial diversity of Mesa County is homogeneous when compared to the state of Colorado. The County is predominantly white with a relatively small minority population. The largest racial minority is Hispanic, comprising 11.8 percent of the population, compared to 19.9 percent of Colorado’s population.

**Table 3-57  
Mesa County and Colorado Racial Composition (2006-2008 Estimates)**

Race	Mesa County		Colorado	
	Total Population	Percentage	Total Population	Percentage
	<b>138,641</b>	<b>100</b>	<b>4,844,568</b>	<b>100</b>
Hispanic or Latino (of any race)	16,342	11.8	963,831	19.9
Mexican	11,346	8.2	712,498	14.7
Puerto Rican	296	0.2	18,236	0.4
Cuban	26	0.0	5,553	0.1
Dominican	0	0.0	1,714	0.0
Central American	132	0.1	26,228	0.0
South American	348	0.3	14,113	0.3
Other Hispanic or Latino	4,194	3.0	185,489	3.8

**Table 3-57**  
**Mesa County and Colorado Racial Composition (2006-2008 Estimates)**

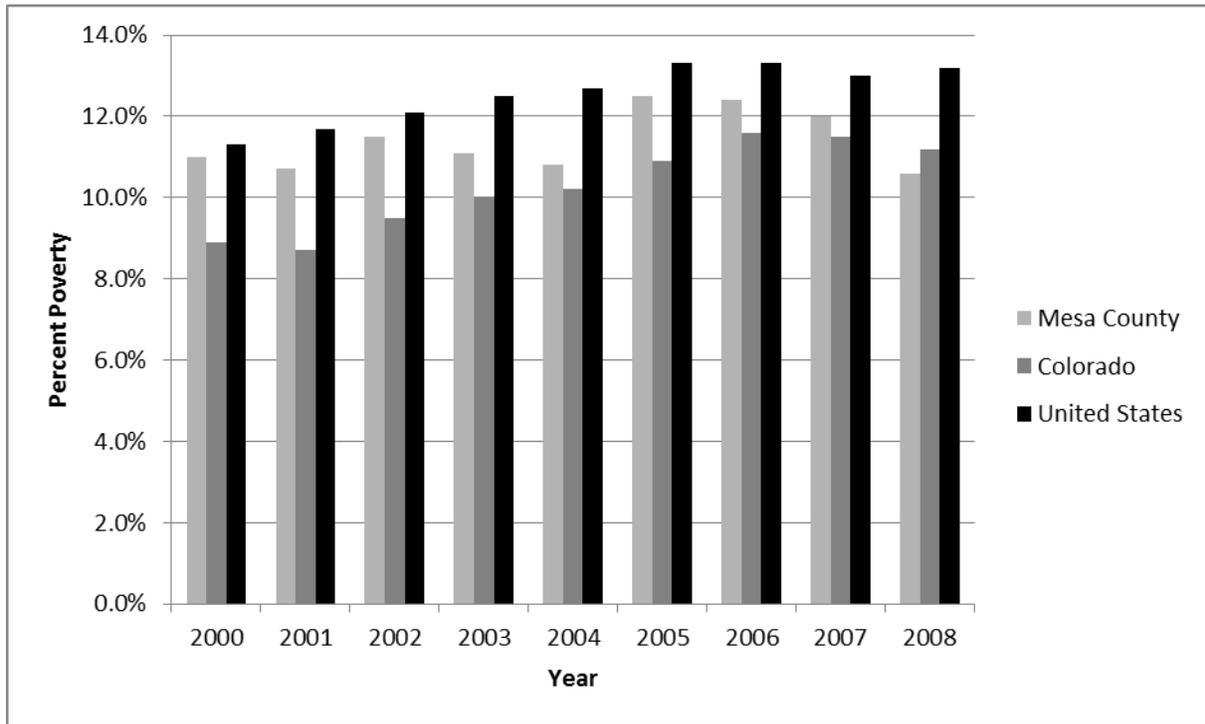
Race	Mesa County		Colorado	
	Total Population	Percentage	Total Population	Percentage
Not Hispanic or Latino	122,299	88.2	3,880,737	80.1
White alone	117,334	84.6	3,448,171	71.2
Black or African American alone	754	0.5	177,105	3.7
American Indian and Alaska Native alone	775	0.6	30,772	0.6
Asian alone	767	0.6	124,787	2.6
Native Hawaiian and Other Pacific Islander alone	137	0.1	4,305	0.1
Some other race alone	52	0.0	10,101	0.2
Two or more races	2,480	1.8	85,496	1.8
Two races including Some other race	120	0.1	3,294	0.1
Two races excluding Some other race, and Three or more races	2,360	1.7	82,202	1.7

Source: US Census Bureau 2008a

Looking at **Diagram 3-27**, Percent of Mesa County Residents in Poverty (2000-2007), Mesa County's poverty rate has ebbed and flowed between a low of 10.6 percent and a high of 12.5 percent between 2000 and 2008. Since 2000, Mesa County has fared much better than the US as a whole, but not as well as the state of Colorado. Until 2009 the county's economic health was largely insulated from changes in the national market. Since then the global recession has hit Mesa County full force. According to the Mesa County Workforce Center employment peaked in April 2009. At that time the labor force in Mesa County stood at 86,122, but the number of individuals unemployed was almost 7,000, an unemployment rate of 8 percent. This is a notable change from one year earlier when the labor force was 80,268 with 2,600 individuals unemployed for an unemployment rate of just 3.2 percent (Mesa County Workforce Center 2010).

Communities within Mesa County, which include Grand Junction, Palisade, Fruita, Debeque, Glade Park, Loma/Mack, Gateway, and Collbran, are roughly similar to Mesa County in minority population and poverty rates. Like the county, the minority populations located within these communities are not dissimilarly affected by BLM management decisions.

**Diagram 3-27**  
**Percent of Mesa County Residents in Poverty (2000-2007)**



Source: US Census Bureau 2008a

### **Conclusion**

The descriptions in this report represent a snapshot of current demographic and economic trends in the area adjoining the GJFO. As in the past, new demand for oil, the predicted shift towards nuclear power as a means to reducing carbon output, increasing tourism, and/or the designation of new NCAs might produce changes in what actually occurs. A return, for example, to uranium mining could bring conflicts between residents who remember the economic boon it provided and residents who express concerns about environmental damage. Improvement of the technology for the extraction of oil from oil shale might raise hopes of a new, pre-1980s boom or concerns about the water demands such technology might represent. A growing professional class, with their recreational preferences, and the quality-of-life benefits provided by the area, a continuing increase in an aging population of retirees, the opportunities to remain in the area for natives forced to seek their economic fortunes elsewhere, any one of these factors might alter the character of the region.

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