

# **La Plata Travel Management Plan Recreation**

## **Environmental Assessment & Travel Management Plan Recreation**

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## **NEED FOR THE PROPOSED ACTION**

**The proposed action** would approve the **La Plata Travel Management Plan** for recreation. This plan is needed to implement the Off-Highway Vehicle decisions that were made in the Farmington Field Office Resource Management Plan, 2003, that designated motorized vehicle use and non-motorized use as “limited to designated roads and trails” where not otherwise designated “open”.

The La Plata Travel Management Plan would provide guidance for defining an appropriate network of roads, two-tracks, trails, and areas for use within the planning area by recreational users.

Management of travel on BLM administered public lands is necessary to address public and administrative access needs, protect resources, promote public safety, provide a range of recreational opportunities, and minimize conflicts among the various users of public lands.

This need was first addressed in the Farmington Resource Management Plan 2003. The dispersed area, all public land not within a Specially Designated Area, was given a “limited” OHV designation throughout the Farmington Field Office. Thirteen OHV Management Units were then designated that cover the entire Field Office. The 13 areas were derived by access routes, entry points, and use patterns for more effective management (See map in Appendix A).

Individual OHV Activity Plans would then be written for each OHV Management Unit.

In the FRMP 2003 the **La Plata Travel Unit** was originally designated as the Farmington Unit. It has been changed to the La Plata Unit in this plan to coincide with the name of the Road Unit used by BLM and the oil and gas industry to manage the road transportation network in the Field Office.

The **La Plata Unit** contains 145,066 acres, of which 73,380 are public lands. There are seven SDAs within the planning unit with a total acreage of 46, 404 acres of public land. That leaves 26, 976 acres of public land in the dispersed area for analysis in this planning document (See map in Appendix A).

Since motorized and non-motorized recreation use are intricately intermingled in the Farmington Field Office the BLM feels that it would make better sense to address recreational travel management as a whole than in numerous separate plans.

## **ACRONYMS AND TERMS USED IN THIS DOCUMENT**

ACEC	Area of Critical Environmental Concern
ATV	All Terrain Vehicle (4-wheeler)
BLM	Bureau of Land Management

CFR	Code of Federal Regulations
EA	Environmental Assessment
EIS	Environmental Impact Statement
FDO	Farmington District Office
FFO	Farmington Field Office
FLPMA	Federal Land Policy Management Act
FRMP	Farmington Resource Management Plan
GIS	Geographic Information System
GRRRA	Glade Run Recreation Area
GPS	Global Positioning System
LPTMP	La Plata Travel Management Plan
MOU	Memorandum of Understanding
NRCS	Natural Resources Conservation Service
OHV	Off-Highway Vehicle
RMP	Resource Management Plan
ROD	Record of Decision
ROS	Recreation Opportunity Spectrum
SDA	Specially Designated Area
SMA	Specially Managed Area
TMU	Travel Management Unit
TMP	Travel Management Plan
T&E	Threatened and Endangered Species
USDA	United States Department of Agriculture
USDI	United States Department of the Interior
VRM	Visual Resource Management

## **RELATIONSHIP TO STATUTES, REGULATIONS, POLICIES, PLANS OR OTHER ENVIRONMENTAL ANALYSES**

### **Off Highway Vehicles**

The principal Bureau of Land Management permitting regulations for OHVs are found in 43 CFR 8340 and Executive Order 11644 (as amended by Executive Order 11989) issued in 1972. The principal statute governing public land management is the Federal Land Policy Management Act of 1976.

Management of the Special Management Area, The Glade Run Recreation Area is addressed in the *Glade Run Trail System Recreation Area Management Plan*, 1996 and the Farmington RMP, 2003 which made changes to the boundary, among others.

The following national strategies provide guidance in the travel management planning process:

*National Management Strategy for Motorized Off-Highway Vehicle Use on Public Lands*, USDI, BLM, January 2001

*National Mountain Bicycling Strategic Action Plan*, USDI, BLM, November 2002

The *Farmington Resource Management Plan with Record of Decision, December 2003, USDI, BLM, Farmington Field Office*, contains the following guidance on OHV use within the Field Office.

To be suitable for cross-country travel, the land must meet the following criteria:

- **BLM surface**
- **Outside an SDA**
- **Outside a designated disposal area**

In the Proposed RMP/Final EIS, approximately 2,135 acres within the La Plata Travel Management Unit that met the above criteria were determined to be the least susceptible to damage from cross-country travel by applying the additional criteria below.

- **Slopes greater than 30 percent**
- **South-facing slopes steeper than 15 percent**
- **Seasonal high water table**
- **Depth to bedrock less than 20 inches**
- **Highly erodible by wind or water**

It should be noted that each SDA has individual OHV designations which may be different from and take precedence over the designations in the surrounding Travel Management Unit.

## **Mountain Bikes**

Mountain biking guidance is given in the *National Mountain Bicycling Strategic Action Plan, USDI, BLM, November 2002*.

## **Road Improvements**

The program to improve existing roads and the development of transportation planning are based on road maintenance agreements with the oil and gas industry. A total of 13 road management units have been established in the FFO area. In most cases these correspond with the travel management units for recreation.

A Transportation plan is being developed for the Farmington Field Office. This plan will identify major collector and local roads supporting industry, and the standards for both collector and local roads.

The goal for road improvement is to have all collector roads meet *Surface Operating Standards for Oil and Gas Exploration and Development, Jan 1989 (Gold Book)* within ten years.

An additional goal will be to bring all local roads into compliance with appropriate standards within 20 years. This will include identifying, closing, and reclaiming unneeded roads. Problem roads will be addressed first, even if a transportation plan has not been completed for the unit in which the road occurs.

## **OVERVIEW OF THE PLANNING PROCESS**

### **Inventory**

An inventory of roads, two-tracks, and trails in the planning area was completed using GPS/GIS technology, digital aerial photos, and ground checking.

The initial public meeting provided the public the opportunity to identify routes currently being used by the public.

Given the size and complexity of the Travel Unit, it is probable, that some routes exist that were not collected during the inventory. As such routes are identified they will be analyzed as outlined in the implementation section of the plan.

### **Criteria and Route Assessment**

The criteria for consideration of route designations and route closures was developed by the Farmington Field Office, Recreation and Wilderness staff and used to assess the route inventory map and make initial route recommendations. The criteria can be found in this document.

### **Public Involvement**

The OHV designation that limited motorized travel to maintained roads, designated trails, routes and areas was made with extensive public participation during the Farmington Resource Management Plan planning process. The Farmington RMP was approved in March 2003.

A public meeting was held on February 2, 2004 to discuss the planning process for the development of the Travel Management Plans within the Farmington Field Office.

A meeting on August 25, 2005 was held to update the public on the plan.

## **PROPOSED ACTION AND ALTERNATIVES**

### **Alternative I – Proposed Action – La Plata Travel Management Plan**

The proposed action would approve the La Plata Travel Management Plan (LPTMP) and associated implementation actions. The OHV designation, “limited to designated roads and trails” would be implemented according to the draft route use recommendations found in the LPTMP.

These route designations would apply **only** to BLM administered public land and would be clearly identified by maps, information signs, and route markers as specified in the travel management plan.

For the La Plata Travel Management Plan the following guidance will apply to areas outside of a SMA.

## Cross-Country Travel Issues

Issue	Management Action
Cross-Country Travel	Not permitted unless designated "Open".
Emergency Use	Allowed.
Administrative Use	Allowed unless specifically prohibited.
Lease and Permit Holders	Not allowed unless specifically authorized.
In Proximity to Residences	Not allowed within ½ mile of any residence unless on a maintained road or a designated trail or route.
Wetlands and Riparian Areas	Prohibited. Travel limited to maintained roads.

## Exceptions for Cross-Country Travel.

Exceptions	
Camping	Cross-country travel for camping is allowed within 300 feet of roads by the most direct route, after site selection by non-motorized means.
Dry Washes	Travel permitted in designated washes.
Game Retrieval	Not allowed unless specifically authorized.
Disabled Access	Allowed per provisions of Rehabilitation Act.
Firewood and Christmas Tree Collection	Not allowed unless specifically authorized by permit.

Cross-country travel is defined as wheeled or tracked, motorized travel by any vehicle, recreational or other, off of roads and trails. Note that this definition only applies to cross-country travel in the dispersed area and not to cross-country travel within the SDAs and ACECs. Further clarification is provided below.

Motorized travel **is** considered cross-country when:

- The passage of motorized vehicles depresses undisturbed ground and crushes vegetation.
- The motorized vehicle maximum width (the distance from the outside of the left tire to the outside of the right tire or maximum tire width for motorcycles) does not easily fit the road or trail profile. However, an all-terrain vehicle (ATV) traveling within a designated two-track route established by a pickup truck is not considered cross-country travel.
- Motorized vehicles use livestock or game trails.
- On an oil and gas road that has been reclaimed.
- On pipeline corridors, except for authorized and/or permitted use.
- Use of a two-track, trail, road, or wash which has not been designated as open to travel.

Motorized travel is **not** considered cross-country travel when:

- Motorized vehicles use constructed roads that are maintained by the oil and gas industry and/or BLM, unless specifically closed to use through signing and/or gates. Constructed roads are often characterized by a road prism with cut and fill slopes.
- Motorized vehicles use trails specifically designated for the vehicle being used. For example, this would include the single-track trails within SDAs that are designed for motorcycles.

- Travel is within a dry wash or arroyo that has been officially designated in the Travel Management Plan.
- 

## **Basic Criteria Used**

### **Basic Criteria for Route and Area Designation:**

A route is defined as a road, two-track or trail where designated that the public can utilize to meet recreational goals. An area is defined as a number of acres where cross-country travel is allowed.

1. Routes and areas that provide access to existing rights with access needs such as rights-of-way (ROW), easements, private land, state land, Bureau of Reclamation (BOR) land, cost-share, prescriptive rights, etc.
2. Routes and areas that provide access needs for maintenance of range improvements, law enforcement, fire protection, watershed restoration, commercial operations, or other administrative activities.
3. Routes and areas that have been identified as part of the BLM transportation system.
4. Those routes and areas that provide access to large blocks of BLM administered public land or serve as vital connecting routes.
5. Routes and areas that provide access for recreational activities in order to meet recreation opportunities and demand. Provide barrier-free recreation opportunities or special access accommodations.

### **Basic Criteria for Limiting Travel:**

1. Routes causing unacceptable resource damage, erosion, or route proliferation that is not manageable.
2. Routes through a soil that is susceptible to erosion, riparian areas and springs, and areas highly susceptible to resource damage.
3. Multiple routes that lead to the same location where one would be sufficient.
4. Routes that are naturally re-vegetating, are no longer used, or are no longer physically present.
5. Routes that have a high potential to negatively affect Threatened & Endangered species, or other sensitive species, or important wildlife habitat.
6. Routes that are determined to pose a safety hazard to the public.

7. Routes causing undue conflict between motorized and non-motorized recreation.
8. Routes which may adversely affect areas of cultural or religious concern to Native Americans.
9. Routes which may adversely affect cultural or historic sites, which may be eligible for the National Register of Historic Places.
10. Routes that may adversely affect paleontological resources.
11. Routes that may adversely affect adjacent landowners use or enjoyment of their property.

### **Decisions for the La Plata Transportation Unit:**

1. No additional areas were identified for cross-country travel (See Area Designations Below).
2. Travel in washes is allowed only if that wash is signed as open for travel by that vehicle type.
3. Travel is permitted on maintained oil and gas roads, unless the road is gated, or signed as closed to public access.
4. Pipeline rights of ways (ROWs) are not open to travel unless specifically signed as open to public travel.
5. The Bohanon Canyon and Kiffen Canyon trails are designated as a single-track motorized trail. **Note:** Final alignment will depend on an accurate map of the trail corridor and an analysis of resource concerns. The trail may have to be re-located in some areas due to resource concerns.
6. An All Terrain Vehicle (ATV) trail, consisting of a series of stacked loops, will be identified, and constructed starting in the Glade Recreation Area and proceeding north. As currently envisioned the first loop will be totally within the Glade Recreation Area.
7. The following Action Items will be implemented for the La Plata Transportation Unit.

### **Action Items**

#### **Maps and Brochures**

**Objective:** Produce a Travel Management Unit map and brochure.

An official La Plata Travel Management Map and informational brochure will identify the designated routes and limitations on route use. The map will be created using ArcMap and GIS technology.

## **Designated trails, two-tracks, and washes will be defined as follows:**

**Open** – Routes will be designated for both motorized and non-motorized use.

**ATV** – Routes will be limited to four wheelers and motorcycles. These routes will be closed to full size motorized vehicles. The routes will begin at adequate turn-around/unloading points that will be determined during implementation. Non-motorized users may use these trails with the understanding that they will likely encounter motorized users.

**Single Track Motorized** – Routes are limited to two-wheeled vehicles in which the wheels are in line. This does not preclude other types of non-motorized use unless designated at trail heads.

**Single Track Non-Motorized** – Routes are limited to wheeled vehicles in which the wheels are in line and are not powered by an engine. This does not preclude other types of non-motorized users unless designated at trail heads.

**Single Use Trail** – Routes are limited to a single use, whether this is motorized or non-motorized. The allowed use will be clearly marked at trailheads and on all trail markers.

**Administrative Use Only** – Routes will be limited to use only for the purposes of accessing private land, essential activities relating to a valid existing right or lease, administering grazing allotments, law enforcement, and other necessary BLM activities where access is needed. Additional administrative use may be granted on a case-by-case basis with approval from the BLM authorized officer.

## **Signs and Markers**

**Objective:** Identify the designated routes on-the-ground in a clear and consistent manner to provide easily understandable information to the public, and to facilitate compliance and enforcement of the route designations.

Information signs and/or kiosks will be placed at each main entry point onto BLM managed lands in the La Plata Travel Management Unit. These signs will include a map of the area showing designated routes and an explanation of the route marker system. Other signing may be incorporated at these locations to better inform the public as to reasoning, effects of non-compliance, etc.

Where there is a potential for an open route to extend past its current end point by vehicle travel the end will be designated with clear signing.

Signing will be placed to show the public where they are entering and leaving public lands where necessary to protect private property rights. Placement of additional markers will be considered at the request of private landowners.

Route designations will generally be marked with brown flexible marker posts with standard decals as follows:

**Open** – Non-graded “Open” routes will be marked with a designated route symbol and arrows as necessary to indicate routes open for vehicle travel. Some routes may have a number and/or name if this will provide clarity to the using public, especially in the case of historic routes. Major “Collector Roads” will have a designated route number and/or name also.

**ATV** – ATV routes will be marked with a standard ATV symbol. A full sized vehicle symbol with a red slash through it will be included to indicate that the route is closed to full sized vehicles.

**Single Track Motorized** – Routes will be marked with a standard motorcycle symbol. A full sized vehicle and ATV symbol with a red slash through them will be included to indicate that the route is closed to these classes of vehicles.

**Single Track Non-Motorized** – Routes will be marked with whatever non-motorized use is authorized, and a set of motorized symbols, with the red slash to indicate closure to motorized use.

**Single Use Trail** – Routes will be marked with the use that is authorized.

**Administrative Use Only** – Routes will be marked with the standard “Administrative Vehicles Only” signs or similar signing.

**Closed Routes** – Routes will be marked with “Closed for Restoration” or similar signing.

### **Barriers**

**Objective:** Use physical barriers, if necessary, to discourage use, protect private property, keep users on designated routes, and allow rehabilitation of closed routes and/or areas.

Natural barriers would include soil berms, rocks and boulders, or vegetation placed to prevent travel off of a designated route or on a closed route.

Constructed fences and gates will be used where natural barriers are not feasible or effective to protect private property and non-public lands. Gates and/or fences may be required on administrative routes.

Any gates that are installed may be locked if it is determined necessary by the authorized officer.

### **Route Construction**

**Objective:** Establish a system of trails, and routes to provide a range of recreational opportunities to the public.

- Construct an ATV trail network using historic trails, where feasible, and additional new trails to establish a system of stacked loops from the GRRA to the Colorado line.
- Re-align the mountain bike trail in the GRRA using International Mountain Bike Association guidelines for single-track trail construction.
- Any proposed new segments of trail will have all environmental documentation completed before any construction is undertaken.
- Any proposal to include existing trail as part of the BLM trail network will have all environmental documentation completed before final designation.
- Any new trail construction will use recognized principles of trail construction.

### **Area Designation:**

**Objective:** Each Township, either wholly or partially, within the planning area was analyzed for the feasibility of allowing cross country travel.

- The “**Decision Tree for Identifying Areas where Cross Country Travel would be Appropriate**” form was used to assess each Township within the La Plata Travel Unit. Through this analysis it was determined that there are no suitable areas for cross-country travel within the La Plata Travel Unit. Copies of these forms are available to the public upon request.

### **Rehabilitation**

**Objective:** Apply restoration techniques to closed routes and areas, to help natural processes, discourage use of closed routes, prevent spread of noxious weeds, vandalism, trash dumping, and minimize the impact on visual resources.

- Rehabilitation will be determined using the following guidelines:
  1. Leave route or disturbance to naturally re-vegetate. Sign and/or barricade depending on visibility.
  2. Reclaim the route or disturbance that is visible from designated routes. Sign and/or barricade depending on visibility.
  3. Reclaim the entire route or disturbance. Use signage and/or barricade where visibility is and issue.

- Seeding will be done where necessary to aid in the restoration of closed routes and disturbed areas. Appropriate seed mixtures will be based on individual site conditions.
- Recommended restoration techniques include ripping the surface to break up compacted soil and allow better water retention. Seeding would generally be done in the fall. Techniques such as hydraulic seeding, seed drilling, mulching, water barring, pitting, roughening, contour furrowing, and others may be used on a case-by-case basis.
- Noxious weed treatment and control would be done as necessary to promote re-vegetation with native plants and prevent the spread of noxious weeds.

### **Monitoring**

**Objective:** Identify actions, including timeframes, methods, and resource needs for environmental monitoring

Use counters to document visitation to various sections of the travel area. Counters would be left in place for a minimum of one year. Counter(s) for the GRRRA would be left in place indefinitely.

Closed routes will be monitored for signs of use. Restored areas and routes will be monitored to assess the rate of recovery and effectiveness of the techniques used in the project.

The area signs and barriers will be monitored for condition and effectiveness.

Data collected will be used to assess the effectiveness of the plan and implementation strategy.

Modification of the plan will be considered if the goals and objectives are not being met.

### **Enforcement**

**Objective:** Identify actions, including timeframes, methods, and resource needs for compliance and enforcement related to route designations.

- Emphasis will be placed on self-regulation by the user groups.
- Increased law enforcement patrol would be instituted if monitoring efforts show non-compliance with this plan.

## **Maintenance**

### **Objective: Identify maintenance levels, standards, and resource needs.**

Maintenance of routes will be done to minimize soil erosion and other resource degradation. Maintenance will be done as monitoring efforts discover problems.

Maintenance levels will be defined using the following BLM guidance:

### **Maintenance Levels – Recreation Roads (i.e. Simon Canyon Access Road)**

The assigned maintenance level reflects the appropriate maintenance that best fits the travel management objectives for planned management activities. Roads will be prioritized for maintenance needs or may be maintained at lower levels depending upon funding.

**Level 1:** Those roads where minimum maintenance is required to protect adjacent lands and resource values. These roads are no longer needed and are closed to traffic; the objective is to remove these roads from the transportation system.

**Minimum Standards:** Emphasis is given to maintaining drainage and runoff patterns as needed to protect adjacent lands. Grading, brushing, or slide removal is not performed unless roadbed drainage is being adversely affected, causing erosion. Closure and traffic restrictive devices are maintained.

**Level 2:** Those roads where the management objectives require the road to be opened for limited administrative traffic. Typically, these roads are passable by high clearance vehicles. An example is 2-track recreational roads.

**Minimum Standards:** Drainage structures are to be maintained as needed. Grading is conducted as necessary to correct drainage problems. Brushing is conducted as needed to allow administrative access. Slides may be left in place provided they do not adversely affect drainage.

**Level 3:** Those roads where management objectives require the road to be open seasonally or year-round for commercial, recreation, or high volume administrative access. Typically, these roads are natural or aggregate surfaced, but may include low use bituminous surfaced roads. These roads have defined cross section with drainage structures, such as rolling dips, culverts, or ditches. These roads may be negotiated by passenger cars traveling at prudent speeds. User comfort and convenience are not considered a high priority. An example is the oil and gas roads.

**Minimum Standards:** Drainage structures are maintained as needed. Grading is conducted to provide a reasonable level of riding comfort at prudent speeds for the road conditions. Brushing is conducted as needed to improve sight distance.

Slides adversely affecting drainage receive high priority for removal; otherwise they will be removed on a scheduled basis.

**Level 4:** Those roads where management objectives require the road to be open all year to connect major features, such as recreation sites, local road systems, and administrative sites, to County, State, or Federal road systems. Typically, these roads are single or double lane, aggregate, or bituminous surface, with a higher volume of commercial and recreational traffic than administrative traffic. An example would be the Angel Peak road and the Simon Canyon Road.

Minimum Standards: The entire roadway is maintained at least annually, although a preventive maintenance program may be established; problems are repaired as discovered. These roads may be closed or have limited access due to snow or other adverse weather conditions.

**Level 5:** Includes those roads where management objectives require the road to remain open all year, and are roads with the highest traffic volume of the transportation system.

Minimum Standards: The entire roadway is maintained at least annually and a preventive maintenance program is established. Problems are repaired as discovered. These roads may be closed or have limited access due to adverse weather conditions.

### **Maintenance Levels – Trails**

The assigned maintenance level reflects the appropriate level of maintenance required to meet management objectives.

**Level 1:** Trails that are closed to motorized and non-motorized use. This level is the minimum maintenance required to protect adjacent lands and resource values. The objective may be to remove these trails from the trail system.

Minimum Standards: Emphasis is given to maintaining drainage and runoff patterns as needed to protect adjacent lands. Brushing and removal of hazards are not performed unless trail drainage is adversely affected, causing erosion. Closure devices are maintained.

**Level 2:** Includes low use trails with little or no contact between parties. There is little or no visitor use management. Visitors may encounter obstructions.

Minimum Standards: Repairs will be done at the beginning of the season to prevent environmental damage and maintain access. Emphasis is given to maintaining drainage and mitigating hazards. The trail may be signed “Not Regularly Maintained”. Major repairs may not be done for several seasons.

**Level 3:** This is a moderate use trail with visitor use on a seasonal and/or peak use period, with frequent contact between parties. Trail management is conducted with occasional visitor use patrols. Visitors are not likely to encounter obstructions.

Minimum Standards: Major repairs shall be completed annually. Maintenance shall be scheduled two to three times per season, if needed, to repair the trail, to prevent environmental damage and to maintain access. Trail is kept in good condition.

**Level 4:** Includes high use trails during specific times of the year, with a high frequency of contact between users. There are regularly scheduled visitor use patrols and management.

Minimum Standards: Scheduled maintenance occurs three or four times during the season. Trail condition and accessibility for persons with disabilities are major concerns. Any significant repairs will be completed within ten days.

**Level 5:** Includes special high use trails with high visitor use, patrols and management.

Minimum Standards: There is a scheduled maintenance program. Significant repairs will be completed within two to three workdays.

#### **Minimum Standards for All Levels:**

- Signs will be replaced if found to be deficient due to vandalism or environmental degradation and can not be repaired.
- Physical barriers will be repaired or replaced if monitoring finds vandalism or environmental degradation.
- Noxious weeds will be eradicated as monitoring discovers infestations associated with the trail system.
- An effort will be made to enlist user groups to help in sign replacement, and barrier repair.

#### **Education and Information**

**Objective:** Provide clear, consistent information to the public to ensure understanding and compliance with the designations.

- A brochure and map will be developed for the public. This handout will include a map and travel information. It will also include information related to low impact OHV use, protection of resource values, safety, and outdoor ethics.
- The principal user groups will be enlisted to help in educating the public as to proper etiquette and outdoor ethics.

### **Partnerships**

**Objective:** Develop partnerships with local user groups to facilitate a feeling of ownership in the recreating public.

- Establish an MOU with local user groups, in which the group would help in the implementation of the plan and be the point of contact for other users. In many cases users are more likely to care for an area if they know their peers are involved in caring for the area.

### **Implementation Plan**

**Objective:** Implement the action items in this plan in a consistent and timely manner.

- Initial implementation will begin in the spring of 2006, with additional signing and rehabilitation continuing as funding and workload allow.
- Priority projects will include:
  1. Protecting non-public land through signing and barriers.
  2. Signing.
  3. Re-aligning the GRRR single-track trail.
  4. Developing and printing the map and brochure for the public.
  5. Establishing an ATV trail system.
  6. Constructing barriers on public lands.
  7. Developing a monitoring plan.

### **Alternative II – No Action**

The no action alternative would be a continuation of existing conditions. Travel would be allowed on existing roads and trails with no specific route designations, travel management plan, or rehabilitation efforts. An appropriate network of vehicle routes would not be analyzed or designated. Visitor use levels and resource concerns would continue to increase. Conflicts with other public land users, and adjacent land owners would not be addressed. **Note:** The no action alternative is provided for comparison purposes only with the other alternatives.

## **Alternative III – Designate All Existing Routes**

Designate all existing routes as “Open” for travel. No routes would be closed for travel, even those that leave public lands onto private or Navajo Nation lands. Although a designated network of routes would be established, concerns such as reducing trespass on private land, protection of resource values, reducing conflicts, and visitor safety would not be addressed to the same extent as Alternative I.

## **Alternative Considered but Eliminated from Detailed Analysis.**

This alternative would close all routes in the planning area to motorized vehicle use, or close all routes except for necessary BLM access roads. This alternative would maximize resource protection. However, this would not meet the variety of access needs, and would not be consistent with the goals identified in the Farmington Resource Management Plan. Since this alternative does not fulfill the purpose and need for the travel management plan it has been eliminated from further analysis in this document.

## **AFFECTED ENVIRONMENT**

### **General Area Description**

The La Plata Travel Unit consists of approximately 145,066 acres. Of this 73,380 is public land.

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

There are four ACECs within the project area. They are Cedar Hill ACEC, East Side Rincon ACEC, Farmer’s Arroyo ACEC, and Holmes Group ACEC.

### **Prime/Unique Farmlands**

There are no prime/unique farmlands within the planning area on public land.

### **Wilderness**

The project area is not within or near any designated wilderness or wilderness study area.

### **Hazardous/Solid Waste**

This project will not generate any hazardous/solid waste.

### **Wild and Scenic Rivers**

There are no designated wild and scenic rivers on public lands within the Farmington Field Office.

### **Native American Religious Concerns**

No Native American Religious sites or concerns have been documented for the project area.

### **Environmental Justice**

No environmental justice issues are expected as the proposed plan will benefit adjacent landowners by regulating recreational use in the planning area. This will result in a reduction in trespass, vandalism, and noise.

### **Infrastructure – Roads**

Most unpaved roads in the planning area were constructed by industry to access well pads and other needed infrastructure. The BLM recognizes three classes of industry roads. First is the **Collector Road**, a main arterial road servicing a large area. Second are **Local Roads** which branch off of the Collector Road servicing smaller areas, and finally the **Resource Road** which goes to a single feature, such as a well pad.

There are also unpaved County Roads and numerous two-tracks throughout the area. The total miles of unpaved roads and two-tracks in the planning area is in excess of 500 miles. Given this road density it is nearly impossible to find an area that is more than ½ mile from an existing road.

Road density by township is summarized in the table below. It ranges from a high of 8.12 miles of road per square mile to a low of 3.46 miles of road per square mile. The Forest Service in their **Motor Vehicle Route and Area Designation Guide, v. 111705** consider a density over 1.7 miles per square mile to be undesirable for adding additional recreational routes and/or areas.

**Average Miles of Road/Square Mile.**

Township & Range	Miles
T32N, R10W	3.90
T32N, R11W	3.80
T32N, R12W	3.38
T32N, R13W	3.46
T31N, R10,11W	4.23
T31N, R12W	4.41
T31N, R13W	3.72
T30N, R11W	4.64
T30N, R12W	5.32
T30N, R13W	7.54
T29N, R13W	8.12

### **Soils**

Soil types are listed in descending order by acreage. More detailed information on individual soil characteristics can be found in the NRCS publication *Soil Survey of San Juan County, eastern part, Nov 1980*.

**1. Blancot-Notal association, 0 to 5 percent slopes (BT), 24,829 acres**

This map unit is on fans and in valleys. Data in the tables that would affect cross-country travel designation are highlighted in “**Bold**”.

**Soil Characteristics (BT)**

Unit Components	Permeability	Available Water Capacity	Depth to Bedrock	Salinity (Mmhos/cm)	Shrink-Swell Potential	Water Erosion Potential	Wind Erosion Potential	Dust Potential	Percent Silt and Clay
Blancot	Moderate	High	60+”	<2	Low	Moderate	Moderate	Moderate High	50-80
Notal	Very slow	Very high	60+”	<b>4 - 8</b>	Moderate	Moderate	<b>Severe</b>	Moderate High	70-80

**2. Gypsiorthids-Badland-Stumble complex, 5 to 30 percent slopes (GY), 22,618 acres**

This map unit is on hills, knolls, and breaks and in valleys.

**Soil Characteristics (GY)**

Unit Components	Permeability	Available Water Capacity	Depth to Bedrock	Salinity (Mmhos/cm)	Shrink-Swell Potential	Water Erosion Potential	Wind Erosion Potential	Dust Potential	Percent Silt and Clay
Gypsiorthids	Rapid	Low	6 – 60”	---	---	Moderate	<b>Severe</b>	<b>High</b>	
Stumble	Rapid	Low	60”+	<2	Low	Slight	<b>Very Severe</b>	<b>High</b>	15-25

**3. Farb-Persayo-Rock outcrop complex, 3 to 30 percent slopes (FA), 16,328 acres**

This unit is on hills and breaks.

**Soil Characteristics (FA)**

Unit Components	Permeability	Available Water Capacity	Depth to Bedrock	Salinity (Mmhos/cm)	Shrink-Swell Potential	Water Erosion Potential	Wind Erosion Potential	Dust Potential	Percent Silt and Clay
Persayo	Moderately Slow	Very Low	<b>12”</b>	<8	Moderate	Severe	<b>High</b>	<b>High</b>	35-50
Farb	Moderately Rapid	Very Low	<b>10”</b>	<2	Low	Severe	<b>Severe</b>	<b>High</b>	60-85

**4. Badland (BA), 10,632 acres**

This map unit consists of non-stony, barren shale uplands that are dissected by deep intermittent drainage-ways and gullies.

**5. Atrac-Florita-Travessilla association, 3 to 30 percent slopes (AT), 6,197 acres**

This map unit is on hills, fans, mesas, and breaks.

### Soil Characteristics (AT)

Unit Components	Permeability	Available Water Capacity	Depth to Bedrock	Salinity (Mmhos/cm)	Shrink-Swell Potential	Water Erosion Potential	Wind Erosion Potential	Dust Potential	Percent Silt and Clay
Atrac	Moderate	High	60"+	<2	Low	Moderate	Moderate	Moderate High	60-80
Florita	Rapid	Low	60"+	<2	Low	Moderate	<b>Severe</b>	<b>High</b>	30-40
Travessilla	Moderately rapid	Very low	<b>12"</b>	<2	Low	Moderate	<b>Severe</b>	<b>High</b>	35-50

### **6. Haplargids-Blackston-Torriorthents complex, 8 to 50 percent slopes (HA), 5,644 acres**

This unit is found on terraces, mesas, and plateaus.

**Table 7: Soil Characteristics (HA)**

Unit Components	Permeability	Available Water Capacity	Depth to Bedrock	Salinity (Mmhos/cm)	Shrink-Swell Potential	Water Erosion Potential	Wind Erosion Potential	Dust Potential	Percent Silt and Clay
Haplargids	Moderate to Moderately Slow	Low to High	60"+	--	--	Slight to Severe	Low	Low	---
Blackston	Moderately Slow	Low	60"+	2-4	Low	Slight	Moderate	Moderate Low	25-50
Torriorthents	Moderately Slow to Rapid	Low to High	<b>15"</b>	--	--	Slight to Severe	Slight	Low	---

\* Acreage is a total for all components.

### **7. Rock outcrop-Travessilla-Weska complex, 30 to 70 percent slopes (RT), 5,324 acres**

This map unit is on hills, breaks, and mesas.

### Soil Characteristics (RT)

Unit Components	Permeability	Available Water Capacity	Depth to Bedrock	Salinity (Mmhos/cm)	Shrink-Swell Potential	Water Erosion Potential	Wind Erosion Potential	Dust Potential	Percent Silt and Clay
Travessilla	Moderately rapid	Very low	<b>9"</b>	<2	Low	<b>Severe</b>	<b>Severe</b>	<b>High</b>	35-50
Weska	Moderately slow	Very low	<b>7"</b>	<2	Moderate	<b>Very severe</b>	moderate	Moderate High	75-90

### **8. Stumble-Fruitland association, 0 to 8 percent (SW), 3,847 acres**

This map unit is on fans and valley sides.

### Soil Characteristics (SW)

Unit Components	Permeability	Available Water Capacity	Depth to Bedrock	Salinity (Mmhos/cm)	Shrink-Swell Potential	Water Erosion Potential	Wind Erosion Potential	Dust Potential	Percent Silt and Clay
Stumble	Rapid	Moderate	60"+	<2	Low	Slight	<b>Severe</b>	<b>High</b>	15-25
Fruitland	Moderately rapid	Moderate	60"+	<4	Low	Slight	<b>Severe</b>	<b>High</b>	30-45

**9. Buckle silt loam, 0 to 5 percent slopes (BU), 3,626 acres**

This deep well drained soil is on fans and valley bottoms

**Soil Characteristics (BU)**

Unit Components	Permeability	Available Water Capacity	Depth to Bedrock	Salinity (Mmhos/cm)	Shrink-Swell Potential	Water Erosion Potential	Wind Erosion Potential	Dust Potential	Percent Silt and Clay
Buckle	Moderately slow	High	66"+	<2	Low	Moderate	Moderate	Moderate High	65-85

**10. Travessilla-Weska-Rock outcrop, 0 to 30 percent (TA), 3,533 acres**

This map unit is on upland hills, breaks, and mesas. Slope is zero to 30 percent.

**Soil Characteristics (TA)**

Unit Components	Permeability	Available Water Capacity	Depth to Bedrock	Salinity (Mmhos/cm)	Shrink-Swell Potential	Water Erosion Potential	Wind Erosion Potential	Dust Potential	Percent Silt and Clay
Travessilla	Moderately rapid	Very low	12"	<2	Low	Moderate	Severe	High	35-50
Weska	Moderately slow	Very low	9"	<2	Moderate	Very severe	Moderate	Moderate High	75-90

**11. Blancot-Fruitland association, 0 to 8 percent slopes (BR), 3,212 acres**

This map unit is on fans and in valleys.

**Soil Characteristics (BR)**

Unit Components	Permeability	Available Water Capacity	Depth to Bedrock	Salinity (Mmhos/cm)	Shrink-Swell Potential	Water Erosion Potential	Wind Erosion Potential	Dust Potential	Percent Silt and Clay
Blancot	Moderate	High	60"+	<2	Low	Moderate	Moderate	Moderate High	50-80
Fruitland	Moderately rapid	Moderate	60"+	<4	Moderate	Slight	Severe	High	30-45

**12. Badland-Rock outcrop-Persayo complex, 30 to 70 percent slopes (BC ), 1,730 acres**

This unit is located on hills, ridges, and breaks.

**Soil Characteristics (BC)**

Unit Components	Permeability	Available Water Capacity	Depth to Bedrock	Salinity (Mmhos/cm)	Shrink-Swell Potential	Water Erosion Potential	Wind Erosion Potential	Dust Potential	Percent Silt and Clay
Persayo	Moderately slow	Very low	12"	<8	Low	Severe	Severe	High	60-85

**13. Huerfano-Muff-Uffens complex, 0 to 8 percent slopes (HU), 1,557 acres**

This map unit is on mesas and in valleys.

**Soil Characteristics (HU)**

Unit Components	Permeability	Available Water Capacity	Depth to Bedrock	Salinity (Mmhos/cm)	Shrink-Swell Potential	Water Erosion Potential	Wind Erosion Potential	Dust Potential	Percent Silt and Clay
Huerfano	Moderately slow	Very low	15"	>4	Moderate	Moderate	Severe	High	40-70
Muff	Slow	Low	24"	2-4	Low	Moderate	Severe	High	50-100
Uffens	Moderately slow	Low	60"+	4-8	Low	Slight	Severe	High	45-55

**14. Doak-Avalon association, 0 to 5 percent slopes (DN), 1,327 acres**

This map unit is on mesas, plateaus, and terraces.

**Soil Characteristics ( DN)**

Unit Components	Permeability	Available Water Capacity	Depth to Bedrock	Salinity (Mmhos/cm)	Shrink-Swell Potential	Water Erosion Potential	Wind Erosion Potential	Dust Potential	Percent Silt and Clay
Doak	Moderately slow	Very high	7	<2	Low	Slight	Moderate	Moderate	60-75
Avalon	Moderate	High	60"+	2-4	Low	Moderate	High	High	50-70

**15. Twick-Silver association, 0 to 25 percent (TW), 694 acres**

This map unit is on hills.

**Soil Characteristics (TW)**

Unit Components	Permeability	Available Water Capacity	Depth to Bedrock	Salinity (Mmhos/cm)	Shrink-Swell Potential	Water Erosion Potential	Wind Erosion Potential	Dust Potential	Percent Silt and Clay
Twick	Slow	Very low	17"	2 - 4	Low	Moderate	Slight	Low	70-90
Silver	Slow	High	60"+	<2	Moderate	Moderate	Slight	Low	75-90

**16. Doak loam, 1 to 3 percent slopes (Db), 526 acres**

This deep, well drained soil is on mesas, plateaus, and terraces.

**Soil Characteristics (Db)**

Unit Components	Permeability	Available Water Capacity	Depth to Bedrock	Salinity (Mmhos/cm)	Shrink-Swell Potential	Water Erosion Potential	Wind Erosion Potential	Dust Potential	Percent Silt and Clay
Doak loam	Moderately slow	Very high	60"+	<2	Low	Moderate	Moderate	Moderate Low	60-75

**17. Turley-Slickspots complex, 0 to 3 percent slopes (Tv), 398 acres**

This map unit is found on fans.

**Soil Characteristics (Tv)**

Unit Components	Permeability	Available Water Capacity	Depth to Bedrock	Salinity (Mmhos/cm)	Shrink-Swell Potential	Water Erosion Potential	Wind Erosion Potential	Dust Potential	Percent Silt and Clay
Turley clay loam	Moderately slow	Very high	60+"	2 - 4	Moderate	Moderate	Severe	High	65-80

**18. Stumble loamy sand, 0 to 3 percent slopes (St), 374 acres**

This deep, somewhat excessively drained soil is on fans and valley sides.

**Soil Characteristics (St)**

Unit Components	Permeability	Available Water Capacity	Depth to Bedrock	Salinity (Mmhos/cm)	Shrink-Swell Potential	Water Erosion Potential	Wind Erosion Potential	Dust Potential	Percent Silt and Clay
Stumble loamy sand	Rapid	Low	81”+	<2	Low	Slight	Severe	High	15-25

**19. Doak loam, 3 to 5 percent slopes (Dc), 292 acres**

This deep, well drained soil is on mesas, plateaus, and terraces.

**Soil Characteristics (Dc)**

Unit Components	Permeability	Available Water Capacity	Depth to Bedrock	Salinity (Mmhos/cm)	Shrink-Swell Potential	Water Erosion Potential	Wind Erosion Potential	Dust Potential	Percent Silt and Clay
Doak loam	Moderately slow	Very high	60”+	<2	Low	Moderate	Moderate	Moderate Low	60-75

**20. Beebe loamy sand, 0 to 2 percent slopes (Be), 183 acres**

This deep, well drained soil is on flood plains and low river terraces. acreage.

**Soil Characteristics (Be)**

Unit Components	Permeability	Available Water Capacity	Depth to Bedrock	Salinity (Mmhos/cm)	Shrink-Swell Potential	Water Erosion Potential	Wind Erosion Potential	Dust Potential	Percent Silt and Clay
Beebe loamy sand	Very rapid	Low	81”+	<2	Low	Slight	Very Severe	High	15-30

**21. Walrees loam, 0 to 2 percent slopes (Wa), 130 acres**

This moderately deep, somewhat poorly drained soil is on flood plains and terraces.

**Soil Characteristics (Wa)**

Unit Components	Permeability	Available Water Capacity	Depth to Bedrock	Salinity (Mmhos/cm)	Shrink-Swell Potential	Water Erosion Potential	Wind Erosion Potential	Dust Potential	Percent Silt and Clay
Walrees loam	Moderately slow	High	81”	2 - 8	Low	Slight	Severe	High	60-75

**22. Avalon sandy loam, 5 to 8 percent slopes (Ax), 124 acres**

This deep, well drained soil is on mesas and plateaus.

**Soil Characteristics (Ax)**

Unit Components	Permeability	Available Water Capacity	Depth to Bedrock	Salinity (Mmhos/cm)	Shrink-Swell Potential	Water Erosion Potential	Wind Erosion Potential	Dust Potential	Percent Silt and Clay
Avalon Sandy Loam	Moderate	Very High	80”+	2-8	Low	Moderate	Severe	High	35-50

**23. Beebe Variant loamy sand, 0 to 2 percent slopes (Bf), 104 acres**

This deep, well drained soil is on flood plains and low river terraces.

**Soil Characteristics (Bf)**

Unit Components	Permeability	Available Water Capacity	Depth to Bedrock	Salinity (Mmhos/cm)	Shrink-Swell Potential	Water Erosion Potential	Wind Erosion Potential	Dust Potential	Percent Silt and Clay
Beebe Variant loamy sand	Rapid	Low	81”+	2 -4	Low	Slight	<b>Very Severe</b>	<b>High</b>	15-35

**24. River Wash (RA), 81 acres**

River wash consists of areas of un-stabilized sandy, silty, clayey, or gravelly sediment on floodplains, streambeds, and riverbeds and in arroyos.

**25. Avalon loam, 0 to 3 percent slopes (Ay), 73 acres**

This deep well drained soil is on mesas and plateaus.

**Soil Characteristics (Ay)**

Unit Components	Permeability	Available Water Capacity	Depth to Bedrock	Salinity (Mmhos/cm)	Shrink-Swell Potential	Water Erosion Potential	Wind Erosion Potential	Dust Potential	Percent Silt and Clay
Avalon Loam	Moderate	High	60”+	<b>2-8</b>	Low	Moderate	<b>Severe</b>	<b>High</b>	50-70

**26. Turley clay loam, 3 to 5 percent slopes (Ts), 67 acres**

This deep, well drained soil is on valley sides and fans.

**Soil Characteristics (Ts)**

Unit Components	Permeability	Available Water Capacity	Depth to Bedrock	Salinity (Mmhos/cm)	Shrink-Swell Potential	Water Erosion Potential	Wind Erosion Potential	Dust Potential	Percent Silt and Clay
Turley clay loam	Moderately slow	Very high	60+”	2 - 4	Moderate	Moderate	<b>Severe</b>	<b>High</b>	65-80

**27. Stumble loamy sand, 3 to 8 percent slopes (Su), 57 acres**

This deep, somewhat excessively drained soil is on fans and valley sides.

**Soil Characteristics (Su)**

Unit Components	Permeability	Available Water Capacity	Depth to Bedrock	Salinity (Mmhos/cm)	Shrink-Swell Potential	Water Erosion Potential	Wind Erosion Potential	Dust Potential	Percent Silt and Clay
Stumble loamy sand	Rapid	Low	81”+	<2	Low	Slight	<b>Very Severe</b>	<b>High</b>	15-25

**28. Avalon sandy loam, 2 to 5 percent slopes (Av), 50 acres**

This deep well drained soil is on mesas and plateaus.

### **Soil Characteristics (Av)**

Unit Components	Permeability	Available Water Capacity	Depth to Bedrock	Salinity (Mmhos/cm)	Shrink-Swell Potential	Water Erosion Potential	Wind Erosion Potential	Dust Potential	Percent Silt and Clay
Avalon Sandy Loam	Moderate	Very High	72"+	2-8	Low	Slight	Severe	High	35-50

### **29. Turley clay loam, 0 to 1 percent slopes (Tp), 40 acres**

This deep, well drained soil is on valley sides and fans.

### **Soil Characteristics (Tp)**

Unit Components	Permeability	Available Water Capacity	Depth to Bedrock	Salinity (Mmhos/cm)	Shrink-Swell Potential	Water Erosion Potential	Wind Erosion Potential	Dust Potential	Percent Silt and Clay
Turley clay loam	Moderately slow	Very high	80"	2 - 4	Moderate	Moderate	Severe	High	65-80

### **Fruitland loam, 1 to 3 percent slopes (Fu), 31 acres**

This deep, well drained soil is on fans and in valleys.

### **Soil Characteristics (Fu)**

Unit Components	Permeability	Available Water Capacity	Depth to Bedrock	Salinity (Mmhos/cm)	Shrink-Swell Potential	Water Erosion Potential	Wind Erosion Potential	Dust Potential	Percent Silt and Clay
Fruitland loam	Moderately rapid	High	60"+	<4	Low	Slight	Moderate	Moderate low	10-25

### **31. Blackston loam, 0 to 3 percent slopes (Bk), 28 acres**

This deep, well drained soil is on river terraces.

### **Soil Characteristics (Bk)**

Unit Components	Permeability	Available Water Capacity	Depth to Bedrock	Salinity (Mmhos/cm)	Shrink-Swell Potential	Water Erosion Potential	Wind Erosion Potential	Dust Potential	Percent Silt and Clay
Blackston loam	Moderate	Low	80"+	2 -4	Low	Slight	Moderate	Moderate low	50-70

### **32. Fruitland-Slickspots complex, 0 to 3 percent slopes (Fy), 13 acres**

This map unit is on fans and in valleys.

### **Soil Characteristics (Fy)**

Unit Components	Permeability	Available Water Capacity	Depth to Bedrock	Salinity (Mmhos/cm)	Shrink-Swell Potential	Water Erosion Potential	Wind Erosion Potential	Dust Potential	Percent Silt and Clay
Fruitland	Moderately rapid	Moderate	60"+	<4	Low	Moderate	Severe	High	30-45

## **Soil Factors that affect Cross-Country Travel**

### **Soil Erosion Potential**

The *FRMP 2003* states that highly erodible soils would be a limiting factor when considering an “Open” OHV designation for a parcel of land.

### **Depth to Bedrock**

The *FRMP 2003* uses a depth to bedrock of 20 inches as a limiting factor to an “Open” designation.

### **Slope**

The *FRMP 2003* states that slope greater than 30 percent, or north-facing slopes steeper than 15 percent would normally be excluded when considering an “Open” OHV designation.

### **Water table**

The *FRMP 2003* excludes from consideration for an “Open” designation those areas with seasonal high water tables.

### **Fugitive Dust Potential**

Dust in the air is a hazard to humans for many reasons. As fine particles, dust can have direct adverse effect on human health. Dust may contain pesticides, pollen, fungi and other irritants to the lungs and eyes of humans. Dust also affects visibility. Soils contribute dust to the atmosphere from natural forces, such as wind, and from human activities.

The potential for soil to release fugitive dust into the atmosphere depends largely on the moisture status of the soil, the kind and size of the soil particle, and the condition of the soil surface.

Research that grouped soils by the USDA-NRCS Wind Erodibility Groups and the percent of clay and silt in the soil were used to categorize the dust potential of the various soil units (See bibliography).

#### **Dust Potential**

Dust Potential Category	Wind Erodibility Group	Silt Content
Slight	N/A	Bedrock
Low	8	0 to 15
Moderate Low	5	15 to 30
Moderate High	6, 7	Above 30
High	1,2,3,4	Above 15

### **Compaction**

Soil compaction occurs when soil particles are pressed together, reducing the pore space between them. Soil compaction occurs in response to pressure exerted by vehicles and animals. The risk for compaction is greatest when soils are wet.

Compaction decreases infiltration and thus increases runoff and the hazard of water erosion. Decreased infiltration has a direct effect on plants and their ability to take up water.

The persistence of soil compaction is determined by the depth at which it occurs, the shrink-swell potential of the soil, and the climate. As the depth of compaction increases, the more persistent the condition becomes.

The type and percentage of clay determines the **shrink-swell potential**. The greater the shrink-swell potential and number of wet/dry cycles, the lower is the duration of compaction at a particular depth. Freeze/thaw cycles also help decrease near surface compaction.

**Salinity**

Soil salinity is a measure of the total amount of soluble salt in soil. As soil salinity increases plants have a harder time extracting water from the soil. High soil salinity can also cause nutrient imbalances, result in the accumulation of elements toxic to plants, and reduce water infiltration.

Plants vary in their tolerance to salts. Electrical conductivity (EC) is the most common indicator of salinity of a soil. When the EC of the soil water reaches 4 Mmhos/cm. the growth of many plants is restricted. Salt-sensitive plants are affected at 2 Mmhos/cm levels. Highly tolerant plants can withstand eight or more Mmhos/cm. Salt problems are more severe in areas with hot, dry climates than in cool, wet climates. This is because as soil dries, salts become concentrated in the soil solution, increasing salt stress.

**General Guidelines for Plant Response to Soil Salinity**

Salinity	Plant Response
0 to 2	Mostly negligible
2 to 4	Growth of sensitive plants may be restricted
4 to 8	Growth of many plants is restricted
8 to 16	Only tolerant plants grow satisfactorily
Above 16	Only a few, very tolerant plants grow satisfactorily

Most of the soils in the planning area fall in the 2 – 4 Mmhos/cm level. An increase in erosion due to loss of vegetation by concentrated use, will result in larger sediment yields due to increased erosion. This can result in an increase in salt levels at lower elevations.

Exposures of the Nacimiento formation in the planning area have resulted in extensive areas of sparsely vegetated badlands. Disturbance of the fragile surface of these badlands by animals or off highway vehicles, especially in the spring, can cause a significant increase in sediment and, therefore, salt yield.

## **Paleontology**

### **Objectives**

Paleontological resource protection objectives include facilitating research and collection on public lands, use for education and recreation, protecting scientifically valuable resources that may be in conflict with other land and resource uses, and protecting scientifically valuable fossils, as required by law.

**The Bohannon Fossil Complex SDA** is located within the planning area. Details can be found in the section on “Specially Designated Areas.” Any proposed route within the SDA would require a paleontological clearance before construction could commence. Cross Country travel is not allowed.

### **Badlands Terrain**

Badlands are intricately dissected, water-carved topographic features. Badlands develop on sloping surfaces with little or no vegetative cover, consisting of poorly consolidated clays, silts, and minor amounts of sandstone.

The badland terrain in the planning unit is largely derived from exposures of the Nacimiento Formation, and to a lesser extent the San Jose Formation. The Nacimiento is a Paleocene formation while the San Jose formation is in the later Eocene. Both formations contain intermixed beds of sandstones, siltstones, mudstones and shales.

These formations are important because of the early mammal fossils they contain. Research is ongoing in these formations. Most badland terrain in the planning area is within the Bohannon Fossil Complex SMA. There are, however, small areas of badland terrain located outside of the SMA.

### **Landcover**

Landcover categories were determined using data from the Southwest ReGap Landcover Analysis. In decreasing order of percent cover the La Plata Travel Unit consists of the following eight major land cover types. The minor percent cover types are listed in alphabetical order.

#### **1. SO39 Colorado Plateau Pinyon-Juniper Woodland**

This ecological system occurs on dry mountains and foothills of the Colorado Plateau region from the Western Slope of Colorado to the Wasatch Range, south to the Mogollon and east into the northwest corner of New Mexico. It is typically found at lower elevations ranging from 4850 to 7900 feet.

These woodlands occur on warm, dry sites on mountain slopes, mesa, plateaus, and ridges. Severe climatic events occurring during the growing season, such as frosts and drought, are thought to limit the distribution of pinyon-juniper woodlands to relatively narrow altitudinal belts on mountainsides.

Pinyon Pine, *Pinus edulis* and/or One-seeded Juniper, *Juniperus osteosperma* dominate the tree canopy. In the southern portion of the Colorado Plateau in northern Arizona and northwestern New Mexico, Utah Juniper, *Juniperus monosperma* and hybrids of *Juniperus spp.* may dominate or codominate the tree canopy.

Understory layers are variable and may be dominated by shrubs, graminoids, or are absent.

## **2. SO54 Inter-Mountain Basins Big Sagebrush Shrubland**

This ecological system occurs throughout much of the western U.S., typically in broad basins between mountain ranges, plains, and foothills. Soils are typically deep, well-drained and non-saline. These shrublands are dominated by *Artemisia tridentata spp. tridentata*. Scattered Juniper spp., *Sarcobatus vermiculatus* and *Atriplex spp.* may be present in some stands. *Ericameria nauseosa*, *Chrysothamnus viscidiflorus*, *Purshia tridentata*, or *Symphoricarpos oreophilus* may codominate disturbed stands. Perennial herbaceous components typically contribute less than 25% vegetative cover. Common graminoid species include *Achnatherum hymenoides*, *Bouteloua gracilis*, *Elymus lanceolatus*, *Festuca idahoensis*, *Hesperostipa comata*, *Leymus cinereus*, *Pleuraphis jamesii*, *Pascopyrum smithii*, *Poa secunda*, or *Pseudoroegneria spicata*.

## **3. SO10 Colorado Plateau Mixed Bedrock Canyon and Tableland**

The distribution of this ecological system is centered on the Colorado Plateau where it is comprised of barren and sparsely vegetated landscapes (generally <10% plant cover) of steep cliff faces, narrow canyons, and open tablelands of predominantly sedimentary rocks, such as sandstone, shale, and limestone.

The vegetation is characterized by very open tree canopy or scattered trees and shrubs with a sparse herbaceous layer. Common species include Pinyon pine, *Pinus edulis*, Juniper *Juniperus spp.*, Dwarf Mountain Mahogany, *Cercocarpus intricatus*, and other short-shrub and herbaceous species, utilizing moisture from cracks and pockets where soil accumulates.

This ecological system has a naturally high rate of erosion. The occurrence of fires is infrequent and not an important ecological process.

## **4. SO79 Inter-Mountain Basins Semi-Desert Shrub Steppe**

This ecological system occurs throughout the Intermountain western U.S., typically at lower elevations on alluvial fans and flats with moderate to deep soils. This semi-arid shrub-steppe is typically dominated by graminoids (>25% cover) with an open shrub layer, but includes sparse mixed shrublands without a strong graminoids layer.

Characteristic grasses include Indian Ricegrass, *Achnatherum hymenoides*, Blue grama, *Bouteloua gracilis*, Inland saltgrass, *Distichlis spicata*, Needle-and-thread grass, *Hesperostipa comata*, James's galleta, *Pleuraphis jamesii*, Sandberg bluegrass, *Poa secunda*, and Alkali sacaton, *Sporobolus airoides*.

The woody layer is often a mixture of shrubs and dwarf-shrubs. Characteristic species include Four-wing saltbush, *Atriplex canescens*, Sand sagebrush, *Artemisia filifolia*, Green's rabbitbrush, *Chrysothamnus greenii*, Sticky rabbitbrush, *Chrysothamnus viscidiflorus*, Joint-fir, *Ephedra spp.*, Rubber rabbitbrush, *Ericameria nauseosa*, Broom snakeweed, *Gutierrezia sarothrae*, and Winterfat, *Krascheninnikovia lanata*. Scattered Big Sagebrush, *Artemisia tridentata* may be present but does not dominate.

The general aspect of occurrences may be either open shrubland with patchy grasses or patchy open herbaceous layer. Disturbance may be important in maintaining the woody component. Microphytic crust is very important in some occurrences.

#### **5. SO96 Inter-Mountain Basins Greasewood Flat**

This ecological system occurs throughout much of the western U.S. in Intermountain basins and extends onto the western Great Plains. It typically occurs near drainages on stream terraces and flats or may form rings around playas. Sites typically have saline soils, a shallow water table and flood intermittently, but remain dry for most growing seasons.

This system usually occurs as a mosaic of multiple communities, with open to moderately dense shrublands dominated or codominated by Greasewood, *Sarcobatus vermiculatus*, Four-wing saltbush, *Atriplex canescens*, Spiny saltbush, *Atriplex confertifolia*, or Winterfat, *Krascheninnikovia lanata* may be present to codominant.

Occurrences are often surrounded by mixed salt desert scrub. The herbaceous layer, if present, is usually dominated by graminoids.

#### **6. SO90 Inter-Mountain Basins Semi-Desert Grassland**

This widespread ecological system occurs throughout the Intermountain western U.S. on dry plains and mesas, at approximately 4750 to 7610 feet in elevation. These grasslands occur in lowland and upland areas and may occupy swales, playas, mesa tops, plateau parks, alluvial flats, and plains, but sites typically xeric. Substrates are often well-drained sandy or loamy-textured soils derived from sedimentary parent materials.

Grasslands within this system are typically characterized by a sparse to moderately dense herbaceous layer dominated by medium-tall and short bunch grasses, often in a sod-forming growth.

The dominant perennial bunch grasses and shrubs within this system are all very drought-resistant plants. These grasslands are typically dominated or codominated by Indian ricegrass, *Achnatherum hymenoides*, *Aristida spp.*, Blue grama *Bouteloua gracilis*, Needle-and-thread grass, *Hesperostipa comata*, Ring muhly, *Muhlenbergia torreyi*, or James's galleta, *Pleuraphis jamesii*.

*The system may include scattered shrubs and dwarf-shrubs of species Artemisia, Atriplex, Coleogyne, Ephedra, Gutierrezia, or Krascheninnikovia lanata.*

## **7. SO65 Inter-Mountain Basins Mixed Salt Desert Scrub**

This extensive ecological system includes open-canopied shrublands of typically saline basins, alluvial slopes and plains across the Intermountain western U.S. This type also extends in limited distribution into the southern Great Plains.

The vegetation is characterized by a typically open to moderately dense shrubland composed of one or more Saltbush species, *Atriplex* spp. Other shrubs present to codominate may include Big Sagebrush, *Artemisia tridentate* ssp., Green's rabbitbrush, *Chrysothamnus viscidiflorus*, Rubber rabbitbrush, *Ericameria nauseosa*, Torrey joint-fir, *Ephedra torreyana*, Hop sage, *Grayia spinosa*, Winterfat, *Krascheninnikovia lanata*, Pale wolfberry, *Lycium pallidum*, Budsage, *Picrothamnus desertorum*, or Horsebush species, *Tetradymia* spp.

The herbaceous layer varies from sparse to moderately dense is dominated by perennial graminoids such as Indian ricegrass, *Achnatherum hymenoides*, Blue grama, *Bouteloua gracilis*, Streambank wheatgrass *Elymus lanceolatus* ssp. *lanceolatus*, Western wheatgrass, *Pascopyrum smithii*, James's galleta, *Pleuraphis jamesii*, Big galleta, *Pleuraphis rigida*, Sandberg bluegrass, *Poa secunda*, or Alkali sacaton, *Sporobolus airoides*. Various forbs are also present.

Many areas within this system are degraded due to erosion and may resemble "badlands." Soil surface is often very barren in occurrences of this system. The interspaces between characteristic plant clusters are commonly covered by a microphytic crust.

## **8. SO59 Colorado Plateau Blackbrush-Morman Tea Shrubland**

This ecological system occurs in the Colorado Plateau on benchlands, colluvial slopes, pediments, or bajadas. Elevation ranges from 1810 – 5350 feet. Substrates are shallow, typically calcareous, non-saline and gravelly or sandy soils over sandstone or limestone bedrock, caliche or limestone alluvium. It also occurs in deeper soils on sandy plains where it may have invaded desert grasslands.

The vegetation is characterized by extensive open shrublands dominated by Blackbrush, *Coleogyne ramosissima* often with Sticky joint-fir, *Ephedra viridis*, Torrey joint-fir, *Ephedra torreyana*, or Hop sage, *Grayia spinosa*. Sandy portions may include Sand sage, *Artemisia filifolia* as codominant.

Within a blackbrush shrubland disturbed patches are dominated by shrubs such as Green's rabbitbrush, *Chrysothamnus viscidiflorus*, Rabbitbrush species, *Ericameria* spp.,

Joint-fir, *Ephedra spp.*, Winterfat, *Eurotia lanata*, Hoary rosemarymint, *Poliomenantha incana* or exotic annual grasses.

The herbaceous layer is sparse and composed of graminoids such as Indian ricegrass, *Achnatherum hymenoides*, James's galleta, *Pleuraphis jamesii*, or Sand dropseed, *Sporobolus cryptandrus*.

Dark-colored microbiotic soil crusts are often present in this system in fairly undisturbed areas. Sandy soils may have more microbiotic crusts than clayish or silty soil surfaces.

**Minor Land Cover Types:** listed alphabetically.

### **N31 Barren Lands, Non-Specific**

Barren areas of bedrock, desert pavement, scarps, talus, slides, sand dunes, strip mines, gravel pits and other accumulation of earthen material. Generally, vegetation accounts for less than 15% of total cover.

### **SO11 Inter-Mountain Basin Shale Badland**

This widespread ecological system of the Intermountain western U.S. is composed of barren and sparsely vegetated substrates (<10% plant cover) typically derived from marine shales, but also including substrates derived from siltstones and mudstones (clay). Landforms are typically rounded hills and plains that form a rolling topography.

### **SO14 Inter-Mountain Basin Wash**

This barren and sparsely vegetated (generally <10% plant cover) ecological system is restricted to intermittently flooded streambeds and banks that are often lined with *Sarcobatus vermiculatus*, *Ericameria nauseosa*, and/or *Grayia spinosa*. Shrubs often form a continuous or intermittent linear canopy in and along drainages but do not extend out into flats. Soils are generally less alkaline than those found in the playa system.

### **DO9 Invasive Annual and Biennial Forb land**

*Salsola spp.*, *Kochia scoparia*, *Halogeton glomeratum*.

### **DO4 Invasive Southwest Riparian Woodland and Shrubland**

*Tamarix spp.*, and/or *Elaeagnus angustifolia*,

### **SO46 Rocky Mountain Gambel Oak-Mixed Montane Shrubland**

This ecological system occurs in the mountains, plateaus, and foothills in the Colorado Plateau. These shrublands are most commonly found along dry foothills, lower mountain slopes, and are often situated above pinyon-juniper woodlands.

### **SO93 Rocky Mountain Lower Montane Riparian Woodland and Shrubland**

This system is found throughout the Colorado Plateau region within a broad elevation range. This system often occurs as a mosaic of multiple communities that are tree-dominated with a diverse shrub component. This system is dependent on a natural

hydrologic regime, especially annual to episodic flooding. Occurrences are found within the flood zone of rivers, on islands, sand or cobble bars, and immediate streambanks.

### **SO36 Rocky Mountain Ponderosa Pine Woodland**

This very widespread ecological system is most common throughout the cordillera of the Rocky Mountains. It is also found in the Colorado Plateau region, west into scattered locations in the Great Basin. These woodlands occur at the lower treeline/ecotone between grassland or shrubland and more mesic coniferous forests typically in warm, dry, exposed sites.

### **S136 Southern Colorado Plateau Sand Shrubland**

This large patch ecological system occurs on windswept mesas, broad basins and plains at low to moderate elevations. Substrates are stabilized sandsheets or shallow to moderately deep sandy soils that may form small hummocks or small coppice dunes. This semi-arid, open shrubland is typically dominated by short shrubs (10 – 30% cover) with a sparse graminoid layer. The woody layer is often a mixture of shrubs and dwarf-shrubs.

### **SO85 Southern Rocky Mountain Montane-Subalpine Grassland**

This ecological system typically occurs between 2200 – 3000 m on flat to rolling plains and parks or on lower sideslopes that are dry, but may extend up to 3350 m on warm aspects. Soils resemble prairie soils in that the A-horizon is dark brown, relatively high in organic matter, slightly acid, and usually well-drained.

## **Microbiotic Crusts**

Microbiotic crusts are commonly found in semiarid and arid environments throughout the world. Areas in the United States where crusts are a prominent feature of the landscape include the Great Basin, Colorado Plateau, Sonoran Desert, and the lower Columbia Basin.

Microbiotic crusts are formed by living organisms and their byproducts, creating a surface crust of soil particles bound together by organic materials. Above ground crust thickness can reach up to 10 centimeters. Mature crusts of the Great Basin and Colorado Plateau are usually darker than the surrounding soil. This color is due in part to the density of the organisms and to the often dark color of the cyanobacteria, lichens, and mosses. The presence or absence of a crust is partly determined by soil texture and conductivity, pH, moisture, and possibly temperature. Crust coverage varies greatly, from less than 10 percent to nearly 100 percent.

Microbiotic crusts are predominantly composed of cyanobacteria, green and brown algae, mosses, and lichens. Liverworts, fungi, and bacteria can also be important components. Cyanobacteria make up a large component of microbiotic crusts in semiarid and arid regions of the United States.

Crusts contribute to a number of functions in the environment. These include soil stability and erosion, atmospheric Nitrogen-fixation, nutrient contributions to plants, soil-plant-water relations, infiltration, seedling germination, and plant growth.

Microbiotic crusts are well adapted to severe growing conditions, but poorly adapted to compressional disturbances. Domestic livestock grazing, oil and gas development, and more recently, recreational activities (hiking, biking, and OHVs) put a heavy toll on the integrity of crusts. Disruption of the crusts brings decreased organism diversity, soil nutrients, and organic matter.

Direct damage to crusts usually comes in the form of construction activities and trampling by humans and livestock. Trampling breaks up the sheaths and filaments holding the soil together and drastically reduces the capability of the soil organisms to function, particularly in nitrogen fixation.

Changes in plant composition are often used as indicators of range health. This indicator may not be sensitive enough to warn of damage to microbiotic crusts. Studies looking at trampling disturbance have noted that losses of moss cover, lichen cover, and cyanobacterial presence can be severe, runoff can increase by half, and the rate of soil loss can increase six times without apparent damage to vegetation.

Another indirect disturbance occurs through crust burial. When the integrity of the crust is broken through trampling or other means, the soil is more susceptible to wind and water erosion. This soil can be carried long distances, covering intact crusts. Crusts tolerate shallow burial by extending sheaths to the surface to begin photosynthesis again. Deeper burial by eroded sediment will kill crusts.

Full recovery of microbiotic crusts from disturbances is a slow process, particularly for mosses and lichens. There are means to facilitate recovery. Allowing the cyanobacterial and green algae component to recover will give the appearance of a healthy crust. This visual recovery can be complete, with the exception of lichens and mosses, in as little as 1 to 5 years given average climate conditions. Limiting the disturbed area also increases the rate of recovery provided that there is a nearby source of inoculums.

### **Microbiotic Crust in the Planning Area**

Landcover types normally supporting the largest concentrations of microbiotic crusts within the planning area are the **Inter-Mountain Basins Mixed Salt Desert Scrub**, **Inter-Mountain Basins Semi-Desert Scrub Steppe**, and the **Colorado Plateau Blackbrush-Mormon Tea Shrubland**.

Crust integrity and density is variable depending on activities occurring around it. In some places microbiotic crusts have been destroyed by human activity, while in other areas little damage can be observed. Microbiotic crust integrity and density would be analyzed when considering new trails.

### **Watersheds**

The planning area contains portions of the Middle San Juan, the Animas and the La Plata Watersheds.

### Watersheds in Planning Area

Watershed Name	Acres	Acres Disturbed*	Percent Disturbed	Road Density (mi/mi <sup>2</sup> ) <sup>1</sup>
Animas	144,584	8,668	6.0	4.2
La Plata	114,841	3,612	3.1	2.4
Middle San Juan	673,450	10,084	1.5	2.2

\* Surface disturbance due to roads and wells in the entire watershed. Note: Only portions of the watersheds are within the planning area

### Water

The planning area is drained by ephemeral tributaries of the La Plata, Animas Rivers and San Juan rivers. Stream flow in these ephemeral channels is in response to storm events. Differences in rainfall patterns cause stream flow to be extremely variable. Approximately one-half of the annual precipitation in the planning unit occurs from July through October, generally in the form of localized, short-duration, high intensity thunderstorms. These storms may create large flows, which are commonly of limited duration and extent.

The type of soil and amount and type of vegetation have a major effect on the amount of precipitation that becomes surface runoff.

### Riparian Areas

Riparian areas are defined by the BLM as “a form of wetland transition between permanently saturated wetlands and upland areas. These areas exhibit vegetation or physical characteristics reflective of permanent surface or subsurface water influence. Lands along, adjacent to, or contiguous with perennially and intermittent flowing rivers and streams, glacial potholes, and the shores of lakes and reservoirs with stable water levels are typical riparian areas.”

Small areas of riparian vegetation can be found in the major drainages in the planning area. Travel in wash bottoms would not be allowed in areas with riparian vegetation.

### Air Quality

Air quality in the San Juan Basin is affected both by nearby industry and by natural terrain. The primary sources of air pollutants in the basin are from electrical power generation plants, oil/gas refineries and treating facilities and compressor stations. Additional air quality impairment results from the cumulative impact of area motor vehicle emissions and dust, and natural gas well pads. Since the San Juan Basin is a natural depression, air masses sometimes stagnate from lack of circulation resulting in diminishing air quality. The New Mexico Air Quality Bureau (NMAQB) is responsible for enforcing the state and national ambient air quality standards in New Mexico. Any emission source must comply with the NMAQB regulations (USDI, BLM 2003b).

The project area lies within the Four Corners Interstate Air Quality Control Region. Initial cumulative air quality analysis was conducted in the final EIS for the Proposed Farmington Resource Management Plan (USDI, BLM 2003a). At the present time,

the counties that lie within the jurisdictional boundaries of the FFO are classified as in attainment of all state and national ambient air quality standards as defined in the Clean Air Act of 1972, as amended (USDI, BLM 2003b). However, during the summers of 2000 through 2002, ozone levels in San Juan County were approaching non-attainment. Additional modeling and monitoring was conducted by Alpine Geophysics, LLC and Environ International Corporations, Inc., in 2003 and 2004. Results of the modeling suggest the episodes recorded in 2000 through 2002 were attributable to regional transport and high natural biogenic source emissions. The model also predicted that the region will not violate the ozone NAAQS through 2007 and that the trends in the 8-hr ozone values in the region are declining. There is no indication at this time that the approval of the proposed action would result in a violation of ambient air quality standards.

Recently, the BLM initiated the process by which future natural gas development would occur under the jurisdiction of the Durango, Colorado San Juan Public Lands Center. The cumulative air quality impact assessment performed by Durango, which included Farmington's potential emission sources, determined that potential visibility impacts to federal PSD Class I Areas (Mesa Verde Nation Park and the Wenimuche Wilderness Area) could occur. Additional air quality monitoring and modeling may be required. The BLM will work directly with the state regulatory agency to assure that any data gathered meets state standards. Results may require additional mitigation measures on future projects.

USDI 2003a U.S. Department of the Interior, Bureau of Land Management. 2003. *Farmington Proposed Resource Management Plan and Final Environmental Impact Statement*. Farmington, New Mexico, March.

USDI 2003b U.S. Department of the Interior, Bureau of Land Management. *Farmington Resource Management Plan with Record of Decision*. Farmington, New Mexico, December 2003.

## **Land Forms**

The planning area lies within the San Juan Basin portion of the Colorado Plateau physiographic province. The San Juan Basin is an asymmetrical syncline that extends from northwestern New Mexico into southwestern Colorado. Roughly circular in shape, it is approximately 200 miles long, north to south, and 130 miles wide, including its Colorado portion. The central part of the San Juan Basin is a dissected plateau, gently dipping to the west. Stream erosion has formed deep, steep walled canyons.

## **Land form characteristics by Township and Range**

### **T32N, R10W:**

This unit in the northeast of the planning area contains the majority of Cox Canyon and its tributaries. The Cox Canyon drainage is comprised of broad valley flats and nearly level plateaus and/or terraces. Drainages in this unit eventually drain in to the Animas River. Outside of the Cox Canyon drainage the landscape is largely comprised of gently sloping ridges and hills with surface elevations trending higher toward the north. The northern one third of this unit contains small areas of moderately moist to very moist steep slopes. Moderately dry to very dry slopes are normal and are scattered throughout the unit.

### **T32N, R11W:**

Cox Canyon and its tributaries extend into this unit with nearly all drainages running west to east. The central portion of this unit is dominated by rugged uplands, and narrow, steep sloped canyons. Slopes range from dry to moderately moist. Major drainages to the west of these uplands either drain in to the San Juan or La Plata Rivers. Lone Mountain 7126 feet in elevation is located in the north central portion of this unit.

### **T32N, R12W:**

This unit is dominated by a large nearly level terrace running from the southwest corner toward the northeast. A portion of this feature is named Jaquez Flat. The remainder of this unit is comprised of gently sloping ridges and hills, with a few dry to moderately moist steep slopes in the southeast and northwest portion of the unit.

### **T32N, R13W:**

Approximately two miles of the La Plata River are within this unit. Associated with this are areas of river terraces mostly along the west bank of the river. The remainder of this unit is comprised of gently sloping ridges and hills, with valley flats and plateaus in the southeast trending toward the north.

### **T31N, R13W:**

The La Plata River and its flats, and terraces form the western boundary of this unit. The northeastern portion is a flat terrace, with the rest of the unit consisting of gently sloping ridges and hills. An area of very dry to very moist steep slopes begins in the southwest, running toward the northeast.

### **T31N, R12W:**

The Glade Wash with its' valleys and terraces dominates this unit draining from the northeast to the southwest. The rest of the unit is generally comprised of gently sloping ridges and hills. The northwest quarter contains a extensive area of flat terraces with gently sloping hills interspersed among the terraces. Section 33 contains rugged badlands with moderately dry to moist steep slopes.

**T31N, R11W:**

This unit eastern border is the Animas River, with its floodplain and terraces. The northern half is comprised of rugged uplands with moderately dry to very moist steep slopes. The remainder of the unit includes the broad valley and terraces of Estes Arroyo in the southwest which drains to the southeast into the Animas River. Further north Bohanan Canyon also runs southeast into the Animas from the uplands.

**T30N, R11W:**

The eastern boundary of this unit is the Animas River with its extensive eastern floodplain and terraces. The majority of the unit is gently sloping ridges and hills with a series of flat topped hills running from the southwest toward the northeast. The hills in the southwest have moderately dry to very moist steep slopes depending on aspect.

**T30N, R12W:**

The southern boundary is US550. The majority of the unit is comprised of gently rolling hills and ridges. Many of the hills are topped by a level plateau or terrace. The eastern portion of this unit contains moderately dry to very moist steep slopes depending on aspect.

**T30N, R13W:**

The western boundary of this unit is the La Plata River and its floodplain and terraces. To the south is the city of Farmington. The Glade Wash with its' valleys and terraces dominates the unit draining from the northeast to the southwest. The rest of the unit is generally comprised of gently sloping ridges and hills. The southwest and southern portions of the unit range from moderately dry to moist slopes depending on aspect.

**Visual Resource Management**

The BLM uses a VRM system to inventory and manage visual resources on public lands. The primary objective of VRM is to maintain the existing visual quality of BLM administered public lands and to protect unique and fragile visual resources. The VRM system uses four classes to describe the different degrees of modification allowed to the landscape. VRM classes are visual ratings that describe an area in terms of visual quality, viewer sensitivity to the landscape, and the distance in which a viewer would observe an area. Once an area has been assigned a VRM class, that class can be used to analyze and determine the visual impacts of proposed activities on the land, and gauge the amount of disturbance an area can tolerate before it exceeds the visual objectives of it's VRM class (BLM 1980).

VRM classes are assigned to areas within the Farmington Field Office through Resource Management Plan (RMP) process. The assignment of VRM classes is based on the management decisions made in the RMP. These classifications must conform to the land use allocations set forth in the RMP and are assigned using the guidelines and management objectives for VRM Classes I through IV.

Areas with visual sensitivity within BLM administered public lands are the result of the high degree of public interest in and public concern for a particular area's visual

resources, an area's high degree of public visibility, the level of use of an area by the public, and the type of visitor use that an area receives (BLM 1992).

The La Plata planning area falls within the VRM Class III category. In VRM class III the objective is to partially retain the existing character of the landscape. Moderate change to the landscape is acceptable. Activities on the landscape may attract attention but should not dominate the view.

## **Noxious Weeds**

### **Objective**

The objective of the FFO weed management program is to detect invasive plant species populations, prevent the spread of new invasive populations, manage existing populations using the tools of integrated weed management, and eradicate invasive populations, using the safest environmental methods available

For all actions on public lands that involve surface disturbance or rehabilitation, reasonable steps would be required to prevent the introduction or spread of noxious weeds, including requirements for using weed seed-free hay, mulch, and straw.

### **Noxious Weeds in the Planning Area:**

The following invasive, noxious weeds can be found within the planning unit.

#### Russian knapweed, *Centaurea repens*.

Knapweed forms dense patches in cultivated fields, pastures, and along roadsides. It is very common along major river corridors. It is a major weed problem in the La Plata river valley and throughout Farmington.

#### Cheatgrass, *Bromus tectorum*

Found on open slopes, desert shrub, sagebrush, and pinyon-juniper communities throughout the planning unit.

#### Whitetop, *Cardaria draba*

Whitetop is common on alkaline soils; cultivated and waste places. It is well established along the La Plata river drainage, and is very common in parts of the Animas river corridor.

#### Canada thistle, *Cirsium arvense*

Canada thistle is found along roadsides, in fields, and other disturbed sites from desert scrub up to spruce-fir communities. It is common throughout the Four Corners region.

#### Russian olive, *Elaeagnus angustifolia*

Russian olive is cultivated as a shade tree and escaped. Typically grows in moist sites along river drainages and other moist sites. It is common along the Animas and San Juan rivers, and in many other areas of the Four Corners region.

Halogeton, *Halogeton glomeratus*

Halogeton is commonly found in disturbed sites in salt grass and desert shrub communities. It is now found in all western states.

Summer cypress, *Kochia scoparia*

Summer cypress is very common along roadsides, irrigation ditches, cultivated fields, gardens, vacant lots, and other disturbed sites. It is one of the most common weeds in the San Juan Basin.

Tamarisk, salt-cedar, *Tamarix chiensis*

Tamarisk is common along seeps, streams, washes, and reservoirs throughout the San Juan Basin.

## **Wildlife**

### **Objective**

The objectives of BLM's wildlife management program are to ensure optimum populations and a natural abundance and diversity of fish and wildlife values by restoring, maintaining, and enhancing habitat conditions for consumptive and non-consumptive uses.

### **Wildlife in the Planning Unit**

The planning unit is home to a variety of species. Their location and numbers are largely dependent on the type of landcover and the quality of the habitat. See Appendix B for a list of expected species. The northern portion of the planning unit is more critical as winter range for deer and elk than areas further south.

## **Special Status Species**

### **Objective**

The objective of the program is to comply with federal and state requirements for protection of threatened and endangered species and their habitat, as well as to protect the habitat of sensitive, non-listed species to prevent the need for listing them as threatened or endangered.

### **Threatened and Endangered**

There are no known T&E concerns within the planning area.

### **Special Management Species**

The following special status species are present in the planning area.

- **Aztec gilia, *Aliciella formosa*.** Perennial, 7-30 cm tall, older plants woody at the base, glandular; stems numerous, branched; leaves entire, 25 mm long, sharp-pointed; flowers pinkish-purple, trumpet-shaped, about 22 mm long. Flowers April and May. Salt desert scrub communities in soils of the Nacimiento Formation; 1,500-1,800 meters.

- **Brack’s cactus**, *Sclerocactus cloveriae* var. *brackii*. Stems mostly solitary 3-8.5 cm tall; central spines 4-5, the lower one of ten absent, but if present, hooked; radial spines 5-8; flowers pink to purple; fruit green to tan, sometimes suffused with pink, dry. Flowers late April and May. Desert Scrub and scattered juniper communities. Sandy clay hills of the Nacimientto formation at 1515-1820 meters.

**Raptor Management Policy**

In 1991 the Farmington Field Office (FFO) established a 1/3 mile radius protected “buffer zone” around active and historical raptor nests. The American peregrine falcon, ferruginous hawk, golden eagle and prairie falcon are the raptor species managed under this guidance.

There are currently six raptor nest sites that have been identified within the planning area

**Migratory Birds of Conservation Concern**

Executive Order 13186, January 17, 2001, calls for increased efforts to more fully implement the Migratory Bird Treaty Act of 1918. In keeping with this mandate, the FFO consulted the Partners in Flight Bird Conservation Plan for New Mexico and the U.S. Fish & Wildlife Service’s list of Birds of Conservation Concern. A list of seven “priority avian species utilizing the piñon-juniper woodland landcover type and seven avian species utilizing the Desert Shrub and grassland landcover types was developed from a review of the above documents.

**Migratory Birds of Conservation Concern.**

<b>Species</b>	<b>Landcover Type</b>
Loggerhead shrike	Sage/Fourwing/Grass
Sage thrasher	Sage/Grass
Sage sparrow	Sage/Grass
Black-throated sparrow	Sage/Grass
Ash-throated flycatcher	Sage/Grass
Burrowing owl	Sage/Grass
Bendire’s thrasher	Sage/Grass
Gray vireo	Pinyon-Juniper
Gray flycatcher	Pinyon-Juniper
Juniper titmouse	Pinyon-Juniper
Pinyon jay	Pinyon-Juniper
Cassin’s kingbird	Pinyon-Juniper
Black-throated gray warbler	Pinyon-Juniper
Ash-throated flycatcher	Pinyon-Juniper

## Cultural Resources

### Objective

The BLM's Cultural Resource Management Program is a comprehensive system for identifying, planning the appropriate use of, and managing cultural resources on public lands within areas of BLM responsibility. The major emphasis of the BLM's cultural resource management program objectives involves the protection, preservation, and enhancement of the cultural resources for present and future generations.

The planning area lies in the San Juan Basin of northwest New Mexico, one of the most significant archeological areas in the United States. Within the San Juan Basin, there is a continuity of human occupation spanning over 10,000 years. The cultural remains of Native Americans and Euro-Americans found in the San Juan Basin are diverse and include such things as simple hunting camps, rock art, trails, burials, puebloan villages and "great towns" of the Chaco culture, agricultural related features, game drives, quarries, sacred sites, trading posts and ranches.

A total of 37, 341 prehistoric and historic sites have been recorded in the Farmington Field Office (FFO) as of June 2002. On the average 350 to 400 sites are recorded each year.

Most archeological investigations in and around the FFO are a result of planned mineral exploration and development.

The planning area contains four SDAs set aside for their cultural values. These are described under "Areas with Special Designations."

Any proposed action within the planning unit, such as the construction of a new recreational trail, would entail a cultural clearance before designation or construction could begin.

### Frequency of Known Sites by Watershed and Time Period

Watershed	Prehistoric	Historic	Both	Unknown	Total
Animas	436	241	99	189	965
La Plata	684	114	67	206	1071

Cultural sites documented in the planning area range from Archaic through Historic. The majority of the sites recorded are from the Pueblo I to Pueblo III period, and from the Dinéah/Gobernador period through the Reservation period for Navajo sites. The density of sites generally increases toward the north of the planning area. Site density is highest in the northeast and northwest near the La Plata and Animas rivers.

### Areas with Special Designations

The planning unit includes the following SDAs:

### **Glade Run Recreation Area:**

There are approximately 21,544 acres within the boundary of the Glade Run Recreation Area, of which 17,935 acres are public land (BLM) and 18,796 acres contain federal minerals.

This recreation area contains a network of established roads, dry washes, and designated trails that provide for a variety of outdoor recreation opportunities. Major access points from the communities of Farmington, Flora Vista and Aztec link nearly 40 miles of well-developed routes.

### **Management Goal:**

Manage the recreation area to accommodate a large variety of recreational uses and outdoor recreational experiences. Coordinate management efforts with multiple users and regulatory groups.

### **Existing Travel Management Prescriptions:**

Travel limited to maintained roads, designated trails, routes, ways, and areas on 15,134 acres. Approximately 3,811 acres designated as Open OHV area.

### **Bohanon Canyon Fossil Complex**

There are approximately 13,834 acres within the boundary of the Bohanon Canyon Fossil Complex, of which 12,380 acres are public land (BLM) and 12,468 acres contain federal minerals.

The area between Bohannon Canyon and Kiffen Canyon North of Aztec contains fauna from the Paleocene Nacimiento formation and the Eocene San Jose Formation. The Paleocene marked the beginning of expansion of mammals after the demise of the dinosaurs and the Eocene primates. More interesting, the boundary between the Paleocene and Eocene contains evidence of a climatic event that has been documented from isotope studies and shows up in faunal changes. Studies in the same age rocks in the Big Horn Basin of Wyoming have shown faunal changes that support a dramatic climate change at the boundary of the Paleocene and Eocene.

### **Management Goal:**

The goal for special management is to facilitate scientific study and protection of the paleontological resources.

### **Existing Travel Management Prescriptions:**

OHV travel limited to maintained roads, designated routes, and trails.

### **Cedar Hill ACEC:**

There are a total of 1,886 acres within the boundary of the Cedar Hill ACEC, all of which are public land (BLM) and contain federal minerals.

Cedar Hill is a large Anasazi Pueblo I community, with numerous pithouses, surface structures, great kivas, middens, and other associated features. During Pueblo I, there was extensive use of the uplands near the major waterways, including the San Juan and

Animas Rivers. Although most of the structures and other features are difficult to observe from the surface, large-block archaeological surveys have documented the extent and complexities of this community. Cedar Hill may have had active communities for several hundred years. Archaeological evidence indicates that this site was abandoned by early Pueblo II.

**Management Goal:**

The purpose for the designation of this area is to provide proactive long-term protection and preservation of its cultural and natural resources.

**Existing Travel Management Prescriptions:**

Designate as Limited OHV Area and close identified roads.

**East Side Rincon ACEC:**

There are a total of 195 acres within the boundary of the East Side Rincon ACEC, of which 75 acres are public land acres (BLM) and 75 acres are federal mineral acres. The East Side Rincon Site ACEC is located on a narrow riverine terrace on the east side of the La Plata River. The river channel cuts into the east bank of the site, creating a steep-banked terrace edge, which rises 45 to 100 meters above the floodplain. A deeply entrenched arroyo also bisects portions of the site. Cultural features are exposed in the banks of the arroyo in the east bank of the La Plata River.

The site contains evidence of an archaic occupation, as well as Basketmaker and Pueblo components. The Basketmaker III-Pueblo I occupation appears the most expansive, including at least six pithouses, several storage cists and a trash midden.

The site was first recorded in 1935, with additional recordation in 1964 and complete documentation in 1983 and 1984. The latter work resulted in listing the site on the National Register of Historic Places. The site is significant because little is known about the Archaic and Basketmaker use of the La Plata Valley and it represents of the few Basketmaker villages documented in this area.

**Management Goal:**

The management goal is to protect cultural and resource values.

**Existing Travel Management Prescriptions:**

Designate as Limited OHV area and close identified roads.

**Farmer's Arroyo ACEC:**

There are a total of 40 acres within the boundary of the Farmer's Arroyo ACEC, all of which are public land (BLM) and federal mineral acres.

The Farmer's Arroyo Site (40 acres) is located on a high cobble ridge looking out over the Animas River Valley. Badlands lie to the east and rolling mesas cut by arroyos and shallow drainages lie to the west.

The site appears to have been an adobe structure. There is no rubble to indicate the presence of masonry or cobble walls and the artifact scatter is minimal, probably because of collection by hikers and OHV users. Aerial photography clearly shows a U-shaped structure indicated by changes in surface elevations and vegetative cover. It is estimated that the structure contains 12 to 16 ground floor rooms with a possible second story. The few ceramics remaining at the site date the occupation to the Pueblo III period, Mesa Verde phase.

A very large kiva, probably used in conjunction with the adobe structure, is 400 feet to the southwest at the base of the ridge and a cobble walled pueblo with four rooms is located about a quarter mile further south. The adobe construction, topographic setting, and proximity to Aztec ruins make this site a unique and significant resource requiring special management attention.

**Management Goal:**

The management goal is to protect cultural resource values.

**Existing Travel Management Prescriptions:**

Implement **Closed OHV Area** and close identified roads.

**Holmes Group ACEC:**

There are a total of 94 acres (7 acres BLM surface, 58 acres Federal minerals) within the boundary of the Holmes Group ACEC, an archaeological community located 15 miles north of Farmington, NM. At one time, this community had National Landmark Status, but its status was revoked because of the extensive vandalism that has taken place.

The large outlier community contains the remains of at least 30 small houses, one L-shaped Chacoan structure with a plaza open to the southeast, a second large structure thought to be Chacoan because of its size, and one isolated great kiva. The small houses, Chacoan structures and associated refuse mounds are in close proximity with cultural material covering most of the ACEC.

The Holmes Group includes approximately 250 rooms and 60 kivas. Ceramics on the site range from Late Pueblo II through Late Pueblo III, indicating occupation and use from about A.D. 975 to A.D. 1300.

**Management Goal:**

Manage the Holmes Group to protect its cultural resource value.

**Management Prescriptions:**

Continue to implement limited OHV designation.

**River Tracts ACEC:**

The San Juan Basin River Management Plan was completed in January of 1987. At that time, the major emphasis for the HMP was to preserve riverine habitats for wildlife and recreation. Since 1987, riparian habitat management by federal agencies across the west has come under intense scrutiny because of the rarity and importance of this habitat type.

In addition, the river riparian habitat managed by the FFO supports potential habitat for endangered and sensitive species. The river tracts warrant the protections afforded by the designation of the River Tracts ACEC.

Since 1996, all of the river tracts listed in the 1987 San Juan Basin River Management Plan were evaluated. Some of the river tracts were not mapped correctly, and after recent land surveys some tracts did not have river frontage or did not support riparian vegetation. There are 30 river tracts that warrant inclusion into the River Tracts ACEC:

- Animas River tracts: 1, 2, and 8.
- La Plata River tracts: 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10.
- San Juan River tracts: Archuleta, Blanco, Bloomfield, Bradshaw, Bull Calf, Desert Hills, Gallegos, Jewett Valley, Kutz, La Plata, Santa Rosa, Schneider, Simon Canyon, South Bloomfield, Subdivision, Valdez, and Wheeler.

As river properties are acquired through land exchanges, other tracts may be added to this list in the future.

**Management Goal:**

The main goal is to protect and rehabilitate the riparian and wetland habitats consistent with the Riparian and Aquatic HMP of 2000.

**Existing Travel Management Prescriptions:**

Off road vehicles limited to roads (designated maintained county roads, designated unmaintained county roads, and active oilfield access roads).

**East La Plata Wildlife Area:**

There are a total of 7,159 acres within the boundary of East La Plata Wildlife Area, of which 5,895 acres are public land acres (BLM) and 5,814 acres are federal mineral acres. Historically, this area received heavy winter deer use. It now supports about 60 to 100 deer, depending upon the severity of the winter. The existing browse is in poor condition and needs improvement.

**Management Goal:**

Manage the area to protect and preserve big game habitat.

**Existing Travel Management Prescriptions:**

OHVs limited to maintained roads, designated routes and trails.

**Recreation**

Recreation activities in the planning unit vary. The Glade Run Recreation Area is very popular with the public given its proximity to the city of Farmington. Popular activities include rock crawling, mountain biking, 4-wheeling, dirt biking, hiking, jogging, rock climbing, and sightseeing.

The further from the population centers one goes the numbers of recreational users decline.

## **Recreational Conflict**

Recreational conflict is an ongoing problem. Frequently, different user groups, generally motorized vs. non-motorized, find themselves in conflict over shared resources.

This is largely due to the fact that recreation is basically experiential. People recreate to realize a specific experience, or combination of experiences, such as solitude, speed, the challenge, or a host of other individual goals. If the experience is unfulfilled do to another individual or group than conflict can result.

Hostilities can also arise when different groups feel that they are competing for scarce resources.

Public lands in proximity to the local communities are perceived as a scarce resource to the various user groups. This has led to a great deal of conflict in a relatively small area.

There are five basic interrelated principles of recreational conflict that apply within the Farmington Field Office.

1. Motorized vs. non-motorized recreationists. Factors include noise and knowledge of the presence of machines, both of which in the non-motorized mind compromise solitude, and tranquility desired by these recreationists.
2. Conflicts in recreation are usually asymmetrical (one way). Usually the non-motorized group is “mad as hell” at the motorized group, but the motorized group is tolerant or even indifferent to the non-motorized group. A comment often heard from motorized users is that “we should all be able to get along, and use the same areas”.
3. The conflict can be more complex than a simple competition for land or resources. It often arises because the motivations for participating in an activity are compromised and anticipated recreational experiences are unfulfilled. Members of one recreational group feel they were prevented from having a complete experience due to the intrusion of other groups. It is often the perceived quality of the recreational experience that causes conflict, not competition for resources.
4. Conflict exists at two levels. Direct conflict including perceived impacts of the other activity upon the environment and indirect conflict representing a general feeling of dislike or the unwillingness to appreciate the other group’s views.
5. When a user group feels that it was through their efforts that a resource was developed they start to feel ownership of that resource. When a newer group intrudes on this perceived ownership, conflict will result. This is especially true if the new group seeks to exclude the initial group.

When constructing new trails or in designating “open areas” as OHV playgrounds the proximity of residences and other adjacent landowner values will be a primary consideration.

In the FRMP new “Open” OHV designations are not allowed within ½ mile of any residence unless on a maintained road or a designated trail or route.

## **Resource Opportunity Spectrum**

The Recreation Opportunity Spectrum (ROS) is the BLM’s framework to inventory, plan, and manage recreational opportunities. The ROS is divided into six classes, ranging from essentially natural, low-use areas, resource-dependent recreational opportunities, to highly developed, intensive use areas, facility/vehicle-dependent recreational opportunities. Each class is defined in terms of three principal components: the environmental setting, the activities possible, and the experiences that can be achieved.

The primary factor in determining ROS classes is the setting. This describes the overall outdoor environment in which activities occur, influences the types of activities, and ultimately determines the types of recreation that can be achieved.

Activities are not completely dependent on opportunity class, and most can take place in some form throughout the spectrum. However, general activities can be characterized for each class.

The ROS encompasses a variety of recreational settings under which certain experiences are possible. Seven elements provide the basis to inventory and delineate recreational settings. These are: access, remoteness, naturalness, facility and site management, visitor management, social encounters, and visitor impacts.

**Access:** Includes the mode of travel used in the area. Influences both the ROS level and the type of recreational use an area receives.

**Remoteness:** The extent to which people perceive themselves removed from human activity. Vegetation and/or topography can increase the sense of remoteness. Lack of remoteness is important for some recreational experiences.

**Naturalness:** The degree of human modification of the environment. This is often described in terms of scenic quality. It is influenced by how altered the landscape is.

**Site Management:** The level of site development. The lack of site modification can increase the feeling of self-reliance and naturalness. Highly developed facilities can enhance comfort and increase opportunities to meet and interact with others.

**Visitor Management:** Includes both regulations and control of visitors, providing visitors with information and services. In some recreational settings controls are expected and appropriate; in others, controls may distract from the desired recreational experience.

**Social Encounters:** The number and type of people met in the recreation setting. It measures the extent to which an area provides experiences for solitude or social interaction.

**Visitor Impacts:** The affect of visitation on natural resources such as soil, vegetation, air, water, and wildlife. Even low levels of use can produce significant impacts, and these impacts influence the visitor's experience.

The six Recreation Opportunity Spectrum classes are:

- Class I: Primitive
- Class II: Semi-Primitive Non-Motorized
- Class III: Semi-Primitive Motorized
- Class IV: Roaded Natural
- Class V: Rural
- Class VI: Urban

The ROS class for the La Plata Travel Unit has been identified as Roaded Natural, Class IV.

**Class IV: Roaded Natural:** Consists of areas near improved and maintained roads. While these areas are mostly natural in appearance, some modifications are evident, with moderate numbers of people, visible management controls, and development. The experience provides a sense of security through the moderate number of visitors and developments, but with some personal risk-taking and challenges.

## **Rangelands**

The objective of the rangeland program is to promote healthy sustainable rangeland ecosystems; to accelerate restoration and improvement of public rangeland to properly functioning condition; to promote the orderly use, improvement, and development of the public lands; to efficiently and effectively administer domestic livestock grazing; and to provide for the sustainability of the western livestock industry and communities that are dependent upon productive, healthy public rangelands.

### **The planning area contains the following Grazing Allotments:**

- 5004: Kiffen Canyon:** 13,810, 81% federal
- 5016: Farmington Glade:** 23,525 acres, 48% federal
- 5017: McDermott Wash:** 1560 acres, 92% federal
- 5018: La Plata Community:** 3160 acres, 95% federal
- 5019: Adobe Downs:** 3,081 acres, 60% federal
- 5020: Hartley Springs:** 3395 acres, 29% federal

**5021: Ruins:** 7069 acres, 53% federal  
**5023: Blue Lake:** 1052 acres, 78% federal  
**5025: Riverside Community:** not permitted at this time.  
**5026: Lonetree Mountain:** 14,902 acres, 60% federal  
**5140: Flora Vista:** 15,640 acres, 89% federal

Allotments contain a combination of federal, state, and private land. Periods of livestock use are generally seasonal. Presently, all public lands within the planning area are leased for grazing.

### **Land Ownership**

The La Plata Travel Unit contains a total of 145,066 acres. Of this 73,380 acres are public land. Only 26,976 acres are outside of a SDA.

### **Oil and Natural Gas Production**

Hydrocarbon production in the planning area consists primarily of natural gas production, CBM production, and a small amount of oil/condensate production. The natural gas production rate from the entire San Juan Basin is approximately 4.0 billion cubic feet per day (Bcfd), as of July 2000 (Engler et al. 2001). The Fruitland Coal, Pictured Cliffs, Mesa Verde, and Dakota formations are the primary natural gas-producing formations in the San Juan Basin, although the Fruitland Sand and Chacra also produce notable amounts of natural gas. These formations range in age from 60 to 300 million years before the present time (Tertiary to Pennsylvanian ages).

Of the 1.6 billion thousand cubic feet (Mcf) of gas produced in New Mexico in 1997, almost 1.1 billion (about two thirds) was from the FFO.

San Juan County is the largest natural gas producing county in the state, producing about between 650 and 700 million Mcf annually.

Natural gas production and its' resulting infrastructure, such a roads and well pads, can have major impacts on recreation management. Some potential impacts are:

- Provides easy access to the public to areas previously not used for recreational use.
- Increased access can result in resource damage from illegal trails, and cross country travel where there was none previously.
- New well pads, pipeline right-of-ways, and roads can impact existing recreational trails and development.
- Increased access to an area often results in an increase in illegal activities such as trash dumping, vandalism, illegal wood cutting," pot hunting" poaching, etc.
- An increase in noise from compressors and pump jacks.

**Well Data for the La Plata Travel Unit** note: data accurate as of July 2005

Township & Range	Total Wells	Greatest No. of Wells in a Section	Least No. of Wells in a Section	Average No. of Wells per Sections
T32N, R10W	181	10	2	5.0
T32N, R11W	247	14	3	6.9
T32N, R12W	133	13	2	3.7
T32N, R13W	24	5	1	0.7
T31N, R10W	279	12	4	7.8
T31N, R11W	259	15	2	7.2
T31N, R12W	259	13	2	7.2
T31N, R13W	86	9	1	2.4
T30N, R11W	209	12	2	5.8
T30N, R12W	142	11	1	3.9
T30N, R13W	140	10	1	3.9
T29N, R13W	101	11	1	2.8

**Other Uses**

The La Plata Coal mine was located in Township 32 North, Range 12 & 13 West

The La Plata Mine began producing coal in 1986. The coal was hauled to the San Juan Mine, where it was stockpiled for supply to the San Juan Generating Station. Coal production ceased in December 2002 and the coal haul was completed three months later, enabling reclamation of the site to commence.

**Locations of Permitted quarries in the Planning Area**

Township	Range	Section	Division	Material	Acreage
32N	10W	29	W1/2NE	Sand and Gravel	80
32N	13W	15	NENE	Stone	40
32N	R13W	14	NWNW	Stone	40
30N	12W	4	NESWNE	Fill Material	10
30N	12W	11	NWSE	Sand and Gravel	40

## **ENVIRONMENTAL IMPACTS**

### **Alternative I – Proposed Action (environmental impacts)**

#### **General**

The proposed action would implement the La Plata Travel Management Plan (LPTMP).

#### **Soils, Vegetation, Water**

Factors such as steep slopes, amount and type of vegetation, runoff potential, and wind affect the amount and rate of natural erosion of soils. Erosion is accelerated by surface disturbances, such as those caused by travel of motorized and non-motorized vehicles and construction activities such as roads. Cross country travel and travel on established routes can expose soil to wind and water erosion, form a compacted layer which reduces infiltration and increases runoff. Good route design can to a large extent mitigate these problems.

Vehicle travel on established routes will have little impact on vegetation. Any cross-country travel has the potential to crush and uproot vegetation and leave visible tracks for others to follow.

Implementing the designations in the LPTMP would help reduce the incidence of unauthorized cross-country travel or travel on routes not suitable for the type of vehicle, assuming compliance with the designations. Where necessary, routes proposed for closure would be restored as described in the LPTMP.

Visual impacts in the area will be reduced as routes are closed and rehabilitated. Re-seeding and subsequent re-vegetation would increase site stability, reduce erosion, and reduce impacts to visual resources.

#### **Air Quality**

Motorized vehicle use creates exhaust and fugitive dust when traveling on dirt routes. This can lead to short term impacts to air quality in the immediate location of the vehicle. Areas with no vegetation are susceptible to wind erosion and are sources of dust. Implementation of the preferred alternative would not impact overall air quality of the region.

#### **Invasive Species**

Vehicles, people, and animals can spread noxious weed seeds. Weed seeds are often carried in vehicle radiators, undercarriages, tire treads, or attached to clothing, shoes, or animal fur. These seeds may dislodge and become established in areas previously weed free. Areas where soil and vegetation have been disturbed due to cross-country travel or other disturbance are especially vulnerable to the establishment of invasive, non-native species.

The designation of some routes and the closure of others would help prevent further spread of weeds by vehicles. Increased monitoring as identified in the LPTMP would identify areas needing treatment and restoration.

Educational efforts would be implemented to ensure that public land users are aware of what they can do to help prevent the spread of invasive, non-native species. Stipulations attached to permitted actions, such as Special Recreation Permits (SRPs) would help reduce the introduction of invasive species.

**Visual Resources**

Visual resources would be impacted on a short term basis by restoration projects to obliterate closed routes, and reduce route proliferation. An increasing number of signs and route markers, and barriers could impact visual resources. This will be mitigated by consideration of sign and marker design, color and placement.

**Wildlife**

Designating a network of routes would reduce disturbance to wildlife by vehicles. Use of designated routes and the restoration of closed routes would reduce habitat fragmentation. Prohibiting cross-country travel outside of the GRRRA or in other designated areas will reduce the impact of vehicles on wildlife. When it is necessary seasonal restrictions will be put in place to protect nesting raptors, or any other species of concern.

**T&E Species**

Designating some routes and closing others is not expected to affect listed species, or species of concern. All routes, where necessary, will be checked for T&E species and re-routed where necessary to avoid T&E species.

**Migratory Birds of Conservation Concern**

Implementation of the proposed action should benefit migratory birds by reducing the amount of cross country use. Pervasive non-regulated use can be detrimental to nesting birds.

<b>Species</b>	<b>Effects</b>	<b>Impact Rating Low/Moderate/High</b>
Loggerhead shrike	Little effect anticipated	Low
Sage thrasher	Little effect anticipated	Low
Sage sparrow	Little effect anticipated	Low
Black-throated sparrow	Little effect anticipated	Low
Ash-throated flycatcher	Little effect anticipated	Low
Burrowing owl	Little effect anticipated	Low
Bendire’s thrasher	Little effect anticipated	Low
Gray vireo	Little effect anticipated	Low
Gray flycatcher	Little effect anticipated	Low

Juniper titmouse	Little effect anticipated	Low
Pinyon jay	Little effect anticipated	Low
Cassin's kingbird	Little effect anticipated	Low
Black-throated gray warbler	Little effect anticipated	Low
Ash-throated flycatcher	Little effect anticipated	Low

### **Cultural Resources**

All routes, if not excepted or previously surveyed, will be surveyed for cultural sites. The discovery of a cultural site will result in the re-location of the route in consultation with the cultural staff.

### **Specially Designated Areas**

Not affected as they have their own cross country travel prescriptions.

### **Recreation**

Implementation of the LPTMP will reduce user conflict, reduce private property trespass, and increase public awareness of recreational opportunities in the planning area.

### **Other Uses**

Reducing the number of routes within the planning area, and the restoration and re-vegetation of closed routes would be a benefit to the grazing operators.

Approval of this alternative is not expected to have an effect on the ability of the natural gas industry to conduct operations within the planning area.

Most routes used by the oil and gas industry will be considered open for public use as long as the well is producing. Once the well is plugged, the road would be closed and reclaimed and no longer considered a route open to the public, unless it was already designated as part of a recreation trail system.

Pipeline right-of-ways will not be considered open for public travel unless specifically designated for that use.

Designation of routes will help to reduce trespass on private and non-public lands adjoining the planning area. The maps, signs and markers, education efforts and information associated with the implementation of the plan will provide a means to educate the public about the location and access status of non-public lands.

Routes that provide access to non-public lands and rights-of-way (ROW) would remain available to permitted users and would not affect private landowners or ROW owners.

**Cumulative Impacts**

Designation of an appropriate network of routes, closures and restoration is expected to address public and administrative access needs, protect resources, promote public safety, and minimize conflicts among the various users of public lands.

Motorized and non-motorized recreation, along with other types of outdoor recreation, is going to increase as the general population increases, leading to increased conflicts in popular areas. The travel management plan will help to reduce these conflicts through education and information available to the public.

**Alternative II – No Action**

This alternative would be a continuation of existing conditions. The area would be susceptible to route proliferation, trespass on to non-public lands, resource degradation, and user conflict and increased cross country travel. The continued presence of unauthorized routes and activities such as hill-climbing impact soils, vegetation, visual resources, wildlife, T&E species, and cultural resources through erosion, compaction, vegetation removal and resource damage.

Issues related to resource protection, public safety, and conflicts between various users of public lands would not be addressed and would increase.

**Summary of Effects and Impact Rating**

Resource	Alternative II – No Action	
	Summary of Effects	Impact Rating Low/Medium/High
Soils	Increased erosion, compaction, and runoff.	Medium to High
Landcover	Vegetation trampling and destruction in use areas.	Medium to High
Micro Biotic Crusts	Increased trampling and destruction of crusts. Loss of nutrients to soil.	Medium to High
Riparian	Increased damage to riparian vegetation, pollution of springs and flowing water.	Medium to High
Air Quality	Short term effects only.	Low
VRM	Route proliferation would result in a less natural appearance to the landscape.	Medium
Noxious Weeds	Route proliferation can result in the transfer of noxious weed to new areas.	Medium

Special Status Species	Increased habitat damage, trampling and destruction of special status species.	Medium to High
Cultural	Increased damage to cultural sites.	Medium to High
Paleontology	Increased damage to paleontological resources by increased erosion and crushing of delicate remains.	Medium to High
Conflict	Trespass issues, vandalism, and conflict between user groups would increase.	Medium to High
Safety	Allowing routes across well pads and along pipeline ROWs is a safety concern.	Medium
Wildlife	Proliferation of routes would result in increased habitat fragmentation and stress to wildlife.	Medium to High

### **Alternative III – Designate All Existing Routes**

The environmental impacts of designating all existing routes would be similar to Alternative I – Proposed Action, with the exception of actions related to barriers and restoration, since no routes would be closed under this alternative. Selection of this alternative would allow the present resource impacts to continue. Concerns related to resource protection, public safety, and conflicts between various users of public lands and adjacent non-public lands would not be addressed to the extent that they are by Alternative I.

#### **Summary of Effects and Impact Rating**

<b>Resource</b>	<b>Alternative II – No Action</b>	
	<b>Summary of Effects</b>	<b>Impact Rating Low/Medium/High</b>
Soils	Increased erosion, compaction, and runoff.	Medium to High
Landcover	Vegetation trampling and destruction in use areas.	Medium to High
Micro Biotic Crusts	Increased trampling and destruction of crusts. Loss of nutrients to soil.	Medium to High

Riparian	Increased damage to riparian vegetation, pollution of springs and flowing water.	Medium to High
Air Quality	Short term effects only.	Low
VRM	Route proliferation would result in a less natural appearance to the landscape.	Medium
Noxious Weeds	Route proliferation can result in the transfer of noxious weed to new areas.	Medium
Special Status Species	Increased habitat damage, trampling and destruction of special status species.	Medium to High
Cultural	Increased damage to cultural sites.	Medium to High
Paleontology	Increased damage to paleontological resources by increased erosion and crushing of delicate remains.	Medium to High
Conflict	Trespass issues, vandalism, and conflict between user groups would increase.	Medium to High
Safety	Allowing routes across well pads and along pipeline ROWs is a safety concern.	Medium

### **Conformance with Existing Land Use Plans**

The Farmington Resource Management Plan as approved in March 2003 directs that the Farmington Field Office will be divided in to 13 Travel Management Units. Each unit would have a travel management plan developed for it.

The FRMP also states that “OHV use would be limited to maintained roads, designated trails, routes and areas on public lands in all Management Units, except where conditions are determined to be suitable for cross-country travel”.

Based on the above and the analysis contained in this Environmental Assessment and The La Plata Travel Management Plan, it is apparent that Alternative I: Proposed Action and

Alternative III: Designate all Existing Routes would be in conformance with the Farmington RMP objectives.

Based on the above and the analysis contained in this Environmental Assessment it has been determined that Alternative II: No Action would not be in conformance with the Farmington RMP objectives.

### **Consultation and Coordination**

A public meeting was held on February 2, 2004 to discuss the planning process for the development of the Travel Management Plans within the Farmington Field Office.

A meeting on August 25, 2005 was held to update the public on the plan.

## Potentially Impacted Resources

<b>Resources</b> *Indicates Critical Elements of the Human Environment	<b>Potentially Impacted</b>	<b>No Impact</b>	<b>Stipulations or Mitigation necessary</b>	<b>Not Present On Site</b>	<b>Comments included in EA text</b>	<b>BLM Evaluator</b>
Air Quality *		X				
Water Quality *- Surface/Ground		X				
Soils – Watershed – Hydrology						
Floodplains *		X		X		
Hazardous or Solid Waste Materials*		X				
Mineral Resources		X				
Riparian Zones*/Wetlands *						
Farmlands, Prime or Unique *		X		X		
Livestock Grazing						
Wild Horse and Burros		X		X		
Vegetation, Forestry						
Invasive, Non-native Species*						
Wildlife						
Special Status, T & E Species *						
Visual Resources						
Recreation						
<b>Congressional or Administrative Designations: *</b>						
ACECs *		X				
Wilderness *		X		X		
Wild and Scenic Rivers *		X		X		
Cultural or Historical*						
American Indian Religious Concerns *		X				
Paleontology						
Environmental Justice*		X				

## FINDING OF NO SIGNIFICANT IMPACT AND DECISION RECORD

**Project:** La Plata Travel Management Plan for Recreation

**Project Area:** La Plata Transportation Unit

**BLM Office:** Farmington Field Office, Farmington, New Mexico 87401 (505) 599-8900

### Finding of No Significant Impact

Based on the analysis of the potential environmental impacts of the proposed action in the attached environmental assessment, I have determined that NO significant impacts are expected and, therefore, an environmental impact statement is not required.

### Decision Record

**DECISION:** To approve Alternative C: The La Plata Travel Management Plan for Recreation.

**RATIONALE:** The decision to authorize Alternative C, as described in the attached Environmental Assessment (EA), is based on the following:

- Alternative C will not result in any undue or unnecessary environmental degradation.
- Mitigation measures applied by the BLM will alleviate or minimize environmental impacts.
- The proposed action is tiered to the PRMP/FEIS and in conformance with the Farmington Resource Management Plan (RMP) as approved by the Record of Decision signed September 29, 2003. The RMP is the guiding land use plan for the Public Lands Administered by the Farmington Field Office of the Bureau of Land Management (BLM).

**ADMINISTRATIVE REVIEW AND APPEAL:** Under BLM regulations, this decision record is subject to administrative review in accordance with 43 CFR 3165. Any request for administrative review of this decision record must include information required under 43 CFR 3165.3(b) (State Director Review), including all supporting documentation. Such a request must be filed in writing with the State Director, Bureau of Land Management, 1474 Rodeo Road, Santa Fe, NM 87505, no later than 20 business days after this Decision Record is received or considered to have been received.

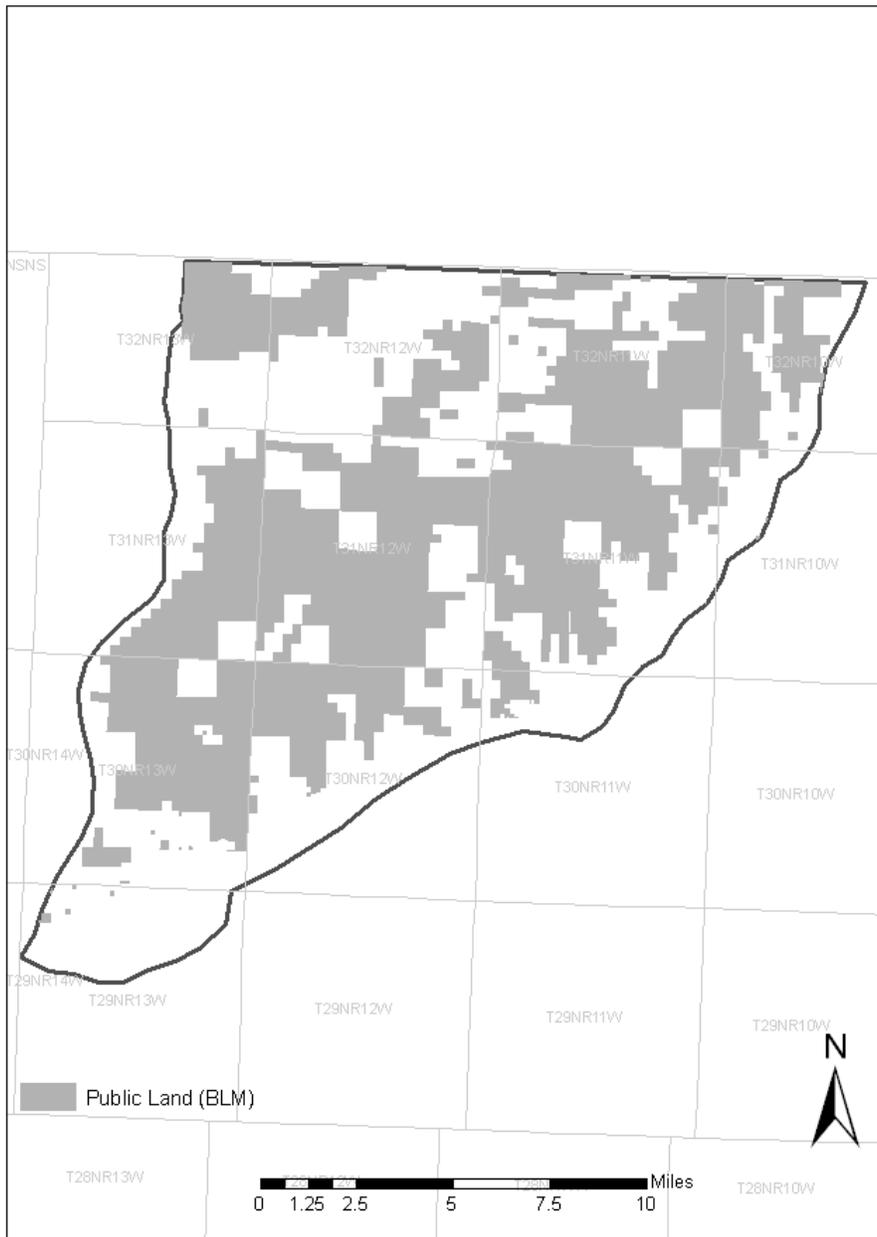
Any party who is adversely affected by the State Director's decision may appeal that decision to the Interior Board of Land Appeals, as provided in 43 CFR 3165.4.

Approved by: \_\_\_\_\_  
Farmington Field Manager

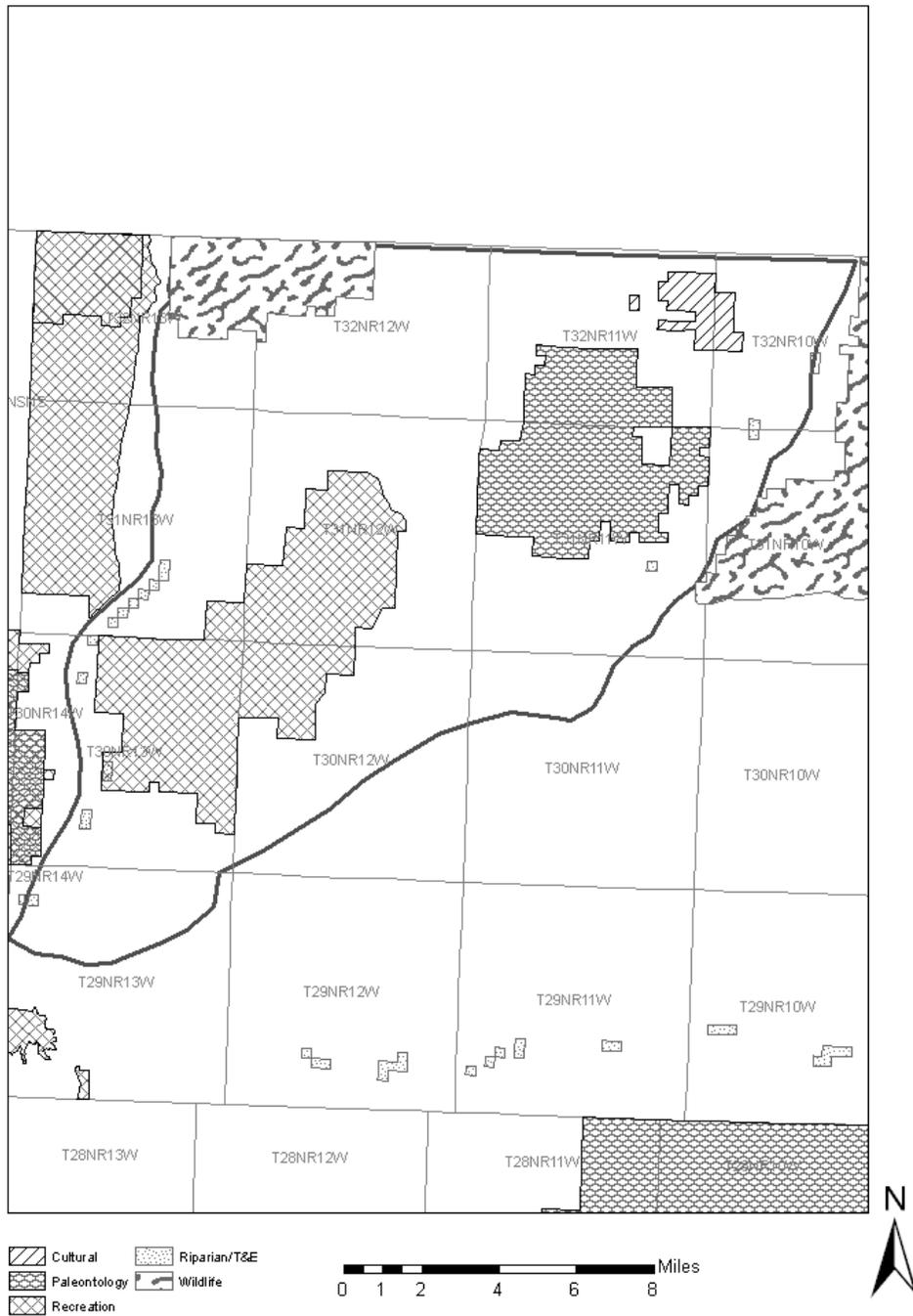
\_\_\_\_\_  
Date

## **Appendix A: Maps**

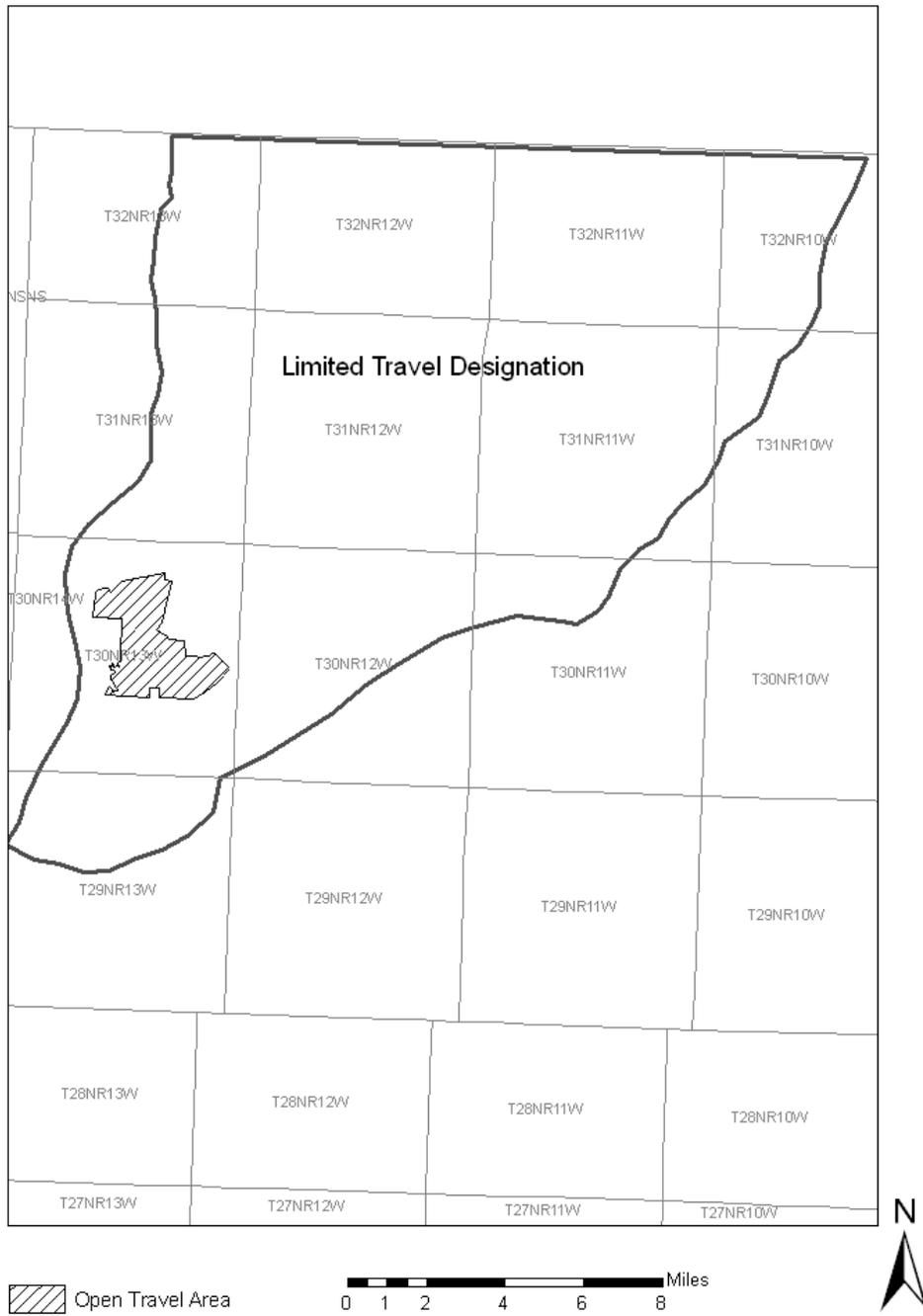
# La Plata Unit-Public Lands



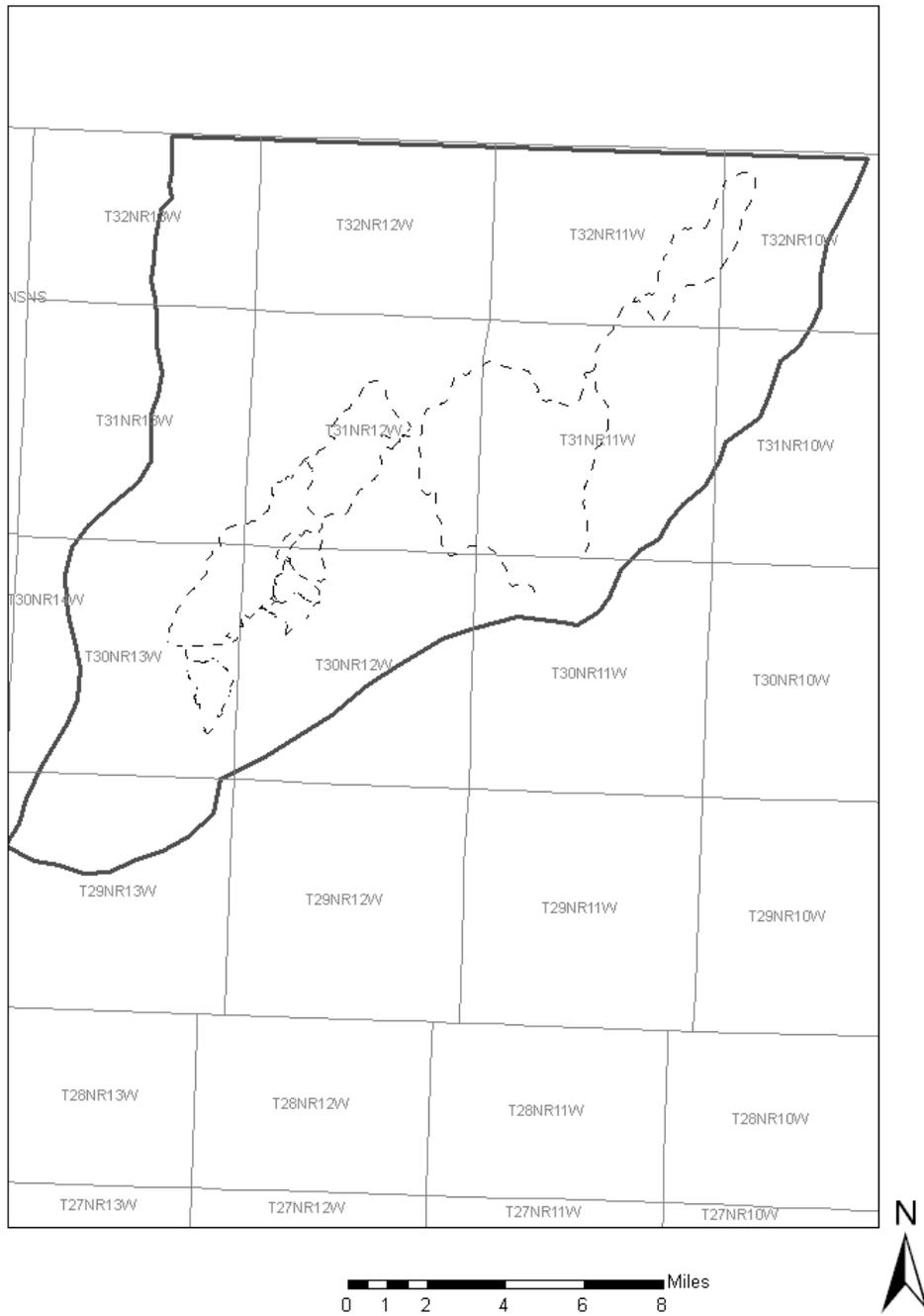
# La Plata Unit-Specially Designated Areas



# La Plata Unit- Designations



# La Plata Unit- Designated Trails



# La Plata Unit-Watersheds



## **Appendix B: Wildlife Lists**

## **Amphibians, Reptiles, and Mammals of San Juan County and the Western portion of Rio Arriba County**

The species included in this list are expected to occur within the planning area, based on the habitat they normally inhabit.

Species that have been documented to be present within San Juan County and the western portion of Rio Arriba County: **(S)**, Species possibly present but never documented: **(PP)**.

**The Biomes where the species is likely to be found** are Coniferous Forest (**CF**; including meadows and grasslands), woodland (**WL**), grassland (**GL**), desert shrub (**DS**), and other (**OT**, may include tundra, riparian, rocks, etc). The primary biomes for migratory bats are recorded for summer breeding occurrence.

### **Amphibians**

#### **Order: Caudata (salamanders)**

##### **Family: Ambystomatidae (mole salamanders)**

Tiger Salamander, *Ambystoma tigrinum*, **S, CF, WL, GL, OT**, non-flowing water needed for breeding.

#### **Order: Anura (frogs & toads)**

##### **Family: Pelobatidae (spadefoots)**

Plains Spadefoot, *Spea bombifrons*, **S, GL**

New Mexico Spadefoot, *Spea multiplicata*, **S, WL, GL, DS**

##### **Family: Bufonidae (toads)**

Red-spotted Toad, *Bufo punctatus*, **S, WL, GL, DS**

Woodhouse's Toad, *Bufo woodhousii*, **S, WL, GL, OT**, Riparian

##### **Family: Hylidae (treefrogs)**

Western Chorus Frog, *Pseudacris triseriata*, **S, OT**, Riparian

##### **Family: Ranidae (true frogs)**

Bullfrog, *Rana catesbeiana*, **S, OT**, Riparian

Northern Leopard Frog, *Rana pipiens*, **S, OT**, Riparian

## **Reptiles**

**Order: Testudines (turtles)**

**Family: Emydidae (box and water turtles)**

Painted Turtle, *Chrysemys pictas*, **S, OT**, Riparian

**Order: Squamata (lizards and snakes)**

**Suborder: Sauria (lizards)**

**Family: Crotaphytidae (collared and leopard lizards)**

Collared Lizard, *Crotaphytus collaris*, **S, WL, GL, DS**

Leopard Lizard, *Gambelia wislizenii*, **S, WL, GL, DS**

**Family: Phrynosomatidae (zebratail, earless, spiny, tree, side-blotched, and horned lizards)**

Lesser Earless Lizard, *Holbrookia maculate*, **S, WL, GL, DS**

Short-horned Lizard, *Phrynosoma hernandesi*, **S, CF, WL, GL, DS**

Sagebrush Lizard, *Sceloporus graciosus*, **S, WL, GL, DS**

Desert Spiny Lizard, *Sceloporus magister*, **S, WL, GL, DS**

Prairie Lizard, *Sceloporus undulates*, **S, CF, WL, GL, DS**

Tree Lizard, *Urosaurus ornatus*, **S, CF, WL, GL, DS**

Side-blotched Lizard, *Uta stansburiana*, **S, WL, GL, DS**

**Family: Teiidae (whiptails)**

Little Striped Whiptail, *Cnemidophorus inornata*, **S, WL, GL, DS**

Western Whiptail, *Cnemidophorus tigris*, **S, WL, GL, DS**

Plateau Striped Whiptail, *Cnemidophorus velox*, **S, WL, GL, DS**

**Suborder: Serpentes (snakes)**

**Family: Colubridae (colubrids)**

Glossy Snake, *Arizona elegans*, S, WL, GL, DS

Racer, *Coluber constrictor*, S, CF, WL, GL, DS

Western Hognose Snake, *Heterodon nasicus*, WL, GL, DS

Night Snake, *Hypsiglena torquata*, S, CF, WL, GL, DS

Common Kingsnake, *Lampropeltis getula*, S, WL, GL, DS

Milk Snake, *Lampropeltis triangulum*, S, CF, WL, GL, DS

Striped Whipsnake, *Masticophis taeniatus*, S, CF, WL, GL, DS

Gopher Snake, *Pituophis catenifer*, S, CF, WL, GL, DS

Blackneck Garter Snake, *Thamnophis cyrtopsis*, S, OT, Riparian

Western Terrestrial Garter Snake, *Thamnophis elegans*, S, CF, WL, DS, OT, Riparian

**Family: Viperidae (vipers)**

Western Rattlesnake, *Crotalus viridis*, S, CF, WL, GL, DS

**Mammals**

**Order: Insectivera**

**Family: Soricidae**

Desert Shrew, *Notiosorex crawfordi*, PP, WL, GL, DS

**Order: Chiroptera**

**Family: Vespertilionidae**

Pallid Bat, *Antrozous pallidus*, S, GL, DS

Townsend's Big-eared Bat, *Eptesicus fuscus*, S, CF, WL, DS, OT, Riparian

Spotted Bat, *Euderma maculatum*, S, CF, WL

California Myotis, *Myotis californicus*, S, WL, GL, DS

Western Small-footed Myotis, *Myotis ciliolabrum*, **S, CF, WL, GL**

Little Brown Myotis, *Myotis lucifugus*, **S, CF, WL**

Fringed Myotis, *Myotis thysanodes*, **PP, CF, WL, GL**

Yuma Myotis, *Myotis yumanensis*, **S, WL, GL, DS**

Silver-haired Bat, *Lasionycteris noctivagans*, **S, CF, WL**

Western Pipistrelle, *Pipistrellus hesperus*, **S, WL, GL, DS**

Big Brown Bat, *Eptesicus fuscus*, **S, CF, WL**

Hoary Bat, *Lasiurus cinereus*, **S, CF, WL**

**Family: Molossidae**

Big Free-tailed Bat, *Nyctinomops macrotis*, **S, WL, GL, DS**

Brazilian Free-tailed Bat, *Tadarida brasiliensis*, **S, WL, GL, DS**

**Order: Lagomorpha**

**Family: Leporidae**

Black-tailed Jackrabbit, *Lepus californicus*, **S, WL, GL, DS**

Desert Cottontail, *Sylvilagus audubonii*, **S, WL, GL, DS**

Mountain Cottontail, *Sylvilagus nuttalli*, **S, CF, WL**

Eastern Cottontail, *Sylvilagus floridanus*, **S, CF, WL**

**Order: Rodentia**

**Family: Sciuridae**

Cliff Chipmunk, *Tamias dorsalis*, **S, CF, WL**

Colorado Chipmunk, *Tamias quadrivittatus*, **S, CF, WL**

White-tailed Antelope Squirrel, *Ammospermophilus leucurus*, **S, WL, GL**

Spotted Ground Squirrel, *Spermophilus spilosoma*, **S, GL**

Rock Squirrel, *Spermophilus variegatus*, **S, OT**, Rocky Areas

Gunnison's Prairie Dog, *Cynomys gunnisoni*, **S, WL, GL**

**Family: Geomyidae**

Botta's Pocket Gopher, *Thomomys bottae*, **S, CF, WL, GL, DS**

**Family: Heteromyidae**

Ord's Kangaroo Rat, *Dipodomys ordii*, **S, GL, DS**

Banner-Tailed Kangaroo Rat, *Dipodomys spectabilis*, **S, GL**

Plains Pocket Mouse, *Perognathus flavescens*, **S, GL, DS**

Silky Pocket Mouse, *Perognathus flavus*, **S, GL, DS**

**Family: Castoridae**

Beaver, *Castor canadensis*, **S, OT**, Riparian

**Family: Muridae**

White-throated Woodrat, *Neotoma albigula*, **S, WL, GL, DS**

Bushy-tailed Woodrat, *Neotoma cinerea*, **S,**

Mexican Woodrat, *Neotoma mexicana*, **S, WL, GL**

Stephen's Woodrat, *Neotoma stephensi*, **S, WL**

Northern Grasshopper Mouse, *Onychomys leucogaster*, **S, GL**

Brush Mouse, *Peromyscus boyii*, **S, WL**

Canyon Mouse, *Peromyscus crinitus*, **S, WL**

Deer Mouse, *Peromyscus maniculatus*, **S, CF, WL, GL, DS**

Pinyon Mouse, *Peromyscus truei*, **S, WL**

Western Harvest Mouse, *Reithrodontomys megalotis*, **S, GL, DS**

Mexican Vole, *Microtus mexicanus*, **S, CF, WL**

Muskrat, *Ondatra zibethicus*, **S, OT**, Riparian

House Mouse, *Mus musculus*, **S, GL, DS**

**Family: Erethizontidae**

North American Porcupine, *Erethizon dorsatum*, **S, CF, WL**

**Order: Carnivora**

**Family: Canidae**

Coyote, *Canis latrans*, **S, WL, GL, DS**

Gray Fox, *Urocyon cinereoargenteus*, **S, CF, WL**

Red Fox *Vulpes vulpes*, **S, CF, WL, GL**

Swift Fox, *Vulpes macrotis*, **S, GL, DS**

**Family: Ursidae**

American Black Bear, *Ursus americanus*, **S, CF, WL**

**Family: Procyonidae**

Ringtail, *Bassariscus astutus*, **PP, WL, GL**

Northern Raccoon, *Procyon lotor*, **S, OT**, Riparian

Northern River Otter, *Lutra canadensis*, **S, OT**, Pine River

**Family: Mustelidae**

Long-tailed Weasel, *Mustela frenata*, **S, CF, WL, GL**

Mink, *Mustela vison*, **S, OT**, Riparian

American Badger, *Taxidea taxus*, **S, GL, DS**

**Family: Mephitidae**

Striped Skunk, *Mephitis mephitis*, **S, CF, WL, GL, DS**

Western Spotted Skunk, *Spilogale gracilis*, **S, WL, GL, DS**

**Family: Felidae**

Bobcat, *Lynx rufus*, **S, CF, WL, GL**

Mountain Lion, *Puma concolor*, **S, CF, WL, GL, DS**

**Order Artiodactyla**

**Family: Cervidae**

Elk, *Cervus elaphus*, **S, CF, WL, GL**

Mule Deer, *Odocoileus hemionus*, **S, CF, WL, GL, DS**

**Family: Antilocapra**

Pronghorn Antelope, *Antilocapra americana*, **S, GL, DS**

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## ***Birds of San Juan County, New Mexico***

*San Juan County, New Mexico*

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261 species plus three additional races of birds are listed. 120 of those species have nested in the county.

Altitude, vegetation, irrigation, artificial lakes and other factors determine which birds are found locally. The diverse habitats of the river valleys, Jackson Lake Refuge, Morgan Lake, Chuska Mountains, Huerfano Mesa, Lake Navajo and Large Canyon offer the best birding.

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### **Seasons:**

Sp - Spring April - May  
S - Summer June - July  
F - Fall Sept. - Nov  
W - Winter Dec. - March

### **Symbols are defined as follows:**

a - abundant; easy to find and numerous.  
c - common; certain to be seen in suitable habitat.  
u - uncommon; expected in small numbers for brief periods  
o - occasional; usually seen a few times a season  
r - rare; seen once every few years.  
x - accidental; recorded but not expected.  
\* - evidence of nesting

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LOONS	Sp	S	F	W
____ Common Loon	r	-	r	r
GREBES	Sp	S	F	W

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___	Horned Grebe	-	-	-	O
___	•Eared Grebe	u	o	u	u
___	Western Grebe	u	-	u	u
___	•Pied-billed Grebe	u	o	u	u
<hr/>					
	PELICANS	Sp	S	F	W
___	American White Pelican	o	r	o	-
<hr/>					
	CORMORANTS	Sp	S	F	W
___	Double-crested Cormorant	-	-	o	-
<hr/>					
	BITTERNs, HERONS and EGRETS	Sp	S	F	W
___	Great-blue Heron	u	o	c	c
___	Green Heron	o	r	o	-
___	Great Egret	-	x	-	-
___	Snowy Egret	u	r	u	-
___	Black-crowned Night Heron	o	o	o	-
___	•Least Bittern	-	r	-	-
___	•American Bittern	u	u	-	o
<hr/>					
	IBISES and SPOONBILLS	Sp	S	F	W
___	White-faced Ibis	u	o	u	-
<hr/>					
	SWANS, GEESE and DUCKS	Sp	S	F	W
___	Whistling Swan	-	-	r	o
___	•Canada Goose	u	u	c	c
___	Snow Goose	r	-	o	r
___	•Mallard	c	u	a	a
___	Gadwall	c	o	c	u
___	Pintail	u	o	c	c
___	Green-winged Teal	c	o	c	c
___	Blue-winged Teal	u	o	u	o
___	•Cinnamon Teal	c	u	c	o
___	American Wigeon	u	o	c	c
___	Northern Shoveler	u	o	c	u
___	•Wood Duck	o	o	o	o
___	•Redhead	o	o	u	u
___	Ring-necked Duck	u	-	u	c
___	Canvasback	o	-	u	u
___	Lesser Scaup	o	-	u	u
___	Common Goldeneye	-	r	o	u
___	Bufflehead	u	-	c	c
___	•Ruddy Duck	c	o	c	u
___	Hooded Merganser	-	-	-	o
___	•Common Merganser	u	o	u	u
___	Red-breasted Merganser	-	-	x	-
<hr/>					
	NEW WORLD VULTURES	Sp	S	F	W

___ •Turkey Vulture	c	c	c	r
<hr/>				
KITES, HAWKS and EAGLES	Sp	S	F	W
___ Mississippi Kite	-	x	-	-
___ Goshawk	-	r	-	o
___ Sharp-shinned Hawk	-	r	o	o
___ •Cooper's Hawk	u	u	c	c
___ •Red-tailed Hawk	u	u	c	c
___ •Swainson's Hawk	-	o	o	-
___ Rough-legged Hawk	r	-	o	u
___ •Ferruginous Hawk	u	u	u	u
___ •Golden Eagle	o	o	u	u
___ •Bald Eagle	-	r	u	u
___ •Marsh Hawk	o	r	u	u
<hr/>				
OSPREY	Sp	S	F	W
___ Osprey	o	r	o	-
<hr/>				
FALCONS and CARACARAS	Sp	S	F	W
___ •Prairie Falcon	u	u	u	u
___ •Peregrine Falcon	r	r	r	r
___ Merlin	-	-	-	r
___ •American Kestrel	c	u	c	c
<hr/>				
GALLINACEOUS BIRDS	Sp	S	F	W
___ •Scaled Quail	u	u	c	c
___ •Gambel's Quail	c	c	a	a
___ •Ring-necked Pheasant	c	c	c	c
___ •Chukar	u	u	u	u
___ •Turkey	u	u	u	u
<hr/>				
RAILS	Sp	S	F	W
___ •Virginia Rail	c	c	u	o
___ •Sora	c	c	u	o
___ •Common Gallinule	-	r	o	o
___ •American Coot	c	u	a	a
<hr/>				
PLOVERS	Sp	S	F	W
___ Semipalmated Plover	o	-	o	-
___ Snowy Plover	r	-	r	-
___ •Killdeer	c	c	c	u
___ •Mountain Plover	-	o	-	-
___ American Golden Plover	-	-	x	-
___ Black-bellied Plover	o	-	o	r
<hr/>				
SANDPIPERS	Sp	S	F	W

___	Common Snipe	o	-	o	u
___	Long-billed Curlew	o	-	o	r
___	•Spotted Sandpiper	u	u	u	-
___	Willet	u	-	u	-
___	Greater Yellowlegs	u	r	u	r
___	Lesser Yellowlegs	o	r	u	-
___	Pectoral Sandpiper	-	r	o	-
___	Baird's Sandpiper	-	r	o	-
___	Least Sandpiper	r	-	-	-
___	Long-billed Dowitcher	o	-	u	r
___	Western Sandpiper	u	o	u	-
___	Marbled Godwit	u	-	o	-
___	Sanderling	o	-	o	-

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STILTS and AVOCETS	Sp	S	F	W
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___	American Avocet	u	r	u	-
___	Black-necked Stilt	r	-	-	-

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PHALAROPES	Sp	S	F	W
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___	Wilson's Phalarope	u	o	u	-
___	Northern Phalarope	r	-	r	-

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GULLS and TERNS	Sp	S	F	W
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___	Herring Gull	o	-	o	r
___	Ring-billed Gull	u	o	c	u
___	Franklin's Gull	o	r	u	-
___	Bonaparte's Gull	o	r	o	r
___	Sabine's Gull	-	-	x	-
___	Forster's Tern	o	o	u	-
___	Caspian Tern	-	x	-	-
___	Black Tern	u	u	u	-

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PIGEON and DOVES	Sp	S	F	W
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___	•Band-tailed Pigeon	u	u	u	-
___	•Rock Dove	u	u	u	u
___	•Mourning Dove	a	c	a	c
___	Inca Dove	-	x	x	-

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CUCKOOS and ANIS	Sp	S	F	W
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___	•Yellow-billed Cuckoo	-	o	r	-
___	Roadrunner	x	-	-	-

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BARN OWLS	Sp	S	F	W
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___	Barn Owl	x	-	-	-
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TYPICAL OWLS	Sp	S	F	W
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___ •Screech Owl	o	o	o	o
___ •Great Horned Owl	u	u	u	u
___ Pygmy Owl	x	-	-	-
___ •Burrowing Owl	u	u	u	-
___ •Long-eared Owl	o	o	o	o
___ Short-eared Owl	-	-	x	-
<hr/>				
NIGHTJARS	Sp	S	F	W
___ Poor-will	-	r	r	-
___ •Common Nighthawk	u	c	c	-
<hr/>				
SWIFTS	Sp	S	F	W
___ Black Swift	-	x	-	-
___ •White-throated Swift	c	c	c	r
<hr/>				
HUMMINGBIRDS	Sp	S	F	W
___ •Black-chinned Hummingbird	c	c	c	-
___ •Broad-tailed Hummingbird	c	u	u	-
___ Rufous Hummingbird	-	u	c	-
___ Calliope Hummingbird	-	-	o	-
<hr/>				
KINGFISHERS and WOODPECKERS	Sp	S	F	W
___ Belted Kingfisher	u	o	u	u
___ •Common Flicker (red-shafted)	c	u	c	c
___ Red-headed Woodpecker	-	r	-	-
___ Acorn Woodpecker	o	o	o	-
___ •Lewis Woodpecker	u	o	o	o
___ Yellow-bellied Sapsucker	o	-	u	o
___ Williamson's Sapsucker	-	r	o	-
___ •Hairy Woodpecker	u	o	u	u
___ Downy Woodpecker	o	o	u	o
___ Northern Three-toed Woodpecker	-	r	-	-
<hr/>				
TYRANT FLYCATCHERS	Sp	S	F	W
___ •Eastern Kingbird	o	o	-	-
___ •Western Kingbird	c	a	c	r
___ •Cassin's Kingbird	u	o	o	-
___ •Ash-throated Flycatcher	c	u	u	-
___ Eastern Phoebe	r	-	-	-
___ Black Phoebe	r	r	-	-
___ •Say's Phoebe	c	u	u	o
___ •Willow Flycatcher (Traill's)	u	u	u	-
___ •Gray Flycatcher	o	o	-	-
___ Western Flycatcher	u	r	u	-
___ •Western Wood Peewee	u	u	u	-
___ Olive-sided Flycatcher	o	-	o	-
<hr/>				
LARKS	Sp	S	F	W

___ •Horned Lark	c	c	a	a
<hr/>				
SWALLOWS	Sp	S	F	W
___ •Violet-green Swallow	c	u	u	-
___ Tree Swallow	u	r	-	r
___ Bank Swallow	o	-	o	-
___ •Rough-winged Swallow	u	u	u	-
___ •Barn Swallow	c	a	c	r
___ •Cliff Swallow	c	a	c	-
___ Purple Martin	r	r	-	-
<hr/>				
CROWS, JAYS and MAGPIES	Sp	S	F	W
___ •Stellar's Jay	c	c	c	u
___ •Scrub Jay	u	c	c	u
___ •Black-billed Magpie	a	a	a	c
___ •Common Raven	c	c	c	c
___ Common Crow	u	c	c	u
___ •Pifion Jay	c	c	c	c
___ Clark's Nutcracker	o	o	o	o
<hr/>				
CHICKADEES	Sp	S	F	W
___ •Black-capped Chickadee	c	u	c	c
___ Mountain Chickadee	u	u	u	c
___ •Plain Titmouse	u	u	u	u
___ •Bushtit	u	u	u	u
<hr/>				
NUTHATCHES	Sp	S	F	W
___ •White-breasted Nuthatch	u	u	u	u
___ Red-breasted Nuthatch	r	-	o	o
___ •Pygmy Nuthatch	u	u	u	u
<hr/>				
CREEPERS	Sp	S	F	W
___ Brown Creeper	o	o	o	o
<hr/>				
DIPPERS	Sp	S	F	W
___ Dipper	-	-	-	r
<hr/>				
WRENS	Sp	S	F	W
___ •House Wren	u	o	u	-
___ •Bewick's Wren	u	o	u	u
___ •Long-billed Marsh Wren	u	o	o	u
___ •Cañon Wren	u	o	u	o
___ •Rock Wren	u	u	u	o
<hr/>				
MIMIC THRUSHES	Sp	S	F	W

___ •Mockingbird	c	c	u	o
___ Gray Catbird	r	-	r	-
___ Brown Thrasher	o	-	o	-
___ Bendire's Thrasher	r	o	r	-
___ •Sage Thrasher	u	u	u	o

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THRUSHES	Sp	S	F	W
___ •American Robin	a	c	c	a
___ Hermit Thrush	u	-	u	r
___ Swainson's Thrush	x	-	x	-
___ •Western Bluebird	u	u	o	c
___ •Mountain Bluebird	c	c	c	c
___ Townsend's Solitaire	o	o	o	u

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KINGLETS	Sp	S	F	W
___ •Blue-gray Gnatcatcher	c	c	c	r
___ Golden-crowned Kinglet	-	-	x	x
___ Ruby-crowned Kinglet	c	-	c	u

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WAGTAILS and PIPITS	Sp	S	F	W
___ Water Pipit	o	-	o	u

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WAXWINGS	Sp	S	F	W
___ Bohemian Waxwing	-	-	r	o
___ Cedar Waxwing	u	-	o	u

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SHRIKE	Sp	S	F	W
___ Northern Shrike	-	-	-	x
___ •Loggerhead Shrike	c	c	c	c

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STARLING	Sp	S	F	W
___ •European Starling	a	c	a	a

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VIREOS	Sp	S	F	W
___ •Gray Vireo	r	o	-	-
___ •Solitary Vireo	o	o	u	-
___ Red-eyed Vireo	-	-	x	-
___ •Warbling Vireo	o	u	u	-

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WOOD WARBLERS	Sp	S	F	W
___ Black-and-white Warbler	o	-	-	-

___	Orange-crowned Warbler	o	-	o	-
___	Nashville Warbler	-	-	x	-
___	Virginia Warbler	u	-	o	-
___	Lucy's Warbler	x	-	-	-
___	•Yellow Warbler	c	c	c	-
___	Magnolia Warbler	-	-	x	-
___	Black-throated Blue Warbler	-	-	x	-
___	•Yellow-rumped Warbler (Audubon)	c	u	c	u
___	Yellow-rumped Warbler (Myrtle)	o	-	-	-
___	•Black-throated Gray Warbler	u	u	u	-
___	Black-throated Green Warbler	x	-	x	-
___	Townsend's Warbler	o	-	o	-
___	•Grace's Warbler	o	o	-	-
___	Palm Warbler	x	-	-	-
___	Ovenbird	x	-	-	-
___	Northern Waterthrush	o	-	o	-
___	MacGillivray's Warbler	u	-	c	-
___	•Common Yellowthroat	u	u	u	-
___	•Yellow-breasted Chat	c	c	u	-
___	Wilson's Warbler	c	r	c	-
___	American Redstart	o	-	o	-

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OLD WORLD SPARROWS	Sp	S	F	W
___ •House Sparrow	a	a	a	a

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BLACKBIRDS and ORIOLES	Sp	S	F	W
___ •Western Meadowlark	a	a	a	c
___ •Yellow-headed Blackbird	c	c	c	u
___ •Red-winged Blackbird	a	a	a	a
___ •Scott's Oriole	o	o	r	-
___ •Northern Oriole (Bullock's)	c	c	c	-
___ •Brewer's Blackbird	a	a	a	c
___ •Great-tailed Grackle	u	u	u	u
___ •Common Grackle	o	r	-	r
___ •Brown-headed Cowbird	c	c	u	o

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TANAGERS	Sp	S	F	W
___ •Western Tanager	c	u	c	-
___ Scarlet Tanager	r	-	r	-

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SPARROWS and TOWHEES	Sp	S	F	W
___ Rose-breasted Grosbeak	o	-	-	-
___ •Black-headed Grosbeak	c	c	c	-
___ •Blue Grosbeak	u	c	c	-
___ •Indigo Bunting	o	r	-	-
___ •Lazuli Bunting	u	u	u	-
___ Dickcissel	-	-	-	x
___ Evening Grosbeak	o	-	o	o
___ Cassin's Finch	o	o	o	u
___ •House Finch	a	c	a	a
___ Gray-crowned Rosy Finch	-	-	-	r
___ Black Rosy Finch	-	-	-	x

___	Brown-capped Rosy Finch	-	-	-	r
___	•Pine Siskin	u	u	u	u
___	American Goldfinch	u	o	o	u
___	•Lesser Goldfinch	u	c	c	o
___	Lawrences's Goldfinch	x	-	-	-
___	Red Crossbill	o	-	-	-
___	Green-tailed Towhee	c	o	c	-
___	•Rufous-sided Towhee	c	c	c	c
___	•Brown Towhee	u	u	u	u
___	Lark Bunting	u	o	o	-
___	Savannah Sparrow	u	u	u	r
___	Baird's Sparrow	x	-	-	-
___	Vesper Sparrow	c	u	c	-
___	•Lark Sparrow	c	c	c	-
___	•Black-throated Sparrow	c	c	c	-
___	•Sage Sparrow	u	o	o	u
___	Dark-eyed Junco (White-winged)	-	-	x	x
___	Dark-eyed Junco (Slate-colored)	-	-	r	u
___	Dark-eyed Junco (Oregon)	a	-	c	a
___	•Gray-headed Junco	c	u	c	c
___	Tree Sparrow	-	-	-	o
___	•Chipping Sparrow	a	u	c	r
___	Brewer's Sparrow	c	u	u	-
___	Harris' Sparrow	o	-	o	-
___	White-crowned Sparrow	a	r	c	a
___	White-throated Sparrow	-	-	-	r
___	Fox Sparrow	x	-	-	-
___	Lincoln's Sparrow	o	-	r	r
___	Swamp Sparrow	r	-	r	-
___	Song Sparrow	u	-	o	c

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