Sheep Gas Gathering System Environmental Assessment

USDA Forest Service
Grand Mesa, Uncompahgre and Gunnison National Forests
Paonia Ranger District
Gunnison County, Colorado

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SUMMARY

The Grand Mesa, Uncompaghre and Gunnison National Forests (FS) propose to issue a 30-year 50-foot Special Use Authorization and temporary use area (TUA) permits that would authorize Gunnison Energy Corporation (GEC) to construct, operate and maintain the Sheep Gas Gathering System (SGGS). The SGGS project would involve installing approximately 10.8 miles (6.6 miles on NF land) of 12-inch diameter buried steel natural gas pipeline and a 6-inch diameter steel water pipeline within a 32-inch trench and install related aboveground appurtenances.

The project area is located in T. 11S., R.90W and T. 12S., R.90 and 91W., 6th P.M. and is within the Paonia Ranger District, Gunnison National Forest, Colorado. See Figures 1 and 2. This action is needed to transport natural gas from existing and proposed wells on leased lands (private and federal) to the existing Ragged Mountain Gas Gathering System for delivery into regional natural gas pipeline systems and energy market. The Proposed Action is described in detail in Chapter 2 of this document.

ALTERNATIVES CONSIDERED IN DETAIL

The Forest Service evaluated the following alternatives in detail:

- No action alternative - This alternative is the baseline for comparing with the Proposed Action. The natural gas and water pipeline and associated facilities would not be authorized or built.
- Proposed Action - The Proposed Action is the proposed pipeline route as submitted by the project proponent (GEC). The Proposed Action is also the agency's Preferred Alternative. Total length on the FS is approximately 6.6 miles.

Based upon the effects of the alternatives, the responsible official will decide whether or not to issue a 30-year 50-foot Use Special Authorization and temporary use area (TUA) permits that would authorize GEC to construct, operate and maintain the Sheep Gas Gathering System.

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

The environmental consequences of implementing this project, by alternative, are described in detail in Chapter 3 of this document. However, at the end of Chapter 2 are a series of alternative comparison tables that provide a concise summary of the effects respecting the key issues and the resource areas affected (e.g. Wildlife, recreation). These tables are not repeated in this section to avoid duplication, but can be found in Chapter 2, Section 2.4 - Comparison of Alternatives.

Table S-1. List of Key Issues

Issue Topic	Cause and Effect
1. The effect of pipeline construction, operation and maintenance on visual resources.	Pipeline ROW construction and installation of associated facilities could adversely affect the visual appearance of the landscape due to initial land disturbance and long-term appearance of a linear pipeline ROW.
2. Effects of pipeline construction on geologic hazards, geology, and soils	Pipeline ROW construction could adversely affect soil structure and stability in the project area thus potentially causing soil erosion and geologic hazards issues.
3. The short term effects of construction activities such as exhaust emissions, burning and fugitive dust on ambient air quality standards and nearby Class I airsheds.	Pipeline ROW construction and project-related traffic could cause reductions in air quality from fugitive dust, pollutants and NO^x and CO emissions that would not be in compliance with standards, regulations and requirements.
4. The effect of pipeline construction, operation and maintenance on roads, traffic and safety concerns.	Pipeline ROW and facility construction activities will change the amount and type of traffic on the NFSRs and other access routes, and creates concerns about traffic safety issues.
5. Effects on Big Game Wildlife Habitat	Pipeline ROW construction activities could adversely affect wildlife use of summer range and calving and fawning habitat due to displacement and/or loss of habitat.
6. Ground water resources	Pipeline trench construction could intercept shallow ground water resources, causing localized depletions. Breaks in the buried water pipeline could adversely affect shallow ground-water quality.
7. The short and long term effects of all aspects of pipeline construction, operation and maintenance on dispersed recreation, especially during hunting season.	Pipeline construction could disrupt recreational experience, and affect noise, safety and access issues.
8. The short and long term effects of all aspects of pipeline construction on noxious weeds	Pipeline construction could promote the entry of noxious weeds if not properly reclaimed.
9. The impacts that construction of pipeline construction may have on the various aquatic related resources, which includes riparian areas, surface waters, aquatic species, fisheries and wetland situations.	Pipeline constructions could impact various aquatic related resources.
10. The short term and long term effects of pipeline construction, installation and operations on surface water quality. These effects would include impacts associated with the transportation system needed to construct and operate the pipeline. Impacts to water quality will relate to other issues such as operations on steep or unstable slopes and the effects of spills.	Pipeline construction, operation and maintenance could affect surface water quality.

Table S-2. Comparison of Alternatives: Significant Issues

Issue Topic	No Action Alternative	Proposed Action
1. The effect of pipeline construction, operation and maintenance on visuals	No Effect	Short term effect due limited visibility from viewing platforms.
2. Effects of pipeline construction on geologic hazards, geology, and soils	No Effect	Pipeline ROW construction could adversely affect soil structure and stability in the project area thus potentially causing soil erosion and geologic hazard instability. Short term risk.
3. The short term effects of construction activities such as exhaust emissions, burning and fugitive dust on ambient air quality standards and nearby Class I airsheds.	No Effect	Short term effect during construction could cause reductions in existing air quality from fugitive dust, pollutants and emissions.
4. The effect of pipeline construction, operation and maintenance on roads, traffic and safety concerns	No Effect	Short term effect during construction only as roads will be upgraded to handle the traffic.
5. Effects on Big Game Wildlife Habitat	No Effect	Short term effect during construction as habitat will revegetate.
6. Pipeline trench construction could intercept shallow ground water resources, causing localized depletions and breaks in the buried water pipeline could adversely affect shallow ground-water quality.	No effect	Short term effects during construction, variable due to climatic conditions, expected to return to close to pre-construction conditions.
7. The short and long term effects of all aspects of pipeline construction, operation and maintenance on Recreation	No effect	Short term effect during construction could cause traffic, noise and access issues.
8. The short and long term effects of all aspects of pipeline construction on reclamation and noxious weeds	No effect	Short term effect during construction and operation. Reclamation and monitoring for noxious weeds in Special Use Authorizations will mitigate any long term effect.
9. The impacts that construction of pipeline construction may have on the various aquatic related resources, which includes riparian areas, surface waters, aquatic species, fisheries and wetland situations.	No effect	Pipeline construction could have a short term impact on various aquatic related resources.

Issue Topic	No Action Alternative	Proposed Action
10. The short term and long term effects of pipeline construction, installation and operations on water quality. These effects would include impacts associated with the transportation system needed to construct and operate the pipeline. Impacts to water quality will relate to other issues such as operations on steep or unstable slopes and the effects of spills	No effect	Pipeline construction, operation and maintenance could have a short term affect on water quality.

Table S-3. Comparison of Alternatives: Listed, Sensitive and MIS Species

Species Group	Status	No Action	Proposed Action
USFWS Listed Wildlife Species			
Canada lynx	USFWS Threatened	No Effect	No Effect *
Sensitive Wildlife Species			
Boreal toad	Sensitive	No Impact	No impact *
Northern leopard frog	Sensitive	No Impact	MIIH *
Wolverine	Sensitive	No Impact	No impact *
American marten	Sensitive	No Impact	No impact *
• Fringed myotis • Spotted bat • Townsends' big-eared bat	Sensitive	No Impact	No Impact *
• Pygmy shrew • Olive-sided flycatcher • American three-toed woodpecker • Purple martin • Loggerhead shrike • Brewer's sparrow	Sensitive	No Impact	MIIH *
• Northern goshawk • Ferruginous hawk • Northern harrier • Flammulated owl	Sensitive	No Impact	MIIH *
American peregrine falcom	Sensitive	No Impact	No Impact *
Lewis' woodpecker	Sensitive	No Impact	No impact *
MIS Wildlife Species			
Elk	MIS	No Impact	Short-term impacts, but meets MIS objectives *
Merriam's Wild Turkey	MIS	No Impact	Short-term impacts, but meets MIS objectives *
Red-naped Sapsucker	MIS	No Impact	Short-term impacts, but meets MIS objectives *

Species Group	Status	No Action	Proposed Action
Fisheries and Aquatic Species Listed Species			
Colorado Pikeminnow	Endangered	No Impact	No Impact
Humpback Chub	Endangered	No Impact	No Impact
Razorback Sucker	Endangered	No Impact	No Impact
Bonytail	Endangered	No Impact	No Impact
Sensitive Fish Species			
Bluehead Sucker	Sensitive	No Impact	MIIH
Flannelmouth Sucker	Sensitive	No Impact	MIIH
Roundtail Chub	Sensitive	No Impact	MIIH
Colorado River Cutthroat Trout	Sensitive	No Impact	MIIH
Mountain sucker	Sensitive	No impact	MIIH
MIS Fish Species			
Common Trout	MIS	No Impact	MIIH
Listed, Sensitive and Special Management Plant Species			
FSS plant species	Sensitive	No Impact	No impact as species to not occur in project area

MIIH - may impact individuals or habitat, but not likely to contribute to a trend towards federal listing.

- See Chapter 3 Wildlife section for more information

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CHAPTER 1: PURPOSE AND NEED FOR ACTION

1.1 DOCUMENT STRUCTURE

The Grand Mesa, Uncompahgre and Gunnison National Forests (GMUG) have prepared this Environmental Assessment in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This Environmental Assessment discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. The document is organized into four parts:

- *Chapter 1. Purpose and Need for Action:* This chapter includes information on project proposal, the purpose of and need for the project, and the agency's proposal for achieving that purpose and need. This section also details how the GMUG informed the public of the proposal and how the public responded.
- *Chapter 2. Alternatives, including the Proposed Action:* This section provides a more detailed description of the agency's proposed action as well as alternative methods for achieving the stated purpose and need. These alternatives were developed based on significant issues raised by the public the interdisciplinary team (IDT) and other agencies. Finally, this section provides a summary table of the environmental consequences associated with each alternative.
- *Chapter 3. Affected Environment and Environmental Consequences:* This chapter describes the physical, biological and human environments potentially affected by the proposed action and alternative, and describes the potential effects of the proposed action and the no-action alternative.
- *Chapter 4. Consultation and Coordination:* This chapter provides a list of preparers and agencies consulted during the development of the environmental assessment.
- *Other Sections:* The document also includes a glossary, a list of references, appendices that provide more detailed information to support the analyses presented in the environmental assessment.

Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at the Paonia Ranger District Office, 403 Rio Grande Ave, Paonia, CO. For information regarding planning record files please contact Nancy Schwieger, Project Manager at (970) 527-4131.

1.2 INTRODUCTION

On July 17, 2006, Gunnison Energy Corporation (GEC) submitted a proposal to construct, operate and maintain a natural gas pipeline and related facilities on National Forest System (NFS) lands administered by the GMUG. GEC also requested a temporary use area (TUA) authorization, and authorization to install a water pipeline to transport water co-produced with natural gas to a storage facility on private lands.

The Sheep Gas Gathering System (SGGS) proposal includes 12-inch diameter natural gas pipeline and an 6-inch diameter water pipeline to be co-located within a 50-foot right-of-way (ROW) authorized by a Special Use Authorization (SUA). The SUA would have a term of 30 years.

The proposed SGGS route would traverse through a portion of Gunnison County, Colorado (See Figure 1 for a vicinity map and Figure 2 for Proposed Action map). Of the approximately 10.8 miles of proposed pipeline, about 6.6 miles would be National Forest System (NFS) lands, and the remaining 4.2 miles would be located on private lands. The proposed SGGS has two sections, called the Sheep and the Ault sections, which are described below.

- The Sheep segment with related facilities would extend approximately 6.7 miles between its southern origin point on private land in Township (T) 12S, Range (R) 90W, 6th P.M. Section 1, and its northern terminus at the junction with the existing Ragged Mountain Pipeline (RMP) in T. 11S., R. 11W., Section 9. About 3.9 miles of the Sheep section would be on NFS lands, the remainder on private lands.
- The Ault segment would extend approximately 4.1 miles between its easterly origin point on private land in T. 11S., R. 90W. Section 27, and its westerly terminus at the junction with the Sheep section on private lands in T. 11S., R. 90W. Section 20. About 2.7 miles of the Ault section would be on NFS lands.

This pipeline and related facilities is proposed to transport natural gas from oil and gas leases on private and federal lands to the regional market.

GEC proposes to begin construction June 2007 with desired in-service date of late 2007. There is a possibility, depending on availability of crews and equipment or weather conditions that the pipeline construction will continue through 2 field seasons and be completed in 2008.

1.3 PURPOSE AND NEED

The GMUG has identified a need to authorize GEC to use NFS lands to construct, operate and maintain a 12-inch natural gas pipeline, a 6-inch water pipeline and associated facilities within a 50-foot ROW subject to terms and conditions of a Special Use Authorization (SUA), and temporary use area (TUA) permit along with operating plans and/or stipulations for use of federal lands. The proposed pipeline is sized at 12 inches in order to accommodate anticipated natural gas production in addition to future possible, though currently unknown, capacity needs that could arise from other leased production areas.

The overall purpose of the SGGS project is to transport natural gas produced from existing private and federal leases across federal lands to processing and distribution facilities, and ultimately to the local and regional markets. This project would contribute to meeting the need for regional energy resources.

The project responds to goals and objectives outline in the GMUG Land and Resource Management Plan as amended (GMUG Forest Plan, 1993). See Section 1.6 for specific goals and objectives of the Land Management Plan (LMP).

Figure 1-Vicinity Map

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Figure 2-Proposed Action Map

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By providing for energy mineral development, the GMUG LMP acknowledges that these areas could at some time be needed to support the facilities necessary for the production and transportation of natural gas.

1.4 PROPOSED ACTION IN BRIEF

A brief description of the proposed action is provided in this section. The proposed action and no action alternative are described in greater detail in Chapter 2.

The GMUG proposes to issue a 30-year Special Use Authorization (SUA) including Operating Plans and Construction Stipulations, and a short-term temporary use area (TUA) permit, that would authorize GEC to use NFS lands to construct, operate and maintain the SGGS for the purpose of transporting natural gas from wells on leased lands (private and federal) to the existing RMP and ultimate delivery to the regional energy market.

The SGGS would be installed in 2 segments, the Sheep segment which would start from private lands in Section 1, T 12 S, R 91 W, then follow the course of National Forest System Road (NFSR) 704 through Section 6, T 12 S, R 90 W, then turn northeast overland from Section 31 to 32, T 12 S, R 90 W crossing West Muddy Creek and heading northward in Sections 29, 20, 17, 8 and 9, T 11 S, R 90 West, to the tie in with the existing RMP. The Ault section starts in Section 27, of T 11 S, R 90 W and proceeds west through Sections 28, 21and 20, T 11 S, R 90 W, 6th P. M on NFSR 849.1B1 to connect with the Sheep section. All lands are located in Gunnison County, Colorado.

The SUA would involve a 100-foot temporary construction ROW that would be reduced to a permanent 50-foot ROW after pipeline installation, consisting of 25 feet each side of centerline. Surface disturbance during construction is estimated to be approximately 130 acres considering a temporary construction ROW of 100 feet. The 50-foot permanent ROW would encompass approximately 65 acres out the 130 mentioned above.

On NFS lands, the GEC would install about 6.6 miles of 12-inch diameter buried steel natural gas pipeline within a 32-inch wide trench with related aboveground appurtenances, including vents, location markers and the tie into RMP. An additional 4.2 miles of pipeline would be constructed on private lands.

The GMUG also proposes to authorize GEC to install a produced water pipeline of 6-inch diameter steel laid in the same trench as the gas pipeline. The water line would transport water produced from existing gas wells on private and BLM lands to storage facilities on private lands just south of the junction of NFSR # 851 and 851.1a or to a holding facility on private lands at the southeast end of the line.

1.5 AUTHORIZING ACTIONS AND AGENCY JURISDICTIONS

1.5.1 Federal Policy, Acts and Interagency Guides

MINERAL LEASING ACT OF 1920, AS AMENDED (30 U.S.C. 185)

Application for the SGGS project was made under Section 28 of the Mineral Leasing Act of 1920 (MLA, as amended, 30 U.S.C 185). The MLA [Sec. 28 (a)] authorizes federal agencies to grant ROW's for pipeline purposes for the transportation of oil, natural gas, synthetic liquid or gaseous fuels, or any refined product produced. The MLA [Sec. 28

(e)] further gives federal agencies authority to allow temporary uses of federal lands for construction, operation and maintenance of pipelines. The FS implementing regulations for this portion of the MLA are found at 36 CFR 251.

The MLA directs the agencies to require the applicant to submit a plan of construction, operation, and rehabilitation for ROW's. GEC's submission of a Plan of Development (POD) satisfies this requirement (project file).

In addition, the MLA [Sec. 28 (h)(2)] gives the federal agencies the authority to impose stipulations on pipeline projects for the following:

(A) Requirements for restoration, revegetation, and curtailment of erosion of the surface of the land;

(B) Requirements to insure that activities in connection with the right-of-way or permit would not violate applicable air and water quality standards or related facility sitting standards established by or pursuant to law;

(C) Requirements designed to control or prevent

(i) Damage to the environment (including damage to fish and wildlife habitat),

(ii) Damage to public or private property, and

(iii) Hazards to public health and safety; and

(D) Requirements to protect the interests of individuals living in the general area of the right-of-way or permit who rely on the fish, wildlife, and biotic resources of the area for subsistence purposes. Such regulations shall be applicable to every right-of-way granted.

FEDERAL LAND POLICY AND MANAGEMENT ACT OF OCTOBER 21, 1976 (90 STAT. 2743; 43 U.S.C. 1761-1771) TITLE V

FLPMA authorizes the Secretary of Agriculture to issue permits,…to occupy, use, or traverse National Forest System lands. It directs the U.S. to receive fair market value unless otherwise provided for by statute and provides for reimbursement of administrative costs in addition to the collection of land use fees (43 U.S.C. 1764(g)).

1.5.2 USDA-Forest Service National Direction

Forest Service Manual 2700, SPECIAL USES MANAGEMENT, CHAPTER 2720, 2726.31a – Oil and Gas Development.

The authority for grants to non-Federal entities for oil and gas pipeline rights-of-way on National Forest System lands for the purpose of transporting oil or gas is given in Section 28 of the Mineral Leasing Act of 1920, as amended (30 U.S.C. 185). The designation includes only pipelines and directly related facilities for the transportation of oil, natural gas, synthetic liquid or gaseous fuel, and any refined product produced there from.

Holders of valid BLM oil and gas leases and designated operators of BLM unitized lease areas do not require a special use authorization for pipelines or directly related facilities associated with the lease and located within the boundaries of the lease or unit area, as long as the pipelines or facilities are used solely for the production or gathering of oil and gas. If the pipelines and related facilities are used for the transportation of oil and gas, whether on-lease or off-lease, the pipeline SUA must be issued under the authority of the Mineral Leasing Act.

This FSM directs that pipeline rights-of-way shall be only wide enough for efficient operation and maintenance of the pipeline after construction. They shall not exceed 50 feet plus the ground occupied by the pipeline or its related facilities, unless the issuing officer records the reasons why a wider right-of-way is necessary for operation and maintenance after construction, or to protect the environment or public safety. Approve temporary additional widths as necessary during the construction phase of the pipeline.

Forest Service Manual 2700, SPECIAL USES MANAGEMENT, CHAPTER 2720, 2729.01 – authority.

This FSM directs the agency to issue authorizations for the impoundment, storage, transmission, or distribution of water under the appropriate provisions of the Federal Land Policy and Management Act of October 21, 1976 (43 U.S.C. 1761), The Act of October 27, 1986, or if in wilderness, under the Wilderness Act of September 3, 1964.

Forest Service Manual 2509.25 Water Conservation Practices Handbook

This handbook describes management measures to meet environmental goals for protecting soil, aquatic, and riparian systems. It includes design criteria (specific practices to attain the management measures using current knowledge and technology) to protect five areas including hydrologic function, riparian areas and wetlands, sediment control, soil quality, and water purity.

Forest Service Manual 7700, Transportation system, CHAPTER 7730, 7731.16 – Permits.

Permits may be required to authorize the use of existing NFSRs (36 CFR 261.54(c)). Permits may fulfill the requirements of an order or authorize a use that an order or regulation restricts. Permits include conditions for road use and for the protection and management of National Forests. Procedures for issuing permits are found in Forest Service Handbook (FSH) 7709.59, section 24.

1. Commercial Use. In order to ensure investment sharing and performance of road maintenance, forest officers may implement systems for authorizing commercial use of National Forest System roads. Issue a road order pursuant to 36 CFR 261.54 requiring that commercial use not otherwise authorized by a contract, agreement, easement, license, or special-use permit be authorized by permit only. Include appropriate investment sharing and maintenance requirements and rules of use as terms of the permit. Under this direction, the GMUG has implemented Forest Supervisor's Order FS-01-01 that requires all commercial users of forest roads to have a Road Use Permit (RUP). Further, the Rocky Mountain Regional Forester has implemented order Rs-2007-01 that requires all commercial users of NFSRs to hold a permit for such use.

2. Oversize Vehicles. In order to protect the safety of road users and public investment in roads and bridges, use permits to authorize the movement of oversized vehicles when vehicle use is not otherwise authorized by agreement or easement.

3. Other Use. Issue permits, or a letter of permission, to authorize an act or omission that would otherwise be a violation of a regulation in effect on a road.

1.5.3 USDA-Forest Service-Grand Mesa, Uncompahgre, & Gunnison National Forests

GMUG LAND AND RESOURCE MANAGEMENT PLAN 1983 (AS AMENDED)

The Grand Mesa, Uncompahgre, and Gunnison National Forests Land and Resource Management Plan (LRMP) (1983, as amended 1991 and 1993 for Oil and Gas Leasing)) gives direction that is applicable to the proposed action in the following sections:

Forest-wide Standards and Guidelines (see Ch. 3 for specific resources' standards and guidelines)

Special Use Management: LRMP, pp. III-71. Act on special use applications in a prioritized order in which acting on land use activity requests that contribute to increased economic activity associated with national forest resources, oil and gas is second of three priorities.

Management Area (MA) Direction

The project area is within the following GMUG Management Areas:

Table 1. GMUG NF Management Areas

Management Area Name	Direction
MA 2A Semi-primitive motorized recreation experience	Provide for a Semi-primitive motorized recreation experience. (LRMP, pp III-102) Semi-primitive motorized recreation opportunities in a natural appearing environment. Range management will reduce conflicts between recreation and livestock. Vegetation treatment will enhance plant and animal diversity. Mineral and energy resources activities are generally compatible with goals of this management area subject to appropriate stipulations. Visual Resource Management General direction for visual resource management within the 2A areas calls for designing and implementing the management activities to not be evident or remain visually subordinate. No other resource specific direction or standards and guidelines relevant to this type of project are identified in the Forest Plan.
MA 6B Livestock Grazing	Livestock Grazing (LRMP, pp III-148) Management emphasis is for forage production and livestock production. The area is managed for livestock grazing where the range condition is at or above satisfactory level. Range condition is maintained through use of forage improvement practices, livestock

Management Area Name	Direction
	management, and regulation of other resource activities. Investments in compatible resource activities can occur. Management activities are evident but harmonize and blend with the natural setting. <u>Visual Resource Management</u> General direction for visual resource management within the 6B areas calls for designing and implementing the management activities to blend with the natural landscape, to manage for the adopted visual quality objective (VQO), and implement visual resource management as outlines in management requirements. No other resource specific direction or standards and guidelines relevant to this type of project are identified in the Forest Plan. <u>Transportation System</u> General direction includes locating roads outside riparian areas unless other routes have been determined as more environmentally damaging, use sediment traps with barriers where the natural vegetation is inadequate to protect the waterway, and minimize detrimental disturbance to the riparian area by construction activities, initiate timely and effective rehabilitation, and restore riparian areas so that vegetative ground cover or suitable substitute protects soil from erosion and prevents increased sediment yield. *Standards and guidelines*: Do not parallel streams when road location must occur in riparian areas except where absolutely necessary. Cross streams at right angles, and locate stream crossings at points of low bank slope and firm surfaces. No other specific direction or standards and guidelines relevant to this type of project are identified in the Forest Plan.
MA 9A Riparian Area Management	<u>Riparian Area Management (LRMP, pp III-173)</u> Management emphasis is for Riparian/Aquatic Ecosystems. Emphasis is on the management of all the components of aquatic/riparian ecosystems to provide healthy, self-perpetuating plant communities, acceptable water quality standards, habitats for viable populations of fish and wildlife, and stable stream channels and still water body shorelines. Vehicular travel is limited on roads and trails at times when the ecosystems would be unacceptably damaged. The area over which this prescription applies is forest-wide. <u>Visual Resource Management</u> General direction for visual resource management in this management area calls for design and implement management activities which sustain inherent visual values of riparian areas and blend with the surrounding

Management Area Name	Direction
	natural landscapes. <u>Water Resource Improvement and Maintenance</u> General direction includes conducting appropriate water quality monitoring during ground disturbing activities to insure that non-point sources of sediment are identified and mitigated and maintain channel stability, stream profile and vegetative cone in at least their current conditions. *Standards and guidelines*: Implement mitigation measures when present or unavoidable future facilities are located in the active floodplain to ensure that State water quality standards, sediment threshold limits, bank stability criteria, flood hazard reduction, and instream flow standards are met during and immediately after construction. And treat disturbed areas, resulting from management activities, to limit sediment yields to acceptable levels during the construction field season. <u>Soil Resource Management</u> General direction includes rehabilitation and stabilizing of disturbed soil areas and use of heavy construction equipment on a case by case basis. *Standards and guidelines*: If heavy equipment is required for construction, it will be used only when the soil will not be susceptible to permanent damage. No other specific direction or standards and guidelines relevant to this type of project are identified in the Forest Plan <u>Transportation System</u> General direction includes locating roads outside riparian areas unless other routes have been determined as more environmentally damaging, use sediment traps with barriers where the natural vegetation is inadequate to protect the waterway, and minimize detrimental disturbance to the riparian area by construction activities, initiate timely and effective rehabilitation, and restore riparian areas so that vegetative ground cover or suitable substitute protects soil from erosion and prevents increased sediment yield. *Standards and guidelines*: Cross streams at right angles, and locate stream crossings at points of low bank slope and firm surfaces.

No other specific direction or standards and guidelines relevant to this type of project are identified in the Forest Plan.

GMUG OIL AND GAS LEASING EIS AND ROD 1993

The Oil and Gas Leasing EIS offers guidance for pipeline project design.

1.6 PUBLIC INVOLVEMENT

The following sections summarize the actions taken to inform and request scoping comments from the general public, other agencies and governments, permittees, organizations, groups, and individuals. In addition, scoping comments received are summarized. A detailed list of scoping comments is contained in the project files.

1.6.1 Scoping Actions

Table 2 summarizes the initial scoping actions, press releases and letters sent to date. The formal scoping period was initiated with the publication of the Public Notice in the *Grand Junction Daily Sentinel* on August 28, 2006. A Public Notice was also published in the *Delta County Independent* on August 30, 2006.

Table 2. General Scoping Actions (including mailings, press releases, and newspaper articles)

Date	Scoping Item	Who/Where	Notes
9/06	Project noted in GMUG Schedule of Proposed Actions (SOPA) on Forest Websites	GMUG websites	Project listed for first time in the Sept. 06 SOPA.
9/28/06	Mailing of Proposed Action Scoping Package to project mailing list (119 addresses)	Project IDT leader	Scoping package sent out to 119 addresses provided by GMUG NF

Additional contacts were made with special use and range permittees, and requests for additional information were filled during and after the scoping period. Documentation of these contacts is in the project file.

1.6.2 Scoping Letters and Comments

The GMUG received comments on the project from 7 parties during scoping. Original letters, phone records and scoping comments are contained in the project files. In addition, a content analysis of the scoping comments was completed to identify issues, concerns and potential alternatives; that analysis is documented in APPENDIX U.

1.7 ISSUES

Scoping is used to identify issues that relate to the effects of the proposed action. An issue is an unresolved conflict or public concern over a potential effect on a physical, biological, social, or economic resource as a result of the proposed action and alternatives to it. An issue is not an activity; instead, the projected effects of the proposed activity create the issue.

The FS separated the issues into two groups: significant issues and non-significant issues. The Council for Environmental Quality (CEQ) NEPA regulations require this delineation in 40 CFR Sec. 1501.7, "…identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)".

- Significant (or Key) issues are defined as those directly or indirectly caused by implementing the proposed action.
- Non-significant (or Non-Key) issues are identified as those: 1) outside the scope of the proposed action; 2) already decided by law, regulation, Forest Plan, or other higher level decision; 3) irrelevant to the decision to be made; or 4)

conjectural and not supported by scientific or factual evidence. Reasons regarding categorization as non-significant may be found in the project record.

Table 3, below, lists the significant issues considered for this analysis generated from public comments and/or the project interdisciplinary team (IDT). A complete issue content analysis summary and an issue identification summary are in the project record files.

Table 3. List of Key Issues

Issue Topic	Cause and Effect
1. The effect of pipeline construction, operation and maintenance on visual resources.	Pipeline ROW construction and installation of associated facilities could adversely affect the visual appearance of the landscape due to initial land disturbance and long-term appearance of a linear pipeline ROW.
2. Effects of pipeline construction on geologic hazards, geology, and soils	Pipeline ROW construction could adversely affect soil structure and stability in the project area thus potentially causing soil erosion and geologic hazards issues.
3. The short term effects of construction activities such as exhaust emissions, burning and fugitive dust on ambient air quality standards and nearby Class I airsheds.	Pipeline ROW construction and project-related traffic could cause reductions in air quality from fugitive dust, pollutants and NO^x and CO emissions that would not be in compliance with standards, regulations and requirements.
4. The effect of pipeline construction, operation and maintenance on roads, traffic and safety concerns.	Pipeline ROW and facility construction activities will change the amount and type of traffic on the NFSRs and other access routes, and creates concerns about traffic safety issues.
5. Effects on Big Game Wildlife Habitat	Pipeline ROW construction activities could adversely affect wildlife use of summer range and calving and fawning habitat due to displacement and/or loss of habitat.
6. Ground water resources	Pipeline trench construction could intercept shallow ground water resources, causing localized depletions. Breaks in the buried water pipeline could adversely affect shallow ground-water quality.
7. The short and long term effects of all aspects of pipeline construction, operation and maintenance on dispersed recreation, especially during hunting season.	Pipeline construction could disrupt recreational experience, and affect noise, safety and access issues.
8. The short and long term effects of all aspects of pipeline construction on noxious weeds	Pipeline construction could promote the entry of noxious weeds if not properly reclaimed.
9. The impacts that construction of pipeline construction may have on the various aquatic related resources, which includes riparian areas, surface waters, aquatic species, fisheries and wetland situations.	Pipeline constructions could impact various aquatic related resources.
10. The short term and long term effects of pipeline construction, installation and operations on surface water quality. These effects would include impacts associated with the transportation system needed to construct and operate the pipeline. Impacts to water quality will relate to other issues such as operations on steep or unstable slopes and the effects of spills.	Pipeline construction, operation and maintenance could affect surface water quality.

The IDT identified and carried through the analysis several non-key issues in order to fully develop and allow further comparison of the proposed action and no action alternatives. Non-key issues carried through the analysis in Chapter 3 include socioeconomic effects, range, travel management and cultural resources.

Table 4. List of Non-Key Issues

Issue Topic	Cause and Effect
1. The effect of pipeline construction, operation and maintenance on the socio-economics of the area.	Installation and operation of the pipeline will influence the socio-economic situation in the area.
2. The short and long term effects of pipeline construction on travel management.	Pipeline ROW construction could promote unauthorized motorized travel
3. The short and long term effects of pipeline construction on range management.	Pipeline construction could disrupt management activities and cause forage loss.
4. The short and long term effects of pipeline construction on cultural resources.	Pipeline construction could disturb cultural resources.

1.8 DECISION FRAMEWORK

This EA is not a decision document. Its main purpose is to disclose the potential consequences of implementing a proposed action and alternatives to that action. After reviewing the final EA and public comments, the responsible official may issue a Finding of No Significant Impact and a Decision Notice documenting which alternative has been selected and why.

The GMUG Forest Supervisor is responsible for making the following decisions:

- Should a SUA be issued for the 12" SGGS and 100-foot construction and 50-foot permanent ROW that will allow pipeline construction and operation on federal lands?
- Should a SUA be issued for the 6" produced water pipeline that would be located in the same right-of-way trench as the gas pipeline?
- Should the FS authorize road use permits for construction, reconstruction, use, upgrade, and/or maintenance of existing and/or temporary roads needed for access to the pipeline construction ROW?
- To authorize other support activities (i.e. timber removal)?
- Shall Temporary Use Permits be granted for a 1.4 acre temporary staging area needed for project construction on federal lands?

CHAPTER 2: ALTERNATIVES IN DETAIL

2.1 INTRODUCTION

This chapter describes and compares the no action and proposed alternatives considered for the SGGS. It includes a description and map of the proposed alternative along with a list of criteria for locating potential routes. This section also presents the alternatives in comparative form, defining the differences between each alternative and providing a basis for alternative selection. Some of the information used to compare the alternatives is based upon the environmental, social and economic effects of implementing each alternative.

2.2 ALTERNATIVES CONSIDERED IN DETAIL

In developing proposed action, the Forest Service considered eight variations of pipeline routes, and carried the No Action and the Proposed Action forward for detailed analysis. The remaining options were eliminated from detailed study as discussed in Section 2.2.3.

The no action and proposed action alternative are listed in Table 5 below. The range of alternatives were developed from assessing public and Interdisciplinary Team (IDT) input on the proposed action, performing field reconnaissance of the routes with the IDT, and reviewing route options brought forward by the proponent during project planning.

Table 5. List of Alternatives

No Action Alternative	The No Action is the baseline for comparing the other alternative.
Proposed Action (Preferred Alternative)	The Proposed Action is the proposed pipeline route as submitted and refined by the project proponent (GEC). The Proposed Action is also the agency‘s Preferred Alternative. Total length is approximately 10.8 miles with 6.6 miles of NFS lands.

2.2.1 No Action Alternative

Under the No Action Alternative, current management plans would continue to guide management of the project area, and the gas and water pipelines and associated facilities would not be authorized or built.

Under the No Action Alternative, there would be no effective means to transport natural gas produced from existing wells on federal and private lands to the regional market. This would result in no increase in the domestic natural gas supply available to the regional market. Some existing valid federal lease rights may not be exercised, and other pipeline routes to transport gas from existing leased production areas to distribution areas would likely be proposed.

Under the No Action Alternative, wells would have no effective means to transport natural gas and thus they would not produce gas. If another pipeline route is proposed, water produced from the existing and proposed wells would have to be disposed of in an approved location on-site (i.e. disposal well) or would have to be stored on site in tanks and hauled to an approved disposal facility.

Under the No Action Alternative, there would be no project-related uses of existing access roads, except as authorized for other uses and projects. Road reconstruction associated with this pipeline proposal would not occur. The existing system of NFSRs would continue to provide access to federal lands for fire suppression, other land management activities, and recreation. On-going public and permitted road uses would continue. No map is presented for the No Action Alternative.

2.2.2 Proposed Action (Preferred alternative)

The Proposed Action alternative was developed by the FS IDT working with the project proponent to place the SGGS route such that it minimized environmental effects complied with the GMUG LMP, and the applicable legal framework. The Proposed Action was designed to include Design Features of the Proposed Action (See Appendix A) Design features of the Proposed Action were derived from agency specialists reviewing and revising the preliminary Plan of Development (POD) to ensure it included protective measures derived from agency policy and management plans.

Under the Proposed Action alternative, the SGGS would be installed in a 100 foot-wide construction right-of-way (ROW) that would be reduced to a 50-foot wide permanent ROW. Installation of the SGGS would include approximately 6.6 miles of 12-inch diameter buried steel natural gas pipeline within a 4-5’ deep trench (to allow 36 inches of cover), and related aboveground appurtenances on NFS lands. An additional 4.2 miles of pipeline would be constructed on private lands (See Figure 2). The proposed action alternative includes installing a water pipeline of 6-inch diameter steel laid in the same trench as the gas pipeline.

Surface disturbance during construction is estimated to be approximately 130 acres considering a temporary construction ROW of 100 feet and 1.4 acre staging area. The 50-foot permanent ROW would encompass approximately 65 acres out the 130 mentioned above. See Appendix B for ROW engineering-typical drawings.

Construction operations would include clearing up to a 100-foot corridor of vegetation, moving in heavy equipment and the 12-inch and 6-inch pipeline sections, digging a 4-5’ deep and 32 inches wide trench for the pipeline, placing and connecting the pipeline segments, pneumatically testing the pipeline, placing surface access valves and vents, backfilling the trench, and revegetating and reclaiming the disturbed areas after pipeline construction. An approximate 10-12 feet wide corridor of non-forested (grassland and shrub) habitat would be maintained over the term of the permanent 50-foot ROW (30 years). The remainder of the cleared 50-foot ROW would be allowed to revegetate to a natural forested condition in suitable habitats. The 12-inch and 6-inch pipeline and related facilities would be designed to Department of Transportation (DOT) CFR 49 Part 192 standards and American National Standards Institute (ANSI) Class 600 specifications. Pipeline burial depths would be a minimum of 18 inches below grade in solid rock, a minimum of 36 inches below grade in normal soil, or 48 inches below grade across streams and roads. Additional depth requirements would be reviewed on a case by case basis.

The only permanent above ground facilities to be authorized on NFS lands would be pipeline markers, one 48 inch manhole cover over the cellar (underground vault) containing the tie in with the existing RMP pipeline, and 5-7 vent pipes proposed for each pipeline at the highpoints along the SGGS pipeline route. No compression facilities are planned as they will be using the existing RMP compressor.

One, 1.4-acre staging area, for vehicle, equipment, parking and vehicle turn-a-rounds, would be constructed on NFS lands, just north of Condemn It Park. The staging area would be reclaimed after pipeline construction is complete.

Under the Proposed Action alternative, project traffic would use approximately 21 miles of existing NFSRs and construct 267 feet of temporary road. No new permanent roads are proposed anywhere in the project area. Additional details are included in the Plan of Development (POD) discussion below.

The SGGS project would also involve the potential private land connected actions of 3 staging areas, water storage facilities or water pipeline stub connections and pigging facilities within the ROW. Pigging refers to the practice of using pipeline inspection gauges or 'pigs' to perform various operations on a pipeline without stopping the flow of the product in the pipeline. Although the FS has no authority or jurisdiction over such facilities on private land, the agencies must analyze these actions in the same analysis (40 CFR 1508.25) as a connected action.

2.2.2.1 ROUTE SELECTION

Route selection was based on critical review of issues that affect overall project success in achieving the purpose and need. The following criteria (using Forest Service policy, GMUG Forest Plan guidance, and Gas Pipeline Industry Standards (Department of Transportation (DOT) regulatory requirements and Code of Colorado Revised Statutes and Colorado Oil and Gas Conservation Commission)) were applied during the pipeline route assessment processes and included:

1. Public/construction safety hazards during and after construction to the maximum extent feasible, reduce the probability of worker/public harm or third party damage to the facility by avoiding:
   - Areas of unstable Geology and Soils
   - Areas of sensitive hydrologic resources, riparian areas and wetlands
   - Streams that support Fisheries
   - Conflicts with on-going Range management activities
   - Sensitive Wildlife Habitats
   - Areas of sensitive Visual resources
   - Areas with high Recreational use
2. Constructability/Engineering/Operating feasibility was evaluated by determining if the route can be reasonably constructed, accounting for practical design, construction, and operation procedures including workplace safety and minimizing impacts to the environment. Specific considerations included:
   - Forest Service law/regulation/policy/direction pertaining to impacts to NFS resources and 49 CFR parts 191and 192
   - Department of Transportation (DOT) regulatory requirements

- Code of Colorado Revised Statutes 723-4 §§ 4900-4999 and Colorado Oil and Gas Conservation Commission Rule 1100 Series
- Pipeline diameter, wall thickness, operating pressure design for anticipated volumes
- Compression/pump horsepower requirements and siting
- Pipeline origin and terminus

3. Permitting feasibility was assessed by identifying the permitting requirements and constraints, and by reducing regulatory compliance issues, as practical.
    - Maximize use of existing corridors (i.e. parallel existing pipelines)
    - Route to avoid "point" resource impacts (i.e. wetlands, streams, archaeological sites, side slopes) to the maximum extent feasible
    - Construction time frame with consideration of any seasonal restrictions
    - Optimize route length and construction use areas to reduce overall physical impacts (minimize land disturbance)
4. Private Land ROW Acquisition Feasibility – Develop reasonable and practical route to minimize impacts to affected landowners (federal, state, and private).
    - Land ownership/tract density
    - Societal benefit from facility (i.e. bringing additional supply of utility gas, transport of mineral interest, exercising valid lease rights, etc.)
    - Land use types
    - Land owner concerns regarding the siting of the facility across their lands
    - Legally defensible route
5. Access & Transportation Availability
    - Maximize use of existing roads for both construction and post-construction access (i.e. minimize construction use of temporary access roads).
6. Economics
    - Consider capital costs related to construction, authorization and operation of facilities on a particular route

2.2.2.2 PLAN OF DEVELOPMENT (POD)

An initial Plan of Development (POD) was submitted (project file) that described specific project construction and design procedures along with measures to protect environmental resources. A final POD subject to agency approval would accompany the Special Use Authorization.

The Plan of Development contains an introduction, a detailed discussion of the proposed construction activities, and a description of operation and maintenance activities. That information is presented below in the details of the Proposed Action. In addition, the following environmental compliance plans are attached to the Plan of Development (POD) as appendices. The complete preliminary POD and appendices are available in the project files. Several plans contain procedures not anticipated in this project, such as blasting or hydrostatic testing, but they are included in case of changed circumstances.

- Appendix 1—Biological Resources Protection Plan
- Appendix 2—Blasting Plan

- Appendix 3—Cultural Resources Protection Plan
- Appendix 4—Environmental Compliance Management Plan
- Appendix 5—Fire Prevention and Suppression Plan
- Appendix 6—Fugitive Dust Control Plan
- Appendix 7—Hazardous Materials Management and Spill Prevention, Containment, and Countermeasure Plan
- Appendix 8—Pressure Testing Plan
- Appendix 9—Noxious Weed Management Plan
- Appendix 10—Safety Plan
- Appendix 11—Transportation Management Plan
- Appendix 12—Environmental Protection Plan

2.2.2.3 PIPELINE FACILITIES

The SGGS natural gas and water pipelines would consist of approximately 10.8 miles of a 12-inch diameter natural gas pipeline and 6-inch water pipeline and related aboveground appurtenances. The gas pipeline would be designed for a maximum operating pressure (MAOP) of 1440 psig. Probable natural gas system operating pressure is approximately 250-350 psig. Potential maximum capacity for the pipeline is 20mmcf/day. Both pipelines would be buried 4-5 feet deep for a minimum cover of 36 inches in soil or a minimum 18 to 24 inches of cover in solid rock. Additional burial depth would be achieved at stream and roadway crossings (i.e. 48 inches of cover minimum) as per permit requirements and good engineering practices. Pipe material specifications are as follows:

- 12-inch natural gas pipeline 0.250 w.t., Grade X-42
- 6-inch water pipeline 0.188 w.t., Grade B

2.2.2.4 6-INCH WATER PIPELINE FACILITIES

Installation of the 6-inch produced water line would allow transport of produced water from existing wells on BLM and private lands to existing state-permitted storage facilities located at year-round access points on private land. The water would be stored and disposed of according to State regulations. Installing the water line concurrently with the SGGS construction would maximize benefit from a single construction activity and minimize potential for storing and hauling produced water. The 6-inch water line would be installed in the same trench as the 12-inch diameter gas pipeline and would be offset a minimum of 1-foot from the gas pipeline. See Appendix C for a drawing showing the relationship of the pipes in the trench.

The volume of water that would be produced from the existing GEC wells and the size of the storage facility that would be needed is currently unknown since there are no wells currently producing. The pipe has been sized to accommodate potential, but currently unknown, additional production future.

2.2.2.5 ABOVEGROUND APPURTENANT FACILITIES

Anticipated associated aboveground appurtenances on NFS lands include pipeline markers, cellar with a 48 inch manhole cover at the northerly terminus tie in with the existing RMP, and 5-7 vent pipes proposed for both water and gas lines at the highpoints along the SGGS route. The pipeline location would be marked with aboveground markers in accordance with DOT safety requirements, land management agency requirements, and private landowner preference. Markers are installed typically at road and fence crossings.

Other associated aboveground appurtenances, meter stations, valves, cathodic protection, pigging, waterline storage or delivery facilities pertinent to the pipeline will be located on private lands.

On NFS, all aboveground appurtenances would be painted in conformance with color specifications provided by federal agencies from the "Standard Environmental Color Chart" issued by the Rocky Mountain Five-State Interagency Committee (See also Chapter 3.3,). Aboveground appurtenances, except for pipeline markers, would be constructed/installed along the same timeframe as the pipelines.

2.2.2.6 PIPELINE RIGHT OF WAY (ROW)

The ROW would consist of a 100-foot construction ROW reduced down to a permanent 50-foot ROW authorized in a SUA issued for a period of 30 years plus one staging area required during construction only of the Sheep section. The 50-foot ROW granted in the SUA would contain both the proposed 12-inch and 6-inch pipelines. See Appendix B for engineering typical drawings showing the ROW. The total length of the SGGS pipeline on NFS lands in the proposed SUA would be approximately 6.6.miles.

2.2.2.7 TEMPORARY USE AREAS (TUA's)

One temporary staging area (200' x 300' or 1.4 acres) for staging pipe and various pieces of equipment is included in the Proposed Action. No hazardous materials (chemicals or fuel) would be stored on site. The site would be located just north of the Condemn It Park private lands and west of NFSR 704 in Section 31, T. 11S. R. 90W. see Figure 2. Three additional staging areas are anticipated on private lands, one will be on an existing wellpad and the others would be approximately 2 acres each at unknown locations.

2.2.2.8 ROW LAND REQUIREMENTS

Construction of the pipelines would disturb approximately 130 acres for the ROW and 1.4 acres for the staging area, of land across all ownerships. Approximately 65 acres disturbed during initial construction would be required for long-term operations and maintenance (i.e. 50-foot ROW grant) and 66 acres, including the staging area, would be disturbed during initial construction but reclaimed. Table 6 identifies the associated pipeline length and land ownership status and anticipated maximum disturbance areas.

Table 6. Proposed SGGS Project Pipeline / ROW length, acreage, and land status summary

Land Status	Pipe Length (miles)	50' ROW[1] (acres)	Total (acres)
PRIVATE	4.2	25	50
NFS	6.6	40	80
Totals	**10.8**	**65**	**130***

* Total acres disturbed are 131 including the staging area.

2.2.2.9 COMPRESSOR STATION FACILITIES

The SGGS will use the existing RMP compressor (T. 10S., R. 90W., Section 30). No additional compressor sets or upgrades are needed to implement this project.

2.2.2.10 ROAD USE AND ACCESS

The Proposed Action includes using a combination of existing state, county, private and National Forest System Roads (NFSR) to gain access to the right-of-way during construction. Project traffic would use about 21 miles of existing NFSRs and about 267 feet of new temporary road to access the construction ROW from private lands to the West Muddy Creek crossing.

Daily construction vehicles would access the pipeline right-of way (ROW) from the HWY 133 to the south over County and NFSR 265 to the job site using NFSR 849.1b1, 849.1A, 849.1B, 851 and 704 and one temporary road. Mobilization of construction equipment for the ROW operations would occur at designated staging areas and would be equally divided at the south, southeast and north pipeline terminus. See transportation map Appendix D.

A summary of road access to be used for the proposed action is noted below in Table 7., and is further described in the narrative following or in the Transportation section of (Chapter 3.4).

Table 7. Summary of State, County, and Federal (National Forest) Transportation Routes for the Proposed Action

Road Number	Segment	Projected Hauling Use	Miles
CR 265	**From SH 133 to NF lands**	**Moderate ***	**5.6**
NFSR 849.1B1	**From private lands to Sheep Park private lands, a continuation of FS 849 to pipeline ROW (Ault)**	**Moderate ***	**2.5**
NFSR 265	**From County RD. 265 to 851**	**Moderate ***	
NFSR 851	**From FS 265 to private lands**	**Moderate ***	**1.7**
NFSR 265 and 851 junction	**Continuing on FS 265 to junction with FS 704**	**Moderate ***	**6.5**
NFSR 704	**From the junction with 265 south to private lands**	**Moderate ***	**6.5**
NFSR 849.1A	**Wolverton private parcel to Martin private parcel**	**Moderate ***	**1.9**
NFSR 849.1B	**Road Gulch from 849.1A junction to 849.1B1**	**Moderate ***	**1.9**
[1] Number of Trips Daily **0-10 = Light Use** **11-25 = Moderate Use** **25-50 = Heavy Use** *** Does not include any road construction/reconstruction/maintenance work**	**CR - County Road** **SH - State Highway**		21

NFSR 265

NFSR 265 would be the principal access route during construction, and would be used to access NFSR 851 and 704, which are the primary accesses for the ROW during construction, operation and maintenance activities.

During construction, this NFSR would be used for 66% of the project traffic to haul in pipeline equipment and materials.

NFSR 851

During construction, this NFSR would be used for approximately 33% of the project traffic to haul in pipeline equipment and materials. This NFSR would continue to be used during pipeline operation and maintenance.

NFSR 704

During project construction, this NFSR could be used for up to 33% of the project traffic to haul in pipeline equipment and materials. This NFSR would continue to be used during pipeline operation and maintenance.

NFSR 849.1A, .1B, and .1B1

During project construction, these NFSRs (849.1A, 849.1B and 849.1B1 and the pipeline ROW could be used for up to 33% of the project traffic to haul in pipeline equipment and materials. These roads will be accessed through private lands or from the pipeline ROW. These NFSRs would continue to be used during pipeline operation and maintenance.

Improvements, as identified in the required road engineering study, to all existing access roads might be needed to accommodate the oversize and heavy construction equipment need to construct the ROW and install the pipeline. Road modifications, ranging from grading to reconstruction, would be required to use the existing road system. Existing NFSRs used in conjunction with the SGGS project would be periodically maintained and kept open for public access per the terms of a FS Road Use Permit (RUP). Upgrades to the temporary road would be performed at the direction of the FS, and designed per the terms of the ASSHTO Standards. The temporary road would be decommissioned by obliteration and reclamation at the end of construction. The proponent will be required provide specific improvement and use parameters, to be determined and designed by a professional Civil Engineer, and submitted for Forest Service approval for each road segment. The Engineer's recommendations must be approved and implemented before any project related traffic may use those roads.

The Proposed Action assumes that since the NFSRs are generally closed from mid-November to mid-April, due to winter and saturated conditions, construction activities will be limited.

Projected Traffic Volume and Type

The proposed action would use the following equipment in the construction of the pipeline. Hauling construction equipment and materials would be done in accordance with Colorado state requirements. Size and types of equipment using the roads are shown in Appendix E.

2.2.2.11 CONSTRUCTION SCHEDULE / ACTIVITIES

Expected construction timeframe of the Proposed Action is approximately 5 months per segment (Ault (East-West) or Sheep (North-South). Pipeline construction would only be authorized to occur between May 15 and October 15, or the onset of winter. (Note: timing restriction would not apply to pneumatically testing the pipeline, hydromulching and reseeding activities, and other reclamation activities that may be required in the fall before winter sets in.) Because NFSRs in this area are generally closed due to snow from mid-November to mid-April, construction use during those periods will be limited.

2.2.2.12 CONSTRUCTION ACTIVITIES

The actual construction activities are completed in phases and those phases are summarized below and are provided for general information. Detailed construction methods and project design criteria for each of the phases described below are located in the POD and POD appendices. The complete POD is in the project files.

Initial Surveying and Staking

Initial engineering surveys are performed to place the proposed pipeline ROW alignment on the ground. This information is used to develop the detailed proposed action and alignment sheet maps used in the planning and subsequent analysis. In addition, surveys and literature reviews are conducted to identify sensitive resources along the proposed route. Sensitive resources identified could include: sensitive wildlife populations and habitat; sensitive plant populations; cultural resources; wetlands and waterbodies; noxious weed infestations; and areas of potential geologic instability.

Construction
Civil engineering surveys are performed to identify the centerline of the pipeline and the boundaries of both sides of the approved working limits before construction activities commence. Construction Inspectors are responsible for verifying that the limits of authorized construction work areas are staked prior to construction. Construction equipment include trucks, loaders, various sized dozers, shovels and backhoes, side booms, and bending machines.

Clearing, Grading, and Topsoiling
Before clearing and grading activities are conducted, landowner and range fences would be braced and cut, and temporary gates and fences would be installed to contain livestock, if needed. A clearing crew would follow the fence crew and would clear the work area of vegetation and obstacles (e.g., trees, logs, brush, rocks). Temporary erosion control measures such as silt fences or straw bales would be installed prior to vegetation removal along steep slopes, wetlands, riparian areas and other areas designated by the FS. Grading would be conducted where necessary to provide a reasonably level work surface. Where the ground is relatively flat and does not require grading, rootstock would be left in the ground. More extensive grading would be required in steep side-slopes or vertical areas and where necessary to prevent excessive bending of the pipeline.

Vegetation would be cleared and stockpiled for use in reclamation and the construction right-of-way graded to provide for safe and efficient operation of construction equipment and inspection vehicles, and to provide space for the storage of subsoil and topsoil. Construction activity and ground disturbance would be limited to approved, staked areas.

Unless otherwise requested by the FS, topsoil would generally be separated from subsoil only over the trench itself. In areas where the ROW would be graded to provide a level working surface and where there was a need to separate topsoil from subsoil, the ROW would be graded to collect topsoil before any subsoil was disturbed. Again, topsoil would be piled such that the mixing of subsoil and topsoil would not occur. Topsoil would not be stripped from areas where subsoil would be stored to maintain the integrity of the natural soil horizons and preserve rootstock. Gaps would be left between the spoil piles to prevent storm water runoff from backing up or flooding. Topsoil would be returned to its original horizon after subsoil was backfilled in the trench.

Trenching and Blasting
Construction methods used to excavate a trench would vary depending on soils, terrain, and related factors. In situations such as steep slopes, unstable soils, high water table, or deep or wide trench requirements, trackhoes would generally be used.

The trench would be excavated to a depth that provides sufficient cover over the pipeline after backfilling. Typically, the trench would be about 4 to 5 feet deep to allow for the minimum 36 inches of cover in most locations. The trench would be approximately 32 inches wide in stable soils. Additional cover for the pipeline would be provided at road and waterbody crossings, while less cover is required in rock.

When rock or rocky formations were encountered, tractor-mounted mechanical rippers or rock trenchers would be used for fracturing the rock prior to excavation. In areas where mechanical equipment could not break up or loosen the bedrock, blasting could be used but it is not anticipated. Excavated rock would be used to backfill the trench to the top of the existing bedrock profile.

In areas where grazing occurs construction activities could potentially hinder the movement of livestock across those allotments. Wildlife accustomed to freely moving through the area in search of food and water could also be hindered by construction activities. To minimize impact on livestock and wildlife movements during construction, soft plugs (areas where the trench is excavated and replaced with minimal compaction) would be installed to allow livestock and wildlife to safely cross the open trench. Soft plugs would be constructed with a ramp on each side to enable animals that fell into the trench an avenue of escape. To allow for safe passage, soft plugs would be constructed at intervals determined every ¼ mile or in consultation with the FS and in addition where the trench is intersected by known livestock or wildlife trails.

Pipe Installation

Pipe installation would include stringing, bending for horizontal or vertical angles in the alignment, connecting the pipe segments together, inspection, coating the joint areas to prevent corrosion, and then lowering-in and padding as described in greater detail below.

Stringing

Line pipe is shipped directly from the manufacturer by rail to pipe yards and then hauled by stringing trucks to the pipeline right-of-way. Each individual joint of pipe is unloaded with a sideboom or trackhoe and placed (strung) parallel to the ditch in a continuous line. Stringing operations are coordinated with trenching and installation activities in order to properly manage the construction time at a particular tract of land. Gaps are left at access points across the ditch to allow crossing of the right-of-way.

Bending

After joints of pipe are strung along the ditch but before the joints are joined together, individual joints of pipe would be bent to accommodate horizontal and vertical changes in direction. Field bends are made utilizing a hydraulically operated bending machine. Where the deflection of a bend exceeds the allowable limits for a field-bent pipe, factory (induction) bends would be installed.

Welding

After pipe joints are bent, the pipe joints would be lined up end-to-end and clamped into position. Welded pipe would be in conformance with 49 CFR Part 192, Subpart E, "Welding of Steel Pipelines" and API 1104, "Standard for Welding Pipelines and Related Facilities," latest edition approved by DOT.

Inspection

All welds are visually inspected by an American Welding Society (AWS) certified inspector who is part of the construction management staff. Non-destructive radiographic inspection methods are conducted in accordance with DOT requirements. A specialized contractor, AWS certified to perform radiographic inspection, would perform this work. Any defects would be repaired or cut out as required under the specified regulations and standards.

Coating

To prevent corrosion, the pipe is externally coated with fusion bonded epoxy coating prior to delivery. After welding, field joints are coated with a tape wrap, shrinkable sleeve wrap, or field-applied fusion bond epoxy. Before the pipe is lowered into the ditch, the pipeline coating is visually inspected and tested with an electronic detector, and any faults or scratches are repaired.

Lowering-in and Padding

Before the pipe section is lowered into the ditch, inspections are conducted to verify that the pipe is properly fitted and installed into the ditch, minimum cover is provided, and the trench bottom is free of rocks and other debris that could damage the external pipe coating. Dewatering may be necessary where water has accumulated in the trench and water will be handled in accordance with State permits. Side-boom tractors are used to simultaneously lift the pipe section, position it over the ditch, and lower it in place. On sloped terrain, trench breakers (stacked sand bags or foam) would be installed in the trench at specified intervals to prevent subsurface water movement along the pipeline. Specialized padding machines can be used to sift soil fines from the excavated subsoils to provide rock-free pipeline padding and bedding. Sandbags may be used to pad the bottom of the ditch instead of, or in combination with, padding with soil fines. In rocky areas, padding material or a rock shield is used to protect the pipe. No topsoil would be used as padding material.

Backfilling

Backfilling begins after a section of pipe has been successfully placed in the ditch. Backfill is conducted using a bulldozer, rotary auger backfiller, padding machine or other suitable equipment. Backfilling the trench would generally use the subsoil previously excavated from the trench, except in rocky areas where imported select fill material may be needed. Backfill is graded and compacted, where necessary for ground stability, by tamping or walking with a wheeled or tracked vehicle. Compaction is performed to the extent that there are no voids in the trench. Any excavated materials or materials unfit for backfill are either be utilized elsewhere or properly disposed of in conformance with FS regulations.

Pressure Testing

Each pipeline is tested in compliance with DOT regulations (49 CFR Parts 192). Pneumatic testing is planned. The testing is completed after backfilling and all construction work that directly affects the pipe is completed. Prior to filling the pipeline for a test, the pipeline is cleaned by passing pigs through the interior of the line. Using a truck mounted air compressor the air pressure is increased to 1000-1200 psig for 8 hours.

After 8 hours the air would be slowly released. If leaks are found, they are repaired and the pipe retested until specifications are met.

Final Tie-In

Following successful pneumatic testing, test manifolds would be removed and the final pipeline tie-ins would be made and inspected.

Commissioning

After final tie-ins are complete and inspected, the pipeline would be cleaned and dried using pigs that are moved through the pipeline with pressurized, dry air. The pipeline would be dried to minimize the potential for internal corrosion. Once the pipe has dried sufficiently, pipeline commissioning would commence. Commissioning involves activities to verify that equipment has been properly installed and is working, the controls and communications systems are functional, and that the pipeline is ready for service. In the final step, the pipeline is prepared for service by purging the line of air and loading the line with natural gas.

Cleanup and Restoration

Cleanup, reclamation and restoration of the surface along the right-of-way and the staging area is performed by removing any construction debris and by performing final grading to the finished contour. Steps are taken to minimize erosion, restore the natural ground contour, and account for trench settling. After backfilling, final cleanup would begin as soon as weather and site conditions permit. Every reasonable effort would be made to complete final cleanup (including final grading and installation of erosion control devices) generally within 20 days after backfilling the trench. Construction debris would be cleaned up and taken to an approved disposal facility off of NF lands.

After permanent erosion control devices are installed and final grading has occurred, all disturbed work areas would be seeded as soon as possible during the appropriate time of year. Noxious weeds would be treated prior to construction. Design features, SUA and the POD delineate requirements for dealing with Noxious Weeds. Restoration methods, structures and seeding are performed in accordance with requirements as described in the POD, SUA, Chapter 3 and in agreement with the FS specifications.

Pipeline markers would be installed at fence, and road crossings and other locations (as required by 49 CFR 192) to show the location of the pipeline. Markers would identify the owner of the pipeline and convey emergency information. Special markers providing information and guidance to aerial patrol pilots also would be installed.

2.2.2.12 SPECIAL CONSTRUCTION PROCEDURES

In addition to standard pipeline construction methods, special construction techniques where warranted by site-specific conditions. These special techniques would be used when constructing for example, across steep terrain, waterbodies, wetlands, and when blasting through rock. These are described in general below. Specific construction techniques are contained in the POD and other techniques may be required by the FS depending on the situation..

Road Crossings

Where the proposed route crosses a road the open-cut method would be used. The open-cut method would require temporary closure of the road to traffic and/or establishment of detours. If no reasonable detour is feasible, at least one lane of traffic would be kept open, except during brief periods when it is essential for safety to close the road to install the pipeline. Most open-cut road crossings would be completed and the road resurfaced in 24 to 48 hours. Measures, such as posting signs at open-cut road crossings and notifying local landowners, to ensure safety and minimize traffic disruptions would be taken as directed by the FS.

Steep Terrain

Additional grading may be required in areas where the proposed pipeline route would cross steep slopes. Steep slopes often need to be graded down to a gentler slope to accommodate pipe-bending limitations. In such areas, the slopes would be cut away, and after the pipeline is installed, reconstructed to their original contours during restoration.

In areas where the proposed pipeline route crosses laterally along the side of a slope, cut and fill grading may be required to obtain a safe, flat work terrace. Topsoil would be stripped from the entire ROW and stockpiled prior to cut and fill grading on steep terrain. Generally, on steep side-slopes, soil from the high side of the ROW would be excavated and moved to the low side of the ROW to create a safe and level work terrace. After the pipeline is installed, the soil from the low side of the ROW would be returned to the high side, and the slope's original contours would be restored. Topsoil from the stockpile would be spread over the surface, erosion control features installed, and seeding implemented.

In steep terrain, temporary sediment barriers such as silt fence and certified weed-free straw bales or other sediment control devices or combination of devices would be installed prior to clearing to prevent the movement of disturbed soil off the ROW. Temporary slope breakers consisting of mounded and compacted soil would be installed across the ROW during grading, and permanent slope breakers would be installed during cleanup. Following construction, seed would be applied to steep slopes, and the ROW would be mulched with certified weed-free hay, non-brittle straw, native materials or covered with erosion control fabric. Mulching materials approved by the FS would be used on the portion of the route that is under its jurisdictions. Sediment barriers would be maintained across the ROW until permanent vegetation is established.

Waterbody Crossings

The goal would be to cross waterbodies during low flow periods. There are several alternatives, the open-cut method, flume and dam-and-pump methods. The flume crossing method is preferred at it involves diverting the flow of water across the trenching area through one or more flume pipes placed in the waterbody. In the flume method, trenching, pipe installation, and backfilling are done with the streambed in a relatively dry condition while water flow is maintained for all but a short reach of the waterbody at the actual crossing. Once backfilling is completed, the flume is removed and the streambanks restored and stabilized.

The project would also cross intermittent waterbodies. If these intermittent waterbodies are dry at the time of crossing, the open-cut method would be used. If an intermittent waterbody is flowing when crossed, the flume method would be used.

When crossing any waterbodies, authorizing agency project design criteria (see Appendix A) and regulations, the guidelines outlined in the POD and any applicable permit requirements would be used. As a part of a site-specific design, to be submitted prior to crossing West Muddy Creek, a longitudinal profile and at least two cross sections will be surveyed to document pre-construction conditions.

Before construction, decisions will be made to have the backhoe reaching over the stream or temporary bridges (e.g., clean rock fill over culverts, timber mats supported by flumes) would be installed across West Muddy Creek to allow construction equipment to cross.

Clearing adjacent to waterbodies would involve the removal of vegetation from the construction ROW. If no herbaceous strip exists, sediment barriers would be installed at the top of the streambank. Initial grading of the herbaceous strip would be limited to the extent needed to create a safe approach to the waterbody.

During clearing, sediment barriers would be installed and maintained across the ROW adjacent to waterbodies to minimize the potential for sediment runoff. Silt fence and/or certified weed-free straw bales located across the working side of the ROW would be removed during the day when vehicle traffic is present and would be replaced each night. Alternatively, drivable berms could be installed and maintained across the ROW in lieu of silt fence and/or straw bales.

It will be required that equipment refueling and lubricating at waterbodies would take place in gentle upland areas that are 100 feet or more from the edges of the water outside the water influence zone.

A Spill Prevention, Containment and Countermeasure (SPCC) Plan (located in the POD) will address the handling of fuel and other hazardous materials.

After the pipeline is installed beneath the waterbody using one of the methods described above, restoration would begin. Waterbody banks would be restored to preconstruction contours or to a stable angle of repose. Rock riprap, gabion baskets (rock enclosed in wire bins) or other devices would be installed as necessary on steep waterbody banks in accordance with permit requirements. More stable banks would be seeded with the District seed mix and mulched or covered with erosion control fabric. Waterbody banks would be temporarily stabilized within 24 hours of completing in-stream construction. Sediment barriers, such as silt fence, woody debris and/or certified weed-free straw bales would be maintained across the ROW at all waterbody approaches until permanent vegetation was established.

Wetland Crossings

Based on soil classifications, the proposed pipeline route would cross approximately 14 areas of potential wetlands (see Ch. 3 Watershed section). Pipeline construction across wetlands would be similar to typical conventional upland cross-country construction procedures, with several modifications and limitations to reduce the potential for pipeline construction to affect wetland hydrology and soil structure. To minimize impacts when crossing wetlands, GEC would adhere to FS project design criteria (See Appendix A) and regulations, the guidelines outlined in the POD and any applicable permit requirements.

Construction equipment working in wetlands would be limited to that essential for ROW clearing, excavating the trench, fabricating and installing the pipeline, backfilling the trench, and restoring the ROW. In areas where there is no reasonable access to the ROW except through wetlands, non-essential equipment would be allowed to travel through wetlands only if the ground was firm enough or had been stabilized to avoid rutting.

Clearing of vegetation in wetlands would be limited to trees and shrubs, which would be cut flush with the surface of the ground and removed from the wetland. To avoid excessive disruption of wetland soils and the native seed and rootstock within the wetland soils, stump removal, grading, topsoil segregation, and excavation would be limited to the area immediately over the trenchline. A limited amount of stump removal and grading could be conducted in other areas if dictated by safety-related concerns. Topsoil segregation over the trenchline would only occur if the wetland soils were not saturated at the time of construction.

During clearing, sediment barriers, such as silt fence and certified weed-free staked straw bales, would be installed and maintained adjacent to wetlands and within additional temporary workspace areas as necessary to minimize the potential for sediment runoff. Sediment barriers would be installed across the full width of the construction ROW at the base of slopes adjacent to wetland boundaries. Silt fence and/or certified weed-free straw bales installed across the working side of the ROW could be removed during the day when vehicle traffic was present and would be replaced each night. Alternatively, drivable berms could be installed and maintained across the ROW in lieu of silt fence or certified weed-free straw bales. Sediment barriers also would be installed within wetlands along the edge of the ROW, where necessary, to minimize the potential for sediment to run off the construction ROW and into wetland areas outside the work area.

The method of pipeline construction used in wetlands would depend largely on the stability of the soils at the time of construction. If wetland soils are not excessively saturated at the time of construction and can support construction equipment on equipment mats, timber riprap, or straw mats, construction would occur in a manner similar to conventional upland cross-country construction techniques. In unsaturated wetlands, topsoil from the trenchline would be stripped and stored separately from subsoil. Topsoil segregation generally would not be possible in saturated soils.

Where wetland soils were saturated and/or inundated, the pipeline could be installed using the “push-pull” technique. The push-pull technique would involve stringing and welding the pipeline outside of the wetland and excavating and backfilling the trench using a backhoe supported by equipment mats or timber riprap. The prefabricated pipeline would be installed in the wetland by pushing or pulling it across the water-filled trench. Most pipes installed in saturated wetlands would be coated with concrete or equipped with set-on weights to provide negative buoyancy.

Because little or no grading would occur in wetlands, restoration of contours would be accomplished during backfilling. Prior to backfilling, trench breakers would be installed where necessary to prevent the subsurface drainage of water from wetlands. Where topsoil has been segregated from subsoil, the subsoil would be backfilled first followed by the topsoil. Topsoil would be replaced to the original ground level leaving no crown over the trenchline. In some areas where wetlands overlie rocky soils, the pipe would be padded with rock-free soil or sand before backfilling with native bedrock and soil. Equipment mats, timber riprap, geotextile fabric, and/or certified weed-free straw mats would be removed from wetlands following backfilling.

Where wetlands are located at the base of slopes, permanent slope breakers would be constructed across the ROW in upland areas adjacent to the wetland boundary. Temporary sediment barriers would be installed where necessary until revegetation of adjacent upland areas was successful. Once revegetation is successful, sediment barriers would be removed from the ROW and disposed of properly.

In wetlands where no standing water is present, the construction ROW would be seeded in accordance with the recommendations of the FS. Lime, mulch, and fertilizer would not be used in wetlands.

Blasting

Blasting is not anticipated for this project; however it might be required in areas where competent shallow bedrock or boulders were encountered that could not be removed by conventional excavation methods. If blasting were required to clear the ROW and to fracture the ditch, strict safety precautions would be followed. Extreme care would be used to avoid damage to underground structures, cables, conduits, pipelines, and underground watercourses or springs. To protect property or livestock, FS and/or GEC would provide adequate notice to adjacent landowners or permittees in advance of blasting. Blasting activity would be performed during daylight hours and in compliance with Federal, State, and local codes and ordinances and manufacturers' prescribed safety procedures and industry practices.

Fences and Livestock Grazing

Fences would be crossed or paralleled by the construction ROW. Grazing permittees and the FS would be contacted prior to crossing any fence on NFS lands or any fence between public and private land, and would offer the permittee and FS the opportunity to be present when the fence is cut so that the permittees can be satisfied that the fence is adequately braced and secured. The grazing permittees would be contacted prior to the start of construction and reclamation on their allotments. Before cutting the wires for pipeline construction, each fence crossed by the ROW would be braced and secured to prevent the slacking of the wire. To prevent the passage of livestock, the opening in the fenceline would be temporarily closed when construction crews left the area. If gaps in natural barriers used for livestock control were created by the pipeline construction, the gaps would be fenced according to the landowners or FS requirements. Whenever possible, a minimum of 10 feet of undisturbed area would be maintained where the pipeline parallels a fenceline.

All existing improvements, such as fences, gates, irrigation ditches, cattle guards, and stockponds would be maintained during construction and repaired to pre-construction conditions or better. If needed, the proponent will provide an emergency source of stock water.

2.2.2.13 PIPELINE/ROW OPERATION

The proponent would be responsible for monitoring pipeline operations after construction is completed. In case of emergency or malfunction maintenance and operating personnel would be coordinated from Paonia Ranger District so that any area can be reached within a short timeframe. The pipeline system would be operated and maintained in accordance with industry standard procedures to ensure safe operation and to maintain the integrity of its pipeline system. The operating and maintenance procedures would be developed in accordance with the safety standards outlined in 49 CFR Parts 191, 192 and the State of Colorado and other applicable regulations. These procedures would continue to be implemented during the operations and maintenance of the pipeline facilities.

Surveillance

Communications and detection systems for the project would be developed. The frequency of aerial patrols and ground inspections of the pipeline would be in compliance with Federal and State requirements and would occur at least annually.

The following inspection intervals would be used for pipeline systems:

- Aerial patrols: Aerial patrols would be conducted at least annually for evidence of leaks, erosion damage, and right-of-way encroachment. Intervals for aerial patrols would be in accordance with Federal and State regulations.

- Surface patrols: Facilities that cannot be observed properly by air patrol or other remote means would be patrolled by surface patrol annually or more frequently if necessary. Corrosion control surveys would generally be performed yearly or during a period not to exceed 15 months. Surface patrols would be conducted by pedestrian surveys or horseback as no motorized vehicles would be allowed on the pipeline ROW except where the pipeline is located within the road ROW. Motorized vehicles would only be authorized on a case-by-case basis in order to access the ROW, outside of the road ROW, for emergency repair needs with notification provided to FS prior to access.

Right-of-Way Access during Operation

Surface travel along the ROW, outside of existing roads, would generally be limited to periodic valve inspections, leak surveys, maintenance, and any pipeline repairs that may be needed. Surface patrols, outside of the roads, would be conducted by pedestrian surveys or horseback as no motorized vehicles would be allowed on the pipeline ROW. Motorized vehicle use, outside of existing roads, would only be authorized on a case-by-case basis in order to access the right-of-way for emergency repair needs with notification provided to FS prior to access.

In addition to the above activities, it would also be necessary for nonmotorized access to the right-of-way, outside of the road ROW, for the following:

- Corrosion control survey crews
- Noxious weed control surveys and maintenance
- Periodic monitoring of irrigation ditches for two seasons after construction to ensure the integrity of the ditch and field flow characteristics.
- Monitoring reclamation success

Pipeline and Site Maintenance and Repair

Pipelines would be built to current standards of engineering, inspection, and cathodic protection and would require minimal maintenance. Standards and regulations include 49 CFR part 191, 192 and 195, CCR 723-4 §§4900-4999 and Colorado Oil and Gas Conservation Commission Rules 1100. Repairs required because of minor corrosion and slight external mechanical damage to pipe and coating material can be made without interruption or with minimum interruption of service. Repairs are usually made under a reduced pipeline pressure and require a minimum amount of excavation and heavy equipment. Other minor repairs include correction of erosion, repairs to waterbars, replacement of pipeline markers, and removal of debris from the right-of-way. These repairs may require earth-moving equipment and/or hand tools and would require approval from the FS if motorized vehicles are involved.

Some settling of the backfilled trench would occur, particularly after the first winter following construction. In this case, subsidence and potholes would be filled and the surface restored to normal grade and reseeded. If subsidence is discovered in subsequent years, the potholes would be filled and the surface restored to normal grade and reseeded. Motorized equipment would be required to access the part of the trench in need of filling if subsidence occurs and would require approval from the FS if motorized vehicles are involved. Any areas disturbed during this process would be reclaimed after trench maintenance.

The proponent would also maintain the right-of-way in a safe, useable condition as directed by the FS. A regular maintenance program would include, but is not limited to, soil stabilization and noxious weed management and control. A 10-12 foot wide area centered on the pipeline would be managed as herbaceous vegetation so that emergency maintenance can be accomplished if needed.

Pipeline failures or external mechanical damage needing major repairs may require shutdown of the pipeline. In these instances, the pipeline segment would be isolated between mainline valves and the natural gas in the segment needing repair would be vented to the atmosphere. To facilitate these repairs, equipment, tools, pre-tested pipe, and other materials for emergency use would be stored at existing operations facilities.

The proponent would be responsible for noxious weed control on project disturbed areas and or in locations determined by the Forest Service where infestations originated within the authorized area (See Appendix A). The proponent would consult with the FS Authorized Officer or field representative and local weed districts for acceptable weed control management techniques within the limits imposed in the ROW.

2.2.2.14 TERMINATION AND ABANDONMENT

Prior to termination of the Right-of-Way, or any portion thereof, the operator would contact the FS Authorized Officer to arrange for a pre-termination meeting and joint inspection of the right-of-way. The meeting and inspection would be held so that an agreement on an acceptable termination and rehabilitation plan can be reached. This plan would include best management practices of the time that may include, but not be limited to, abandonment and/or removal of aboveground facilities, drainage structures and/or surface material, recontouring, replacing of topsoil, seeding, and monitoring. The buried pipe likely would be cleaned, filled with inert gas, sealed and abandoned in-place. The Authorized Officer would approve the termination and abandonment plan. The proponent would relinquish all, or those specified portions, of the right-of-way in accordance with the termination plan and ROW.

2.2.2.15 LAND MANAGEMENT PLAN CONSISTENCY

The Proposed Action is consistent with the GMUG LMP. As defined by the GMUG LMP, high geologic hazard areas include active mudflows, earthflows, landslide, and avalanche areas. No surface occupancy should be allowed in high geologic hazard areas as construction in these areas would likely result in accelerated slope movement and related resource damage. The best mitigation in these areas is avoidance (1993, Oil and Gas EIS, ROD, paraphrased). The GMUG LMP also requires that where feasible, pipelines should be placed adjacent to roads.

2.2.3 Alternatives Considered but Eliminated from Detailed Study

Federal agencies are required by NEPA to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). During the development of the Proposed Action, the FS and GEC explored other potential pipeline routes. Other alternative routes were raised during public scoping. Some of these alternatives considered may have been outside the purpose and need, determined to be components that would cause unnecessary environmental harm, or not practicable or feasible to construct for engineering and environmental reasons. Therefore, a number of alternatives were considered, but dismissed from detailed consideration and are noted below and Appendix F.

Option A (Follow NFSR 704)

In Option A, the pipeline route would have started from the proposed southerly access from private lands, and would follow NFSR #704 north to the junction with NFSR #265. From this junction, the route would head east, cutting the 2 sets of switchbacks on Ranger Hill, and follow NFSR 265 to tie into the existing RMP at the existing 10-90-7 wellpad in T11S, R90W, Section 7. The Ault leg would remain the same. Option A was approximately 12.6 miles long. Approximately 2.0 miles of the proposed route is in areas with high geologic hazards (WWE, 2006), many of which showing sign of active movement. In addition, this route has 4 perennial stream crossings, and 7 intermittent stream crossings totaling 13 acres of ground disturbance within 100' of ephemeral, intermittent or perennial streams. For these reasons, this option was not considered by FS.

Option B (EAST CONDEMN IT)

In Option B, the pipeline route would take a southerly and easterly route around Condemn It Park (T. 12S. R. 90W., Sections 5 & 6, T. 11S. R. 90W., Sections 31 & 32) then be the same as the proposed action route north of the West Muddy creek crossing. The Ault leg would remain the same. Option B is approximately 11.1 miles long. This option was abandoned due to constructability issues; namely on the east side of the private parcel there is insufficient room to construct a pipeline between the private land and the very steep and eroding western slope of the Bear Creek drainage. This proposed route also crosses approximately 1 mile of high geologic hazards. In this option, there would also be a substantial amount of construction required along steep and eroding side slopes which would entail extensive cut and fill slopes. In addition, this route has 3 perennial stream crossings, and 4 intermittent stream crossings totaling 9 acres of ground disturbance within 100' of ephemeral, intermittent or perennial streams. Because of these factors this option is not being considered by the FS.

Option C (ATV)

Option C follows NFSR 704 road from private land to the south to point where an unauthorized, and recently closed, ATV trail takes off to the east (T. 11S. R. 90W., Section 25) and enters private land (SW corner of Sheep Park) in T. 11S. R. 91W., Section 29. Option C is approximately 12.8 miles long. This option was abandoned due to constructability issues associated with 0.3 miles of high geologic hazards. Field reviews could not find any alternative route around the hazards. In addition, this route has 3 perennial stream crossings, and 9 intermittent stream crossings totaling 7 acres of ground disturbance within 100' of ephemeral, intermittent or perennial streams. For these reasons, this option was not considered by the FS.

Option D (WELLPAD)

Option D follows NFSR 704 road from the private land to the south to a reclaimed drill site (now used as a dispersed campsite) in T. 11S. R. 91W., Section 13 proceeding to private land in T. 11S. R. 91W., Section 24 and T. 11S. R. 90W., Section 19. From the private lands the route crosses NFS lands to private lands in Sheep Park. Option C is approximately 13.5 miles long. Approximately 1.25 miles of the proposed route is in areas with high geologic hazards (WWE, 2006), many of which showing sign of active movement. This route crosses West Muddy Creek one time, as well as several of its tributaries. For these reasons, as well as the private landowners refusal to have the ROW enter his property at this location, this option was not considered by FS.

Option E (OUTSIDE SHEEP PARK)

Option E follows the proposed Sheep route from the private lands to the south to just outside of private lands in Sheep Park. The route would them follow to the easterly side of the private lands to the junction of NFSR 851 and 851.1a to the existing RMP pipeline. Option E is approximately 10.9 miles long. Forest Service Manual 2703.2 states to deny proposals for uses of National Forest System land which can reasonably be accommodated on non-National Forest System lands. The private landowner (same as in Option D) has consented for the ROW to traverse private lands, not encumbering additional NFS lands. For this reason, this option was not considered by FS

Option F (Ault-WESTMUDDY CREEK)

Option F, Ault leg/West Muddy alternative, was abandoned due to constructability issues, and resource damage concerns. This option followed NFSR 849.1A, a 4WD road through private and NFS lands in T.12S, R. 90W, Sections 3 & 4 proceeding to T.11S., R.90W, Section 32 where it would meet up with the proposed Sheep portion near the West Muddy crossing. The temporary road to be constructed is located between the private lands and the West Muddy crossing. Field reviews indicated that the Proposed Action route was better located to avoid this section due to numerous wetlands, ponds, floodplains, steep road cuts and raveling slopes, areas of significant erosion and obvious geologic instability. In addition there are numerous perennial and intermittent stream crossings. Approximately 3 miles of the proposed route is in areas with high geologic hazards many showing sign of active movement. Option F is approximately 10.9 miles long.

Option G (Ault - ROAD GULCH)

Option G, Ault leg/Road Gulch alternative, was abandoned due to constructability issues. This option followed the same route as Option F, but headed north away from the West Muddy Creek up NFSR 849.1B Road Gulch (Section 33 south line T. 11S., R. 90W.), to connect with the proposed action at Ault Reservoir. Option G is approximately 13.3 miles long. Road Gulch is an existing high clearance unimproved 4WD road that would require extensive reconstruction to accommodate access and the ROW. Field reviews indicated that the Proposed Action route was better located to avoid this section due to numerous wetlands, floodplains, steep road cuts and raveling slopes, areas of significant erosion and 4 perennial stream crossings and at least 9 crossings of intermittent streams. Approximately 3 miles of the proposed route is in areas with high geologic hazards many showing sign of active movement. For these reasons, this option was not considered by FS.

Option H

Option H would traverse private lands to connect with the proposed SG Interests (SG) Bull Mountain Pipeline. The Bull Mountain pipeline project has not received federal approval therefore this document cannot be based on a decision that has not been made. Also, SG and GEC have not negotiated a long term agreement due to capacity constraints. Common carrier, the federal requirement that a pipeline "shall accept, convey, transport, or purchase without discrimination, all oil or gas delivered to the pipeline...." does not apply to pipelines on private lands. In addition, this route would traverse approximately 0.3 miles of high geologic hazards. For these reasons, Option H was not considered by FS.

Table 8 Comparison of alternatives not carried forward for analysis

Alternative	Length (miles)	High Geologic Hazards (miles)	Stream Crossings Per. Int. (NFS)
A	12.6	2	4 9
B	11.1	1	3 11
C #	12.8	0.3	3 11
D	13.5	1.25	
E *	10.9		
F	10.9	3	
G	13.3	3	4 11
H		0.3	
Proposed	10.8	0	2 4

Landowner refused permission for access at this location
*Could be accommodated on private lands instead of encumbering NFS

2.2.4 Comparison of Alternatives

This section provides a tabular comparative summary of the effects of implementing each alternative as derived from the effects analysis in Chapter 3. Information in the following tables is focused on activities and effects where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives.

Table 9. Comparison of Alternatives: Significant Issues

Issue Topic	No Action Alternative	Proposed Action
11. The effect of pipeline construction, operation and maintenance on visuals	No Effect	Short term effect due limited visibility from viewing platforms.
12. Effects of pipeline construction on geologic hazards, geology, and soils	No Effect	Pipeline ROW construction could adversely affect soil structure and stability in the project area thus potentially causing soil erosion and geologic hazard instability. Short term risk.
13. The short term effects of construction activities such as exhaust emissions, burning and fugitive dust on ambient air quality standards and nearby Class I airsheds.	No Effect	Short term effect during construction could cause reductions in existing air quality from fugitive dust, pollutants and emissions.
14. The effect of pipeline construction, operation and maintenance on roads, traffic and safety concerns	No Effect	Short term effect during construction only as roads will be upgraded to handle the traffic.
15. Effects on Big Game Wildlife Habitat	No Effect	Short term effect during construction as habitat will revegetate.
16. Pipeline trench construction could intercept shallow ground water resources, causing localized depletions and breaks in the buried water pipeline could adversely affect shallow ground-water quality.	No effect	Short term effects during construction, variable due to climatic conditions, expected to return to close to pre-construction conditions.
17. The short and long term effects of all aspects of pipeline construction, operation and maintenance on Recreation	No effect	Short term effect during construction could cause traffic, noise and access issues.
18. The short and long term effects of all aspects of pipeline construction on reclamation and noxious weeds	No effect	Short term effect during construction and operation. Reclamation and monitoring for noxious weeds in Special Use Authorizations will mitigate any long term effect.

Issue Topic	No Action Alternative	Proposed Action
19. The impacts that construction of pipeline construction may have on the various aquatic related resources, which includes riparian areas, surface waters, aquatic species, fisheries and wetland situations.	No effect	Pipeline construction could have a short term impact on various aquatic related resources.
20. The short term and long term effects of pipeline construction, installation and operations on water quality. These effects would include impacts associated with the transportation system needed to construct and operate the pipeline. Impacts to water quality will relate to other issues such as operations on steep or unstable slopes and the effects of spills	No effect	Pipeline construction, operation and maintenance could have a short term affect on water quality.

Tables 10-12. Comparison of Alternatives: Listed, Sensitive and MIS Species

Species Group	Status	No Action	Proposed Action
10. USFWS Listed Wildlife Species			
Canada lynx	USFWS Threatened	No Effect	No Effect *
Sensitive Wildlife Species			
Boreal toad	Sensitive	No Impact	No impact *
Northern leopard frog	Sensitive	No Impact	MIIH *
Wolverine	Sensitive	No Impact	No impact *
American marten	Sensitive	No Impact	No impact *
• Fringed myotis • Spotted bat • Townsends' big-eared bat	Sensitive	No Impact	No Impact *
• Pygmy shrew • Olive-sided flycatcher • American three-toed woodpecker • Purple martin • Loggerhead shrike • Brewer's sparrow	Sensitive	No Impact	MIIH *
• Northern goshawk • Ferruginous hawk • Northern harrier • Flammulated owl	Sensitive	No Impact	MIIH *
American peregrine falcom	Sensitive	No Impact	No Impact *
Lewis' woodpecker	Sensitive	No Impact	No impact *
MIS Wildlife Species			
Elk	MIS	No Impact	Short-term impacts, but meets MIS objectives *
Merriam's Wild Turkey	MIS	No Impact	Short-term impacts, but meets MIS objectives *
Red-naped Sapsucker	MIS	No Impact	Short-term impacts, but meets MIS objectives *
11. Fisheries and Aquatic Species Listed Species			
Colorado Pikeminnow	Endangered	No Impact	No Impact
Humpback Chub	Endangered	No Impact	No Impact
Razorback Sucker	Endangered	No Impact	No Impact
Bonytail	Endangered	No Impact	No Impact
Sensitive Fish Species			
Bluehead Sucker	Sensitive	No Impact	MIIH
Flannelmouth Sucker	Sensitive	No Impact	MIIH
Roundtail Chub	Sensitive	No Impact	MIIH
Colorado River Cutthroat Trout	Sensitive	No Impact	MIIH
Mountain sucker	Sensitive	No impact	MIIH
MIS Fish Species			
Common Trout	MIS	No Impact	MIIH

Species Group	Status	No Action	Proposed Action
12. Listed, Sensitive and Special Management Plant Species			
FSS plant species	Sensitive	No Impact	No impact as species to not occur in project area

MIIH - may impact individuals or habitat, but not likely to contribute to a trend towards federal listing.

* See Chapter 3 Wildlife section for more information

CHAPTER 3: ENVIRONMENTAL CONSEQUENCES

This chapter summarizes the physical, biological, social, and human environments of the project area and the direct, indirect and cumulative effects of implementing each alternative on the environment. The physical environment includes sections for Geology, Vegetation and Wildlife, Watershed and Soils. The human environment includes sections for Economics, Heritage, Recreation, Visuals and Transportation. This chapter also presents the scientific and analytical basis for the comparison of alternatives presented in Chapter 2.

Under NEPA, “direct effects” are caused by the action and occur at the same time and place. “Indirect effects” are caused by the action and are later in time or farther removed in distance, but still reasonably foreseeable. Under NEPA, cumulative effects are the incremental effects of the Proposed Action when added to other past, present, and reasonable foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collective significant actions taking place over a period of time. A comprehensive list of potentially cumulative actions considered for this project is presented in Appendix G. The default temporal scale (time limits for past activities) selected for this project is from twenty years ago to the present. The default spatial scale to be considered for this project is within the 6th code HUC watersheds that may be affected by the Proposed Action. However, each resource area cumulative effect area can be different and possibly larger or even smaller depending on the resource area. The cumulative effects discussion at the end of each resource section analyzes the cumulative effect of the project together with past, present and reasonably foreseeable future actions listed in Appendix G.

OVERVIEW OF THE PROJECT AREA

The project area lies in Gunnison and Delta Counties, Colorado (Figure 1 and 2). The project area includes National Forest System (FS) lands administered by the GMUG. In addition, the project includes several parcels of private lands. The proposed pipeline, Sheep segment, starts on private land, then proceeds north on NFSR 704 to just north of the Condemn-it Park, then heads north-east crossing West Muddy Creek and then crossing and paralleling Sheep Creek north to Sheep Park private lands, a small segment of FS, another private parcel, then back to FS and the connection to the Ragged Mountain Pipeline. The Ault segment starts on private lands just south of Ault Reservoir, heading northwest along NFSR 849.1B1 to join the Sheep segment on private lands in Sheep Park.

No Wilderness or Inventoried Roadless Areas are within or adjacent to the project area.

3.1 GEOLOGY AND GEOLOGIC HAZARDS

3.1.1 Introduction

This is an analysis of the effects the SGGS would have on geologic resources and an assessment of geologic hazards along the proposed route. The analysis area for direct and indirect effects is specific areas and geologic features bordering the proposed pipeline alignment on both NFS and private lands.

3.1.2 Methodology for Analysis

This analysis consisted of gathering existing geology and geohazards information for each alternative, namely:

- Numerous field visits were conducted during the field season of 2006, with the proposed corridors traversed and documented by a professional geologist.
- A Geologic Evaluation of the SGGS and alternative routes was prepared. This report included aerial photograph evaluation, topographic/geologic mapping and interpretation, and field investigations (2006, Wright Water Engineers, WWE, project file).

3.1.3 Regulatory Framework

The GMUG LMP defines high geologic hazard areas to be active mudflows, earthflows, landslide, and avalanche areas. The GMUG Oil and Gas Leasing EIS and Record of Decision identifies that areas of high geologic hazards are stipulated as No surface occupancy for drilling and other operations to remove risk for accelerated slope movement and related resource damage. The best mitigation in these areas is avoidance (paraphrased).

- FSM 2883 - Identify existing and potential geologic hazards, land base limitations, and affected management activities in all land management plans.
- FSM 2884 - Assess the risk of loss of life and property resulting from geologic hazards...with proposed projects and resource development.

3.1.4 Affected Environment

The exposed bedrock geology in the Sheep and Ault Pipelines area is within the Tertiary Wasatch Formation. The Wasatch is an interbedded and lenticular, tan, yellowish to reddish brown, and reddish purple clay stone, siltstone, sandstone and conglomerate. The Wasatch formation unconformityy overlies the Upper Cretaceous Mesa Verde Group. The Mesa Verde group is about 6,000 feet (maximum) and was deposited as non-marine sediments in lacustrine, flood-plain and high energy fluvial environments similar to the Wasatch formation. The Wasatch formation is highly susceptible to landslides. Surficial deposits consist of weathered deep soils and various alluvial and colluvial deposits. There are also numerous clusters of basalt boulders possibly representing erosional lag deposits.

Geologic hazards are present in the project area in the form of current and historic rock falls, landslides and slumps. Areas of instability are typically associated with steep slopes, saturated soil conditions, and slope aspects on the down-dip side of the outcropping geologic strata where dipping structures daylight on exposed slopes.

The SGGS proposed action avoids known geologic hazards and, for the most part, avoids areas susceptible to ground movement. However, several segments of the pipeline are proximal, but do not directly traverse, known geologic hazards.

Along the Sheep portion of the proposed pipeline, just north of the West Muddy Creek crossing, the pipeline transverses two dry unnamed tributaries to West Muddy Creek. The Sheep pipeline route first crosses the lower end of the larger of the two drainages. This dry tributary includes a relatively large scarp at the head of the drainage. This head scarp is the origin of a debris flow with multiple lobes. The proposed Sheep pipeline route avoids the debris flow and crosses a small portion of the drainage at its southern end (Figure 3, Site A).

In the northwest corner of Section 32 (approx. 0.75 miles north of the confluence of Sheep Creek and West Muddy Creek) the pipeline route skirts the eastern boundary of a relatively active debris flow (Figure 3, Site B), and then climbs a steep slope (greater than 50%). In another location, within Sheep Park (a private inholding) the pipeline is adjacent to some potentially unstable areas (Figure3, Site C).

A short segment of the Ault portion of the pipeline crosses an area of moderate concern. In the NE¼NE¼ of Section 28, T11S, R90WA, there is a 0.3-mile stretch of a narrow valley which contain steep slopes (between 35%-50% slope; Figure 3, Site D), and wetlands.

3.1.5 Environmental Consequences

The potential effects to geologic resources and geologic hazards include changes to the local topography resulting from surface disturbance, increased slope instability, mass movement in areas of geologic instability, and increased sedimentation due to soil movement into adjacent drainages.

3.1.5.1 No Action alternative

No Action Alternative results in no pipeline construction activities and no soil disturbance. All forces currently acting on geologic resources and geologic hazards in the project area would remain the same.

3.1.5.2 Proposed Action

Numerous design features have been developed and would be implemented to minimize potential to affect geologic instabilities. These are found in Appendix A - and in the proposed POD.

Disturbing existing geologic hazard areas or creating cuts and placing fill on moderate to steep slopes could contribute to increased erosion and siltation along the proposed route. Activities that cause landslide activity are considered to cause irreversible effects to the soil resources. Placement of fill on steep slopes presents the problem of keeping the fill in place. Fill may be lost due to sloughing and storm events. Trenching and associated dirt-work can also lead to higher moisture infiltration rates into effected soil and can potentially increase the likelihood of mass movement. Although sediment and erosion control measures would be applied during construction, there remains possibility for some soil movement and increased erosion with the construction of the proposed SGGS.

Vegetation removal along the pipeline route could also contribute to the land instability by allowing more water to infiltrate soils. Vegetation removal has the potential to destabilize currently stable areas.

The Forest Service completed site-specific evaluations of both geologic hazards and slope for areas along the pipeline alternative. This evaluation ranked where the pipeline crosses these areas with low, moderate or high risk potential for geologic instability (see Figure 3), as well as areas with moderate and steep slopes (see Figure 4).

The activity of geologic hazards in this region is most often determined by water content of the soil. Water in the pore space of a soil acts as a lubricating agent, making it much easier for grains to slide past one another. In general, soil movement is more likely to occur on east-facing and north facing slopes due to the regional bedrock dip to the northeast and the prevailing direction of ground water movement.

Ultimately, the amount of water saturation in the soil at the time of construction would have a major effect on whether or not soil instability is activated during the construction phase of the project. Cutting, filling and trenching are actions that alter the dynamic equilibrium by loading and unloading portions of slopes which may trigger accelerated slope movements, such as slumps and landslides. Hence, the construction activities required to install the SGGS project may affect the slope stability. This effect would be more likely to occur on north facing slopes given the higher moisture content due to regional dip of strata as well as decreased exposure to the sun (warming). Design criteria of the pipeline (timing) reduces the likelihood of movement in these areas.

The surrounding landscapes show evidence of slope movements in the geomorphic past and mass movement events, either slow or accelerated, that could exert pressures on the pipeline. However, through design the proposed pipeline alignment avoids all high hazards, any movement adjacent to the pipeline is likely to be minor.

For the most part, the proposed SGGS avoids steep slopes. Table 13 below, provides a summary of the slopes encountered along the proposed pipeline route. In general, as slope increases the likelihood of slope instability increases. However, this is not always the case, as geology and soil types can have a major effect on the stability of a particular slope. Figure 4 displays the relationship between slope and geologic stability. For more information on slope and soils see Chapter 3.10.2.

Approximately 125 acres of the proposed disturbance will be in areas of low to moderate slopes (i.e. less than 35% slope). Construction activities in these areas are not expected to create land stability issues, or require special construction techniques Five (5) acres of the proposed disturbance area are considered to be in areas with moderate to steep slopes (35 to 50 %). Areas with moderate to high slopes could translate to slowed construction, unanticipated maintenance, and more difficult reclamation. These conditions increase the opportunity for increased water saturation and therefore could potentially lead to decreased slope stability.

Table 13. Proposed Action – Slope Summary

% Slope	Slope Rating	Linear mileage	Acreage (100' ROW)
0-15%	low	5.8 miles	75 acres
15-35%		3.9	50
35-50%	moderate	0.3	4
Greater than 50%	high	0.7	1

Figure 3-Geologic Hazard Assessment

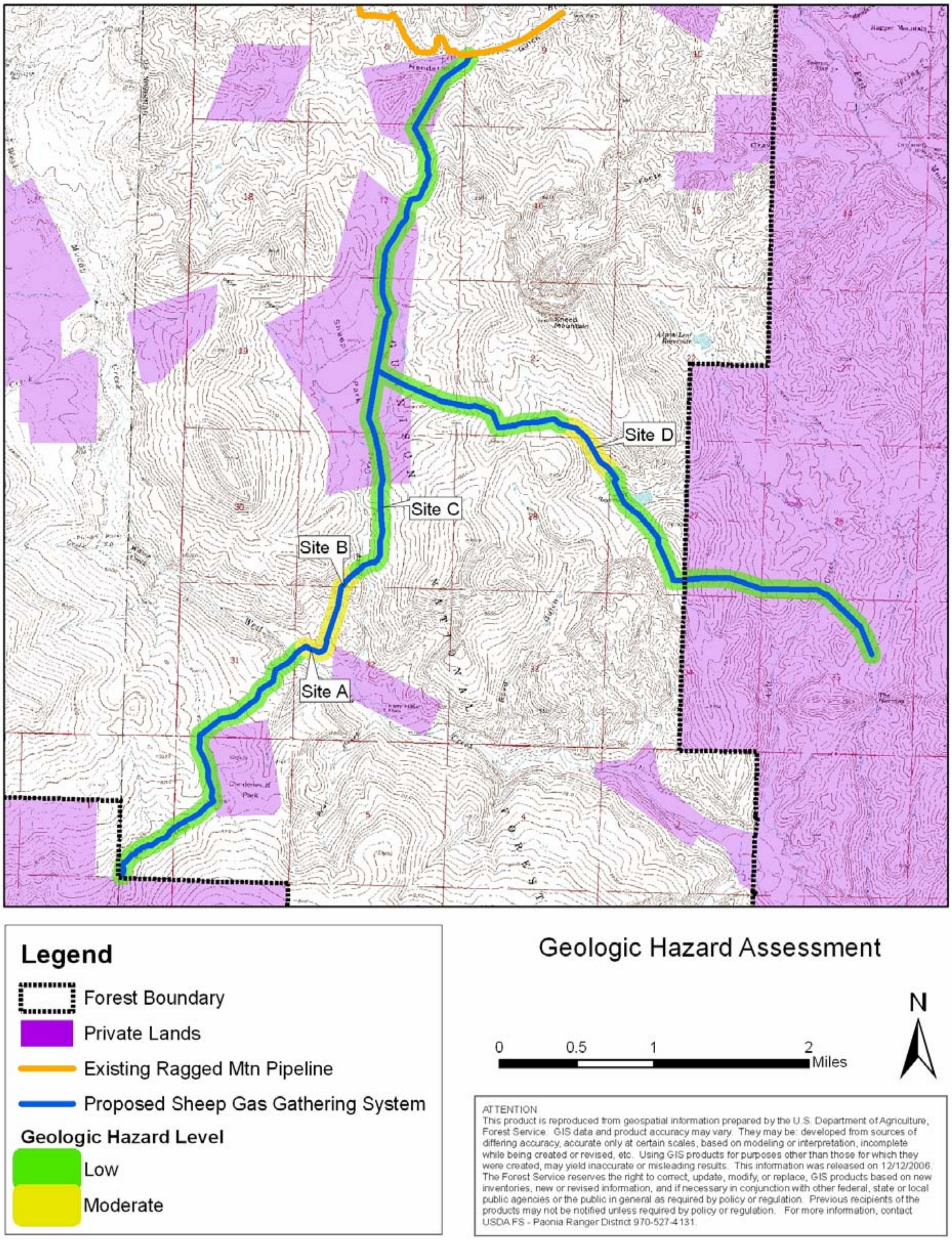
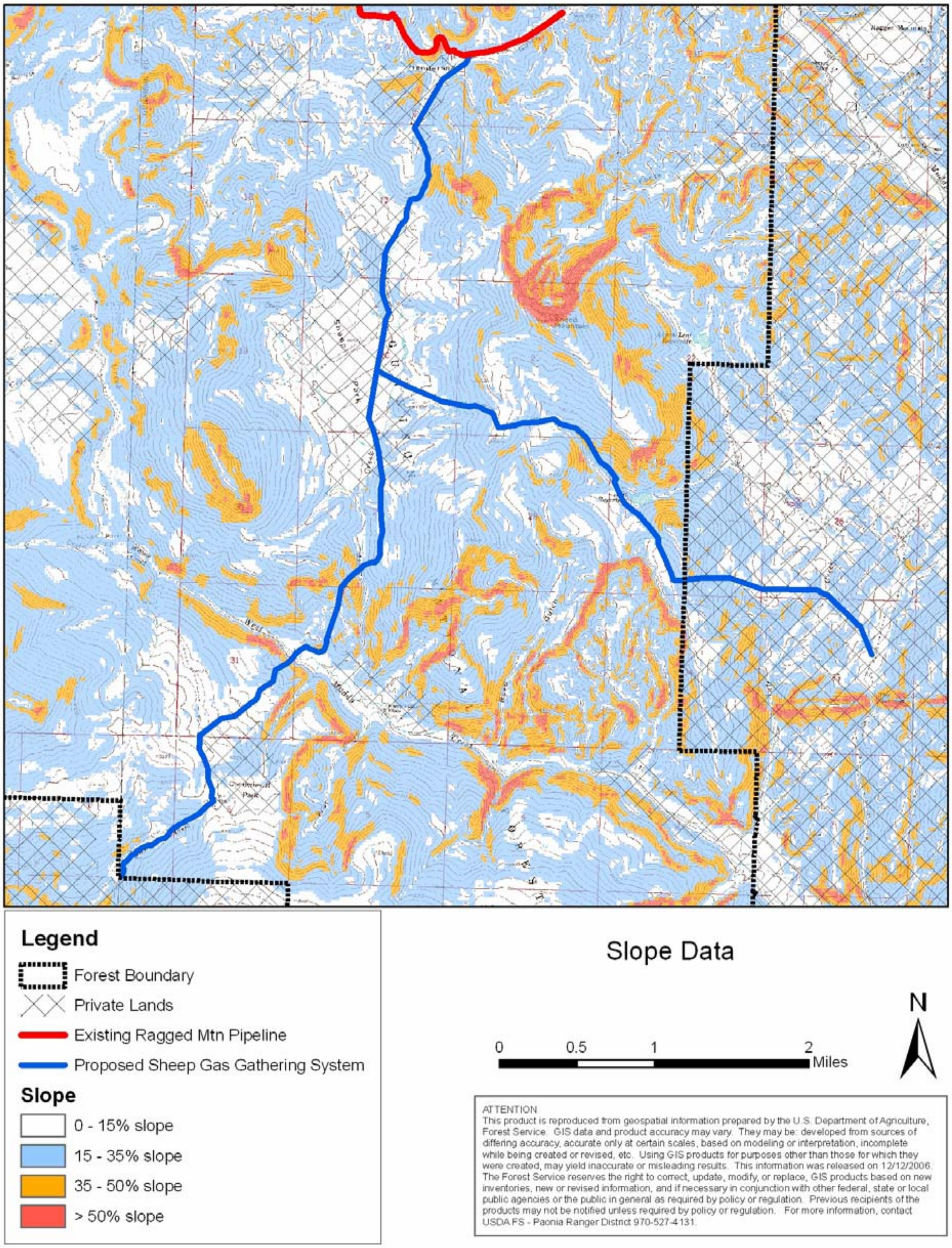


Figure 4-Slope Data



Slope Stability

Geologic hazard mapping information was compiled for the project area (USFS, 1991; WWE, 2006). Figure 4 is a general display of landslide material, landforms and terrain in the project area. Figure 5 displays a geologic hazard mapping assessment, specific to the pipeline route, which shows areas rated on the degree of risk of movement. Ratings of low, moderate and high are used, with the following implications:

Low Hazard—A slope may undergo failure under extremely adverse conditions which may have a low probability of occurrence.

Moderate Hazard—A slope would probably fail under severe conditions which can be expected to occur at some future time.

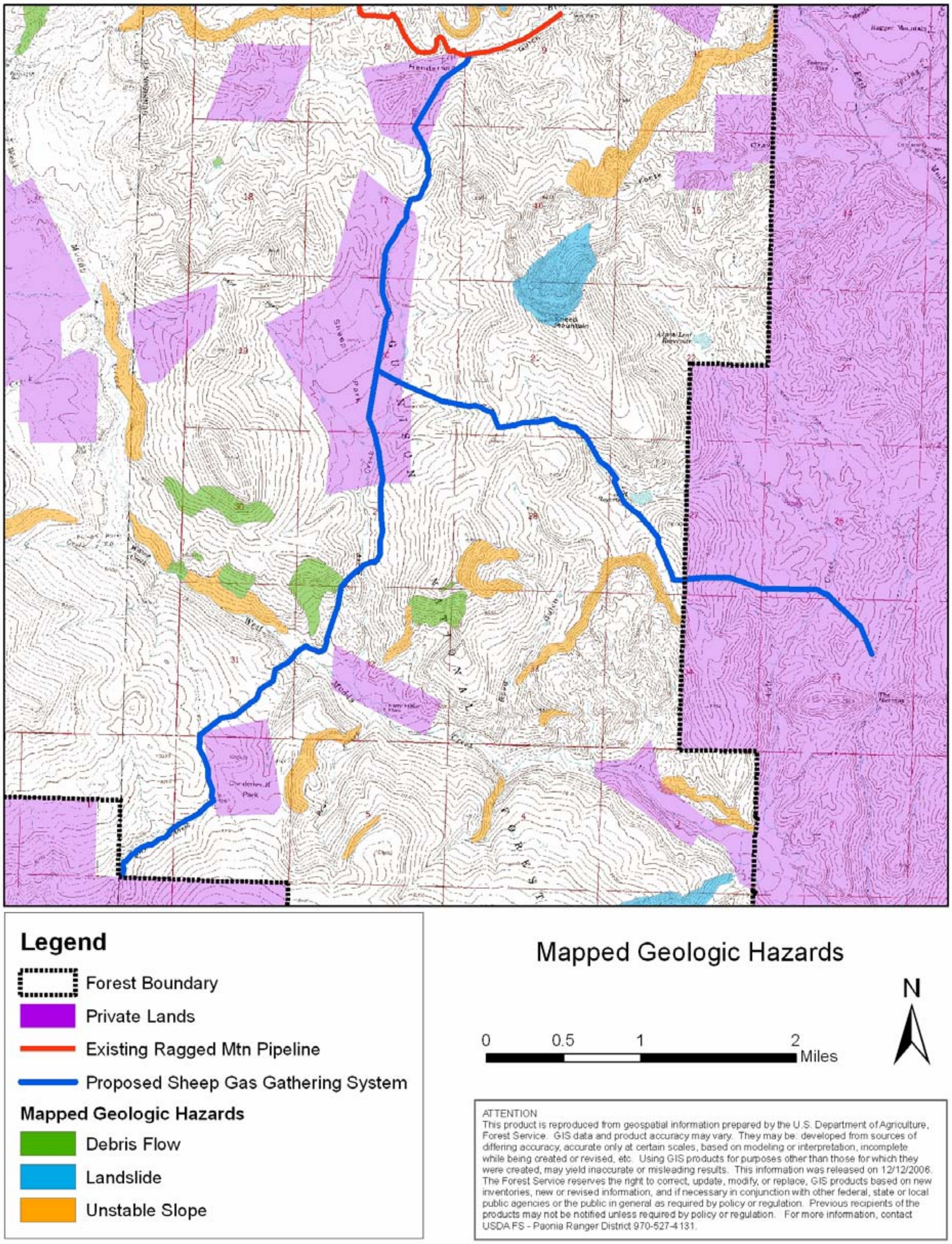
High Hazard—A slope is most certain to undergo failure in the future under normal conditions. Area has shown signs of recent failure.

As mentioned previously, the Sheep portion of the pipeline is adjacent to several geologically unstable areas. With respect to Site A, on Figure 3, historically the debris flow in this location has moved southeasterly from the top of the drainage approximately half way towards the West Muddy Creek floodplain. Large scrub oak stands in the lowest lobe indicate relative stability. Below the debris flow lobes, the lower end of this drainage is broad with relatively little undulation. This portion of the drainage is likely the fine-grained outwash or mudflow which continued beyond the debris flow lobes. The proposed Sheep pipeline route avoids the debris flow and crosses a small portion of the drainage at its southern end. A buried pipeline through this area should be relatively safe in that any likely natural reactivation of the debris flow would be depositional on the valley surface rather than deep-seated and erosional. This would likely minimize or negate any potential impact to the buried pipeline (2006, WWE). Construction and maintenance of the pipeline as well as the long term presence of the pipeline would not likely initiate movement within, or adversely affect this debris flow. In addition, if reactivation of the debris flow occurred (natural or otherwise), the distal position of the pipeline route should negate any effects from soil or mass movements.

With respect to Site B in Figure 3, the pipeline route lies along the eastern edge of this drainage and to the east of the most prominent material lobe of a debris flow. The location of the pipeline buried along the eastern edge of this lobe will provide stability such that any reactivation of the debris flow will be across the top of the pipeline. Thickets of mature scrub oak indicate the debris flow has not experienced significant movement in the last few decades (2006, WWE). It is unlikely construction and maintenance, as well as the long term presence of the pipeline, would initiate movement within this debris flow, or be adversely affected by future movements of the feature.

Site C in Figure 3, contains some potentially unstable slopes due to places with saturated soil conditions and some minor surface expressions of previous movement (hummocky topography and minor benching). The pipeline traverses this area, however due to the low/moderate slopes, and the lack of signs shows recent activity, the likelihood of pipeline construction and maintenance causing/initiating mass movement is very low. Future mass movements in this location, however unlikely, should not adversely affect the pipeline.

FIGURE 5-Mapped Geologic Hazards



As mentioned previously, the Ault leg of the SGGS shows no significant geologic impediments. Site D of Figure 3, is the only Ault portion that contains any slope instability concerns. Construction in this location could require special care around wetlands and across moderate to steep side slopes. Since the pipeline will be situated along a side-slope in this location, a larger amount of cut is needed to properly install the pipeline. Although this area has a moderate geologic hazard rating, it is mostly due to the presence of wetlands, not known geologic instabilities. Vegetation in the area does show a small amount of movement (minor “pistol butting”), but there is no evidence of large scale movement or threat of failure. The majority of the concern relates to erosion potential and affects to the adjacent wetlands, see the Soils Chapter 3.10.2 for additional information on effects related to this resource.

All other segments of the proposed pipeline route, not specifically mentioned, have a low hazard rating with respect to slope stability. Pipeline construction and maintenance in these locations have a very low potential to cause, initiate, or perturb geologic instabilities. Mass movement is highly unlikely in these sections. Table 14 contains a geologic instability summary for the proposed pipeline alignment.

Table 14. Proposed Action – Geologic Instability Summary

Hazard Rating	Linear Mileage	Acreage (100’ ROW)
Low	9.6	116
Moderate	1.1	14
High	0.0	0.0

Compliance with the Forest Plan and Other Regulatory Direction

The Proposed Action does not traverse any significant geologic hazards. It also avoids, to the extent possible, affecting steeps slopes. The overall risk for causing accelerated slope movements is low. Because of geologic hazards along alternative road routes (see Chapter 3.4.3), pipeline construction is not feasible in these areas. The Proposed Action meets the GMUG Forest Plan direction for geologic hazards

Cumulative Effects

The construction, installation, and operation of the SGGS could have the potential to affect slumping, mass wasting and general slope instability in the area. However, the region does have active natural instability and it may be difficult in many circumstances to distinguish pipeline-related effects from natural occurrences. Small scale natural earth movements currently occurring in the project area would likely to continue in the future. It can be reasonably anticipated that they will vary in amount and intensity based on climatic factors over time. It is assumed that past, present, and reasonably foreseeable action would continue in the future and have the ability to effect geologic resources and instabilities. These actions, if not properly mitigated, could increase slope instabilities in the project area and have negative effects on topography and in turn increase sediment load into adjacent drainages.

3.1.6 Monitoring

Create monitoring plan to detect and document slope movement on steep slopes and adjacent geologic hazards during construction and interim reclamation.

3.2 VEGETATION AND WILDLIFE

3.2.1 Introduction

This document serves as the Wildlife Report to assess potential impacts to federally-listed threatened and endangered species (T&E species), Forest Service Sensitive (FSS) and Management Indicator Species (MIS) as designated in the LMP, as amended. A Biological Assessment and Biological Evaluation were prepared separately and are included in the project record.

Species considered for this analysis are shown in Appendix H. Threatened, Endangered and Sensitive Species carried forward for this analysis and effects determinations are shown in Table 15. Those that were not likely to be present in the analysis area were not carried forward for analysis, and a determination of “No effect” for T&E species, and a determination of “No impact” for FSS species was made.

3.2.2 Methodology and Assumptions for Analysis

Pre-field reviews were conducted to determine which species are known to occur in the area or have suitable habitat present and could potentially occur. Primary sources included Paonia District wildlife sightings records and information from species assessments prepared for Sensitive Species in Region 2 (USDA 2007a).

The project proponent provided reports on conditions of wetlands (SWCA 2006a), vegetation (SWCA 2006b), and wildlife (Monarch, 2006) within the proposed action corridor. In addition, the district wildlife biologist visited the project site on several occasions and assessed the area for various wildlife species. Observations recorded during these surveys have been incorporated where appropriate.

HABCAP modeling was not used for this analysis. It was developed as a comparative tool to model differences in habitat capabilities between alternatives by calculating changes in habitat types and structural stages. It estimates capability at a single point in time, and does not simulate change over time. Because of the long, linear nature of the pipeline corridor, the conversion of the existing habitat in the corridor to grass/forb habitats over the long term, and that much of the potential effects are a result of disturbance associated with construction, this modeling tool was not used.

There are several assumptions that have been made for this analysis:

(1) Most of the corridor will be maintained as a grass/forb habitat over the long-term. There may be some shrub component in some sections, but will be controlled in most locations to allow detection of gas leaks during monitoring.

(2) Because of the heavy truck traffic that will occur, those roads identified in the required road engineering study will need some reconstruction, including clearing and rocking. Temporary road construction (approximately 267 feet) will be obliterated after it is no longer needed for construction, and returned to a natural condition, including seeding with approved seed mixture and treating for noxious weeds. Improved roads

will result in improved summer and fall recreation access. Summer and fall recreation is expected to increase slightly over the long-term.

(3) Changes in habitat on all land ownerships have been included in the direct and indirect effects analyses. Where specific habitat data is lacking, habitat was typed from aerial photographs and field visits/photographs and assumed to be similar to known habitat types found on adjacent forest lands.

(4) There will be no increase in winter use of NFSRs 851, 265, or 704 as a result of this construction. Snow compaction or use of roads within lynx analysis units (LAUs) will not increase over ambient levels. Changes to winter use of these roads for this project would require further analysis for impacts to lynx.

3.2.3 Regulatory Framework

Applicable requirements and other direction may be found in the Endangered Species Act, National Forest Management Act, and USDA-Forest Service Regulations and Manuals. The Land and Resource Management Plan mentioned in the Introduction provides area-wide and site-specific standards and guidelines for maintenance of habitat for wildlife species. This direction has been incorporated into the project design where appropriate, through seasonal timing restrictions and project design features. Design Features of the Proposed Action are given in Appendix A.

Desired Condition

Plan goals and objectives for wildlife and wildlife habitats are shown below.

GMUG LMP (1991)

Goal: Fish and Wildlife – Increase NFS winter range carrying capacity for elk and deer. Increase or improve wildlife habitat diversity. Increase vertical and horizontal diversity.

Goal: Old growth – Define and inventory old growth for each of the Forest types on the Forest. Develop and implement silvicultural practices to maintain and establish old growth values. Implement National policy on old growth.

Compliance with the Forest Plan and Other Regulatory Direction

The GMUG LMP provides area-wide and site-specific standards and guidelines for maintenance of habitat for wildlife species. This has been incorporated into the project design where appropriate. This direction is displayed in Table 15 along with how the project is consistent with this direction.

Table 15: Compliance with Relevant Plan Wildlife Standards and Guidelines

Habitat or component	Plan Direction	Consistency
Special status species	Species-specific direction includes 1) openings should be less than 300 ft in width for marten; and 2) provide 20% pole/mature trees stands next to goshawk nesting sites.	Project design features include timing restrictions in ponded areas, aspen, spruce/fir and aspen/conifer habitats. Construction ROW clearing would be 100 feet and there are no known goshawk nesting sites within the analysis areas.
MIS	Species-specific direction includes 1) openings should be less than 300 ft in width for marten; and 2) provide 20% pole/mature trees stands next to goshawk nesting sites.	The corridor is less than 300 ft wide and there are no known goshawk nests next to any corridor.
Raptor nesting	No activities within ¼ mile from nest March 1 to July 31 if they would cause nest failure	Project design features include timing restrictions in aspen, spruce/fir and aspen/conifer habitats and preconstruction surveys for raptors.
Snags	In aspen leave 120 to 300 snags per 100 acres and in spruce/fir leave 90-225 per 100 acres. For Lewis' woodpecker, provide 3-5 snags per acre of size class 8 and 9 for cavities.	Snag retention is to be calculated as per-acre averages for each 100 acres on the GMUG. Corridors would not provide snags but they would be provided in adjacent forested areas, which would not be impacted.
Downed logs	Maintain 10-20 tons of logs and other down woody material per acre. In spruce/fir they should be 12" diameter and 50 linear ft/acre and in aspen they should be 10" diameter and 50 linear ft/acre.	Logs will be placed on the corridor to deter illegal motorized use, where they are available.
Old Growth	In forested areas of a unit 5-12% or more will be in an old growth forest classification. In spruce/fir and mixed conifer it will be in patches of at least 30 acres in size and should average 100-200 acres where possible. In aspen old growth patches can be smaller.	Loss of old-growth forest components will be minimal and restricted to areas along the 704 road and 849 roads where the corridor will travel down the existing road corridor. Widening of the corridor may occur to fit all components of the proposed pipeline. Total acreage possibly impacted will be less than 30.
Elk calving	Provide hiding cover within 1000 feet of known calving areas.	None of the project is within mapped elk calving areas. Loss of hiding cover in unmapped potential elk calving habitat is minimal.
Elk summer		There would disturbance during the summer period and the guideline for summer would not be met.
Elk winter		Habitat alteration will not substantially alter anticipated winter use of the project area, and

Habitat or component	Plan Direction	Consistency
		winter activities are not proposed.
Riparian habitats		There have been several project design features incorporated for riparian and wetland habitats. Plan direction will be met.
Boreal toads and northern leopard frogs		There are no known or suspected populations along the proposed route or travel routes to the project site, but suitable habitat exists for the frog. BMPs to be implemented will reduce potential for impacts if amphibians are present.

Several of the wildlife standards in the GMUG Forest Plan relate to the use of the HABCAP model to measure habitat effectiveness over Diversity Units (roughly based on fourth order watersheds 5000 to 20,000 acres in size). These standards were not considered to be relevant to this analysis because this project is for a linear utility corridor. The HABCAP was developed as a tool for comparing the effects of alternatives and does not provide a link with populations that are supported by science (GMUG 2002 Annual Monitoring and Evaluation Report). Its applicability to various species (such as elk) is unclear. HABCAP may be used to factor in natural processes such as succession. The areas within the pipeline corridor would have shrubby vegetation in some sections, over time, but will largely be maintained as grass/forb vegetation. Taller vegetation, such as aspen and conifer would interfere with monitoring of the pipeline for leaks. HABCAP does not addresses spatial distribution of habitat and only looks at the overstory vegetation. The results are expressed in numbers of animals the area can support; even though animals may or may not be in the area (USDA Forest Service, 1994). In addition, disturbance associated with the construction phase is a significant effect for some species; maybe more than the actual changes in vegetation. As a result, HABCAP modeling was not used in this analysis. Consistency with these standards was not analyzed. No other mitigations were identified.

3.2.4 Vegetation Affected Environment

Overall vegetation composition is a component of habitat that is essential to analyzing effects to wildlife.

The analysis area used for direct and indirect effects is limited to a 1-mile buffer on each side of the access roads and pipeline corridors. The direct effects are limited to the 100-foot wide construction corridor where the pipeline will be buried. However, the indirect effects of disturbance from increased traffic into the area on access routes, human activities, and heavy equipment use on the pipeline corridor can result in displacement of some species. One mile was used as the available literature suggests that species that are displaced would not be displaced over one mile. Specific literature will be discussed in the relevant sections. Figure 6 shows an overview of the wildlife analysis area.

The analysis includes changes in vegetation cover types, as this proposal would alter existing vegetation to largely grass/forb cover types within the corridor over the long-term. There is little analysis based on existing structural stages of each cover type. Some species may only be associated with mature stands of a certain cover type, and all of the acres of this cover type may not currently provide habitat. However, over the long-term, they could provide habitat and the analysis focuses on changes in potential habitat over the long-term.

Private land along the corridors has been included in the direct and indirect effects analysis, as the proposal includes actions on private lands. Vegetation data and field visits covered private lands to a large extent. However, there may be data gaps, especially where the proposed route ends east of the Forest boundary.

Other measures used include miles that follow existing roads (disturbance is along an existing road) and miles that access currently unroaded areas (disturbance in more secure habitats). Seasonal habitat use was also evaluated for some species.

Timeframes used for the analysis include effects of increased traffic, human activity and equipment use over the short-term. Project construction activities are expected to take one field season for the proposed action. However, if construction is not completed within one season, activities would occur the following season, and some monitoring activities would occur annually thereafter. Over the long-term, effects of disturbance will be very minimal (only once-yearly monitoring for leaks and noxious weed spraying in the summer). Over the long term, the corridors would become revegetated by grasses, forbs, and shrubs in most sections outside of existing roads. Aspen and conifer regeneration would be removed from the 50-foot right-of-way as it would interfere with leak detection.

The area directly above the pipeline would be maintained primarily as grass/forb habitat.

The cumulative effects analysis area for most species is the 1-mile (each side) buffer along the corridor, along with access roads to it where appropriate.

Existing Condition

Common Vegetation Unit (CVU) data was used in this analysis to describe existing vegetation and habitats within the project area. Several distinct habitat types will be intersected by the proposed pipeline route. These include aspen, mixed aspen and spruce/fir conifer forest, Gambel oak, grass/forb, and sage communities. Some grass/forb areas contain a riparian willow component and are mapped as willow shrub habitat. Riparian areas below the scale of the CVU coverage are also intersected. Very small portions of the project area may intersect other habitat types. In addition, the CVU data does not account for the existing roads along which much of the construction would occur. These road prisms are below the resolution of the coverage. Therefore, For the Proposed Action, the pipeline route travels off of private lands along an existing road between mature aspen forest and riparian and oak shrub stands, then through young aspen into mature aspen and a small belt of mixed conifer and aspen forest, at which point the route intersects the West Fork of Muddy Creek. From this point the route travels through a small portion of willow/cottonwood riparian area, oak-dominated shrublands, and open grass/forb areas and onto private property in Sheep Park, where the route forks. From Sheep Park north onto the National Forest, habitat is primarily grass/forb and sage. The route then follows an existing road through parks and aspen stands to NFSR 851 road, where the route will connect with existing gas pipelines. The eastern route travels out of Sheep Park, through grass/forb, sage, and oak-dominated shrublands, along an existing road through aspen stands, and then off of the forest through grass/forb, sage, and aspen forest. Elevations along the proposed route vary from approximately 7400 feet to 8400 feet.

Figure 6

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Table 16 shows the existing vegetation in the 100' construction corridors. Table 17 shows the existing vegetation in the 1-mile disturbance corridors. These tables include public and private lands, where the information is available. Private land information is incomplete outside of the external boundaries of the Forest. roaded areas are represented as if they were vegetated with the adjacent cover type.

Table 16. Vegetation types within 100' construction corridor along proposed route.

Vegetation Type (CVU)	Acres*
Forbs	35.4
Gambel Oak	32.8
Sage	31.5 (plus 2.1 probable outside of CVU coverage)
Aspen	20.7
Willow	6.0
Spruce-Fir	1.9

*Approximately 280 meters of the proposed route is outside of the CVU coverage, in sage habitat.

Table 17. Vegetation types within 1 mile of proposed centerline of route.

Vegetation Type (CVU)	Acres*
Forbs	1004
Gambel Oak	4127
Sage	1681
Aspen	5836
Willow	291
Spruce-Fir	218
Bare ground	62
Shrub (unspecified)	46
Snowberry	153
Cottonwood	17

*A portion of the 1-mile buffer is outside of the CVU coverage on private lands. No vegetative data is presented for that area.

Major perennial riparian areas crossed by the proposed route are limited to West Muddy Creek and Sheep Creek. Riparian habitats along the ends of the route include Willow Creek (Tributary of Hubbard Creek) and Little Henderson Creek. Cottonwood riparian habitats are found at every small scale at the West Muddy crossing, and other small riparian areas and wetlands are found along the corridor (SWCA 2006a).

3.2.5. Environmental Consequences

3.2.5.1 No Action Alternative

Under the No Action alternative, the pipeline would not be constructed across NFS lands in the area. The effects of ongoing management activities would continue, wildlife populations and habitat would continue to change based on natural cycles. If there are specific effects they are addressed by species.

3.2.5.2 Proposed Action

It is assumed that all vegetation within a 100-foot corridor would be removed (~130 acres). Existing vegetation cover type in the construction corridor is shown in Table 18. Vegetation reestablishment will be through seeding after construction, suckering from species like aspen adjacent to the corridor, and re-seeding in from adjacent areas.

Table 18. Proposed Action Details

Proposed Action Details	Measure
Total length of corridor	10.8 miles
Length of corridor on NFS lands	6.6 miles
Length of corridor on private lands	4.2 miles
Area within 50 ft right-of-way	65 acres
Area within 100-foot construction zone	130 acres
Area of equipment staging, parking, etc outside corridor	1 acres
Area within one mile of the corridor	14,729
Length along existing roads	4.0 miles
Length not on existing roads	Approx. 6.8 miles
Construction duration	2- 5 months
Construction season	Late May through October (approx)
Number of seasons	1, possibly 2

Activities associated with construction of the pipeline are likely to cause disturbance and displacement of some species, depending on season of activity. Table 19 shows the vegetation cover types within a one-mile buffer each side of the proposed centerline of the project.

Clearing of vegetation along the pipeline corridor would result in habitat alteration and long-term (greater than twenty years) type conversion, which would vary by vegetative species, and hence wildlife habitats affected. Total area of habitat alteration is approximately 130 acres (80 on NFS lands), of which approximately half is within the construction corridor but not the right-of-way, and may be expected to revegetate.

Habitat alteration could result in changes in providing cover, foraging habitat, or breeding habitat, and may impact travel, including dispersal, of some species.

Disturbance from project activities has the potential for effects to some wildlife species as well. Behavioral responses are influenced by characteristics of the disturbance itself (type of activity, distance away, season, direction of movement, speed, predictability, frequency and magnitude) and location (based on topography or presence of vegetation) (Knight and Cole, 1995). Wildlife behavior may take the form of avoidance, habituation or attraction (Knight and Temple, 1995). These behavioral responses may be of short duration (temporary displacement) or long-term, such as abandonment of preferred habitats.

There are numerous studies showing displacement of elk as a result of traffic along roadways. Effects may vary based on season, amount of traffic on the road, and surrounding cover (see elk analysis section).

Other researchers have looked at effects of traffic on various species of birds. Goshawks have been found to be sensitive to disturbance during nesting, but have also been found successfully nesting adjacent to open roadways (see goshawk analysis).

Another study looked at how traffic associated with natural gas extraction affected breeding birds in sagebrush steppe habitats (Ingelfinger and Anderson, 2004). They found a 39-60% reduction in birds surveyed within 100 meters (328 ft) of a road receiving low traffic (10-700 vehicles per day).

Some actions associated with this proposal are not expected to have any effect on wildlife species being analyzed and won't be considered. These include dust control on roads, testing of the pipeline (water source and disposal), and routine pigging.

Actions with potential for direct effects:

- Habitat alteration within corridor
- Upland effects would be long-term changes in plant community composition
- Riparian effects would be short-term and of small scale
- Barriers to movement from trenching during construction
- Direct mortality of individual animals from project activities, including vehicle use.

Actions with potential for indirect effects during construction:

- Disturbance associated with human activities and equipment use along corridor and access roads.
- Length of disturbance is expected to be from late May or early June, 2007, through October, 2006. Additional work may need to occur in similar time frames in 2008.
- Impacts to water quality

Actions with potential for indirect effects after construction:

- Changes in vegetation (forage, cover etc) after seeding
- Monitoring for leaks (aerial or ground surveys) at 12 to 15 month intervals
- Surveys for corrosion, noxious weeds, ditches
- Maintenance and repairs
- Changes or improvements in long term access due to road improvement
- Increases in noxious weeds (primarily thistles)

Cumulative Effects

The cumulative effects analysis area for most species is a 1-mile buffer on either side of centerline for the project. Effects of the past actions have already been incorporated into the existing conditions; a complete list of the past actions is found in Appendix G.

Ongoing activities on all ownerships include camping, hiking, hunting, OHV use on designated trail systems, road and trail maintenance, special uses, firewood cutting, livestock grazing and associated developments. There are two ongoing timber sales on the Paonia Ranger District. Ongoing oil and gas actions are shown Appendix G. On private lands, ongoing actions include water facilities such as ponds, ditches and canals for irrigation and a pipeline to hook private wells to an existing system (Henderson Lateral). Actions considered are shown in the Appendix G. These tables may include projects outside of the cumulative effects area for wildlife species, and were created for the EA for a variety of specialists to use for analysis. Actions outside of those areas are not considered in effects determinations.

3.2.6 Threatened and Endangered Species

3.2.6.1 Affected Environment

A county-by-county species list was provided by the US Fish and Wildlife Service on September 19, 2006. There is only one federally listed terrestrial species that has the potential to be found in the project area other than incidentally, the Canada lynx. Other species considered and rationale for not analyzing them is shown in Table 19; these species would all have no effect determinations. Fish species were analyzed separately. Although the proposed pipeline route is entirely within Gunnison County, Delta County species were considered as well, as roads used to access this project lie within that county.

Table 19. Federally Threatened and Endangered or Candidate Species considered for this project.

Species	Scientific Name	Habitat Description and Requirements	Habitat in Project Area?
Canada Lynx	*Lynx canadensis*	Spruce/fir, mixed conifer, lodgepole pine forest (primary), or mixed deciduous/conifer (secondary)	Yes
Black-footed ferret	*Mustela nigripes*	Lower elevation steppe and shrub habitats with prairie dog towns	No
Bald Eagle	*Haliateeus leucocephalus*	Major river systems, reservoirs, upland areas	No

Species	Scientific Name	Habitat Description and Requirements	Habitat in Project Area?
		supporting carrion and other foraging opportunities.	
Yellow-billed cuckoo	*Coccyzus americanus*	Low elevation river corridors, cottonwoods	No
Uncompahgre fritillary butterfly	*Boloria acrocnema*	Alpine regions of the southern San Juan mountains.	No
Clay-loving wild buckwheat	*Erigonium pelinophilum*	Specific microhabitats along toe slopes in adobe soils of Mancos shale in sage and shadscale near 5270' elevation	No
Uinta Basin Hookless Cactus	*Sclerocactus glaucus*	Grows on fine-textured soils derived from Mancos shale in shadscale, greasewood and juniper community types at elevations generally near 5,000 ft.	No

* This species is also considered in the Biological Evaluation

3.2.6.2 Canada lynx

The Canada Lynx was listed as threatened in March 2000. In August 2004, the Second Edition of the Canada Lynx Conservation Assessment and Strategy (LCAS) was released, to provide a consistent and effective approach to conserve Canada lynx on federal lands.

The Canada Lynx Conservation Agreement (USDA 2005a) identifies the Science Report (Ruggerio et al, 2000) and the LCAS (Ruediger et al, 2000) as including the best available science on habitat and conservation measures. Both of these documents, along with local information are to be used for project analyses.

Following release of the LCAS, the Forest mapped LAUs and habitat within them, based on Regional direction. Habitat was mapped based on existing vegetation information, including vegetation type, canopy closure and size of trees. Areas outside of LAUs are not considered to be suitable lynx habitat, even though they may contain habitat components or stand similar to those within LAUs.

The LCAS includes direction about limiting the amount of unsuitable habitat within a LAU (less than 30%), as well as maintaining at least 10% of the suitable habitat as denning habitat. A portion of the proposed route lies within one LAU (Mule Park). Additionally, gravel hauling to improve roads for access to the project is expected to occur within another LAU (Crater Lake). Both meet the direction for suitable habitat; none have more than 30% unsuitable. Existing conditions of the LAUs are displayed in Table 20.

Table 20. LAU Existing Condition

LAU	LAU Acreage	Suitable Habitat	Acres Denning Habitat (% of LAU)	Acres Winter Foraging Habitat (% of LAU)	Acres Other Habitat (% of LAU)	Acres Unsuitable Habitat (% of LAU)	Acres Non Habitat (% of LAU)
Mule Park	37,068	24,268	2,564 6.9%	3,431 9.3%	18,272 49.3%	7 <0.1%	12,793 34.5%
Crater Lake	46,398	33,104	12,554 27.1%	7,508 16.2%	13,342 28.8%	536 1.2%	12,458 26.9%

Lynx have been reintroduced to southwestern Colorado, beginning in 1999. Tracking of these lynx indicate that lynx are using or moving through the Forest, but only a few of the relocations lie within or adjacent to the project area (CDOW 2005).

The Recovery Outline (USDI FWS 2005) identifies core areas, secondary areas and peripheral areas, based on historical and current occurrence records, as well as confirmed breeding. The Southern Rockies (Colorado and Wyoming) were identified as a Provisional Core Area. This designation was identified because this area contains a reintroduced population. Reproduction has been documented but it is too early to determine whether a self-sustaining population will result. One litter of kittens has been born to the offspring of reintroduced lynx (CDOW 2006).

In November 2005, the FWS proposed critical habitat for lynx (USDI FWS 2005a). In 2006 Critical habitat for the lynx was designated, with none occurring on or near the GMUG (USDI 2006).

Extensive stands of pure aspen may not provide quality hare (primary prey) habitat due to deficiencies in winter habitat characteristics. However, when mixed with spruce/fir, aspen (especially younger stands) may substantially contribute to prey productivity (Ruediger et al, 2000). Lynx transplanted into Colorado were frequently located in well developed riparian and valley wetland shrub habitats of the upper montane and subalpine zones. These ecotones may provide quality foraging habitat for lynx. All of the 2005 dens were scattered throughout the high elevation areas of Colorado, south of Interstate 70. Most of the dens were in spruce/fir forests in areas of extensive downfall. Elevations ranged from 10,226 to 11,765 feet (CDOW 2005a).

Lynx standards and guidelines (LCAS for GMUG) are met where applicable and are shown in Appendix I.

Landscape Linkage

There are no landscape linkage areas in or near the project area or any travel routes associated with the project Threatened and Endangered Species.

3.2.6.3 Environmental Consequences

3.2.6.3.1 No Action Alternative

If the “no action” alternative is selected, there would be no changes in habitat as a result of clearing for a pipeline corridor. The LAU would continue to provide habitat. There would be no change in potential disturbance in the project area from current levels. Long-term changes would continue to be dependent on existing conditions, succession of vegetative types, and other actions within the project area, as indicated in the cumulative effects tables in this analysis.

3.2.6.3.2 Proposed Action Alternative

The following potential effects to lynx may include:

- short-term direct effects during construction (visual or auditory disturbance or displacement of individuals from machinery, vehicles and humans)
- short-term direct effects of mortality from traffic, shooting
- long-term direct effects as a result of changes in vegetation, which provides denning and foraging habitat

Lynx have been described as being generally tolerant of humans, including moderate levels of snowmobile traffic (Ruediger et al, 2000). In a lightly roaded study area in northcental Washington, logging roads did not appear to affect habitat use by lynx. In contrast, a study in the southern Canadian Rocky Mountains found that lynx crossed highways within their home range less than would be expected (Ruediger et al, 2000).

Of the total 218 adult lynx that have been released in Colorado, there are 80 known mortalities (CDOW 2006). The cause of death is unknown for a third of these, but the two leading known causes of mortality are starvation and being hit by a vehicle. Speed has been identified as the primary factor contributing to vehicle-wildlife collisions (Gunther et al, 1998). None of the roads on the Forests are built as high-speed roads, and vehicle collisions are not expected to be an issue for this project. Project activities are anticipated to extend into archery, muzzleloader, and rifle big-game seasons, which could cause conflicts with hunters during these seasons. The disturbance associated with construction and associated activities are likely to decrease the hunting pressure in this area, which could reduce the possibility of an illegal or accidental shooting of a lynx in this area. In addition, Colorado Division of Wildlife has provided hunter education on lynx identification as a measure to reduce the likelihood of accidental lynx kill. However, hunting pressure within GMU 521 is not anticipated to change as a result of this project, so hunting pressure may be shifted to areas with greater amounts of lynx habitat.

There would be no project activities permitted under this decision during the winter, and increases in snow compaction or winter recreational use are not an issue for this project.

Creation of the corridor would not have a substantial long-term effect on lynx habitat. The portion of the proposed action which falls within the LAU is coincident with an existing road, and the road right-of-way and surrounding areas are vegetated with grasses and forbs for the most part. There is a portion of roadway and proposed route, approximately 675 meters (2,200 feet) in length, which runs through a young aspen stand classified as “other” lynx habitat (Figure 7). Total clearing along the portion of the road in “other” habitat types would occur in at most 5.1 acres (2200’ x 100’), of which approximately 25% (25’ road prism) is already an existing road corridor, and no clearing will occur within winter or denning habitats as mapped in GIS. Within this length of corridor, the final right-of-way will be no more than 50 feet in width, resulting in a net loss of cover type along the corridor of no more than 1.3 acres (2200’ x 25’ outside of existing road prism). Vegetation with the ROW would be managed as a grass/forb habitat over the long-term and would convert to non-habitat in some cases, and will continue to be non-habitat on the road surface. However, lynx do forage (hunt) along edges and can easily cross a 40 foot width of grass-forb habitat. Vegetation within the 100-foot temporary construction ROW and outside of the 50' ROW is likely to return to its previous condition over time. Aspen and oak could resprout from existing roots, if compaction is not too great. Oakbrush is not considered lynx habitat, but could provide cover for a traveling lynx. Aspen sprouts would return the affected area to the "suitable" category within 5 to 10 years. The remainder of the proposed route which occurs within the LAU is within sage habitats (Figure 6) and is not considered suitable habitat.

The proposed staging area for equipment does not occur within an LAU and is already in a grass/forb cover type.

Lynx breed in March and April in the north, and kittens are born in May and June in the Yukon (Ruediger et al, 2000). Den surveys in May and June 2005 in Colorado found kittens in the dens at that time (CDOW 2005a). Of the 16 dens surveyed in 2005 in Colorado all were found at high elevations from 10,226 to 11,765 feet. All of the project area is below these elevations, but potential denning habitat has been mapped by the Forests. No denning habitat occurs along the proposed route. Denning habitat is mapped near the junction of the 265 and 704 roads, and is intersected by the 704 road, which will be needed for access. However, the habitat is an open riparian area with isolated conifers, heavily grazed, and did not appear in a field visit to be suitable for denning. No other denning or anticipated high-use summer foraging areas occur along the route or access roads. Snow track surveys along the 851 and 851-1a roads in November of 2006 showed little use of the Henderson Creek drainage by snowshoe hares, the lynx's primary prey (D. Garrison, pers. obs.). Therefore, disturbance from vehicles to denning or summer foraging is not expected to occur during this project.

Figure 7

(Intentionally left blank)

Determination

Implementation of the project "may affect, but is not likely to adversely affect" the lynx. This is based on the small amount of the project within an LAU, small amount of potential habitat loss associated with the project, the lack of nearby denning habitat along the route and access roads, seasonal restrictions on construction, lack of winter snow alteration, as well as the low probability of disturbance to suitable habitats associated with project activities such as road access.

Cumulative Effects

Cumulative effects for the Endangered Species Act include future non-federal actions which may impact this species. Past actions are included in the existing conditions described in this report. Present and future nonfederal actions in this area are described in Appendix G. Grazing in this area may contribute to vegetation changes on private lands in the area. However, those lands are already modified through long term human use, and continued grazing is not likely to alter the suitability of lynx habitat in this area from current conditions. Outfitting and guiding are anticipated to occur at levels similar to past and current levels, and should not contribute to any changes in lynx presence or habitat suitability in this area. Water development is largely existing and future actions will continue use of existing facilities. Future gas pipeline construction and well construction on private lands will occur in the Muddy watershed, and may contribute incrementally to loss or modification of habitat and disturbance. However, little of the watershed is suitable denning or foraging habitat and most modifications will be to "other" or nonsuitable habitats, or occur outside of LAUs.

Cumulative effects for NEPA include all of the above actions as well as past, present and future federal actions. These actions are shown in Appendix G. Grazing and outfitting impacts are the same as above. Other actions are either of insubstantial impacts to lynx or their habitat (Christmas tree cutting, road and trail maintenance) or occur on already disturbed sites (oil and gas work, special use permits). Recreational activities are not expected to be substantially altered by this project, although improved road conditions may slightly increase hunting and other recreational traffic in this area during summer and fall.

The proposed aspen timber sale is outside of the LAU and would not lead to changes in habitat suitability within an LAU. Cumulatively, this project is unlikely to contribute towards substantial habitat loss or alteration within this area.

3.2.7 Sensitive Wildlife Species

There are several sensitive species that are or are potentially present in the project area. Information on distribution, dispersal capability, abundance, population trends, habitat trends, habitat vulnerability, and risks based on life history and demographics has been reviewed for USFS R2 Sensitive Species, and is available on Region 2's website (www.fs.fed.us/r2/projects/scp). This information has been incorporated where relevant. The list of species reviewed for this project was taken from the Region 2 Sensitive Species Matrix (USDA 2007b). Numerous species which are not known or expected to occur in the project area, due to absence of habitats or range limitations, were not carried forward for analysis. A list of all possible sensitive species on the Forest is given in Appendix H. Species are presented here in the order they are listed in the matrix.

3.2.7.1 No Action Alternative Effects Common to Sensitive Species

The direct and indirect impacts of the “no action” alternative would not change current habitat or population conditions of any Forest Service sensitive species in the short term. Long-term changes would continue to be dependent on existing conditions, succession of vegetative types, and other actions within the project area, as indicated in the cumulative effects tables in this analysis.

3.2.7.2 Pygmy Shrew

3.2.7.2.1 Pygmy Shrew Affected Environment

This species may occur on the Forest. In the Rocky Mountain Region, they appear to be strictly boreal. In addition, moist boreal habitats such as bogs and marshes appear to be preferred (USDA 2007b). In the Southern Rocky Mountains they have been found at elevations above 5,500 feet, in habitats ranging from edges of alpine and subalpine rockslides to spruce/fir bogs; coniferous forest; sedge marsh; dry brushy hillsides; and open woodlands. In some areas they were found to be quite common (Fitzgerald et al, 1994). They may be present in the project area. No small mammal surveys were conducted for this project.

3.2.7.2.2 Pygmy Shrew Environmental Consequences

Actions with the potential to affect this species or habitat include:

- short-term potential for loss of individuals during construction
- long-term changes to habitat

Because of this species’ wide range of habitat associations, it is assumed that all of the project area provides potentially suitable habitat.

The shrews’ den may be a burrow or shelter under a log, or may be located in the roots of old stumps. Females are likely to produce more than one litter (with 2 to 8 young) per year in favorable areas (Wilson and Ruff, 1999). Because of the species small size, and higher tolerance to disturbance, individuals may not be displaced as quickly upon disturbance and could be killed during clearing activities.

Over the short-term habitat would be lost in the corridor. However, after placement of rocks and logs in the corridor and vegetation is re-established, the corridor would provide habitat for this species. Heavy equipment could easily kill or injure individual shrews during construction, and small mammals such as shrews are susceptible to road kill.

Cumulative Effects

The cumulative effects analysis area for this species is the 1-mile buffer along the corridor. Because only a very small proportion of the habitat would be affected (approximately 1% of the land area within 1 mile of centerline) over the short-term, and the species high reproductive rates, direct and indirect effects are low and insignificant. There will be no further cumulative effects analysis for this species.

Determination

Implementation of the proposed action “may impact individuals or habitat, but will not likely contribute to a trend towards federal listing”. This is because this species is at risk for direct mortality during construction, uses a wide variety of habitats of which only a very small proportion would be affected (<1%) over the short-term, and the species has high reproductive rates.

3.2.7.3 FRINGED MYOTIS

3.2.7.3.1 Fringed Myotis Affected Environment

The fringed myotis is considered to be likely to occur on the Forest. Fringed myotis can be found at moderate elevations in a variety of habitats that apparently vary by geographic location. There is some evidence that even though they forage in a variety of grass and shrublands, they are never far from forested areas. They have been found in desert, grasslands and up to spruce/fir habitats within some parts of their range. Night, day and maternity roosts can occur in caves, mines, and buildings that aren’t heavily disturbed by human presence (USDA 2007b). No bat surveys have been done recently in the vicinity of the project.

Fringed myotis appear to occur as scattered populations at moderate elevations (up to 7,500 ft). Typical vegetation of the habitat includes ponderosa pine, pinyon/juniper, greasewood, saltbush and scrub oak (CDOW 2005b). Roost sites include rock crevices, caves, mines, buildings, and trees. They are known to hibernate in caves and buildings.

The Conservation Assessment for this species additionally identifies snags as potential roosting habitat. Removal of large-diameter, cavity forming trees suitable for roosting and modification of the forest structure around roost sites are identified as concerns. Suitable tree roosting habitat consists of largely late-successional pine with high densities of snags with early to medium stages of decay (Keinath 2004).

3.2.7.3.2 Fringed Myotis Environmental Consequences

Roosting habitat (pinyon/juniper and ponderosa) is lacing along the proposed route, so roosting is not expected to occur near the project. Females at maternity colonies are sensitive to disturbance, but there are no suitable caves, abandoned mines or buildings along the corridors. Disturbance of maternity colonies is not an issue.

Over the long-term, the corridor could provide foraging habitat for individuals roosting in other areas. However, because of the distance from suitable roosting habitat, the potential of this is low. In addition, habitat alteration at high quality foraging habitat (the stream crossings and near riparian areas) will be minimally altered by the project and foraging suitability will not change as a result of this project. Implementation of the project would have no impact on this species or its habitat.

Cumulative Effects

Because there are no direct or indirect effects, there are no cumulative effects.

Determination

Implementation of the proposed action would have “no impact” due to the lack of suitable roosting habitat in the corridors and low potential to alter foraging habitat due to the minor scale of disturbance and the distance from suitable roosting habitat.

3.2.7.4 Spotted Bat

3.2.7.4.1 Spotted Bat Affected Environment

The spotted bat may occur on the forest. Spotted bats typically roost in cliffs, and forage over large areas, including open sage, pinyon, aspen, and conifer forests (Schmidt, 2003). Spotted bats are large open-country flyers, and feed on moths and other large insects. Maternity roosts are also in cliffs, and this species does hibernate. The bat typically occurs in isolated areas at low numbers.

A Region-wide conservation assessment for this species has not yet been completed. Information on this bat in Colorado is limited due to the low number of occurrences. No bat surveys have been done recently in the vicinity of the project.

3.2.7.4.2 Spotted Bat Environmental Consequences

Actions with the potential for effects to this species include:

- short-term effects of disturbance during construction
- long-term changes to habitat

Spotted bats roost in cliffs, which are not present in the project area. Therefore, disturbance during construction will not impact roosting or hibernating bats. Foraging may occur in the project area, but useage is not known since no bat surveys have been conducted. Disturbance to foraging bats is unlikely since most work will occur in daylight and project activities should not impact prey availability in the project area.

Over the long-term, the corridor could provide foraging habitat for individuals roosting in other areas. However, because of the distance from suitable roosting habitat, the potential of this is low. In addition, habitat alteration at high quality foraging habitat (the stream crossings and near riparian areas) will be minimally altered by the project and foraging suitability will not change as a result of this project. Therefore, there would be no discernable direct or indirect impacts to this species.

Cumulative Effects

Because there are no direct or indirect effects, there are no cumulative effects.

Determination

Implementation of the proposed action would have “no impact” due to the lack of suitable roosting habitat in the corridors and low potential to alter foraging habitat due to the minor scale of disturbance and the distance from suitable roosting habitat.

3.2.7.5 Townsend’s Big-eared Bat

3.2.7.5.1 Townsend’s Big-eared bat Affected Environment

Townsend’s big-eared bats can be found throughout Colorado except on the eastern plains. This species is known to occur on the GMUG. Distribution is limited to areas with suitable roosting habitat (caves, abandoned mine adits) in proximity to foraging habitat. They forage on moths in a wide variety of vegetation types (USDA 2007b, Grover and Keinath 2006). No bat surveys have been done recently in the vicinity of the project.

This bat is generally solitary in the summer, but females may form maternity colonies. They may be found in suitable roosts in woodlands and forests up to elevations of 9,500 feet. Winter hibernacla are selected for low and stable temperatures and are used from October to April. Populations, especially maternity colonies and winter hibernacula are highly susceptible to disturbance (CDOW 2005b). However, because of the very restrictive roosting habitat requirements, and lack of those habitats along any of the proposed pipeline corridors, there would be no effects and this species will not be carried forward for further analysis.

3.2.7.5.2 Townsend's Big-eared bat Environmental Consequences

Actions with the potential for effects to this species include:

- short-term effects of disturbance during construction
- long-term changes to habitat

Townsend's big-eared bats roost in caves, mines, abandoned buildings, and other structures and features which are not present along the project route or access roads. Therefore, disturbance during construction will not impact roosting or hibernating bats. Foraging may occur in the project area, but usage is not known since no bat surveys have been conducted. Disturbance to foraging bats is unlikely since most work will occur in daylight and project activities should not impact prey availability in the project area.

Over the long-term, the corridor could provide foraging habitat for individuals roosting in other areas. However, because of the distance from suitable roosting habitat, the potential of this is low. In addition, habitat alteration at high quality foraging habitat (the stream crossings and near riparian areas) will be minimally altered by the project and foraging suitability will not change as a result of this project. Therefore, there will be no discernable direct or indirect impacts to this species.

Cumulative Effects

Because there are no direct or indirect effects, there are no cumulative effects.

Determination

Implementation of the proposed action would have "no impact" due to the lack of suitable roosting habitat in the corridors and low potential to alter foraging habitat due to the minor scale of disturbance and the distance from suitable roosting habitat.

3.2.7.6 American Marten

3.2.7.6.1 American Marten Affected Environment

The American marten is known to occur on the Forest and may be present near the project area, although suitable habitat is very limited. They show close association with mesic, dense coniferous forests with complex physical structure, which is lacking along the proposed route. Maternal dens and winter resting sites are associated with large snags, large logs, large live spruce/fir trees and squirrel middens. Timber harvest, and reduction of snags and logs, has altered landscape patterns and reduced habitat quality (USDA 2007b). A marten survey was conducted on the Grand Mesa during the winter of 1993-94 for presence/absence and habitat types in which marten were found. Marten were documented in all suitable habitats surveyed (mature spruce-fir) with track plates, and habitat conditions averaged 70% canopy cover and tree age of 150 years old. See 2005x, Management Indicator Species Assessment (project files) for more information on populations and trends. No surveys for marten have been conducted for this project. Winter carnivore surveys were conducted in the Muddy Creek drainage north of the project area. No Threatened, Endangered, Sensitive, or MIS species were detected in the surveys. Only a small portion of the proposed route (approximately 200 meters) crosses spruce/fir mixed with aspen forest, and approximately 1500 meters of access road runs through or alongside spruce-fir vegetation.

3.2.7.6.2 American Marten Environmental Consequences

Actions with the potential for effects to this species include:

- short-term effects of disturbance during construction
- long-term changes to habitat

Marten tend to be shy but occasionally appear fearless of humans and may approach closely (Ruggerio et al, 1994). They are active at various times of the day and night and appear to be flexible in their activity patterns. Activities associated with this project may cause avoidance or may result in changes in activity patterns.

Studies of home range size of male martens shows a range 16 km2 (Minnesota) to 0.8 km2 in Montana (Ruggerio et al, 1994). Overall, marten home ranges are large by mammalian standards. Female home ranges are smaller and home range size also varies based on prey abundance. Assuming a mid-range home range size (8 km2), that would be a home range size of approximately 3 square miles. Because this species appears to be generally tolerant of disturbance, and they would have abundant habitat outside of the corridor within their territory, disturbance is not an issue for this species.

Denning habitat includes natal dens and maternal dens. Young are born in March and April in natal dens, but may be moved to other dens by their mother. They leave dens at about 50 days (Ruggerio et al, 1994). Young born in late April would leave dens around mid-June. However, spruce-fir habitat suitable for denning is largely absent along the corridor (1.9 acres), and limited within 1 mile of the project as well (218 acres out of 14,729). Therefore, the likelihood of marten denning habitat loss occurring during the project is low. The nearest areas with larger suitable habitat patches are on Electric Mountain, to the west of the project area.

Marten make little use of early successional types as they lack overhead cover, high volumes of coarse woody debris, small-scale complex vegetation patterns and result in a conversion to a moist cool site to a warm, dry site (and changes in prey densities) (Ruggerio et al, 1994). Martens will generally avoid forest openings, but studies have found them crossing openings of 10m (Spencer et al, 1983), to 40 m (Simon 1980) to 100 m (Koehler and Hornocker 1977) (in Ruggerio et al, 1994). Maximum width of any of the pipeline corridors is 50 feet (15 m), with construction clearing of 100 feet (30 m) and the opening should not be a barrier to movements.

Starting in 1997, as a result of Amendment 14 that outlaws traps and snares, there has been no legal recreational trapping for any furbearer species. In 2001, CDOW looked at opening certain furbearer species to box and cage trapping. Several species may now be legally trapped, but this does not include marten. Effects of changes in access to trappers and resultant effects on vulnerability of marten to trapping will not be analyzed further.

Cumulative Effects

The cumulative effects analysis area for this species is the 1-mile buffer along the corridor and access roads to the corridor. None of the ongoing or reasonably foreseeable timber harvest is in spruce/fir cover types within the 1-mile buffers of any of the alternatives. Other actions as described in the cumulative effects tables are unlikely to contribute to losses of marten habitat or cause substantial disturbance.

Determination

Implementation of the proposed action “may impact individuals or habitat, but will not likely contribute to a trend towards federal listing”. This is based on the low amount of suitable habitat impacted by the project, the low amount of suitable habitat near the project which would indicate the presence of martens, and the low potential of disturbance to marten denning or foraging as a result of the project. In addition, the corridor itself, after construction, is not anticipated to be a barrier to marten movement.

3.2.7.7 Wolverine

3.2.7.7.1 Wolverine Affected Environment

The wolverine is thought to prefer remote areas that occur within the coniferous subalpine zone or within open and barren rock alpine zone that occurs along the Rocky Mountain chain in Wyoming and Colorado. Investigations by the state of Colorado in 1997 indicate the possible presence of wolverine in some parts of Colorado. Recent, unverified reports of wolverines have occurred in Colorado, on the Arapaho-Roosevelt and San Juan NFs. While it is possible there are wolverines present on the GMUG, there are no recent verified reports of wolverines on the Forest. Any use would be expected to be from transitory individuals.

3.2.7.7.2 Wolverine Environmental Consequences

Researchers have generally agreed that wolverine habitat is probably best defined in terms of adequate year-round food supplies (primarily large mammal carrion, along with berries, small mammals, beetles and insect larvae) in large, sparsely uninhabited areas, rather than in terms of topography or plant associations (Ruggerio et al, 1994).

Actions with the potential for effects are limited to disturbance during construction. However, none of the project area or associated road access is in or near large roadless areas, and the likelihood of wolverine use of this area is remote. There have been no recent documented sightings of wolverine on the Forest, further reducing the possibility of presence in the area.

Cumulative Effects

Because there are no direct or indirect effects, there are no cumulative effects.

Determination

The project, as proposed, will have no impact on wolverine. This is based on the lack of suitable habitat impacted by the project, the lack of suitable habitat near the project which would indicate the presence of wolverine, and the low likelihood of wolverine being present in the area due to existing conditions. In addition, the corridor itself, after construction, is not anticipated to be a barrier to wolverine movement.

3.2.7.8 Northern Goshawk

3.2.7.8.1 Northern Goshawk Affected Environment

This species occurs on the GMUG.. Nesting seems to occur in mature forest types. Foraging habitat may include younger or more open canopy forests. The goshawk may be vulnerable to nest abandonment due to disturbance within the area. Alternate nests are commonly used, but nest tree fidelity was stronger in uncut forests compared to treated forests (USDA 2007b).

There are numerous documented sightings of this species on the District, as well as several known nest locations. Based on actual known locations of nest sites, suspected breeding territories, and sightings, the northern goshawk appears to be well distributed throughout the GMUG in suitable habitat. Records of known goshawk nest activity on the GMUG show that numbers of breeding goshawks and nest success has remained relatively stable, although low over a 17-year period (USDA 2001). Breeding Bird Survey data show a slight increasing trend for this species in Colorado (Sauer et al 2005).

The primary threat to goshawk populations is alteration of its preferred habitat from timber management practices. Although the goshawk uses a wide range of forest communities during the breeding season, it prefers mature and old growth forest for nesting and hunting. Although there is some evidence goshawks are resilient of forest fragmentation and can re-establish when cleared areas are reforested, the thresholds for population persistence have not been identified. Issues related to habitat alteration include forest fragmentation, creation of even-aged, monotypic stands, potential increase in area of younger age class, and loss of tree species diversity (Kennedy 2003).

There are no known territories along or near the proposed route. A general raptor survey was conducted in 2006, and several nests were located near the proposed route (Monarch 2006). However, none of these were identified as goshawk nests. Additional surveys are likely to be conducted prior to initiation of construction.

3.2.7.8.1 Northern Goshawk Environmental Consequences

Actions with the potential for effects to this species include:

- short-term effects of disturbance during construction
- short-term potential for loss of young during construction
- long-term changes to habitat

Human disturbances to goshawk nests have been a suspected cause of nest abandonment (Reynolds et al, 1992). Alternate nests are used commonly, but Crocker-Bedford found yearly nest tree fidelity remained at 67% in uncut forests, while treated units dropped to 15-20%, even with no-cut buffers around the nests (USDA 2007b).

Braun et al (1996) reviewed existing goshawk management guidelines. They found no studies of human disturbance on breeding goshawks, but felt that the recommendation to minimize human activities in the nest area during the breeding season was a reasonable, conservative approach.

The nearest know nest territory is several miles from any of the proposed corridors or access roads. Activities associated with this project would have no effect on these known territories, if they were occupied.

Project design features include avoiding construction in aspen, aspen/conifer and spruce/fir stands until August 1 or completing raptor surveys prior to construction in these habitats. This design feature would help reduce the potential for loss of young during nesting as a result of clearing in the corridor or nest abandonment due to disturbance.

There are approximately 21 acres of aspen habitat within the construction corridor which could be lost during project activities. Currently, the stand structure in those areas may provide nesting habitat, although much of this habitat is along existing roads. Over the long-term, the corridor would not provide nesting habitat but could provide foraging habitat.

Cumulative Effects

The cumulative effects analysis area for this species is the 1-mile buffer along the corridor and access roads to the corridor. Within 1 mile of the project centerline, there are 5836 acres of aspen. There is one planned aspen sale near Condemn-it Park, of approximately 15 acres. Assuming all aspen within the construction corridor, and the 15 acres of aspen in the timber sale, are removed, total aspen lost in the analysis area would be 36 acres, or 0.6%. Actual figures would be slightly less as some of the corridor is already nonvegetated along existing roads. The 15 acre aspen timber sale unit would regenerate in the long-term and return to habitat suitability in the future, but the 50’ right-of-way would not, and approximately 10 acres would be permanently removed from aspen production (0.2%).

The GMUG did an analysis of habitat trends on the Forest; aspen have stayed the same in the 1983 to 2000 period, while mature spruce/fir habitats have decreased 0.3% due to management activities (USDA Forest Service 2005c).

The corridor is several miles from the nearest known goshawk nesting territory, and should not contribute cumulative effects to this territory.

Determination

Implementation of the proposed action “may impact individuals or habitat, but will not likely contribute to a trend towards federal listing”. This is based on the small amount of potential habitat affected, and design features for implementing a seasonal restriction in suitable habitats unless surveys find no occupied territories.

3.2.7.9 Ferruginous Hawk

3.2.7.9.1 Ferruginous Hawk Affected Environment

The ferruginous hawk is a large soaring hawk of the genus *Buteo.* It is relatively uncommon, and no sightings of this species were documented on the district in 2006. It has been observed in winter in the Cortez and Dove Creek areas in southwest Colorado (D. Garrison pers. obs.). It occurs more commonly in the eastern portion of the state, and is migratory. They typically migrate through and winter in similar grassland habitats.

Prey is almost exclusively small mammals such as ground squirrels and prairie dogs (USDA 2006b).

Although relatively rare, Breeding Bird Survey (BBS) data shows an upward trend for the population of this hawk in Colorado (Sauer et al 2005).

3.7.2.9.2 Ferruginous hawk Environmental Consequences

Actions with the potential for effects to this species include:

- short-term effects of disturbance during construction
- short-term potential for loss of young during construction
- long-term changes to habitat

Ferruginous hawks nest in shortgrass prairie, which is absent from the project area. However, Sheep Park and other areas have similar grass/forb habitats, which may be used for nesting. Prey species such as ground squirrels occur throughout the area, although prairie dogs are absent. However, since no ferruginous hawks have been seen in the area, it is unlikely that there are nesting birds present. Timing restrictions will be in place unless surveys determine there are no hawks present in the area.

Cumulative Effects

The cumulative effects analysis area for this species is the 1-mile buffer along the corridor. None of the projects proposed within this area will have substantial impacts on habitat suitability or disturbance for this species.

Determination

Implementation of the proposed action “may impact individuals or habitat, but will not likely contribute to a trend towards federal listing”. This is based on the small amount of potential habitat affected, and design features for implementing a seasonal restriction in suitable habitats unless surveys find no occupied territories.

3.2.7.10 Peregrine Falcon

3.2.7.10.1 American peregrine falcon Affected Environment

The peregrine falcon is a former federally listed species which has since been downgraded. The falcon typically nests in cliffs, but also uses ledges on buildings in cities. Prey includes small mammals but is largely avian. Across the United States, the falcon has increased in population over the last thirty years. There are potential nest sites on the Paonia district, but none are within several miles of the project area. No survey or monitoring of this species is occurring on the district at this time.

3.2.7.10.2 American peregrine falcon Environmental Consequences

Actions with the potential for effects to this species include:

- long-term changes to habitat

Due to the distance from the project site to the nearest suitable nesting habitat, disturbance to nesting individuals will not occur as a result of this project. While falcons may use this area for foraging, suitability will not be altered over the long-term as a result of this project.

Cumulative Effects

Because there are no direct or indirect effects, there are no cumulative effects.

Determination

Implementation of the proposed action will have “no impact” on peregrine falcons. This is based on the distance from potential nesting sites and the lack of habitat suitability change resulting from the project.

3.2.7.11 Northern Harrier

3.2.7.11.1 Northern Harrier Affected Environment

The northern harrier is medium-to-large hawk. It breeds in open wetland or upland habitats, and is highly associated with large undisturbed areas during breeding. It nests on the ground, or over water, and nests are well-concealed. Ground nests tend to be near water if possible. It forages in open grasslands and riparian areas, flying low over the ground and surprising its prey, rather than hovering or soaring like many other large open-country hawks. It feeds on small mammals and small birds (Slater and Rock 2005). Habitat for the harrier in the project area occurs in the open parks in the area, including Sheep Park. Harriers have not been documented in the area, although they have been seen on the district (D. Garrison pers. obs.).

The harrier shows a downward trend in Colorado in BBS routes. This bird was not documented during raptor surveys for this project (Monarch 2006) nor in field visits to the site.

3.2.7.11.2 Northern Harrier Environmental Consequences

Actions with the potential for effects to this species include:

- short-term effects of disturbance during construction
- short-term potential for loss of young during construction
- long-term changes to habitat

Harriers nest in grasslands and riparian areas, which are limited in the project area. However, Sheep Park and other areas have similar grass/forb habitats, which may be used for nesting. However, since no harriers have been seen in the area, it is unlikely that there are nesting birds present. Timing restrictions will be in place unless surveys determine there are no hawks present in the area. Suitable foraging areas and prey species occur throughout the open areas along the project route. Project actions will not alter foraging habitat suitability along the proposed route.

Cumulative Effects

The cumulative effects analysis area for this species is the 1-mile buffer along the corridor. None of the projects proposed within this area will have substantial impacts on habitat suitability or disturbance for this species.

Determination

Implementation of the project "may impact individuals or habitat, but will not likely contribute to a trend towards federal listing". This is based on the small amount of potential habitat affected, and design features for implementing a seasonal restriction in suitable habitats unless surveys find no occupied territories.

3.2.7.12 Flammulated Owl

3.2.7.12.1 Flammulated Owl Affected Environment

This species is known to occur on the Forest. Flammulated owls have a strong association with ponderosa pine, but also use aspen forests in the montane life zone. This species is migratory, but shows high site tenacity by adults. As an insectivore, they can occur at relatively high densities compared to other owls (USDA 2007b). These owls depend on cavities for nesting, open forests for catching insects, and brush or dense foliage for roosting (Kingery 1998).

No surveys were done specifically for flammulated owls for this project. No owls were documented during raptor surveys for this project (Monarch 2006). No BBS information is available for this species.

3.2.7.12.2 Flammulated owl Environmental Consequences

Actions with the potential for effects to this species include:

- short-term effects of disturbance during construction
- short-term potential for loss of young during construction
- long-term changes to habitat

These owls are very tolerant of humans, nesting close to occupied areas and tolerating observation by flashlight at night. The effects of mechanical disturbance have not been assessed, but moderate disturbance may not have an adverse impact on the species (Hayward and Verner, 1994).

The territory occupancy began in May for flammulated owls in Colorado and young fledge in July (Reynolds and Linkhart, 1986). Project design features include surveying suitable habitat and construction activities would be prohibited within 0.25 miles of an active nest until July 31st. This design feature would help reduce the potential for loss of young during nesting as a result of clearing in the corridor.

There are approximately 21 acres of aspen habitat within the construction corridor which could be lost during project activities. Currently, the stand structure in those areas may provide nesting habitat, although much of this habitat is along existing roads. Over the long-term, the corridor would not provide nesting habitat but could provide foraging habitat.

Cumulative Effects

The cumulative effects analysis area for this species is the 1-mile buffer along the corridor and access roads to the corridor. Within 1 mile of the project centerline, there are 5836 acres of aspen. There is one planned aspen sale near Condemn-it Park, of approximately 15 acres. Assuming all aspen within the construction corridor, and the 15 acres of aspen in the timber sale, are removed, total aspen lost in the analysis area would be 36 acres, or 0.6%. Actual figures would be slightly less as some of the corridor is already nonvegetated along existing roads. The 15 acre aspen timber sale unit would regenerate in the long-term and return to habitat suitability in the future, but the 50' right-of-way would not, and approximately 10 acres would be permanently removed from aspen production (0.2%).

The GMUG did an analysis of habitat trends on the Forest; aspen have stayed the same in the 1983 to 2000 period, while mature spruce/fir habitats have decreased 0.3% due to management activities (USDA Forest Service 2005c).

Determination
Implementation of the proposed action "may impact individuals or habitat, but will not likely contribute to a trend towards federal listing". This is based on the small amount of potential habitat affected, and design features for implementing a seasonal restriction in suitable habitats unless surveys find no occupied territories.

3.2.7.13 Lewis' Woodpecker

3.2.7.13.1 Lewis' Woodpecker Affected Environment

Three principal habitats are open ponderosa pine, open riparian woodland dominated by cottonwood, and burned pine forest. They will also use other habitats such as pinyon/juniper. Their distribution is dependent on nest cavity availability and insect abundance. They are known to occur on both Forests (USDA 2007b).

Lewis' woodpecker is a locally common but patchily distributed woodpecker species. The combination of its sporadic distribution, its diet of adult-stage mostly aerial insects, its preference to nest in burned landscapes, and its variable migratory behavior makes it different from most other North American woodpecker (Abele et al 2004).
No Lewis' woodpeckers were observed in the project area during field visits in 2006. The BBS information for this species shows a slight upward trend in Colorado (Sauer, et al, 2005)

3.2.7.13.2 Lewis' Woodpecker Environmental Consequences

Actions with the potential for effects to this species include:

- short-term effects of disturbance during construction
- short-term potential for loss of young during construction
- long-term changes to habitat

Potential habitats present in the project area include cottonwood riparian forest and pinyon/juniper. While none of these habitat types are shown in the CVU coverage for this area, there is a small area of riparian cottonwood forest at the West Muddy crossing of the corridor, and several trees may need to be removed during construction, although efforts to minimize this will occur. The nest-building through fledging period runs from about April 16 through August 4 for this species (Kingery 1998). If birds are nesting in these cottonwoods, and if disturbance occurs during the nest selection period, birds may displaced into nesting in adjacent areas. If nest sites are already selected and egg-laying has occurred, nest abandonment and loss of young immediately adjacent to corridors or access roads could occur. There is also potential for loss of nest cavities with eggs or young due to clearing of the corridor. However, the potential for these effects is very low due to the very small area of habitat affected. In addition, it is highly unlikely that woodpeckers occur in this area, as none were found during field visits in 2006. Therefore, no impacts to this species are anticipated as a result of this project.

Cumulative Effects
Because there are no direct or indirect effects, there are no cumulative effects.

Determination

Implementation of the project will have no impact on Lewis' woodpecker, due to the low probability of occurrence along the corridor and the very limited impact to suitable nesting habitats along the corridor.

3.2.7.14 American Three-toed Woodpecker

3.2.7.14.1 American Three-toed woodpecker Affected Environment

This species is known to occur on the Forest. It is ranked as rare or localized in Colorado, but is a highly mobile species capable of dispersing across landscapes with few habitat related limitations. This species commonly occurs in mature coniferous forests especially in areas with large infestations of bark beetles or recently burned areas (USDA 2007b).

Mature and old growth coniferous forests have been identified as primary habitat, but disturbed areas (recent burns, insect infestations) have also been cited as important habitat. The extent to which three-toed woodpeckers use habitats other than spruce/fir and lodgepole pine in the southern Rocky Mountains remains poorly known (Wiggins 2004). No three-toed woodpeckers were observed in the project area during field visits in 2006. This species shows a downward trend in Colorado (Sauer et al, 2005).

3.2.7.14.2 American Three-toed woodpecker Environmental Consequences

Actions with the potential for effects to this species include:

- short-term effects of disturbance during construction
- short-term potential for loss of young during construction
- long-term changes to habitat

The nest-building through fledging period runs from about June 26 through August 19 for this species (Kingery 1998). If disturbance effects are felt out as far as 328 ft, approximately 6% of the 1-mile buffer area would be within the disturbance range for this species.

This species is associated with spruce/fir habitats, similar to martens. If nesting is occurring in the spruce-fir portion of the construction corridor, nests may be lost during construction. Acres within the corridor would be lost as nesting and foraging habitat over the long term.

Cumulative Effects

The cumulative effects analysis area for this species is the 1-mile buffer along the corridor and access roads to the corridor. None of the ongoing or reasonably foreseeable timber harvest is in spruce/fir cover types within the 1-mile buffer.

Determination

Implementation of the proposed action "may impact individuals or habitat, but will not likely contribute to a trend towards federal listing". This is due to the small number of acres of habitat affected, both for short term direct effects, and long term indirect effects of loss of habitat.

3.2.7.15 Olive-sided Flycatcher

3.2.7.15.1 Olive-sided flycatcher Affected Environment

This species is known to occur on the Forest. They primarily breed in spruce/fir forest, but use the forest-opening ecotone and are a colonizer of post-disturbance habitats. Openings, conifers, snags and an abundant insect food source are the crucial elements (USDA 2007b). They occur less regularly and less abundantly in deciduous or mixed aspen/conifer forests (Kingery 1998). Olive-sided flycatchers have been seen throughout the district and are expected to occur along or near the proposed route. This species shows a relatively stable trend in Colorado (Sauer et al, 2005)

3.2.7.15.2 Olive-sided flycatcher Environmental Consequences

Actions with the potential for effects to this species include:

- short-term effects of disturbance during construction
- short-term potential for loss of young during construction
- long-term changes to habitat

The nest-building through fledging period runs from about June 5 through August 2 for this species (Kingery 1998). If disturbance effects are felt out as far as 328 ft, approximately 6% of the 1-mile buffer area would be within the disturbance range for this species.

This species is associated with spruce/fir habitats, similar to martens. These habitats may be avoided until August 1st (unless surveys are done and find no use by raptors), so loss of nests during ROW clearing may not occur. If ROW clearing does occur before August 1st, any nests in the 1.9 acres of spruce/fir impacted would be lost. Acres within the corridor would be lost as nesting habitat over the long term, but would provide areas for foraging on insects.

Cumulative Effects

The cumulative effects analysis area for this species is the 1-mile buffer along the corridor. None of the ongoing or reasonably foreseeable timber harvest is in spruce/fir cover types within the 1-mile buffers of any of the alternatives.

Determination
Implementation of the proposed action “may impact individuals or habitat, but will not likely contribute to a trend towards federal listing”. This is due to the small number of acres of habitat affected, both for short term direct effects, and long term indirect effects of loss of habitat.

3.2.7.16 Purple Martin

3.2.7.16.1 Purple Martin Affected Environment

This species is known to occur on the Forest and is primarily associated with patches of old growth aspen. Nest site availability may be a key limiting factor to populations in R2 (USDA 2007b). Field surveys conducted in 2006 located purple martins at several locations near the proposed route (Monarch 2006, D. Garrison pers. obs.).

The preferred habitat of purple martins in the Rocky Mountains is mature aspen forest with nearby meadows and open water. Martins nest in cavities in live aspen trees (Wiggins 2005b). This species shows an upward population trend in Colorado but is relatively stable across the US (Sauer et al 2005).

3.2.7.16.2 Purple Martin Environmental Consequences

Actions with the potential for effects to this species include:

- short-term effects of disturbance during construction
- short-term potential for loss of young during construction
- long-term changes to habitat

The nest-building through fledging period runs from about June 6 through July 31 for this species (Kingery 1998). If disturbance effects are felt out as far as 328 ft, approximately 6% of the 1-mile buffer area would be within the disturbance range for this species.

This species uses aspen habitats, similar to flammulated owls. These habitats may be avoided until August 1st (unless surveys are done and find no use by raptors), so loss of nests during ROW clearing may not occur. If ROW clearing does occur before August 1st, nests in the 21 acres of aspen would be lost. Acres within the corridor would be lost as nesting habitat over the long term, but would provide areas for foraging on insects.
There are approximately 21 acres of aspen habitat within the construction corridor which could be lost during project activities. Currently, the stand structure in those areas may provide nesting habitat, although much of this habitat is along existing roads. Over the long-term, the corridor would not provide nesting habitat but could provide foraging habitat.

Cumulative Effects
The cumulative effects analysis area for this species is the 1-mile buffer along the corridor and access roads to the corridor. Within 1 mile of the project centerline, there are 5836 acres of aspen. There is one planned aspen sale near Condemn-it Park, of approximately 15 acres. Assuming all aspen within the construction corridor, and the 15 acres of aspen in the timber sale, are removed, total aspen lost in the analysis area would be 36 acres, or 0.6%. Actual figures would be slightly less as some of the

corridor is already nonvegetated along existing roads. The 15 acre aspen timber sale unit would regenerate in the long-term and return to habitat suitability in the future, but the 50’ right-of-way would not, and approximately 10 acres would be permanently removed from aspen production (0.2%).

The GMUG did an analysis of habitat trends on the Forest; aspen have stayed the same in the 1983 to 2000 period, while mature spruce/fir habitats have decreased 0.3% due to management activities (USDA Forest Service 2005c).

Determination
Implementation of the proposed action “may impact individuals or habitat, but will not likely contribute to a trend towards federal listing”. This is based on the minimal habitat loss resulting from the project and the known presence of martins in the vicinity of the project.

3.2.7.17 Loggerhead Shrike

3.2.7.17.1 Loggerhead Shrike Affected Environment

The loggerhead shrike breeds in a wide variety of open habitats, including grasslands, sage, and shrub. It nests in bushes or trees, and uses bushes and trees for perches from which it feeds. It feeds primarily on insects and small vertebrates, and forages in open short grasses and bare ground (Wiggins 2005a). The GMUG is at the northern edge of the year-round range of this species.

The BBS information on this species shows an upward population trend in Colorado (Sauer et al, 2005). The shrike was not seen on field visits to the project site in 2006.

3.2.7.17.2 Loggerhead Shrike Environmental Consequences

Actions with the potential for effects to this species include:

- short-term effects of disturbance during construction
- short-term potential for loss of young during construction
- long-term changes to habitat

The shrike is an open country habitat associate, and suitable nesting and foraging areas for the species occur along the proposed route. Loss of nesting habitat will be minimal, and restricted to the oak cover type along the route, except for the loss of individual trees in other open cover types. Habitat loss will be at most 33 acres, of which half will regrow over time. Acres within the corridor would be lost as nesting habitat over the long term, but would provide areas for foraging on insects.

Disturbance to nesting birds may occur all along the route, unless timing restrictions for other species are imposed. The species was not detected along the route during field visits in 2006, so it may not occur in this area, however.

Cumulative Effects
The cumulative effects analysis area for this species is the 1-mile buffer along the corridor. There are no projects which would result in other loss of nesting habitat

planned within the buffer. Loss of the 33 acres of oak in this project would mean a decrease in available oak of 0.8% within 1 miles of the project centerline.

Determination
Implementation of the proposed action "may impact individuals or habitat, but will not likely contribute to a trend towards federal listing". This is based on the habitat loss resulting from the project and the potential for nest loss or disturbance during project activities.

3.2.7.18 Brewer's Sparrow

3.2.7.18.1 Brewer's Sparrow Affected Environment
The brewer's sparrow is a widely-distributed sagebrush obligate species. It breeds and forages in open sage habitats throughout its range (Holmes and Johnson 2005). They are most abundant where sage occurs in tall, healthy clumped stands. On the Paonia district, sagebrush habitats are largely coincident with elk and deer winter range and tend to be heavily browsed by those species, especially during extreme winters. Cheatgrass invasion also contributes to loss of habitat, as does road and energy development.

The species shows a downward population trend in Colorado (Sauer et al 2005). These birds were observed in sagebrush habitat in Sheep Park and between The Narrows and Ault Creek along the pipeline corridor during surveys conducted in July 2006. With the exception of these two areas, suitable sagebrush nesting habitat is lacking in the project area (Monarch 2006).

3.27.18.2 Brewer's Sparrow Environmental Consequences
Actions with the potential for effects to this species include:
- short-term effects of disturbance during construction
- short-term potential for loss of young during construction
- long-term changes to habitat

This species has been observed in the project area. The sparrow is a sage obligate, and sagebrush habitats will be altered as a result of this project. Approximately 31.5 acres of sage will be directly impacted by the construction of the pipeline. Half of this area will remain disturbed along the right-of-way, but may revegetate to a certain extent while still allowing for leak monitoring. Disturbance during construction will also occur along the safe portions of the corridor, and may displace nesting birds and/or cause nest failure.

Cumulative Effects
The cumulative effects analysis area for this species is the 1-mile buffer along the corridor. Other projects which may result in loss or alteration of sage habitats include grazing and other gas pipeline construction on both public and private lands. Elk and deer winter use of the area is also expected to impact sage habitats, and other projects may have unknown impacts to the concentration of these species on sage habitats in the area. Loss of the 31.5 acres of aspen in this project would mean a decrease in available sage of at less than 1.9 % within 1 miles of the project centerline. Habitats outside of the CVU coverage but within 1 mile of the proposed route appear on aerial

photography to include large tracts of sage habitat, and approximately 280 meters of the corridor itself outside of the CVU coverage is sage. Therefore, the actual loss of habitat may be slightly higher (280 meters x 100 feet is approximately 2.1 acres), but the percentage loss within 1 mile is probably smaller than described above.

Determination

Implementation of the proposed action "may impact individuals or habitat, but will not likely contribute to a trend towards federal listing". This is based on the habitat loss resulting from the project and the potential for nest loss or disturbance during project activities.

3.2.7.19 Boreal Toad

3.2.7.19.1 Boreal toad Affected Environment

The boreal toad was petitioned for listing in 1993. In 1994, the FWS found that listing may be warranted. Boreal toads are listed as endangered by the Colorado Division of Wildlife (CDOW). The State of Colorado prepared a Recovery Plan for boreal toads in Colorado in 1994 (Nesler and Goettl, 1994). In March 2005, the FWS announced a finding that listing was warranted but precluded by higher priority listings. Several assessments have occurred since then. In the finding of May 2005, the FWS noted that a proposed listing determination for the boreal toad would be funded Fiscal Year 2005. They then evaluated new information, and reevaluated previously acquired information. They determined that the Southern Rocky Mountain population does not qualify as a distinct population segment and the boreal toad was removed from the candidate list (USDI 2005b).

Boreal toads were once very common in the mountains of Colorado, but there were declines in abundance and distribution that began in early 1970s and extended into the 1990s. In Colorado, recent surveys of several hundred potential breeding sites within the historic range indicate that the toad has completely disappeared or declined to extreme rarity in most of the state (Hammerson 1999). Distribution is restricted to areas with suitable breeding habitat in spruce fir forests and alpine meadows (7000 to 12,900 ft). Breeding habitat includes lakes, marshes, ponds and bogs with sunny exposure and quiet, shallow water (Nesler and Goettl, 1994). Hammerson (1999) reports that in Colorado, the boreal toad lives in damp conditions in the vicinity of marshes, wet meadows, streams, beaver ponds, glacial ponds, and lakes interspersed in subalpine forest. Successful breeding requires permanent or semipermanent water, though breeding also takes place in temporary ponds. Snowmelt affects spring emergence and breeding.

Young toads are restricted in distribution and movements by available aquatic habitat, while adults can move up to several miles away. Adult toads emerge from hibernacula in May (depending on snowmelt) and return in late August or early September. Most toads are in hibernation by October (Nesler and Goettl, 1994).

Adults may linger at breeding sites for up to several weeks, then disperse. Larval development takes 2 months or more, depending on temperatures. Larvae commonly are present in the breeding ponds into August. Metamorphosis occurs primarily in August. Juveniles can often be found in wetlands adjacent to breeding sites (Hammerson 1999).

This species is known to occur on the GMUG. They were once common but now exist as apparently disjunct small populations. Current populations appear to be experiencing low reproductive success and high mortality (USDA 2007b). There are records of boreal toads in Garfield, Mesa, Delta and Gunnison counties (Colorado Herpetological Society website). The nearest known population is on Buzzard Creek on the Grand Valley district, west of the project site. Potential breeding habitat was not located along the proposed route during field visits in 2006. No toads were located along the portion of West Muddy Creek at the project site, Ault Reservoir, or at several nearby ponds which were examined for amphibian presence during the late summer of 2006. None of these waters were deemed suitable for boreal toads due to habitat restrictions at the sites.

3.2.7.19.2 Boreal Toad Environmental Consequences

The following potential effects to boreal toads include:

- short-term direct effects from construction (loss of individual adults, egg masses or juveniles)
- loss of adults moving to or from breeding ponds, due to road traffic
- impacts to water quality during construction

Hazardous material would be stored in secure areas and stored over 200 feet from waterbodies or wetlands. See 3.10.1 for more information on changes to water quality.

Effects for this species are limited to the direct effects during construction. As there are no known or suspected populations of this species along the route or access roads, and potential habitat for this species was not located along the proposed project route, it is unlikely that this species will occur in this area.

Cumulative Effects

Because there are no direct or indirect effects, there are no cumulative effects.

Determination

Implementation of the proposed action would have “no impact” on the boreal toad. As there are no known or suspected populations of this species along the proposed route or access roads, and habitat for this species was not found along the route, this species is highly unlikely to occur in this area.

3.2.7.20 Northern Leopard Frog

3.2.7.20.1 Northern leopard frog Affected Environment

This species is widespread and is known to occur on the Forest. Population trends are expected to be downward throughout much of their range. They occupy a wide variety of habitats. During the wet season leopard frogs disperse along aquatic and riparian corridors (USDA 2007b).

The formerly abundant northern leopard frog has become scarce in many areas of Colorado. Some populations have disappeared due at least in part to changes in habitat. Typical habitats include wet meadows, and the banks and shallows of marshes, ponds, glacial kettle ponds, beaver ponds, lakes, reservoirs, streams and irrigation ditches (Hammerson 1999).

There are records of northern leopard frogs in Garfield, Mesa, Delta and Gunnison counties (Colorado Herpetological Society website). Leopard frogs have been documented on the district (District files) but not in the immediate vicinity of the project. No frogs were located along the portion of West Muddy Creek at the project site, Ault Reservoir, or at several nearby ponds which were examined for amphibian presence during the late summer of 2006. Suitable habitat occurs at West Muddy Creek, Ault Reservoir, and at several ponds along the proposed route. Suitable habitat also occurs in numerous streams and ponds near roads which will be used during the project.

3.2.7.20.2 Northern leopard frog Environmental Consequences

The following potential effects to northern leopard frogs include:

- short-term direct effects from construction (loss of individual adults, egg masses or juveniles)
- impacts to water quality during construction

There are no known occupied sites within or near the proposed route, and effects are based on potential habitat. Effects for this species are limited to the direct effects during construction. Hazardous material would be stored in secure areas and stored over 200 feet from waterbodies or wetlands.

While no frogs were located during surveys in 2006, suitable habitat for this species occurs along the proposed route and in some ponds near access roads. Mortality from vehicles or construction equipment may occur during project activities. No loss of habitat will occur as a result of this project.

Cumulative Effects

The cumulative effects analysis for this species is the corridor and associated 1-mile buffers. Several ongoing and reasonably foreseeable future actions will occur within this area. These include recreational use (motorized and non-motorized), firewood cutting, road and trail maintenance, and livestock grazing. All of these activities have had some level of environmental analysis, and riparian and wetland habitats are managed through the use of BMPs.

Livestock grazing is the most widespread activity that has the potential to affect breeding habitat for these species. Grazing can result in loss of riparian vegetation (foraging habitat and cover) and trampling of egg masses. However, frog populations have been located on the district in areas with livestock concentrations (D. Garrison pers. obs.)

Determination

Implementation of the proposed action would result in a “may impact individuals or habitat, but will not likely contribute to a trend towards federal listing” determination for the northern leopard frog. This is based on the possibility of individual mortality by vehicles or heavy equipment during construction, the presence of suitable habitat near the project area, and the lack of habitat loss associated with the project.

Table 21. TES Species Discussed in this Analysis

Species	Determination	Rationale
Threatened and endangered species		
Canada lynx	**No Effect**	**There is no loss of denning or foraging habitat; no increased risk of mortality; no winter access.**
Sensitive Species		
Pygmy shrew **Olive-sided flycatcher** **American three-toed woodpecker** **Purple martin** **Loggerhead shrike** **Brewer's sparrow**	**MIIH**	**Project activities may impact individual animals but overall acreage affected is small and potential for effects is minor over the larger 1-mile buffer analysis area.**
Fringed myotis **Spotted bat** **Townsends' big-eared bat**	**No impact**	**Lack of suitable roosting habitat, will not alter foraging habitat suitability.**
American marten	**No impact**	**Minimal loss or alteration of suitable habitat, lack of habitat in overall area, lack of disturbance due to lack of habitat.**
Wolverine	**No impact**	**Project area is not roadless and is low quality wolverine habitat. Project will not alter suitability or disturb wolverines.**
Northern goshawk **Ferruginous hawk** **Northern harrier** **Flammulated owl**	**MIIH**	**Project design features to survey corridor or avoid construction in aspen, conifer, and aspen/conifer habitats until August 1st would reduce potential to affect breeding birds.**
American peregrine falcon	**No impact**	**Lack of nesting habitat in area, no loos of foraging habitat function.**
Lewis' woodpecker	**No impact**	**Lack of suitable habitat along route, low probability of occurrence, minimla impact to possible nesting habitat.**
Boreal toad	**No impact**	**Lack of suitable habitat; not known or suspected to occur in area.**
Northern leopard frog	**MIIH**	**Project design features for riparian pipeline crossings (timing at low flow) reduce effects on habitat, no known populations affected.**
FSS plant species	**No impact**	**Do not occur in project area; pack of potential habitat for most species.**

FSS = Forest Sensitive Species

MIIH = may impact individuals or habitat, but not likely to contribute to a trend towards federal listing

3.2.8 Sensitive Plant Species

3.2.8.1 Affected Environment

Appendix H lists all sensitive plant species known or likely to occur on the GMUG. A systematic plant survey was conducted during 2006, and none of the species on the Region 2 list were located along the proposed route (SWCA 2006b). In addition, none of the plant species listed are known to occur in this area, based on monitoring of 202 upland and 61 riparian permanent monitoring points in the NFS lands on the Paonia district north of Paonia. Only two of the plants (*Cirsium perplexans* and *Eriophilum gracile*) are known to occur on the Paonia district, and neither has been found in the project area.

3.2.8.2 Environmental Consequences

Direct and indirect effects to plant species in general along the route include mortality during construction and long-term changes in habitat. Introduction of exotic species, including noxious weeds, has the potential to alter plant species composition along the route as well. However, the absence of any sensitive plant species along the route, and the absence of suitable habitats for the majority of the species, makes the potential for impacts too small to quantify. Therefore, there are no direct or indirect effects to these species. Since there are no direct or indirect effects, cumulative effects to plant species will not be addressed.

Cumulative Effects

Because there are no direct or indirect effects, there are no cumulative effects.

Determination

Implementation of the project will have no impact on any Region 2 sensitive plant species.

Table 22. Habitats and Species being Analyzed.

American marten	No impact	Minimal loss or alteration of suitable habitat, lack of habitat in overall area, lack of disturbance due to lack of habitat.
Wolverine	No impact	Project area is not roadless and is low quality wolverine habitat. Project will not alter suitability or disturb wolverines.
Northern goshawk **Ferruginous hawk** **Northern harrier** **Flammulated owl**	MIIH	Project design features to survey corridor or avoid construction in aspen, conifer, and aspen/conifer habitats until August 1st would reduce potential to affect breeding birds.
American peregrine falcon	No impact	Lack of nesting habitat in area, no loss of foraging habitat function.
Lewis' woodpecker	No impact	Lack of suitable habitat along route, low probability of occurrence, minimal impact to possible nesting habitat.
Boreal toad	No impact	Lack of suitable habitat; not known or suspected to occur in area.
Northern leopard frog	MIIH	Project design features for riparian pipeline crossings (timing at low flow) reduce effects on habitat, no known populations affected.
FSS plant species	No impact	Do not occur in project area; pack of potential habitat for most species.

MIS = Management Indicator Species

3.2.9 Management Indicator Species

A complete table of all of the GMUG Management Indicator (MIS) species is presented in Appendix H. The northern goshawk, Brewer's sparrow, and American marten are also sensitive species and are discussed in that section. The Abert's squirrel is not known or expected to occur on the Paonia district and will not be discussed.

In May 2005 the Forest Supervisor on the Grand Mesa, Uncompahgre and Gunnison National Forests (GMUG) issued an amendment that, in part, revised the list of Management Indictor Species (MIS). This list revision was completed under the authority and guidance provided in 36 CFR 219.19 (1982 Rule). Also as part of this amendment, the GMUG used authority provided in 36 CFR 219.14(f) in the 2005 planning Rule (2005 Rule) to make monitoring of MIS populations discretionary. However, on March 30, 2007 the Forest Service was enjoined by the 9th Circuit District Court from implementation of the 2005 Rule. That ruling invalidated the authority provided by 36 CRF 219.14(f).

Revision of the GMUG list of MIS was completed under authorities provided in the 1982 Rule and, therefore, remains valid and in effect. However, since the 2005 Rule has been enjoined and, therefore, authority granted in 36 CFR 219.14(f) invalidated, the GMUG has reinstated MIS requirements per the 1982 planning regulations to monitor both habitat and populations. Regardless of the planning rule in effect, the GMUG has considered and will continue to consider the "best available science" in forest and project level planning, including data and analysis needs for MIS.

The scope of analysis for management indicator species is determined by forest plan management direction, specifically, its standards and guidelines (Chapter II) and monitoring direction (Chapter IV). The GMUG National Forest's Forest Plan (Forest Plan) establishes monitoring and evaluation requirements that employ both habitat capability relationships and, at the appropriate scale, population data. The analysis completed for this project examined how the project directly or indirectly affects selected MIS habitat and populations and how these local effects could influence Forest-wide habitat and population trends. Further the analysis indicates that the project contributes to meeting Forest Plan direction for MIS.

3.2.9.1 No Action Alternative all Management Indicator Species

The direct and indirect impacts of the "no action" alternative would not change current habitat or population conditions of any Management Indicator Species in the short term. Long-term changes would continue to be dependent on existing conditions, succession of vegetative types, and other actions within the project area, as indicated in the cumulative effects tables in this analysis.

3.2.9.2 ELK

3.2.9.2.1 Elk Affected Environment

Elk are widespread and disperse readily across landscapes, with few habitat-related limitations. Populations are abundant (and stable or increasing) on the Forests in R2 and on the GMUG. Value of habitats on Forests is increasing as habitat on adjacent private lands is lost to human development. Females are sensitive to disturbance during calving and herds are sensitive to disturbance in the winter (USDA 2007b).

Elk use a combination of open meadows for foraging and woodlands for cover, calving and thermal regulation. The elk herds in the project area are migratory, using higher elevation forests and meadows during the summer. Transitional ranges include lower elevation aspen and woodland types. Winter ranges include slopes with open south to southwest aspects for foraging and wooded north to northeast aspects for cover. Winter range is found on the north and south ends of the project area. Approximately 80% (8.5 of 10.8 miles) of the proposed route, including that on private lands, lies within mapped elk winter range (CDOW http://ndis.nrel.colostate.edu/ftp/index.html)

The proposed pipeline lies entirely within Game Management Unit (GMU) 521, which is part of Data Analysis Unit (DAU) E-14. The elk population estimate for this DAU, based on 2004 post hunting statistics, was 11,570 elk, while the objective is 10,500. The DAU had a ratio of 26 bulls to 100 cows at that time. CDOW estimated that there were 79 hunters per 100 elk, with an 18% success rate. This DAU provides 4% of the total elk resource in the state (CDOW 2005c).

The primary issues affecting elk distribution are lack of habitat security due to motorized and non-motorized travel and recreation activities (USDA Forest Service 2004 and USDA Forest Service, 2005c).

3.2.9.2.2 Elk Environmental Consequences

The following potential effects to elk include:

- short-term direct effects during construction (visual or auditory disturbance or displacement of individuals from machinery, vehicles and humans)
    - calving season/elk production areas (May 15 to June 20)

• summer concentration areas (June 16 to October 14)

- long-term direct effects as a result of changes in forage and cover
- long-term indirect effects as a result of changes in human use in the area

No project activities would occur during winter and direct effects of disturbance during winter will not be analyzed.

The analysis for disturbance will focus on effects to elk at production areas and summer concentration areas, as mapped by CDOW. Elk production areas are part of the overall range occupied by female elk from May 15 to June 15 for calving. Only known areas are mapped. Summer concentration areas are areas where elk concentrate from mid-June through mid-August. High quality forage, security, and lack of disturbance are characteristics of these areas to meet the high energy demands of lactation, calf rearing, antler growth, and general preparations for the rigors of fall and winter. These maps are updated every four years.

Declines in elk use of habitat adjacent to forest roads have been documented in many studies (Lyon 1979; Rowland et al, 2000). A study of elk in relation to logging disturbances found that there was a buffer zone of 500 to 1,000 meters (1640-3280 feet) separating areas of high elk use from areas of disturbance (Edge and Marcum, 1985). Another study looked at reproductive success of elk following disturbance by humans during calving season (Phillips and Alldredge, 2000). They found that elk subjected to human-induced disturbance through a 3-4 week period during calving season over two years showed lower calf survival. Generally, habitats provide more effective security the further they are from roads. Considering documented road avoidance by elk, the minimum distance between secure habitats and an open road is ½ mile (Hillis et al, 1991).

None of the proposed route is within mapped elk production areas. However, it is likely that elk do use this area for calving and are known to occur in this are during the period when construction will occur. Therefore, elk are anticipated to be displaced during construction. Numerous studies have shown that elk will move back into an area once the disturbance is over and the displacement will be temporary.

Currently, summer recreational use is fairly low in the area, but ATV use is increasing. Motorized use is limited to existing roads and trails. Access roads used would be improved and summer recreational use due to improved road conditions is expected to increase over the long term. A design feature for placement of logs and rocks in the corridor during reclamation to discourage motorized use has been incorporated.

Project activities are anticipated to occur into all of the fall elk seasons within GMU 521. Along the 851 and 704 roads, which will see substantial construction traffic, there are approximately fifteen sites which hunters use for camps during big-game seasons. Disturbance to both local elk populations, and to hunters whose camps are no longer accessible or desirable due to construction activities and/or traffic, is anticipated. As a result, changes to elk hunting pressure in both the immediate project vicinity and other portions of GMU 521 are expected. It is unclear whether these disturbances will increase or decrease elk harvest within this GMU.

CDOW has mapped a variety of elk habitat usage patterns in this area. The entire project area, and surrounding landscape, is considered as summer resident habitat, and approximately 80% of the route and surrounding landscape is elk winter range. The area does not contain mapped summer concentration or calving areas, but it could be used for such.

Because elk are very adaptable, and use a wide variety of habitats, the conversion of existing vegetation to a grass/forb cover type would not have any measurable effects. Creation of the corridor, especially where coincident with existing roadways, will create a wider open area without vegetative cover. Instead cover would be provided by horizontal and vertical bends in the corridor. Vulnerability to hunters could increase in the corridor, but abundant cover is found immediately adjacent to most of the corridor.

The elk population estimate for this DAU, based on 2004 post hunting statistics, was 11,570 elk, while the objective is 10,500. Because this area is well over the population objective, the potential increase in vulnerability to hunters as a result of the loss of cover is not expected to be an issue.

Cumulative Effects

Because only a small number of acres of severe winter habitat would be affected, no project activities would occur during the winter period, and because elk are very adaptable, and use a wide variety of habitats, effects on winter range are not analyzed. There are several projects listed in the cumulative effects tables that are located in winter habitat, but there would be no overlap in timing and very little measurable change in habitat quality.

Activities associated with the oil and gas projects would have more effect through disturbance, rather than changes in acres of habitat and are discussed later.

Because elk are very adaptable, and use a wide variety of habitats, the conversion of existing vegetation to a grass/forb cover type would not have any measurable effects.

Actions taken in this project are unlikely to interact substantially with other recreational, grazing, or special use actions as described in the cumulative effects tables. The 15 acres of aspen harvest planned near Condemn-it Park will alter that habitat from cover to foraging in the short term, but will return to aspen forest in the future.

Summary and Conclusion

The negative effects from this project are of short duration and magnitude and do not result in a Forest-wide decrease in trends or deter from meeting the MIS objectives in the Forest Plans.

3.2.9.3 Merriam’s Wild Turkey

3.2.9.3.1 Merriam’s Wild Turkey

In Colorado, Merriam’s turkey range primarily in dry forests of broken, mountainous terrain to about 8,000 ft elevation. Surveyors found them most often in forested habitats, primarily lower-elevation conifers and oak brush. Riparian deciduous forests, usually cottonwoods are also used (Kingery 1998). On the GMUG, they were selected as indicators primarily for mountain shrub, oak woodlands, pinyon/juniper, and lower elevation ponderosa pine habitat types, although the species is known to use forest-meadow edges, aspen and aspen/conifer habitats during the summer. Winter roosts are commonly in ponderosa pine, oak, pinyon/juniper and cottonwoods. Turkeys are known to occur throughout the West Muddy watershed.

According to BBS, population trends appear to be in a significant upward trend in the United States. For the period from 1966 to 2004, turkeys have exhibited a significant positive trend of 13.3%. Within the state of Colorado, turkeys have exhibited a similar trend (Sauer et al 2005). Turkey populations on the Forests are apparently self-sustaining and healthy. The project area is in GMU 521, which is open to spring and fall hunting.

3.2.9.3.1 Merriam's wild turkey Environmental Consequences

Actions with the potential for effects to this species include:

- short-term effects of disturbance during construction
- short-term potential for loss of young during construction
- long-term changes to habitat

The nest-building through fledging period runs from about June 28 through October 8 for this species (Kingery 1998). If disturbance effects are felt out as far as 328 ft, approximately 6% of the 1-mile buffer area would be within the disturbance range for this species.

Individual nests with eggs could be lost during clearing of the ROW corridors. However, the young are able to leave the nest within 12-24 hours (NWTF 2006) and young should not be trampled during clearing activities. Over the long-term, nesting and night roosting habitat would be lost in the corridor but it could still provide foraging habitat.

Spring and fall turkey hunting season would overlap with project activities. Because of the large amount of traffic associated with the proposal, hunters may choose to hunt in other areas for the 1 or 2 seasons affected by pipeline construction.

Cumulative Effects

The cumulative effects analysis area for this species is the 1-mile buffer along the corridor and access roads to the corridor. Most ongoing and reasonably foreseeable actions are not focused on cottonwood or oak shrubland habitats, except for livestock grazing in both types, and recreational use in cottonwood types. These activities should not affect availability or suitability of trees for roosting or foraging. There are approximately 4144 acres of oak or cottonwood habitats within 1 mile of the project centerline, and approximately 33 acres could be removed during construction (0.8%), of which approximately half is within the construction corridor but not the right-of-way, and could potentially regrow.

Turkey populations on the Forests are apparently self-sustaining and healthy, and support an unlimited spring and fall hunting season.

The GMUG did an analysis of habitat trends on the Forest; oak shrublands have stayed the same in the 1983 to 2000 period, while cottonwood habitats have decreased 10% due to fires and clearing on private lands. The cottonwood component on public lands in considered stable at this time (USDA Forest Service 2005c). Impacts to cottonwoods are restricted to removal of individual trees along the proposed route immediately north of the West Muddy Creek crossing, and do not detract from the suitability of this area for use by turkeys.

Summary and Conclusion
The negative effects from this project are of short duration and magnitude and do not result in a substantial Forest-wide decrease in habitat or population trends or deter from meeting the MIS objectives in the Forest Plans.

3.2.9.4 Red-naped Sapsucker

3.2.9.4.1 Red-naped Sapsucker Affected Environment
In Colorado, red-naped sapsuckers forage in aspen, willows and cottonwoods close to their nest sites, which are almost exclusively in mature aspen stands. Typical nest stands, dominated by large aspen, have a variety of diseases that create the heart rot needed for suitable cavity excavation (Kingery 1998). Nest stands have trees infected with shelf or heartwood fungus (for drilling nest cavities) and nearby willow stands (for drilling sap wells). This species was not observed along the proposed route but is expected to occur there.

According to BBS, populations appear to be stable or increasing in the United States, with areas of local declines. From the period 1966 to 2004, red-naped sapsuckers have exhibited a positive trend of +4.3%. Within Colorado, populations have exhibited similar but higher upward trends (Sauer et al 2005).

3.2.9.4.2 Red-naped sapsucker Environmental Consequences
Actions with the potential for effects to this species include:

- short-term effects of disturbance during construction
- short-term potential for loss of young during construction
- long-term changes to habitat

The nest-building through fledging period runs from about May 20 through August 25 for this species (Kingery 1998). If disturbance effects are felt out as far as 328 ft, approximately 6% of the 1-mile buffer area would be within the disturbance range for this species.

Individual nests with eggs or young could be lost during clearing of the ROW corridors. Over the long-term, approximately 10 acres of habitat would be lost in the corridor.

Cumulative Effects
The cumulative effects analysis area for this species is the 1-mile buffer along the corridor and access roads to the corridor. Within 1 mile of the project centerline, there are 5836 acres of aspen. There is one planned aspen sale near Condemn-it Park, of approximately 15 acres. Assuming all aspen within the construction corridor, and the 15 acres of aspen in the timber sale, are removed, total aspen lost in the analysis area would be 36 acres, or 0.6%. Actual figures would be slightly less as some of the corridor is already nonvegetated along existing roads. The 15 acre aspen timber sale unit would regenerate in the long-term and return to habitat suitability in the future, but the 50’ right-of-way would not, and approximately 10 acres would be permanently removed from aspen production (0.2%)

The GMUG did an analysis of habitat trends on the Forest; aspen have stayed the same in the 1983 to 2000 period, while mature spruce/fir habitats have decreased 0.3% due to management activities (USDA Forest Service 2005c).

Summary and Conclusion

The negative effects from this project are of short duration and magnitude and do not result in a substantial Forest-wide decrease in trends, or deter from meeting the MIS objectives in the Forest Plans.

3.2.10 Landbirds

The USDA Forest Service signed a MOU with USFWS for management of landbirds in 2001. This MOU includes direction on incorporation of habitat management guidelines identified in Bird Management Plans. An Executive Order (EO) was signed in the same year. Section 3 of the EO says to integrate bird conservation measures into projects, and to evaluate effects on migratory birds when doing project level analyses.

The Colorado Land Bird Conservation Plan (CO PIF 2000) focuses on conservation issues and opportunities by physiographic regions. In Region 62 (southern Rocky Mountains) the western coniferous forests have been altered by fire exclusion, timber harvesting, grazing, residential development, chemical applications and introduction of exotic diseases, plants and animals. In Region 87 (Colorado Plateau) livestock grazing, (changes in vegetation due to grazing, manipulation of sagebrush and pinyon/juniper habitats for improving grazing and livestock water developments), manipulation of water, fire suppression and widespread recreation have been identified as issues.

The Colorado Land Bird Conservation Plan identified priority bird species by habitat, for physiographic areas across the state (see Appendix K, Table A). All habitats identified for the two affected physiographic areas (62 and 87) that are present in the analysis area are already being analyzed as habitat for sensitive or management indicator species. It is assumed that the species being analyzed will address effects to priority birds associated with these habitats.

3.3 VISUAL RESOURCES

3.3.1 Introduction

Landscape Character Descriptions are written at the subsection level of the ecological hierarchy for the Paonia District of the Gunnison National Forest. The Sheep Pipeline area is located in subsection M331 Hm, Grand Mesa Breaks. The characteristics of this area, locally called the Muddy Basin, are described as having gently rolling, hummocky hills and mesas covered in a mosaic of aspens, Gambel oak and open grassland parks. There are a few substantial expanses of aspen where fall displays are especially attractive.

The area was used by the Ute Indians for many years before Spanish explorers, Escalante and Dominguez first visited the Muddy region in 1776. Miners came in the early 1880s, and lastly the farmers and ranchers settled the area and founded the now deserted town site of Ragged Mountain which is located to the northeast of the project area.

The culture of this area can be described as agriculturally based to the west closer to Paonia and transitions into more wild land settings as one travels further east and up in elevation. In most cases within forest “in holdings” (i.e. parcels of private land within the boundaries of the national forest), human presence is evident in a pastoral setting with ranching operations, wood fences, ranch homes, cabins and pastures. On forest lands, livestock grazing and dispersed recreation is noticeable but does not dominate the landscape.

3.3.2 Regulatory Framework

The LMP provides general management direction for visual resources, stating that the quality of the existing scenic resources and viewing opportunities are to be maintained or enhanced.

The LMP identifies specific Standards and Guidelines pertaining to the protection and enhancement of visual quality specific to the project as follows:

- Apply the Visual Management System to all National Forest System lands
- Follow direction provided in FSM 2311, 2380, and FSH 2309 16 through FSH 2309 25
- The accepted range of adopted Visual Quality Objectives for individual land areas would correspond to the Adopted Recreation Opportunity Spectrum as displayed in the FSM 2311 11 Exhibit 1
- All ground disturbances to be returned to natural appearances where feasible on all forest system lands.
- All cut and fill slopes within project area are to be revegetated.
- Utility ROW clearing to conform to natural vegetative pattern throughout project area.
- All seen structures would be of naturally harmonious colors.

The LMP identifies specific Management Prescriptions pertaining to the protection and enhancement of visual quality as follows:

- Management Area 2A: Semi-primitive motorized recreation experience
- Management Area 6B: Livestock Grazing
- Management Area 9A: Riparian Area Management

3.3.3 Affected Environment

The entire proposed pipeline falls within the designated visual quality objective (VQO) of “Modification”. The VQO of Modification refers to landscapes where the valued landscape character “appears moderately altered.” Deviations begin to dominate the valued landscape character being viewed.

The Desired Landscape Character of this area is to maintain as high as possible Partial Retention but allow for Modification to occur. This means that activities, disturbances and constructed features meet the objective for this area but they mostly remain visually subordinate to the natural surroundings with a few deviations present.

Currently the existing visual quality in the proposed pipeline area has already been somewhat modified and so is designated as “Modification”. There are several parcels of land that are privately owed. These ranchlands sustain cattle with cultivated pasture lands. There is also the presence of existing gas pipelines, the Hotchkiss pipeline that crosses the Narrows southeast of Ault reservoir and the Henderson Lateral, which follows NFSRs 265 and 851, a segment of the Ragged Mountain Pipeline. The proposed SGGS will connect with the Hotchkiss line to the southeast and the Ragged Mountain Pipeline. The presence of these underground lines is perceived by the swath of disturbed vegetation along the pipeline ROWs, although most of the Henderson Lateral was placed within the road prism.

Scenic attractiveness in this area is mostly B, Common Typical with small areas of C, indistinctive. The West Muddy Creek and the riparian zones along the waterway provide some variety within the landscape. Colors within this character create soft neutral tones.

Use in this area is primarily moderate and dispersed in the summer with a short spike in visitation during the hunting season. The means of accessing this area include NFSR 265, 849, 851 and 704.

All forest roads are assigned concern levels, which are the measure of the degree of public importance. Concern levels range between 1-3 with level one having the highest concern. NFSR 704 is a gravel road which accesses private land and has a concern level of 3. NFSR 265 has more dispersed recreational use and has a concern level of 2. NFSRs 849 and 851 provide access to private lands but access is blocked off to the public.

The proposed route enters private land with the full consent of the owners. The majority of views affected would be by the private land owner’s homes and out buildings. Three of the four staging areas, pigging facilities and metering stations will also be placed on private land.

3.3.4 Environmental Consequences

3.3.4.1 No Action

The “No Action” alternative has no negative visual effects to the surrounding forest landscape. This is true because it creates no disturbances and maintains both the scenery and the VQO.

The “No Action” will not have any affect on the Landscape Character of the land. nor any affect on the Existing Visual Condition of the area and will meet its Visual Quality Objectives

3.3.4.2 Proposed Action

The Proposed Action has few negative visual effects to the surrounding forest landscape. This is true because 4.2 miles of the proposed 10.8 mile pipeline are on private tracts and the majority of it lies within a valley bottom that has little visibility by the public. Although the valley bottom consists mostly of grasslands and pastures, the Visual Absorption Capacity is high since the ROW will not be as evident once the ground rehabilitates. There will be little difference between the grassy vegetation where the disturbance will occur and the adjacent lands within tree years of project completion. The proposed line travels entirely within the VQO of “Modification”.

The proposed pipeline ROW will include NFSR 704 from private land to the north side of Condemn It Park. Along this piece of NFSR 704, views of the pipeline disturbance will be evident particularly during construction but much less evident within three years from final construction. The disturbance will be within the immediate foreground and highly visible for the approximately 2 miles during a very short duration if one is driving down road 704. This stretch of pipeline has a VQO of “Modification”.

The proposed pipeline travels from private land to the NW side of Condemn It Park. Along this piece of NFSR 704, views of the pipeline disturbance will be evident particularly during construction but much less evident within three years from final construction. The proposed pipeline then heads north east into the valley bottom, approximately down the topographic fall line crossing West Muddy Creek. It continues in a northeasterly direction crossing Sheep Creek and then paralleling Sheep Creek northward to intersect the existing Ragged Mountain Pipeline in T11S, R90W, Section 8 near the junction of NFSR 851 and 851.1a.

The Ault to Sheep Park jeep road section travels from private land in Sheep Park through to the south side of Ault reservoir along NFSR 849.1B1 placing the pipeline within the road prism. Once the pipeline passes Ault reservoir, it travels cross country and connects with an existing well pad and the Hotchkiss pipeline on the Hughes private property.

The Landscape Character of the area surrounding proposed action will diminish in scenic value because disturbance of the natural resources, constructed features, and human presence within the visible landscape will increase, particularly in the short term during construction. Over time, much of the natural disturbance will blend back to a naturalized state but the few constructed features associated with the pipeline that remain, will still be seen. Although all of the constructed features (i.e. pigging facilities and metering stations) will be placed on private property, these constructed features might be visible from roads on National Forest. Private adjacent land uses do affect the overall character of the landscape. The proposed area has the ability to absorb the proposed disturbance due to its vegetation type and its multiple low foothills without too much loss to the landscape character or its scenic integrity.

As stated before, constructed features associated with the proposed action will be placed on private lands. However, views into the private lands from roads 704 and 851 will create an overall negative effect. Users will not be able to distinguish where boundary lines start and end. They view the landscape as a whole ecosystem, not parcels of land. In light of the view-shed context that users will be seeing the scenery and hearing the natural landscape, the VQOs will still be met, but the Landscape Character will be diminished

Cumulative Effects

Within the area, past and current oil & gas construction and their associated structures, as well as timber harvests are evident and detract from the visual landscape but do not dominate the landscape. Current water facilities, livestock grazing and their associated grazing facilities are an accepted part of the cultural landscape. Although the additional proposed Sheep pipeline further detracts from the visual landscape, the cumulative effects will not have difficulty meeting its VQO of “Modification”.

3.4 TRANSPORTATION

3.4.1 Introduction

The Transportation section discusses management direction, current conditions, and environmental consequences of the proposed alternatives for the SGGS construction project on the existing transportation system and its users. This section also includes analysis of routes to be used for access to the project area, current conditions of these routes, and general recommendations for upgrades and improvements to project area roads.

3.4.2 Regulatory Framework

GMUG LMP Management Goals

The LMP management goals for transportation are summarized below:

- A minimum road system will be designed to meet the goals of the project. Emphasis will be placed on utilizing the current road system, minimizing new construction, and using temporary roads when feasible and decommission/rehabilitation of disturbed areas.
- Where required, short-term and long term roads would be constructed or reconstructed to the standard necessary to accommodate gas pipeline construction traffic with minimum long term impact to the adjacent resources.

Desired Future Condition of the Forest

The LMP include descriptions of the desired future condition of the Forest resulting from plan implementation. The following conditions are related to this project and the transportation system:

- A safe, functional, and environmentally sound transportation system.
- Substandard conditions and design will be improved to accommodate use and safety features.
- Any road construction would be coordinated with other permitted resource activities.
- Use of the Forest transportation system will be defined in a Road Use Permit.
- Some roads may be decommissioned upon completion of the project if they are no loner needed.

Travel Management Direction

The regulations regarding travel management on National Forest System lands related to vehicle use, including off-highway vehicles authorizes the Forest Service to control the use on roads, trails, and areas open to vehicles by vehicle class and time of year. These regulations also authorize the Forest Service to require users to make improvements to roads prior to their use in order to accommodate the anticipated traffic. For this project, travel management and vehicle use will be accomplished through SUA and Road Use Permits (RUP). Traffic related to this project will use only those travel routes specifically designated in the RUP or SUA. All other routes and areas are closed to project related vehicle use under *Title 16 USC; 36 Code of Federal Regulations.*

3.4.3 Affected Environment

The transportation analysis area is composed of the existing National Forest System Roads (NFSR) proposed for access to the SGGS. The project area is that part of the Gunnison National Forest, Paonia Ranger District, north and west of State Highway 133, south of NFSR 265, and east of NFSR 704. The routes requested, for access to the project area, total approximately 21 miles of Forest Roads and approximately 5 miles of County Road 265.

On the GMUG, road construction associated with timber harvest continued through the 1990s. The past and on-going management resulted in the existing system and non-system roads in the project area. A number of timber harvests have occurred in the Hubbard and Muddy Creek drainages.

The remainder of the transportation system generally developed as a result of gas development, grazing, water development, and other resource management operations with recreation use and impacts continuing to increase in importance and influence.

National Forest System Roads

System roads were designed using the AASHTO guidelines, constructed for National Forest visitor and commercial user access and are maintained for long-term vehicle use. The system roads in the project area were built to be seasonal roads used during the dry periods of the year. They were never intended to be used for all-season access and will require considerable improvement to accommodate this type of use.

Temporary roads will receive only the minimum improvement needed for structural capacity, safety and erosion control and will be decommissioned and reclaimed upon completion of the pipe line construction.

Table 23. Existing NFSRs that could be used to access the project area (see Appendix M for a map):

Road #/Name	Miles	Access	Service Level #	Mtc. level *	Width	Surface	Status	Traffic Counts
NFSR 265/ Buzzard Divide	6.4	Gunnison County 265	C	4	Single lane with turnouts	Crushed aggregate	Existing	118 per day at FS bdy.
NFSR 704/ Condemn It Park	6.5	NFSR 265 or pvt.	C	3	Single lane	Crushed aggregate	Existing	N/A
NFSR 851	1.7	NFSR 265 or pvt.	C	3	Single lane	Crushed aggregate	Existing	N/A
NFSR 849.1A access to Wolverton & Martin (pvt. parcels)	1.9	Pvt.	D	2	Single lane	Native	Existing	N/A
NFSR 849.1B Road Gulch	1.9	NFSR 849.1A and 849.1B1	D	2	Single lane	Native	Existing	N/A
NFSR 849.1B1 Ault to Sheep Pk.	2.5	Pvt. or 849.1B	D	2	Single lane	Native	Existing	N/A
Temp. Rd. from Martin to pipeline ROW (approx. 267')	0.05		N/A	N/A			To be constructed	
Total	20.95							

Traffic Service Level: Describes the significant characteristics and operating conditions of a road (FSH 7709.56 Ch. 4).

Level A – Free flowing, mixed traffic; stable, smooth surface; provides safe service to all traffic.

Level B – Congested during heavy traffic, slower speeds and periodic dust; accommodates any legal-sized load or vehicle.

Level C – Interrupted traffic flow, limited passing facilities, may not accommodate some vehicles. Low design speeds. Unstable surface under certain traffic or weather.

Level D – Traffic flow is slow and may be blocked by management activities. Two-way traffic is difficult, backing may be required. Rough and irregular surface. Accommodates high clearance vehicles. Single purpose facility

* **Maintenance Levels** - Maintenance levels define the level of service provided by, and maintenance required for, a specific road FSH 7709.58

Level 1 – Assigned to intermittent service roads during the time they are closed to vehicular traffic. The closure period must exceed 1 year. Basic custodial maintenance is performed to keep damage to adjacent resources to an acceptable level and to perpetuate the road to facilitate future management activities. Roads receiving maintenance level 1 may be of any type, class, or construction standard, and may be managed at any other maintenance level while they are open for traffic. While being maintained at level 1, they are closed to vehicular traffic, but may be open and suitable for non-motorized uses.

Level 2 – Assigned to roads open for use by high clearance vehicles. Passenger car traffic is not a consideration. Traffic is normally minor, usually consisting of one or a combination of administrative, permitted, dispersed recreation, or specialized uses. Log haul may occur at this level.

Level 3 – Assigned to roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities. Roads in this maintenance level are typically low speed, single lane with turnouts and spot surfacing. Some roads may be fully surface with either native or processed material.

Level 4 – Assigned to roads that provide a moderate degree of user comfort and convenience at moderate traffic speeds. Most roads are double lane and aggregate surfaced. However, some roads may be single lane. Some roads may be paved and/or dust abated.

Level 5 – Assigned to roads that provide a high degree of user comfort and convenience. These roads are normally double lane, paved facilities. Some may be aggregate surfaced and dust abated.

Total length of road segments, on the Forest, is 21 miles .

3.4.4 Environmental Consequences

The Proposed Action uses a combination of existing state, county, and FS roads to gain access to the pipeline project area for construction, operations and maintenance. Existing roads and at least one temporary road will be used to access the project on the Forest. The SGGS Map (Appendix M) displays the transportation system for the project area.

3.4.4.1 No Action Alternative

Under the No Action alternative, current management plans would continue to guide management of the roads in the project area. The proposed pipeline would not be built and there would be no changes to the current project area transportation system, except as authorized for other uses and projects. The NFSR would be routinely maintained in a condition to safety accommodate intended use and in accordance with maintenance criteria documented in the road management objectives commensurate with budget and use, or by entities under road use permit. In addition, there may be some reconstruction or decommissioning activities funded by other sources taking place in the project area. On going public and permitted road uses would continue.

3.4.4.2 Proposed Action

The Proposed Action involves use of the National Forest System Roads listed below. In addition State Highway 133 and Gunnison County Road 265 will be used for access to the forest roads.

Improvements to the road system, to accommodate use, are only addressed relating to Forest Service Roads.

Gunnison Energy Corp. must provide specific improvement and use parameters using the AASHTO design criteria (Guideline for geometric design of very low volume roads (2001 edition) and Design guide for pavement structures (1993 edition)) or as approved by Forest Engineer, to be designed by a Colorado Registered Professional Civil Engineer, and submitted for Forest Service approval for each road segment. The Engineer's recommendations must be approved and implemented before any project related traffic may use that part of the Forest Road system. During the course of the project the Forest Service will provide oversight of road improvement activities and continued monitoring of road conditions resulting from project related traffic.

See Appendix E for size and type of vehicles, how many trips, and loads projected over access roads.

Effects common to all routes

Short term effects are increased traffic loading and potential increased sediment movement due to soil disturbance from maintenance or reconstruction. The increased traffic volume of oversize and heavy vehicles will cause a rapid degrading (1 semi pass equals the degradation of approximately 10,000 passenger vehicles) of the road surface which will have a negative effect on the comfort and safety level of all road users. Additionally, there would be an increase in the probability and severity of accidents associated with this increase in traffic volume and different vehicle use, particularly the mixing of heavy commercial vehicle traffic with recreational and OHV users.

Short-term effects will be substantial to recreation activities, local users, private land access and wildlife. Some visitors would choose to accept minor delays, speed reduction and inconveniences associate with project-related construction activity, other users may temporarily choose to recreate on other parts of the GMUG. Local users and private landowners using the roads for access and hauling livestock to private lands early and late season may encounter delays in the short term. Long-term effects should remain minimal, including the 1-2 pickup trucks per day increase associated with pipeline maintenance, upkeep and servicing activity.

NFSR #265

To accommodate the pipeline traffic, projected by GEC, NFSR 265 needs some specific improvement recommendations. Parts of this road, south of the NFSR 844 junction, are structurally inadequate to support the project related traffic. This road was originally designed as a seasonal road to be used only during the summer. Over the last 5 years other permittees have tried to use portions of this road during the fall, winter, and spring seasons. They have found that it is generally unsuitable for heavy traffic use during saturated conditions without causing extensive road damage. Some reconstruction work to provide surface stabilization, sight distance improvement in curves, and drainage restoration may be needed to accommodate the projected traffic. Specific maintenance and repair work will be specified after the Professional Engineers' recommendations are reviewed by the Forest Service. Portions of NFSR 265 may, with presently unknown locations and timeframes, be closed partially or completely during road reconstruction. Local traffic should expect some inconvenience and possibly long delays. GEC will work with local landowners to accommodate scheduling and emergencies.

Traffic north of NFSR 844 junction is expected to be light and the road is in better shape than the piece to the south.

Peak traffic, usually at the beginning of the season, would entail trucks hauling pipe (6 trips per day), logging trucks (2 trips per day) and associated crew/maintenance traffic (5 trips per day) expected to be 13 trips per day for a short period of time. Most of the pipe would be stored on private lands at the north and east ends of the pipeline. Pipe would be transferred from these private locations to the staging area on NFS lands when pipeline work on NFSR 704 would begin.

Based on the estimated traffic volume, provided by GEC (Appendix E) the average project-related traffic would add up to 9 or more round trips per day, representing a 3%

increase in existing traffic on NFSR 265, the only road with a traffic counter. Gunnison County maintains a traffic counter at the beginning of County Road 265. Last year (2006) was the first year Gunnison County had a year around traffic count of 281 average trips per day. The average 2005 & 2006 traffic counts at the NF boundary, approximately 5 miles north of the County counter, are 63 between May-June, 87 for July-August and 104 between September-October or this equates to a seasonal average daily trip count of 118 for 2006. The FS counter does not differentiate vehicle weight or size. It is assumed that the pipe transport and logging associated traffic would be heavier than the average vehicle weight.

Under the Proposed Action, it is assumed that County Road 265 would be the main access with 25% of the traffic accessing the project from private lands before the forest boundary equating to an average increase of 2.3 trips per day. NFSR 265 would carry 75% of the construction equipment, supplies, and traffic need for the project, equating to an average increase of 6.7 trips per day. Short term affects from construction traffic could last for up to 10 months in 2 – 5 month construction periods over 2 seasons. The traffic impacts associated with long term maintenance and operations traffic would be light vehicles during summer and over snow vehicles during winter. However, this traffic would continue for the life of the pipeline (more than 20 years.)

Traffic on NFSR 265 is projected to increase as commercial use continues to grow in this area. For safety reasons due to increased traffic during construction, consideration, there would be 2 options:

- Improving this route to a 2 lane roadway template would include reconstruction to a double lane road with needed curve widening, sight distance improvements, and adequate structural section will allow the roadway to safely accommodate oversized pipeline construction, operation and maintenance traffic as well as projected increases in recreation traffic.

- The alternative is a single lane road with inter-visible turnouts not to exceed 1000 foot intervals along the length of the route. Overall, a 2 lane roadway will provide for greatly improved safety to the traveling public, especially when encountering oversized pipeline equipment traffic.

These improvements will increase traditional uses in the area over time and will potentially increase commercial use.

Long-term impacts to recreation activities and local users should remain minimal, except for the increase in commercial traffic associated with pipeline maintenance, upkeep and servicing activity. This increased traffic has the potential to create challenges with motorized mixed use currently allowed on this road. Additionally, it could have a corresponding increase in the probability and severity of accidents associated with the increase in traffic volume and different vehicle use, particularly the mixing of commercial vehicle traffic with snowmobile and OHV users.

Positive impacts may be benefits such as improved visibility, proper drainage due to increased maintenance, reduction in accidents, and a more stable road as a result of upgrading.

There are several cattleguards on this road. Prior to hauling any pipeline construction equipment, cattleguards not up to State legal load limits, will not be crossed with heavy equipment and will be replaced prior to use to safely support project and public traffic.

NFSR #851 and #851.1A

NFSR 851 was reconstructed in 2001, from the intersection with 265 to the 851.1A intersection, after being used for a prior pipeline construction project. In its current condition very little needs to be done, to this segment, to accommodate the proposed construction related traffic.

This route along with NFSR 849.1A, .1B & .1B1 may carry up to 66% of the construction traffic depending on the proximity of construction activity to the location of the road. This increase in use may require some resurfacing and shaping after the project is completed. Currently the primary uses are natural gas production, outfitting permittees, forest access for hunting and other recreational activities, and access to private property. There is currently 1 household that are year-around residents. They use this road for daily access. GEC would be required to work with landowners at the end of NFSR 851 & .1A to accommodate their mostly pickup truck or passenger vehicle access.

This route is also expected to be one of the main access routes for operations and maintenance traffic after the pipeline is completed and operational. This could add 1-2 pickup truck trips per day to the traffic on this road year-around.

GEC, as RMP permittee, the gas well owner and the year-around landowner have RUP's to use these roads.

NFSR #704

During project construction, this NFSR could be used for up to (25%) of the project traffic to haul in pipeline equipment and store materials at their proposed staging area on NFS lands. Its present condition is not structurally adequate to support the project related traffic because the road is unstable when wet, ruts easily, has low subsurface strength and lacks stability to support commercial vehicles. It is not safe when wet to accommodate pipeline construction equipment, and therefore will need additional surfacing to support pipeline operations. The traveled way is currently unsuitable for commercial use.

Currently the primary uses are range permittees, forest access for hunting and other recreational activities and access to private property.

For operations and maintenance over the long term, NFSR 704 would see only a slight increase in traffic during the summer months. The traffic associated with long term maintenance and operations traffic would be light vehicles when snow has melted and emergency use by over snow vehicles during winter. However, this traffic would continue for the life of the pipeline (more than 20 years.)

Portions of NFSR 704, with presently unknown locations and timeframes, may be closed partially or completely during road reconstruction or may experience some delays.

Positive impacts may be benefits such as improved alignment and visibility, proper drainage due to increased maintenance, reduction in accidents, and a more stable road as a result of upgrading.

There are several cattleguards on this road. Prior to hauling any pipeline construction equipment, cattleguards not up to State legal load limits will not be crossed with heavy equipment and will be replaced prior to use to safely support project and public traffic.

NFSR #849.1A, .1B and .1B1

During project construction, these NFSR's along with 851 could be used for up to 66% of the project traffic (Appendix E) to haul in pipeline equipment and materials. Their present condition is not structurally adequate to support the project related traffic because the road is unstable when wet, ruts easily, has low subsurface strength and lacks stability to support commercial vehicles. It is not safe when wet to accommodate pipeline construction equipment, and therefore will need additional surfacing to support pipeline operations. The traveled way west of Ault reservoir is unsuitable for any full size traffic use prior to improvements.

For operations and maintenance over the long term, NFSR 849.1A, 1B, and .1B1 would see only a slight increase in traffic during the summer months. The traffic associated with long term maintenance and operations traffic would be 1-2 pickup trucks during summer and over snow vehicles during winter.

Currently the primary uses are range permittees, forest access for hunting and other recreational activities and access to private property.

Portions of NFSR 849.1A, .1B and .1B1 may, with presently unknown locations and timeframes, be closed partially or completely during road reconstruction or local traffic may experience some delays.

Positive impacts may be benefits such as improved visibility, proper drainage due to increased maintenance, reduction in accidents, more stable roads as a result of upgrading.

COUNTY ROAD 265

While the pipeline would be under construction, County Road 265 would be the main access for the project and Gunnison County has requirements for commercial use of County roads. The SUA requires GEC to "comply with all applicable Federal, State, and local laws, regulations and standards…". No assumptions are made as to the condition of County Road 265 or to what the County may require and it is GEC's responsibility to comply with County requirements.

Cumulative Effects

The cumulative effects analysis is defined as past, ongoing and reasonably foreseeable future actions in the project area that would affect the existing transportation system, see Appendix G. The area chosen for the cumulative effects analysis is the transportation system used to access the project area, NFSR 704 north to NFSR 265 southeast to County Road 265 to the junction of NFSR 849 then west to the private land boundary and south to West Muddy Creek by the Wolverton parcel, then west to the junction of private property with NFSR 704.

Motorists would benefit from the improvements in road surface, drainage or geometry put in place as a part of the Proposed Action. Road improvements would affect the traditional uses in the area and over time would cause an increase in traffic from recreational use in addition to the expected commercial uses. Improvements, made as a part of the Proposed Action would reduce the FS maintenance burdens of the affected road segments and GEC would have in the on-going maintenance, under a RUP, during the life of the project. Under the RUP GEC would also comply with seasonal road closures and restrictions during the spring thaw when muddy conditions are present and roads are most vulnerable to rutting and damage. Maintenance/repair/reconstruction activities, authorized under the RUP and SUP, will be performed by the commercial users for the roads they use.

Natural gas development and exploration activities are expected to increase in the foreseeable future as long as the demand and the market conditions are favorable for the gas industry. Even with no further development or expansion, existing gas production facilities will be utilized until the gas field is exhausted which by most estimates is over 20 years. As the number of gas wells and production activities increase the need for all-season access is becoming more important to the production companies. This demand will require improvements to the roadway to accommodate commercial traffic during wet periods. All-season access will also impact winter recreation by changing existing snowmobile patterns and may require the construction of a new snowmobile route through the area. This will also have wildlife impacts by increasing the amount of traffic during sensitive time periods.

The Bull Mountain Pipeline proposal (See Appendix G) would use Gunnison County road 265, and NFSR 265 to the junction with NFSR 844. While it is not anticipated, the Bull Mountain Pipeline and SGGS projects may overlap their construction timelines. This would cause more delays as both require roadwork and heavy or large equipment transport.

Traffic counts are projected to continue to increase as commercial uses continue to grow in this area. This, in addition to increased recreational travel would warrant consideration to improving the routes. Any additional changes would be due to other factors such as increased population, or subdivision of private in-holdings (none pending).

The effects of private land development within the Forest Boundaries may also play a significant role in further development of the Forest transportation system. As new residences are built and the urban interface increases the demand for improved roads and year-around access will increase.

3.5 RANGE

3.5.1 Introduction

The range resources section will discuss management directions, current conditions and environmental consequences of the alternatives on the range resource, which also includes the noxious weed discussion. The analysis area for the SGGS proposal includes Condemn-it Park, Sheep Park S&G and Henderson-West Muddy grazing allotments, see Appendix M.

3.5.2 Regulatory Framework

LMP objectives for Range Resource Management include:

1. Treat noxious weeds
2. Protection of the basic soil, vegetation and water resources
3. Provide for multiple uses on the land

Additional direction can be found in FSM 2200 and FSH 2209.11, 13 and 14.

3.5.3 Affected Environment

The proposed SGGS pipeline will cross portions of three grazing allotments on the Paonia R.D. Those allotments are shown in Appendix M and below:

Table 24. Allotments and Livestock Numbers

Allotment Name:	Livestock Numbers and dates on NF:	Head Months /AUMs
Condemn-it Park Sheep & Goat (S&G) (#876)	1000 ewe/lamb sheep 6/15 – 9/20.	3302 HMs/ 660AUMs
Sheep Park Sheep & Goat (S&G) (#878)	920 ewe/lamb sheep 6/21 – 9/20.	2783 HMs/ 557AUMs
Henderson-West Muddy Cattle & Sheep (C&S) (#806)	135 Cow/calf pairs 6/16-10/15 40 Cow/calf pairs 6/16-10/15 40 Cow/calf pairs 6/16-10/15 37 Cow/calf pairs 6/16-10/15 65 Cow/calf pairs 6/16-10/15 100 Cow/calf pairs 6/16-10/15 246 Cow/calf pairs 6/16-10/15 663 Cow/calf pairs 6/16-10/15	540HMs/ 713 HMs/ 160 AUMs/ 211 AUMs 160 HMs/ 211 AUMs 148 HMs/ 195 AUMs 260 HMs/ 343 AUMs 400 HMs/ 528 AUMs 948 HMs/ 1,299 AUMs 2,652 HMs/ 3,501 AUMs

These allotments are grazed using rotational strategies. Grazing plans are developed every spring. On sheep allotments the rotations are based on sheep camps. The Condemn-it Park allotment has 14 different sheep camps; the Sheep Park allotment has 11 sheep camps and the Henderson –West Muddy has 10 pastures. Sheep are grazed in the vicinity of each sheep camp and moved to the next sheep camp/area. Grazing use on both allotments varies from 4 to 14 days per sheep camp/area. The sheep graze each area one time during the season. The proposed pipeline crosses one of ten pastures on the Henderson-West Muddy allotment. This pasture, South Henderson is grazed alternately in early summer, 6/16-7/05, or in early fall 9/24-10/10. Additional information for these allotments is contained within the allotment management plans.

Range improvements within the analysis area include fences, cattle guards, water developments. There are 9 fences associated with private lands and one on NFSR 849.1B, 2 cattleguards on NFSR 704, 4 water developments on the Sheep segment, 3 water developments on the Ault segment and 2 water developments adjacent to NFSR 849.1B. The improvements can be located in Appendix M.

There are 41 existing populations of Canada thistle (Cirsium arvense) and musk thistle (Carduus nutans) along the proposed pipeline ROW (SWCA, 2006) Environmental Consultants in project files). Also found were two noxious weed species from Colorado state list C, common burdock (Arctium minus) and field bindweed (Convolvulus arvensis). (SWCA, 2006). Most of the noxious weed populations were concentrated in or near disturbed areas such as roads or trails.

3.5.4 Environmental Consequences

3.5.4.1 No Action Alternative

The no action alternative will continue current management activities and will not impart activities that would affect range resources.

Noxious weeds are spread through biological dispersal methods as well as by ongoing human activities such as hunting, grazing, and other uses of the forest. Therefore, noxious weeds, including current species and possible new introductions, could potentially continue to spread and increase the number of acres infested, under the No Action Alternative. However, there is no reason to believe that the No Action alternative would result in any considerable increases in acres of noxious weeds in either the short or long-term

3.5.4.2 Proposed Action

Forage loss

The construction of the pipeline will result in a temporary loss of forage. The construction of the pipeline will cause a temporary loss of approximately 80 acres of forage on NFS lands. The construction of the proposed pipeline right-of-way will result in the loss of approximately 58 animal-unit-months (AUMs) of grazing until adequate reclamation and revegetation occurs. This is approximately 7% of the total AUMs on allotments, the two allotments most affected by the pipeline. This forage loss should be temporary. The pipeline right-of-way and staging area should be reclaimed and revegetated (POD in project file). Immediately following reclamation, grass and forb production should increase slightly due to the reduction of shrubs in the reclaimed areas.

Range Improvements

There are a number of range improvements located along the proposed pipeline route see map in Appendix M and Table 25 below for details. These improvements are critical for managing the grazing on the affected allotments.

Table 25. Range Improvements Affected by the Proposed Pipeline

Allotment	Improvement	Description of Improvement	Effect on Improvement
Condemn-it Park S&G	876-P	Willow Creek stock-pond	Pipeline ROW will be south of this stock pond. Potential for sedimentation and preventing livestock access to water. Design features will prevent any impact.
Condemn-it Park S&G	876-P30	Stock-pond	Pipeline ROW will be north of this stock-pond. Potential sedimentation and preventing livestock access to water. Design features will prevent any impact.
Sheep Park S&G	878-P22	Stock-pond	Pipeline ROW to the west, downhill, of this stock-pond also wetland #7. Potential loss of water (spring fed), sedimentation and preventing livestock access to water. Design features will prevent any impact.
Sheep Park S&G	878-P06	Stock-pond	Pipeline routed to the north to prevent any damage to stock-pond and wetland (#12). Potential for sedimentation, damage on the dam due to project traffic and preventing livestock access to water. Design features will prevent any impact.
Sheep Park S&G	878-P46	Stock-pond	Pipeline ROW could encroach on this stock-pond. Possible sedimentation, loss of water, preventing access to livestock, blocking access for camp restocking and emergencies. Design features will prevent any impact.
Sheep Park S&G	878-P38	Stock-pond	Adjacent to Road Gulch access. Possible sedimentation and loss of water. During Road Gulch road work make sure waterbars continue to feed pond. Design features will prevent any impact.
Sheep Park S&G	878-P21	Stock-pond	Adjacent to Road Gulch access. Possible sedimentation and loss of water. During Road Gulch road work make sure waterbars continue to feed pond. Design features will prevent any impact.
Sheep Park S&G	breached	Stock-pond	Sheep Ck. crossing (wetland #3) will have the dam removed and Sheep Creek will be rehabilitated. Design features will prevent any impact.
Henderson-West Muddy C&S	806-P24	Stock-pond	Pipeline ROW uphill and to the east of this stockpond. Possible sedimentation. Design features will prevent any impact.

Water Supply

The loss of spring flows (878-P22), runoff water and water holding capacity to ponds and spring developments are additional potential impact to range improvements. Any damaged water developments should be replaced with a comparable functional water development.

Grazing Management & Operations

The proposed project has the potential to affect grazing management on the Condemn-it Park, Sheep Park and Henderson West Muddy allotments. Traffic associated with drilling activities is the primary cause. There are at least 9 fences between private land and National Forest that will be crossed by the pipeline where difficulties with leaving gates open may occur. When gates are left open, this often results in livestock drifting into the wrong pasture/allotment. Gates will always remain closed unless authorized by the Authorized Officer. Fences will be kept in good repair. Where the ROW crosses a fenceline, work with the permittee and/or the private landowners to prevent livestock from crossing this gap. Electric fencing, or some other type of approved fencing, will be in place at these locations when the crew is not working onsite and at night.

Some portions of the pipeline construction will affect access to camps needed for livestock management (Table 26). The road along the eastern portion of the pipeline, from Ault Reservoir to Sheep Park, is used to set up three different sheep camps (Appendix M). If construction along this road closes access, then 3 of the 11 camps can not be used. The construction could also limit access to other sheep camps located in the southern part of the allotment.

Table 26. Allotment Sheep Camps and Effect on these Camps.

Allotment	Camp Site	Effect on Camps
Condemn-it Park S&G	Bottom of Road Gulch Sheep Camp	Adjacent to NFSR #849.1a. Potential disturbance due to road work and traffic.
Condemn-it Park S&G	Poison Park Sheep Camp	Adjacent to NFSR #704. Potential disturbance due to road work and traffic.
Condemn-it Park S&G	North Condemn-it Park Sheep Camp	Adjacent to NFSR #704. Potential disturbance due to road work and traffic.
Condemn-it Park S&G	Road #1 Sheep Camp	Adjacent to NFSR #704. Potential disturbance due to road work and traffic.

Allotment	Camp Site	Effect on Camps
Sheep Park S&G	Ault Reservoir Sheep Camp	Uphill from pipeline ROW. Potential disturbance due to road work, construction, traffic and blocking access.
Sheep Park S&G	Above Ault Reservoir Sheep Camp	Downhill from pipeline ROW. Potential disturbance due to road work, construction, traffic and blocking access.
Sheep Park S&G	East Park Sheep Camp	Downhill from pipeline ROW. Potential disturbance due to road work, construction, traffic and blocking access.
Henderson-West Muddy C&S	North Park Sheep Camp	Uphill from pipeline ROW. Potential disturbance due to road work, construction, traffic and blocking access.

Construction activities often have negative effects on livestock distribution. The sounds and commotion of the activities often frighten livestock within an area where they can see and/or hear the activities. This results in livestock avoiding an area larger than the area of actual disturbance.

Livestock could also suffer physical injury or death due to encounters with equipment or pipeline trenches. Either could result in a financial loss for the permittee. During construction, reasonable levels of protection would be given to livestock in order to avoid physical injury or death. Safety procedures are described in detail in the POD (project file). Because of the design criteria and POD there are not expected to be any likely significant impacts to range resources.

Once shrubs begin to revegetate the site forage production should return to pre-disturbance levels. Prior to shrub re-establishment, grass and forbs production should increase in the revegetated area. There would also be easier access to sheep camps as the roads would be in better shape. NFSR 849.1A, .1B, and .1B1 are currently maintained by the permittee under the Range Permit.

Noxious Weeds

Ground-disturbing activities create opportunities for infestations of noxious weeds. The sources of these weed seeds can be air-born, vehicle-born or transported by wildlife and livestock. Any area where the existing vegetation is removed and bare soil is left exposed creates a potential site for noxious weed infestations. Due to 131 acres of ground disturbance there may be an increase in noxious weeds resulting in adverse effects on rangeland resources. The proposed action contains design features and measures in the POD that would limit and/or stop the spread of weeds. Measures, such as washing vehicles, using weed free mulch, weed free materials, controlling existing populations and reseeding/reclamation should limit noxious weed spread in the project area. The SUA would state that the "[h]older shall take all reasonable precautions to prevent the introduction, establishment, and spread of noxious weeds on lands covered by this authorization and adjacent thereto."

Cumulative Effects

A comprehensive list of potentially cumulative actions considered for this project is presented in Appendix G The area considered for this project is within the Henderson/West Muddy C & S, Sheep Park S & G and Condemn-it Park S & G allotments within the road boundaries identified in the Allotment improvement map in Appendix M.

Several past, present and reasonably foreseeable future actions are common to both public and private lands including recreational use (motorized and non-motorized), firewood cutting, road maintenance and livestock grazing. All of these activities have the potential to contribute to the spread of noxious weeds and to degrade range conditions. But, through analysis before a proposed action is implemented, through the compliance with BMPs and through project design features there should be no cumulative significant impacts to the environment due to the actions of this project.

Past, ongoing and foreseeable future activities are not known to have, or potentially have an significant effects on rangeland resources or noxious weeds. The POD outlines design features and mitigation measures which would reduce and/or eliminate potential contributions to cumulative effects by this Proposed Action.

Short term

Direct effects would be reduced availability of forage and access to water by livestock and camps by permittees, potential damage to fences, cattleguards, existing water developments, livestock injury or death and the spread of noxious weeds.

Long term

The long term direct effects would be to increase the availability forage for grazing and increased accessibility to allotments/pastures/improvements due to road maintenance.

Noxious weeds would be decreased along pipeline route and roadways due to SUA noxious weed clause compliance.

3.6 AIR QUALITY

3.6.1 Introduction

Land management and development activities both on and off federally managed lands can potentially affect air quality on these lands. Air quality effects are mobile and can be transported over long distances, with a potential to contribute to impacts over a large area. Air pollutants of concern include fine particulate matter, nitrogen oxides, sulfates, volatile organic carbons, and carbon monoxide. Elevated concentrations of these pollutants can adversely impact human health, reduce visibility, lead to acidic deposition in sensitive, high-elevation lakes and aid in the formation of ground level ozone.

Local emission sources of these pollutants on and off federally managed lands include highway vehicles, wildland fires, slash burning, wood burning stoves, and industrial facilities, including those associated with oil and gas exploration and development. It is these latter emission sources that currently dominate air quality concerns in the Western Slope Region of Colorado (CDPHE 2005).

3.6.2 Methodology

No air dispersion modeling or visibility modeling was done specific to this proposed action (SGGS). To the extent appropriate, the air quality technical analysis for the Bull Mountain pipeline completed in March 2006 is used to estimate air related effects of this proposed action. The Bull Mountain pipeline is yet to be approved or constructed but is proposed to be located 10 to 30 miles north. Unlike the Bull Mountain pipeline, this proposed action includes no compressor station; as an existing permitted station has been determine to be adequate. Even with the modeling done for stationary compressor emissions associated with the Bull Mountain pipeline project indications are that implementation would not directly result in an exceedance of National Ambient Air Quality Standards or Colorado Ambient Air Quality Standards nor would it adversely impact visibility in nearby Class I wilderness areas

Emissions for construction equipment were based on type and quantity of equipment, associated horsepower, a percent load factor assumed (fraction of available power), and an emission rate for each criteria pollutant (grams per horsepower-hour). Load factors were referenced from the EPA Report No. NR-005c, revised April 2004; and emission factors from published EPA documents (EPA420-P-04-009).

Fugitive emissions from material handling were calculated from length of pipeline, topsoil removal depths from public versus private land, and trenching requirements. Construction emissions are assumed to occur for a total of 153 days along the pipeline. These emissions would generally occur within the construction corridor. Travel emissions would occur along roads leading from staging areas to the construction site and may sometimes occur outside the immediate construction zone.

3.6.3 Regulatory Framework

The Clean Air Act (1963), as amended in 1977 and 1990, mandates the establishment of national ambient air quality standards to protect human health and welfare, and prevent significant deterioration of air-quality-related values (AQRVs), and protect natural visibility in Class I Areas. In Colorado, the primary responsibility for enforcing NAAQS rests with the Colorado Department of Health.

Ambient Air Quality Standards

Congress passed the Clean Air Act (CAA) in 1960 with subsequent amendments made in 1967, 1970, 1977, and 1990. The purpose of the Act is to protect the quality of the nation’s air resources and along with human health and welfare.

Administration of the Clean Air Act (CAA), while a federal law, is a state responsibility. In Colorado, this task falls under the State's Department of Health and Environment, Air Pollution Control Division. The Act established National Ambient Air Quality Standards (NAAQS), which were generally adopted by the State of Colorado along with more stringent Colorado Ambient Air Quality Standard (CAAQS) for sulfur dioxide (SO_2, 3-hour averaging time).

The NAAQS and CAAQS define the maximum legally allowable concentration of each criteria pollutant. Criteria pollutants include carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), and particulate matter less than 10 microns (PM_{10}) and less than 2.5 microns ($PM_{2.5}$), sulfur dioxide (SO_2) and lead (Pb). The NAAQS and CAAQS are displayed in the table below. The Project Area is located within an area designated as attainment for all these criteria pollutants.

Table 27. Ambient Air Quality Standards and PSD Increments

Pollutant	Averaging Period(s)	National Ambient Air Quality Standards (NAAQS) (µg/m3)	PSD Class II Increments (µg/m3)	PSD Class I Increments (µg/m3)
SO_2	Annual	80	20	2
	24-hour	365	91	5
	3-hour	1,300 [1]	512	25
NO_2	Annual	100	25	2.5
PM_{10}	Annual	NA	17	4
	24-hour	150	30	8
$PM_{2.5}$	Annual	15	NA	NA
	24-hour	35	NA	NA
CO	8-hour	10,000	NA	NA
	1-hour	40,000	NA	NA
O_3	8-hour	235	NA	NA
	1-hour	157	NA	NA
[1]The Colorado Ambient Air Quality Standard for the 3-hour SO_2 averaging period is 700 µg/m3.				

Class I Air Quality Protection

The Clean Air Act outlines different levels or classes of air quality protection. Class I areas include areas designated as wilderness as of August 7, 1977, that are 5,000 acres or greater in size. These areas have the most stringent degree of protection from current and future air quality degradation. Within the geographic scope of analysis there are three Class I wilderness areas: Maroon Bells-Snowmass, Eagles Nest, and Flat Tops, administered by the White River N.F.; and the West Elk, administered by the Grand Mesa, Uncomphagre and Gunnison N.F.

Under the Clean Air Act, the Forest Service has ". . . an affirmative responsibility to protect the air quality- related values (including visibility) . . . "within a Class I area it manages. As part of this responsibility, the Forest Service and National Park Service monitor air quality related values (AQRV's) in several Class I areas in the vicinity of the project area. Table 28 provides representative measured visibility at two of the closest Class I areas to the project area.

Table 28 identifies the levels of acceptable change for these two areas (see USDA-FS R2 document for more info).

Table 28. Levels of Acceptable Change (LAC)*

AQRV	Concern Threshold (LAC)
Flora	10% increase in tissue chemical analysis of lichen from baseline
	decrease in pollution sensitive lichen species
Visibility	5% reduction in baseline contrast
	0.5 deciview increase from baseline
	5% increase in baseline light extinction
	5% reduction in standard visual range
Water	1 ueq/liter reduction in acid neutralizing capacity in lakes with ANC <= to 25
	10% reduction in acid neutralizing capacity in lakes with ANC>25
*from: http://www.fs.fed.us/r6/aq/natarm/r2/class1r2.htm	

The Wilderness Act (1964) directs the Forest Service to preserve and protect the natural condition of designated wilderness areas, including the intrinsic wilderness value of air quality in all Wildemess Areas. Class II wilderness areas in Colorado are given similar air quality protections under the Wilderness Act and Colorado Clean Air Act.

The Grand Canyon Visibility Transport Commission (GCVTC), created by Congress in 1991, advises the EPA on strategies for protecting visual air quality in national parks and wilderness areas on the Colorado Plateau.

The EPA's Regional Haze Regulation specifies that states must establish goals to improve visibility to natural background conditions in Class I areas.

Grand Mesa, Uncompahgre, and Gunnison National Forest's (GMUG) Land and Resource Management Plan, as amended 1991. Direction specific to air resource management states the following: "Comply with state and federal air quality standards."

Other resources can be found at FSM 2580.

3.6.4 Affected Environment

For the purpose of this analysis the geographic scope includes the North Fork of the Gunnison Watershed and those Class I and Class II Wilderness Areas which are within reasonable proximity and downwind of the project (see map). Much of this area is within the Piceance Basin which is undergoing rapid development of energy resources. Class II wilderness areas given consideration in this analysis include Collegiate Peaks, Hunter-Fryingpan, Raggeds, Holy Cross, and Mt. Massive.

On both the Grand Mesa, Uncompahgre and Gunnison N.F. and the White River N.F., current monitoring of air-quality-related values indicates very-good-to-excellent air quality in the wilderness areas managed by the forest. Monitoring parameters include visibility through the Interagency Monitoring of Protected Visual Environments (IMPROVE) program, acid deposition through the National Acid Deposition Program (NADP), and lake chemistry.

Table 29. Representative Standard Visual Range (SVR)*

Class I Area	SVR in kilometers		
	10th percentile	50 percentile	90th percentile
Maroon Bells/Snowmass Wilderness	90	155	262
West Elk Wilderness	95	190	260
*from: http://www.fs.fed.us/r6/aq/natarm/r2/class1r2.htm			

Emission inventories are compiled by the Colorado Air Pollution Control Division for each county in the State. These inventories indicate that within the general region where the proposed project is located there has been an increase of each of these air *pollutants over time. (http://www.epa.gov/air/data/geosel.html*.) This information is consistent with what one would expect as this region sees a growth in population, highway vehicle travel, and oil and gas development.

BASELINE AIR QUALITY CONDITIONS

County-wide Emissions

The table below contains the most recent (2004) reported pollutant totals for Delta, Garfield, Gunnison, Mesa, and Pitkin Counties. This table includes both mobile and stationary sources. All but volatile organic carbons (VOC) are criteria pollutants. Ozone is a secondary pollutant formed from VOC and NOx, and is not included in this table.

These data are summarized from the WRAPEDMS database (http://www.wrapair.org/forums/ef/docs.html) and maintained by the Western Regional Air Partnership (WRAP). The detailed results for each county can be found in the project record.

Table 30. 2004 Reported Emissions (tons per year) per County in Western Colorado

Pollutant	Delta	Garfield	Gunnison	Mesa	Pitkin
NOx	1,461	8,006	1,131	6,554	714
CO	14,356	36,394	13,200	49,427	8,413
PM	1,914	29,891	1,065	1,771	218
PM10	2,577	3,326	1,966	7,056	1,016
VOC	18,421	42.617	22,152	37,414	11,623
SO2	81.7	139.6	43.2	3,124.3	20.5

NAAQS and CAAQS

No ambient air quality monitoring of NAAQS and CAAQS occurs within the project area. An estimate of background concentrations was obtained from the Draft Roan Plateau Resource Management Plan Amendment/Draft Environmental Impact Statement (BLM 2004). This data, derived from ambient air measurements collected by the Colorado Air

Pollution Control Division (APCD), is considered representative of conditions in and near the project area.

The existing air quality in the five-county area appears good based on the regional monitoring data. For the most part, air pollution emission sources are limited to industrial facilities, transportation emissions along the I-70 corridor, and residential emissions in the small communities surrounding the proposed project area. The table below lists background concentrations of pollutants that have National Ambient Air Quality Standards (NAAQS), and the Colorado Air Quality Standards (CAAQS).

Table 31. Background Concentrations (μg/m3)

Pollutant	Annual	24-hour	8-hour	3-hour	1-hour	Monitoring Station Location
PM10	24	54	-	-	-	Rifle, Garfield Cnty. (1998-2000)
PM2.5	7	19	-	-	-	Grand Junction, Mesa Cnty (1999-2001)
NO2	34	-	-	-	-	Colorado Springs, El Paso Cnty (1998-2000)
CO	-	-	4,444	-	8,000	Grand Junction, Mesa Cnty (1999-2001)
SO2	11	39	-	110	-	Colorado Springs, El Paso Cnty (1998-2000)
*Background concentrations retrieved from Air Quality Assessment Report prepared for Roan Plateau Draft EIS (Trinity 2004). Values were recommended by Colorado Department of Public Health (CDPHE) based on the air quality measurements in the region.						

Visibility and Air Quality Related Value Monitoring

Visibility is monitored at two IMPROVE (Interagency Monitoring of Protected Visual Environments) sites on the WRNF. They are located on Aspen Mountain on the Aspen Ranger District and near Ripple Creek Pass on the Blanco Ranger District.

Acid deposition monitoring occurs on the WRNF through two programs. The Environmental Protection Agency operates three sites under their National Acid Deposition Program (NADP). These sites are located on Sunlight Peak and near the base of Sunlight Ski Resort on the Sopris Ranger District and near Ripple Creek Pass. Wilderness lakes are sampled each summer by the WRNF to determine baseline data and track trends in lake water chemistry.

On the GMUG NF acid deposition and lake chemistry monitoring has been occurring at one site in the Raggeds Wilderness and one site in the West Elks Wilderness since 1990. E.P.A. operates a NADP monitoring site at the Rocky Mountain Biological Lab near Crested Butte Colorado. There are no IMPROVE sites within or nearby to the project analysis area on the GMUG NF

Results of these monitoring programs indicate that baseline air quality conditions on the WRNF and GMUG NF are good to excellent. Trend analyses of NADP data indicate an increase in nitrogen deposition in western Colorado since the program's inception in 1985 (http://nadp.sws.uiuc.edu/).

CLIMATE

Wind Direction

In mountainous terrain, such as in Western Colorado, winds are generally parallel to the major mountain ranges and can be greatly influenced by temperature gradients. This tendency is noted in the available wind data. The prevailing wind direction from each monitoring station is listed in Table 32. Stations have different prevailing wind directions and there is generally no correlation amongst the monitoring stations on the east side or west side of the proposed project. However, the prevailing wind direction at each station is consistent throughout the year.

Winds in the stratosphere generally move weather and pollutants from west to east across the state. At times of the year the winds swing from out of the northwest to the southwest. This is a significant consideration as it suggests the path air pollutants and impacts, once aloft in the atmosphere, are likely to travel.

Table 32. Prevailing Wind Direction from Airport Stations in Western Colorado Data from 1992-2002. Source: Local Climatological Data Annual Summary

Airport Station	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
Rifle	S	S	W	W	W	W	W	W	W	W	S	S	West
Montrose	SE	SSE	SE	SE	SE	SE	SE	SE	SE	SE	SSE	SSE	South East
Eagle	E	E	E	W	W	WSW	E	E	E	E	E	E	East
Aspen	S	S	S	S	S	SSW	SSW	SSW	S	SSW	S	S	South
Gunnison	N	N	N	N	N	N	N	N	N	N	N	N	North
Wind direction is based on hourly data and is defined as the direction with the highest percentage of frequency. Wind direction denotes the direction from which the wind blows.													

3.6.5 Environmental Consequences

3.6.5.1 No Action Alternative

No Action Alternative results in no pipeline construction activities and no impacts to air quality. All activities currently acting on air resources in the project area would remain the same.

3.6.5.2 Proposed Action

No dispersion modeling or visibility impact modeling was conducted for estimated emissions. All emissions associated with the proposed action are considered short term and come from mobile sources. These models are designed to evaluate the effects of stationary sources and as such emissions from mobile sources are not typically analyzed using dispersion models.

Gunnison Energy Co. (GEC) provided a list of proposed equipment for pipeline construction. Construction emissions were categorized into pipeline emissions and travel emissions from mobile construction equipment, such as pickup trucks. Fugitive dust emissions from soil removal and travel on unpaved roads were included in the construction emissions. The equipment list used for this project is typical of natural gas project construction, actual equipment may vary.

No burning of right-of-way clearing slash is proposed and would be discouraged by the agency. Therefore, no emissions estimates for smoke were made.

Air quality impacts associated with pipeline construction would be short term (estimated 153 days - 5 months) due to emissions from construction related vehicle emissions and fugitive dust. For the purpose of this analysis no long term emissions were felt to be directly or indirectly connected to the proposed action. However, under the cumulative effects section some effects would be long-term and are described. Construction emissions are considered mobile sources rather than a stationary source, i.e. compressor station.

Conclusions pertaining to construction emissions are based upon those calculated for the proposed Bull Mountain Pipeline, with the exception of compressor emissions. There are no compressor stations included with this project. Compressor capability would be provided by an existing station. In comparison to the Bull Mountain pipeline this is a much smaller project. In the case of Bull Mountain – 25.5 total miles of construction and for Sheep – 10.8 miles. Since both projects would be accomplished within one operating season, plus the equipment and construction methods are virtually identical it is reasonable to conclude that the emissions would be on the order of 42% of that calculated for Bull Mountain. Should the availability of equipment and personnel result in construction occurring over two operating seasons the quantities of emissions estimated in Table 33 should not change, but rather would be redistributed over time and effects could be lessened.

Table 33. Proposed Action, Total Pipeline Construction Emissions (tons)

Criteria Pollutants	Pipeline Construction Equipment	Emissions from Travel	Earthmoving (Soil) Fugitive Emissions	Fugitive Emissions from Unpaved Roads	Total Construction Emissions
NOx	47.5	71.29	NA	NA	118.79
CO	55.1	87.8	NA	NA	142.9
PM	2.7	4.13	20.89	6.17	33.89
PM10	1.35*	2.06*	10.45*	3.09*	16.95*
VOC	1.79	2.13	NA	NA	3.92
SOx	6.89	10.3	NA	NA	17.19
Emissions listed in tons, based upon a 45% of those disclosed in the Bull Mountain Air Technical Report. *Where no data available, value considered 50% of PM tonnage as worst-case.					

One concern raised was the potential for toxic air emissions, such as hydrogen sulfide, in the event of a pipeline breach during operation. However, the pipeline would contain "raw" natural gas and the concentrations of toxic constituents would be negligible. As such, a pipeline breach could produce a flammable vapor cloud, but would not represent a toxic hazard.

Potential air quality impacts directly related to the proposed Sheep Pipeline project include fugitive dust emissions from 10.8 miles of pipeline construction due to vehicle travel and soil disturbance. It also would include vehicle and construction equipment exhaust emissions associated with construction of the pipeline. The primary emissions related to these activities include nitrogen oxides, carbon monoxide and particulates. There would also be trace emissions of sulfur dioxide and volatile organic carbons

Based upon similarities to the Bull Mountain project and conclusions reached in that analysis it is reasonable to conclude that implementation of the Sheep Pipeline would not likely result in an exceedance of any National Ambient Air Quality Standards or

Colorado Ambient Air Quality Standards nor would it adversely impact visibility in nearby Class I wilderness areas. Since the emissions are low, temporary and localized it is highly unlikely that any ambient air quality standards would be violated.

Cumulative Impacts

Cumulative air quality impacts include effects from the proposed project as well as past, present and reasonably foreseeable emissions sources. The region surrounding the project area (including Delta, Garfield, Gunnison, Mesa and Pitkin Counties) has seen and will continue to see increased air pollution emissions concurrent with increases in air pollution sources such as oil and gas development and population growth.

The Colorado Department of Public Health and Environment identifies oil and gas exploration and development as the dominant air quality concern in the Western Slope region of the State (CDPHE, 2005). Other growing emission sources are directly related to population growth such as highway and recreation vehicles. As the industry and county populations continue to expand so, too, will emissions of air pollutants such as PM, NOx, CO, and VOC. While the proposed project, by itself, is a relatively small contributor to air pollution emissions, it adds to the cumulative impacts associated with this growth.

While not a part of this project, the Ragged Mountain Compressor Station, located on National Forest land, was recently issued a reconstruction permit by Colorado Air Pollution Control Division for enlargement. Once constructed, this facility would increase NOx by 16.7 tons/year; VOC by 5.5 tons/year and CO by 33.7 tons/year. The State has classified this source as a “minor source”.

Emissions from drill rig operations can be viewed as a secondary source, since they are not directly part of the project. It is anticipated that two additional wells may be drilled as a result of the pipeline installation.

Table 34. Connected Action Emissions

Criteria Pollutants	Drill Rig Emissions in tons (4 wells)
NOx	25.52
CO	5.5
PM10	1.82
VOC	2.0
SO2	1.68

Please refer to Appendix G for a complete listing of other past, current and foreseeable projects. Current emissions are summarized in Table 34. Emissions from individual stationary sources were provided by the Colorado Air Quality Control Division and is available in the project record.

3.7 FISHERIES

3.7.1 Introduction

A Biological Evaluation (BE) has been prepared to consider the potential effects of the proposed Sheep Gas Gathering System on Forest Service Threatened, Endangered and Sensitive (TES) aquatic species and their habitat. This section and the TES aquatic species BE was prepared in accordance with direction in FSM 2670.3 and 2672.4.

3.7.2 Regulatory Framework

The US Fish and Wildlife Service maintains a list of federally designated threatened, endangered, proposed, and candidate species that may occur within or be affected by actions occurring on the Grand Mesa, Uncompahgre, and Gunnison (GMUG) National Forest. Similarly, the Regional Forester has designated a list of sensitive species of concern that may occur within the Region 2 and may be affected by management activities associated with the Sheep Gas Gathering System. The list of Threatened, Endangered, Proposed, Candidate, and USFS Sensitive Species and Management Indicator Species considered in this analysis are located in Appendix H.

The GMUG Forest Plan specifies the use of Management Indicator Species (MIS) to evaluate the effects of proposed management activities upon fish and wildlife habitat (USFS 1991). The basic concept of Management Indicator Species is the selection of certain species found in specific habitat types to represent the habitat needs of a larger group of species requiring similar habitats. The Management Indicator Species (MIS) applicable to the Sheep Gas Gathering System is 'common trout', which include cutthroat trout, brown trout, brook trout and rainbow trout. The rationale is included in Appendix H.

GMUG FLP STANDARDS AND GUIDELINES FOR AQUATIC SPECIES

- Maintain fisheries habitat at a level which reflects and improving trend (USFS 1991, 9059 GM).

- Work toward obtaining optimal values for pool riffle ratios, pool measure and pool structure, % bank cover, % bank stability, % bank vegetation stability and % stream bottom composition. Values should approach current habitat condition indices and priorities for more intensive management should be based on these values (USFS 1991, 9060 GM).

- Analyze aquatic habitat quantity and potential based on result of macroinvertebrate sampling as it relates to their tolerance levels to environmental stress or perturbations. (USFS 1991, 9061 GM).

- Manage stream habitat to improve habitat conditions. If alternatives to management activities which cause unfavorable conditions cannot be developed, then mitigation measures would be included in project proposals (USFS 1991, 9084 GM).

- Delineate and manage habitat for Colorado River cutthroat trout as part of the State's recovery plan for the species (USFS 1991, 9076 GM).

3.7.3 Affected Environment

Table 35 lists aquatic TES and Management Indicator Species (MIS) that may occur on the Grand Mesa, Uncompahgre, and Gunnison National Forests. Table 35 also includes the rationale for extent of consideration of each species in this section. Species not present or not effected by the project will not be further discussed in this document.

Table 35. Threatened, Endangered, Sensitive and MIS Species that may occur on the GMUG National Forest.

Species	Status	Habitat	Considered	Rationale
Colorado pikeminnow (*Ptychocheilus lucius*)	Endangered	Warm, swift waters of big rivers in the Colorado River Basin.	No	No suitable habitat within the analysis area. No water depletions expected to occur. Project will have "No Effect" to this species.
Humpback chub (*Gila cypha*)	Endangered	Large river habitats in the upper Colorado River Basin and deep canyon areas of the lower basin.	No	No suitable habitat within the analysis area. No water depletions expected to occur. Project will have "No Effect" to this species.
Razorback sucker (*Xyrauchen texanus*)	Endangered	Medium to large rivers with swift turbulent waters and slow-moving backwater areas in the Colorado River Basin	No	No suitable habitat within the analysis area. No water depletions expected to occur. Project will have "No Effect" to this species.
Bonytail chub (*Gila elegans*)	Endangered	Medium to large rivers with swift turbulent waters and slow-moving backwater areas in the Colorado River Basin.	No	No suitable habitat within the analysis area. No water depletions expected to occur. Project will have "No Effect" to this species.
Bluehead sucker (*Catostomus discobolus*)	Sensitive	Rocky riffles and runs of small to large rivers, foothill areas.	Yes	Surveys have documented this species in Lower Hubbard Creek
Flannelmouth sucker (*Catostomus latipinnis*)	Sensitive	Rocky pools, runs and riffles of medium to large rivers. Less often in creeks and small rivers of Colorado River system.	Yes	Surveys have not located this species in the analysis area. Suitable habitat is present.

Species	Status	Habitat	Considered	Rationale
Roundtail chub (*Gila robusta*)	Sensitive	Rocky runs, sometimes pools, of creeks and small to large rivers, foothill areas.	Yes	Surveys have not located this species in the analysis area.
Colorado River cutthroat trout (*Oncorhynchus clarki pleuriticus*)	Sensitive	Headwater streams and lakes, Colorado and Green river systems.	Yes	Visual surveys have located this species in the analysis area. Suitable habitat present.
Mountain sucker (*Catostomus platyrhynchus*)	Sensitive	Prefer clear, cold creeks and small to medium rivers with clear rubble, gravel or sand substrate.	Yes	Surveys have documented this species in West Muddy Creek.
Common Trout (Rainbow trout, brook trout, brown trout, Colorado River cutthroat trout)	MIS	Potential habitat in most of the perennial streams on the GMUG National Forest	Yes	Surveys have documented rainbow and cutthroat trout in West Muddy Creek and Hubbard Creek

Habitat for the Colorado pikeminnow, bonytail chub, humpback chub, and razorback sucker does not occur at the proposed crossings of any streams within the project area. However, habitat is present for these species more than 30 miles downstream of the proposed crossings. Consequently, project effects to these fish species would be limited to potential water depletions as a result of hydrostatic testing. The plan of development specifies pneumatic testing will be used, which uses compressed air rather than water (project file). Thus, the proposed action should not cause water depletion, and will have "No Effect" on the endangered fish species or their habitat.

3.7.3.1 Bluehead Sucker (*Catostomus discobolus*)

Distribution and Abundance

Historically, bluehead suckers occurred in streams and rivers in the Colorado River Basin as well as in the drainages of the upper Snake, Weber, and Bear rivers. Within the Colorado River Basin, bluehead suckers are found in the Colorado, Dolores, Duchesne, Escalante, Fremont, Green, Gunnison, Price, San Juan, San Rafael, White, and Yampa rivers and numerous smaller tributaries. The bluehead sucker also occurs in the Little Colorado River drainage of the Lower Colorado River Basin. Recent work suggests that bluehead sucker populations are declining throughout their historic range. Currently, they are found in only 45 percent of their historic range in the Upper Colorado River. The reasons for this decline are most likely due to the alteration of thermal and hydrologic regimes, degradation of habitat, and interactions with non-native species (Ptacek *et al*. 2005).

Habitat Associations

Although this species sometimes occupies areas of suitable habitat in larger, low elevation, mainstem streams, it is most commonly collected in small or mid-sized tributaries of the Upper Colorado River Basin. Most reaches of the Colorado River Basin receive heavy sediment loads, high annual peak flows, and low base flows (Ptacek *et al*. 2005). Little is known about the influence of these annual events, but healthy bluehead sucker populations have persisted in habitats with a wide range of annual flows, sediment transport and sediment deposition, providing that these physical events are associated with a natural flow regime. This species has been reported to typically be found in runs or riffles with rock or gravel substrate. Juveniles have been collected from shallow riffles, backwaters and eddies with silt or gravel substrate. Although the species generally inhabits streams with cool temperatures, bluehead suckers have been found inhabiting small creeks with water temperatures as high as 28°C (Ptacek *et al.* 2005).

Bluehead suckers spawn in the spring and early summer. They are a long-lived species with maximum ages reported over 20 years in the Upper Colorado River Basin. Bluehead suckers are known to hybridize with the native flannelmouth sucker and mountain sucker, as well as the non-native white sucker (Ptacek *et al*. 2005).

Forest-wide and Project Area Surveys

Surveys have documented bluehead sucker downstream of the project area in Lower Hubbard Creek. Electrofishing surveys from 2003 indicate that bluehead sucker, white sucker, rainbow trout, brook trout, and speckled dace reside in Lower Hubbard Creek (Table 36). Reach 3 is the most upstream reach, and Reach 1 is the most downstream reach. Length and weight data (mean, minimum and maximum) indicate that at least 2 age classes of bluehead sucker are present.

Table 36. Descriptive Statistics for Sampled Fish Species in Lower Hubbard Creek, 2003. Three reaches were surveyed via single-pass electrofishing. Species sampled include: Bluehead sucker (BHS), white sucker (WHS), rainbow trout (RBT), brook trout (BKT), and speckled dace (SPD).

Species Reach 1	**Mean Length (mm)**	**Min Length (mm)**	**Max Length (mm)**	**Mean Weight (oz)**	**Min Weight (oz)**	**Max Weight (oz)**	**Count**
BHS	74.7	48.0	110.0	4.6	1.0	12.0	63.0
WHS	83.7	46.0	208.0	10.9	1.0	90.0	63.0
RBT	149.8	111.0	250.0	50.8	13.0	159.0	4.0
SPD	59.0	42.0	87.0	2.2	1.0	7.0	90.0
Reach 2							
BHS	98.4	78.0	117.0	10.7	5.0	21.0	7.0
WHS	85.0	85.0	85.0	7.0	7.0	7.0	1.0
SPD	66.7	46.0	100.0	3.7	1.0	8.0	26.0
Reach 3							
BHS	131.7	110.0	176.0	27.2	13.0	66.0	11.0
WHS	188.0	188.0	188.0	75.0	75.0	75.0	1.0
RBT	150.3	110.0	270.0	43.3	15.0	174.0	28.0
BKT	108.5	70.0	147.0	17.5	4.0	31.0	2.0
SPD	87.2	76.0	102.0	7.4	5.0	12.0	5.0

Currently, Lower Hubbard Creek is the only bluehead sucker population on the GMUG National Forest that has been documented via electrofishing. However, it has been noted that below the Forest boundary of Naturita Creek water temperatures and fish habitat conditions favor warm-water species. Bluehead and flannelmouth sucker, roundtail chub, and speckled dace comprised 92% of the estimated biomass in a reach surveyed by the Colorado Division of Wildlife (CDOW 1977b). It is suspected that a population of bluehead sucker may exist on FS lands in Naturita Creek. Additionally, CDOW has documented bluehead sucker in two reaches of the North Fork of the Gunnison River, upstream of Somerset (CDOW 1976).

3.7.3.2 Flannelmouth Sucker (*Catostomus latipinnis*)

Distribution and Abundance

Flannelmouth sucker is found throughout the Colorado River Basin, from southwestern Wyoming to southern Arizona and Sonora. It is more widespread in the upper basin than in the lower basin of California, Arizona, and Nevada (Sublette *et al.* 1990). There are possibly 84 to over 100 occurrences although it is declining or extirpated in many areas. Flannelmouth sucker are highly threatened by ongoing activities including alteration of the hydrologic and thermal characteristics of river habitats, blockage of migration routes due to dam construction, predation by and competition with non-native aquatic species, and hybridization with other species (Rees *et al.* 2005).

It was the most abundant species collected (electrofishing) in the Little Colorado River from 1989-1992. During 1991-1995 in the Little Colorado River, the population size was calculated at 1591-5214 (average 2507), plus an additional 8-136 (average 30) hybrids with *X. Texanus* (Douglas and Marsh 1998). This species is one of the few native species that persist in the lower Colorado River basin, but it has been extirpated from the Gila River Basin and the Colorado River below Lake Mead, Arizona.

Habitat Associations

Flannelmouth sucker spawn in spring and early summer in riffles, usually over a substrate of coarse gravel. Habitat includes moderate to large rivers. Seldom found in small creeks and are absent from impoundments. Flannelmouth sucker are typically found in pools and deeper runs and often in mouths of small tributaries (Rees *et al.* 2005a). They may also utilize riffles and backwaters (Sublette *et al.* 1990). Young are usually in found in shallower water than adults. Flannelmouth suckers are bottom feeders, feeding on diatoms, algae, fragments of higher plants, seeds, and benthic invertebrates (Rees *et al.* 2005a).

Forest-wide and Project Area Surveys

Surveys have not documented this species within the project area. However, it has been noted that below the Forest boundary of Naturita Creek water temperatures and fish habitat conditions favor warm-water species. Bluehead and flannelmouth sucker, roundtail chub, and speckled dace comprised 92% of the estimated biomass in a reach surveyed by the Colorado Division of Wildlife (CDOW 1977b). It is suspected that a population of flannelmouth sucker may exist on FS lands in Naturita Creek. Additionally, CDOW has documented flannelmouth sucker in the North Fork of the Gunnison River, upstream of Somerset (CDOW 1976).

3.7.3.3 Roundtail Chub (*Gila robusta*)

Distribution and Abundance

Roundtail chub historically occurred in lower elevation (below 2,300 m [7,546 ft.]) streams, including the Colorado, Dolores, Duchesne, Escalante, Green, Gunnison, Price, San Juan, San Rafael, White, and Yampa rivers (Bezzerides and Bestgen 2002). This distribution includes much of R2, but little is actually on USFS land (Rees *et al*. 2005b). Roundtail chubs are currently known from larger tributaries of the Colorado Basin from Wyoming south to Arizona and New Mexico (Sublette *et al.* 1990). Roundtail chub have been extirpated from 45 percent of their total historical habitat, especially portions of the Price, San Juan, Gunnison, and Green Rivers (Bezzerides and Bestgen 2002). Roundtail chub populations have declined due to impacts of water development projects, land use management, and interactions with non-native species (Rees *et al.* 2005b).

Habitat Associations

Roundtail chub evolved in the Colorado River Basin below an elevation of approximately 2,300 m (7,546 ft.) (Rees *et al.* 2005b). Most reaches of this system receive heavy sediment loads and high annual peak flows that contrast with low base flows (Rees *et al.* 2005b). Little is known about the specific influence of these annual events, but healthy roundtail chub populations have persisted in habitats with a wide range of annual flows, sediment transport, and even sediment deposition, providing that these physical events are associated with a natural flow regime (Rees *et al.* 2005b).

Roundtail chub occupy rocky runs, rapids, and pools of creeks and small to large rivers; also large reservoirs in the upper Colorado River system (Rees e*t al.* 2005b). Adults are associated with pools and eddies, below or adjacent to rapids and boulders, in cool to warm water mid-elevation streams and rivers. Sigler and Sigler (1996) reported that substrate in roundtail chub habitat may range from rock and gravel to silt and sand. Specific habitat associations probably vary seasonally, geographically, and ontogenetically.

Roundtail chub breed in spring and early summer as spring runoff is subsiding (Bezzerides and Bestgen 2002), often in association with submerged cover such as fallen trees and brush. Fertilized eggs are randomly scattered over gravel substrate with no prenatal care. Roundtail chub are primarily carnivorous and opportunistic; eating available aquatic and terrestrial insects, gastropods, crustaceans, fishes, and sometimes filamentous algae (Sublette *et al.* 1990)

Forest-wide and Project Area Surveys

Surveys have not documented this species within the project area. The current distribution of roundtail chub on Region 2 USFS land appears to be very limited. Presently, only the San Juan National Forest contains a documented population of roundtail chubs (Rees *et al.* 2005b); this population occurs in the Dolores River, downstream from McPhee Reservoir, Colorado. However, it has been noted that below the Forest boundary of Naturita Creek water temperatures and fish habitat conditions favor warm-water species. Bluehead and flannelmouth sucker, roundtail chub, and speckled dace comprised 92% of the estimated biomass in a reach surveyed by the Colorado Division of Wildlife (CDOW 1977b). It is suspected that a population of roundtail chub may exist on FS lands in Naturita Creek.

3.7.3.4 Colorado River Cutthroat Trout (*Oncorhynchus clarki pleuriticus*)

Distribution and Abundance

The Assessment of the Range Wide Status of CRCT conducted in 2005 concluded CRCT historically occupied approximately 21,386 miles of streams with approximately 13,615 (64% of total) of those miles occurring in Colorado. Of the 3,022 currently occupied miles, 224 occur outside of historical habitats. Thirteen percent of the historically occupied habitats are currently occupied. Additionally, 224 miles (1%) of streams currently occupied occur outside historical habitat. These streams are typically above historical barriers in stream segments not believed to have been historically occupied but still within the historical range. There are 285 conservation populations of CRCT identified. “Conservation populations” are considered only slightly hybridized (less than 10% of the characters indicate hybridization) (CRCT Task Force 2001). Amid the “conservation populations” there are also 153 “core conservation populations.” Core conservation populations have less than 1% introgression and information indicating no record of non-native stocking and no contaminating species being present (CRCT Task Force 2001). There are 132 additional conservation populations that have other attributes viewed as important to CRCT conservation. In total, these 285 conservation populations occupy 1,796 miles (8.4% of historical habitat) of habitat (Hirsch *et al.* 2005).

On the GMUG, conservation populations are known to occur in 27 watersheds and approximately 17 of the 27 populations are considered core conservation populations (James and Speas 2005). Conservation populations are restricted to approximately 96 miles of stream, with most populations occurring in tributaries of the North Fork of the Gunnison River (James and Speas 2005).

Habitat Associations

CRCT and other trout species require cool, clear water and well-vegetated streambanks for cover and bank stability. Instream cover in the form of deep pools, boulders and logs is also important. CRCT are adapted to relatively cold water and thrive at high elevations (Young 1995). Most remaining CRCT populations are fluvial or resident (Young 1995). CRCT spawn in late spring when temperature reaches about 45 °F. Spawning begins after flows have peaked in spring or early summer and ends before runoff subsides. Emergence of fry tends to occur in mid- to late summer. Most CRCT spawning on the GMUG Forest appear to occur in June and July since these fish are primarily located near headwater areas, which maintain much colder water temperatures later into the season. Eggs are laid in clean gravel beds in cool flowing water although sometimes spawning may occur in intermittent streams. Spawners may quickly return to mainstem streams after spawning or may remain in tributaries until at least mid-summer.

Based on habitat inventories of nearly 10 miles of CRCT streams on 61 reaches, GMUG fisheries biologists have summarized CRCT habitat parameters. Most CRCT streams on the GMUG lack suitable fish habitat to sustain large populations of trout species. Abundance and size of CRCT are generally limited by steep gradients, lack of spawning habitat, cold-water temperatures, pool depth and frequency, and lack of cover (Behnke 1992, Young 1995). Streams on the GMUG have gradients ranging between 1 and 7%. Generally, most of the CRCT streams are small with an average bankfull width (BFW) of 5.2m.

Spawning habitat is very limited in these headwater systems causing trout to spawn in marginal spawning areas and likely result in poor egg-to-fry survival. Spawning substrate size criteria for CRCT has been described as ranging from 2-100 mm (Young 1995; Kershner 1995; McIntyre and Reiman 1995). Pebble count samples indicate that these size classes make up about 30% of the substrate composition of CRCT streams on the GMUG. Measurements of percent fines less than 2 mm indicate that fine sediment may comprise a high percentage of typical spawning sites, particularly in lower gradient stream reaches (James, unpublished data). Pebble count data suggests substrates such as small boulders and larger comprise approximately 17% of the total substrate composition.

Literature suggests that optimum water temperatures for cutthroat trout is between 12-15°C, and mortality may occur when temperatures exceed 22°C (Dwyer and Kramer 1975, Hickman and Raleigh 1982). Based on existing temperature data, optimum water temperature requirements for cutthroat trout are generally met from June-September, however, water temperature begin to drop dramatically after September, and remain near 0°C during the months of November-March (James, unpublished data). This temperature profile likely limits growth and activity during most of the season, and may result in poor embryo survival following spawning.

Pool density and pool depth play an important role in the survival of all cutthroat trout species, particularly during low flow periods (Young 1995, Meehan 1991). Behnke (1992) has observed that adult trout generally live at depths of 0.3 m or greater in areas of slow water (0.1 m/s) juxtaposed with fast water that carry food and where protective cover is provided by boulders or logs. Pools comprised 41% of the surveyed area and 58% of the total volume during summer low flow conditions on inventoried CRCT streams. Residual pool depths greater than 0.3 meters occurred in 37% of the pools surveyed, with the majority of these occurring in larger streams. Eighty-five percent of pools have a residual pool depth of between 0.2-0.5m. The data indicate pools comprise the majority of fish habitat in most small streams, but the lack of depth may limit cutthroat trout survival during low flow conditions in late summer and during the winter.

Beaver dams play a critical role in the survival of many of these small populations of cutthroat trout, providing good summer and winter rearing habitat. Beaver dams comprised 73% of the total volume of fish habitat during summer low flow conditions.

Cover is an important feature for the survival of CRCT, and appears to be abundant in most GMUG CRCT streams. Large woody debris (LWD), boulders, and undercut banks have been described as key cover components for cutthroat trout (Giger 1972; Horan *et al.* 2000; Young unpublished data). In forested stream reaches, the average LWD density was 23 pieces per 100m. Median LWD density per pool unit was 3 pieces, suggesting that most pools offer suitable cover for CRCT.

The amount of stable bank directly relates to the amount of cover provided by undercut banks. Bank stability averaged 84% on all sampled CRCT streams. Approximately 56% of all CRCT streams have greater than 90% stable bank. Undercut banks were not frequently observed, comprising only 10% of the total streambanks sampled.

Forest-wide and Project Area Surveys

Quantitative population monitoring has been conducted on 23 of the 27 streams containing conservation populations of CRCT occurring on the GMUG. The number of adult fish (>150mm) range from a low of 32 fish in East Fork Dry Creek to a high of over 1,000 fish in Beaver Creek. Nine populations (29%) have 100 or fewer adult fish, 13 (42%) have 100-499 adult fish, zero populations have 500-1,000 fish and only one population (3%) has an estimated adult population greater that 1,000. The data indicate that the majority of conservation populations have fewer than 500 adults (71%) and largely occur in small headwater streams, ranging from 2-4 miles in length.

Generally cutthroat trout populations are composed of four to five age classes and generally range from 40-200 mm in length (Wang and Lambert unpublished report; James, unpublished data). Fish larger than 200 mm were observed in only 7% of the fish sampled, with most fish ranging between 55 and 165 mm.

In addition to population monitoring, intensive habitat inventories were completed during the 2001-2004 field seasons on nearly 10 miles of CRCT streams on 61 reaches. This data represent the best available information to date on fish habitat relations, and likely provides the GMUG with a good “cross-section” of current habitat conditions for CRCT. Several important fish habitat parameters were sampled to determine overall habitat conditions and requirements for CRCT throughout the GMUG (see habitat associations section above).

3.7.3.5 Mountain Sucker (Catostomus platyrhynchus)

The mountain sucker was recently targeted for assessment by the Species Conservation Project (SCP) because of its status as a sensitive species in R2 of the USFS. In 2006, an assessment of the mountain sucker was prepared for the R2, Species Conservation Project by L.T. Belica and N.P. Nibbelink. It addresses the status, biology, ecology, conservation, and management of the mountain sucker throughout its range, with an emphasis on R2. The following information is an excerpt from the SCP assessment.

Distribution and Abundance

Mountain sucker (*Catostomus platyrhynchus*) is found throughout much of western North America, ranging from southern Canada to Utah, and from eastern California to western South Dakota. In R2, the mountain sucker occurs throughout Wyoming and in northwestern Colorado and western South Dakota. Information regarding population trends of mountain sucker throughout its range is lacking, but the species appears to be stable in some regions while declining in others. Mountain sucker may easily be confused with the blue head sucker, especially specimens less then eight inches from small tributaries (Woodling, 1985). Misidentification and lack of information make understanding mountain sucker distribution and abundance difficult.

The main threats to the mountain sucker generally result from anthropogenic activities, with geographically isolated populations or those that previous anthropogenic activities have adversely affected being the most susceptible to extirpation. Habitat loss due to stream impoundment has been the cause of mountain sucker population declines in some drainages, while habitat degradation from increased sedimentation has also contributed to observed declines in others. Construction of passage barriers, such as dams and culverts, results in population and habitat fragmentation, leaving populations vulnerable to extirpation. Although less well understood, the introduction of non-native fishes also appears to threaten mountain sucker populations, primarily through increased predation, but also via increased competition. Hybridization may be a concern for some populations, but little is known about hybridization between mountain sucker and other sucker species found in Region 2.

Habitat Associations

Mountain sucker are most common in low gradient stream segments that consist of a mix of riffles, pools, and runs. Spawning occurs in June to August, in which they move into smaller streams and spawn over gravel riffles. During non-breeding periods, mountain sucker are usually found in deeper parts of streams with lower current velocities (Hauser 1969, Decker 1989).

Mountain sucker are associated with cover such as exposed tree root masses, undercut banks, logs, and boulders (Hauser 1969, Decker 1989, Wydoski and Wydoski 2002). Decker (1989) found that the presence of cover was the primary microhabitat factor for this species. The conditions of the water that mountain sucker inhabit range from clear to easily roiled or turbid (Smith 1966). Mountain sucker are also associated with a wide range of substrates from clay, mud, and sand, through gravel and cobble, up to boulders (Smith 1966, Hauser 1969, Decker 1989).

Daytime summer water temperatures for mountain sucker range from 10-28°C (50-82°F) and are usually between 15-23°C (59-73°F), while in the winter, temperatures may be just above freezing (Smith 1966). Mountain sucker is thought to be primarily a benthic feeder, browsing on stream bottoms for algae, small invertebrates, and organic matter (Moyle 2002).

Forest-wide and Project Area Surveys

Electrofishing surveys have documented this species within the project area in West Muddy Creek. Population estimates from three sampled reaches in West Muddy Creek indicate that mountain sucker range from 235-605 fish per mile (Table 37).

Table 37. Population Estimates for Mountain Sucker (MOS) in West Muddy Creek, 2005. Estimates based on 2-pass electrofishing for fish ≥50 mm (Jakomatic version 2.2).

SiteID	Species	Count	Population Estimate	95% Confidence Interval	Fish/Mile
WMUD2005-1	MOS	16	16.60	3.06	235
WMUD2005-2	MOS	16	23.50	29.40	376
WMUD2005-3	MOS	29	44.71	42.65	605

Descriptive statistics for all three reaches indicate that the size range for mountain sucker in West Muddy creek is between 58-121mm. This indicates at least two age classes of mountain sucker exist in West Muddy Creek (Table 38).

Table 38. Descriptive Statistics for Mountain Sucker in West Muddy Creek, 2005.

	Length (mm)	Weight (oz)
Mean	121.53	33.87
Minimum	58.00	3.00
Maximum	259.00	175.00
Count	62.00	62.00
95% Confidence Level	14.51	11.26

Other populations of mountain sucker have been documented across the GMUG. Electrofishing surveys from 2001-2005 indicate that 14 other populations of mountain sucker are known to exist on the GMUG. In particular, large populations of mountain sucker were documented in Clear Fork Muddy Creek, Dyke Creek, North Anthracite Creek, and West Fork Terror Creek.

3.7.4 Existing Condition

The Sheep Gas Gathering System occurs in several 6th level HUCs including Little Henderson Creek, Lower Hubbard Creek, and Lower West Muddy Creek. The Sheep Gas Gathering System is primarily contained in the Lower West Muddy Creek sub-watershed, which contains West Muddy Creek, Sheep Creek, and Ault Creek. The majority of the Sheep Gas Gathering System runs parallel to Sheep Creek. Streams within the project area on the GMUG National Forest flow into the North Fork Gunnison River followed by the Gunnison River.

Fish-bearing streams are located in the project area, including Lower Hubbard Creek and Lower West Muddy Creek. Electrofishing surveys from 2003 on Lower Hubbard Creek indicate the presence of speckled dace, white sucker, bluehead sucker, rainbow trout, and brook trout downstream of the project area. Currently, no population or habitat assessments exist for Lower Hubbard Creek. However, Table 39 lists the descriptive statistics for lengths and weights for all fish species sampled in the three reaches of Lower Hubbard Creek. Table 39 identifies the most upstream reach (reach 3) consisting of rainbow trout, brook trout and low numbers of suckers. Compared to the most downstream reach, there is an abundance of suckers and only a few rainbow trout. The absence of brook trout in the downstream reaches and the proliferation of suckers suggest a transitional area from cold to warmer water, with habitat that supports both cold water fish assemblages (trout) and cool water fish assemblages (suckers).

Electrofishing surveys on West Muddy Creek document brook trout (BKT), rainbow trout (RBT), mottled sculpin (MTS), mountain sucker (MOS) and speckled dace (SPD). Three reaches were surveyed in 2005. Table 39 displays the electrofishing population assessment, which indicate that West Muddy Creek supports approximately 14 adult brook trout (>75mm) per stream mile and approximately 14 adult rainbow trout (>75mm) per stream mile. Population estimates for mottled sculpin and speckled dace are usually underestimated because electrofishing gear is bias towards larger fish within the water column.

Table 39. Population Estimates for Sampled Fish Species in Lower West Muddy Creek, 2005. Estimates based on 2-pass electrofishing for trout ≥75 mm and all other species >50mm (Jakomatic version 2.2). Reach 1 is the most upstream reach and reach 3 is the most downstream reach.

SiteID	Species	Count	Population Estimate	95% Confidence Interval	Fish/Mile
WMUD2005-1	BRK	1	1	0	14
WMUD2005-1	RBT	1	1	0	14
WMUD2005-1	MTS	11	11	0.8	156
WMUD2005-1	SPD	91	102.24	14.4	1447
WMUD2005-1	MOS	16	16.6	3.06	235
WMUD2005-2	MOS	16	23.5	29.4	376
WMUD2005-2	SPD	65	69.92	8.24	1119
WMUD2005-2	MTS	5	5	1.95	80
WMUD2005-3	MTS	11	12.2	6.24	165
WMUD2005-3	SPD	100	145	57.6	1963
WMUD2005-3	MOS	29	44.71	42.7	605
WMUD2005-3	RBT	1	1	0	14

Colorado River cutthroat trout (CRCT), a Regional Foresters sensitive species (Region 2), were not sampled in Lower West Muddy Creek during the electrofishing effort in 2005. However, CRCT have been visually observed in Lower West Muddy Creek within the project area (C. James, personal observation, 2002). Colorado Division of Wildlife (CDOW) stocking records also indicate that West Muddy Creek has had periodic stocking of pure CRCT and rainbow trout from 1952-1978 (CDOW 2006).

Based on recent samples, re-establishment of CRCT in Lower West Muddy Creek has not been very successful. The presence of brook trout and rainbow trout are believed to be a reason for the unsuccessful re-establishment of CRCT in Lower West Muddy Creek. Competition with non-native trout is considered to be the biggest threat to CRCT, and impacts to the distribution, abundance, and genetic integrity of CRCT and other native cutthroat are well documented (CRCT Task Force 2001; Gresswell 1995; Kershner 1995; McIntyre and Reiman 1995; Rinne 1995; Young 1995). Another factor limiting CRCT and other trout in West Muddy Creek is elevated water temperature. Water temperature measurements from Lower West Muddy Creek in 2005 indicate temperatures of 17-24^{o}C (62.6- 75.2^{o}F). Numerous studies have investigated thermal tolerances of trout. In general, it is believed that temperatures of 22^{o}C and greater will cause stress in trout and possible death can occur at about 28-29^{o}C (Benhke, 1992).

Two quantitative stream habitat assessments were conducted on Lower West Muddy Creek; Stream Condition Inventory (SCI) and PacFish InFish Biological Opinion (PIBO) (Table 40). A side-by-side review of the datasets give an indication of the habitat quality and limiting factors to fish production. Riffle features dominated the reach (87% of reach), with a low to moderate distribution of pools. Since trout spawn in pool tails, available spawning habitat may be limited in high gradient sections. Pool depth was fair, considering the average residual pool depth for the PIBO reach on West Muddy was only 0.22m. These relatively low residual pool depths, may limit summer or over-wintering habitat for trout, particularly in drought years.

Bank stability was also considered fair with only 50-61% stable banks within the sampled reaches. Undercut banks were very limited, with only 13.6% of the total reach having undercuts banks. Additionally, the mean undercut depth was only 0.2m. Though undercut banks are below average and may not provide much fish cover, LWD numbers suggest sufficient woody cover. Pebble count data indicated that the median particle diameter (d50) range between course gravel and small sized cobble (58-110 mm). Fine sediment less than 2 mm composed approximately 16% of the sampled reach. However, as the name of the creek suggests, high sediment loads are frequent and often lasting. It is suspected that successful spawning is restricted by fine sediment loads.

Table 40. Quantitative Habitat Parameters Based on the Stream Condition Inventory (SCI) and Pacfish Infish Biological Opinion (PIBO) Protocol for Lower West Muddy Creek.

Protocol, Year sampled	**SCI 2002**	**PIBO 2005**
Stream Name	West Muddy Cr	West Muddy Cr
Rosgen Stream Class	B	
Basin Area (Acres)	31,027	
Reach Length (m)	500	213.4
Slope (%)	0.9	1.3
Sinuosity		1.15
Mean BFW (m)	7.5	8.3
Mean W:D	54.3	22.4
Residual Pool Depth (m)		0.22
Max Pool Depth (m)		0.39
Undercut Banks (%)		13.6
Mean Undercut Depth (m)		0.20
d50 (median particle size)	110.6	58
%Fines <2mm		16
% Fines <8mm	15	16 (<6mm)
% Reach Stable	50	61
% Reach Vulnerable	38	32
% Reach Unstable	12	7
Total LWD	103	18

Additional activities that may currently affect fish habitat for MIS and sensitive fish species include livestock use and existing road density. Livestock management in the West Muddy sub-watershed appears to be fair. Based on both habitat assessments for West Muddy Creek, stream banks were marginally intact, with only 50-61% stability. Percent fine sediment was relatively high at 16%. However, riparian vegetation seemed in tack. Cumulative grazing activities in the Lower West Muddy Creek watershed has had adverse impacts. However, aquatic resources seem to be limited by natural disturbances as well as management impacts, and the overall impacts may be considered minor effects to aquatic species. However, there is on-going oil and gas development, road maintenance, and leasable minerals within the project area. These impacts are often difficult to quantify, yet play an important role in shaping the landscape.

Increasing road densities are associated with decreased success of spawning and rearing of non-anadromous salmonids in the upper Columbia River basin, and populations are negatively correlated with road density (Lee *et al.* 1997). For Lower West Muddy Creek sub-watershed, the road density is approximately 0.28 mi/mi^2. Little Henderson Creek sub-watershed has a road density of 0.79mi/mi^2. Lower Hubbard Creek sub-watershed has a road density of approximately 0.83mi/mi^2.

Many studies have found negative correlations between roads and fish populations (Furniss *et al.* 1991). Road construction can lead to greatly accelerated erosion rates, alterations in channel morphology and the effects are long lasting on aquatic species (Beschta 1978, Reid and Dunne 1984, Furniss *et al.* 1991). However, few studies have set thresholds for road densities as they relate to fisheries. The Pacific Rivers Council generally uses the 1 mi/mi^2 rule for fish populations, but there are not published studies to support this generalization. Road densities within the project area are relatively low; however, the majority of these roads are located within or near the water influence zone (WIZ). Roads within the WIZ provide chronic inputs of sedimentation and may reduce suitable habitat.

Construction of a 100ft ROW for the Sheep Gas Gathering System has similar effects on fisheries as road construction. For fish and other aquatic species, 39 summaries the miles of near stream pipeline and the number of perennial and intermittent stream crossings for the proposed pipeline route. Stream types were identified using geographic information systems and the GMUG corporate stream layer. Stream types were not field verified in this analysis. Refer to Appendix O for a map of the stream crossings and buffer zones.

Table 41. Miles of near stream pipeline and number of stream crossings for the Sheep Gas Gathering System. * Near stream calculations based on pipeline proximity of 100ft to perennial, intermittent and ephemeral streams using geographic information systems.

	Proposed Action
Miles of Pipeline	10.8
Miles of Near stream Pipeline*	2.0
Perennial Stream Crossings	West Muddy Creek, Sheep Creek (3), Ault Creek Total: 5 (2 on NFS)
Intermittent Stream Crossings	(6 on NFS)

This analysis assumes that the required Forest Service Best Management Practices, State Storm Water Prevention Practices and project design features will be implemented when constructing stream crossings and ROW to protect watershed and aquatic resources. In addition, all appropriate design criteria and mitigation measures described in the R2 Watershed Conservation Practices Handbook, FSH 2509.25 will be used. Design features and mitigation measures would be implemented to minimize erosion, reduce sediment and provide for a protective vegetative cover for the soils within the areas disturbed by the construction activities.

3.7.5 Environmental Consequences

3.7.5.1 No Action

The No Action Alternative would have no effect to fish or fish habitat. No activities would take place, therefore, habitat and population trends would continue at their existing level. No indirect or cumulative effects would occur from this alternative since neither ground disturbing activities nor water depletion would occur.

3.7.5.2 Proposed Action

Direct impacts to fisheries include death or injury to individuals or eggs being smothered during project construction. To reduce the risk of direct mortality to individuals, in-stream work should take place during low-flow periods. To reduce the risk of smothering eggs, in-stream work should not occur during CRCT, mountain sucker, and bluehead sucker spawning from May through the end of July. To further reduce risk to the sensitive fish species, the proponent should complete all crossings on perennial fish bearing streams by diverting all flow into existing side channels that circumvent the in-stream work.

Indirect effects to fisheries could occur if any of their habitat parameters are affected by the project. Those parameters most likely affected by channel trenching and removing riparian vegetation would be water quality (sediment), temperature/shade, large woody debris (LWD), and chemical contamination. It is not likely that the proposed action will have major changes to water temperature and LWD inputs. However, sediment inputs resulting from the proposed action may impact CRCT to a greater extent than other sensitive fish species in the project area. CRCT have lower tolerances to sediment loads than mountain sucker and bluehead sucker.

Sediment

An increased sediment load is often the most important adverse effect of forest management activities on streams (MacDonald *et al.* 1991). Sediment entering stream channels can affect channel shape and form, stream substrates, the structure of fish habitat, and the structure and abundance of fish populations (Chamberlin *et al.* 1991). Increased sediment loads directly affect fish populations by suffocating eggs and newly hatched larvae living in gravels and by abrading sensitive gill membranes of both young and adult fish.

There is a risk of sediment loading anywhere the pipeline is proposed to be installed near perennial and intermittent streams. Increases in sedimentation are expected to be greatest at the West Muddy stream crossing and directly downstream of the crossing (approximately 100-500ft). This is based on the difficulty to control surface erosion from the steep hill slope adjacent to the proposed crossing.

Indirect effects of increased sedimentation include measurable changes in large-scale habitat features and reductions in fish habitat (MacDonald *et al.* 1991). Residual pool depth could be reduced as transported bedload tends to fill in pools. Subsequently, there may be a reduction in suitable spawning habitat and embryo survival for trout.

Additional sediment loads may alter the aquatic macroinvertebrate community, allowing for more sediment tolerant species to dominate.

Table 41 shows the total miles of pipeline that fall within a stream buffer (~100ft), which includes perennial and intermittent channels. The Proposed Action would enter into 2.0 miles of stream buffer (17.4% of total pipeline) and cross 5 perennial streams (2 on NF), and 6 intermittent streams (3 on NF). In general, construction of the pipeline across waterbodies will increase sedimentation and turbidity, streambank erosion, and the potential for fuel and chemical spills. To reduce the potential impacts on aquatic resources for waterbodies crossed by the project, construction should proceed at base flow or no flow conditions. Additionally, any construction through fish bearing streams should divert all flow around the instream work to minimize downstream impacts.

The clearing and grading of vegetation during construction could increase erosion along streambanks and turbidity levels in the waterbodies. Alteration of the natural drainage ways or compaction of soils by heavy equipment during construction may accelerate erosion of the banks, runoff, and the transportation of sediment into waterbodies. The degree of impact on aquatic organisms due to erosion would depend on sediment loads, stream velocity, turbulence, streambank composition, and sediment particle size. To minimize these impacts, the proponent would use equipment bridges, mats, and pads to support equipment that must cross the waterbody or work in saturated soils adjacent to the waterbody.

Stream Shade/Temperature and Large Woody Debris

Tree removal within riparian areas that result in reduction of forest canopy can reduce shade and affect stream temperature, cover, primary production and habitat (Belt *et al.* 1992). Summer stream temperature increases due to the removal of riparian vegetation has been well documented (Belt *et al.* 1992). Measurements by Hewlett and Fortson (1983) under winter conditions also indicate that removal of riparian vegetation can reduce temperatures by about 10°C.

Large wood is important to the aquatic environment because it routes and stores sediment, provides habitat complexity, and acts as a substrate for biological activity. The potential to reduce recruitment would occur where trees are removed from the area having the highest potential for delivery to the system. Both McDade *et al.* (1990) and Van Sickle and Gregory (1990), reported that more than 90% of instream wood identified as coming from adjacent riparian sources came from within approximately one site potential tree height for mature stands. Site potential tree height for wet-sites is approximately 150 feet.

Localized changes in water temperature and light penetration caused by the removal of boulders, woody debris, streambank vegetation, and undercut banks could temporarily displace fish that utilize these features for cover, nesting, and feeding. However, these impacts would be temporary as the streambank recovers over time and relatively minor due to the limited amount of total stream bank area affected per waterbody.

Chemical Contamination

For any large construction project, there is the potential for spills of fuel or other hazardous liquids from storage containers, equipment working in or near streams, and fuel transfers. Any spill of fuel or other hazardous liquid that reaches a waterbody would be detrimental to water and soil quality. The chemicals released during spills could have acute, direct effects on fish, or could have indirect effects such as altered behavior, changes in physiological processes, or changes in food sources. Fish could also be killed if a large volume of hazardous liquid is spilled into a waterbody. Ingestion of large numbers of contaminated fish could affect primary and secondary fish predators in the food chain.

To minimize the potential for spills, GEC should follow its control and containment mitigation, which is part of the overall Spill Prevention Control and Countermeasures Plan (SPCC) in the POD, Emergency Response Plan, and Safety Plan (project file) in the event that a spill does occur. This analysis assumes that every possible measure would be taken to avoid spills and that the SPCC and subsequent emergency and safety plans would be closely followed in the event of a spill. The proponent's implementation of the SCPP would minimize the potential for and the impact of any spill near surface water.

Cumulative Effects

The cumulative effects area for aquatic resources for the Sheep Gas Gathering System includes three 6th level Hydrologic Unit Code sub-watersheds in which the project lies: Lower West Muddy Creek, Little Henderson Creek, and Lower Hubbard Creek.

The full list of past, present, and foreseeable future projects is located in Appendix G**.** To assist in evaluating cumulative management activities, the GMUG recently completed an assessment that evaluated the level of past and current management activities occurring in 6th level watersheds on the Forest. A detailed description of the process can be found in Chapter 5 of the GMUG NF Comprehensive Assessment of Watershed and Aquatic Resources (USDA Forest Service, 2005~~)~~). Table 42 describes the management activities that were evaluated in the GMUG watershed assessment.

Table 42. Land use and management activities included in the GMUG sub-watershed assessment. Cumulative management activities for each 6th level HUC were calculated using geographic information systems.

LAND USE / MANAGEMENT ACTIVITIES	
private inholdings	% of ws
road & motorized trail density	mi/sq mi
stream miles below diversions	% of blue line
stream miles below reservoirs	% of blue line
stream miles inundated by reservoirs	% of blue line
active & abandoned mine adits & tailings	% of ws
recreation (developed sites along streams)	#/sq mi
road & motorized trail stream crossing density	#/sq mi
buffered riparian road & motorized trail density	mi/sq mi
vegetation treatments (timber mgt, ski runs, etc.)	% of net

Each of the factors listed above were used additively and the cumulative totals stratified into four classes ranging from class I- lowest management activities to class IV – highest management activities. Classes are relative ratings between watersheds on the Forest and should not be interpreted that the entire watershed is impaired or unstable. Class I watersheds are believed to reflect a range of on-the-ground conditions that indicate natural functions predominate and show little influence from past or current land management. Class IV are watersheds having the greatest likelihood for specific areas or stream segments that have become degraded and could be affecting stream function and biotic integrity.

Lower West Muddy Creek and Lower Hubbard Creek watersheds are designated ‘Class 2’, meaning that watershed scale activities have likely had some influence on runoff, water quality or flow regime. Little Henderson Creek was designated ‘Class 3’, meaning that watershed scale activities have likely had significant influence on runoff, water quality or flow regime. Little Henderson has a road density of 0.79mi/mi^2 and several water developments.

The majority of the Sheep Gas Gathering System occupy Lower West Muddy sub-watershed. Based on the activity classification, the cumulative impacts in this system appear relatively low. However, past and future activities have had effects to the project area, and continued management should be addressed. This section will focus on those land management activities current and ongoing in the project area that tend to produce significant changes to aquatic habitat: timber harvests; motorized travel routes and stream crossings; water diversions and storage; livestock grazing effects; and oil and gas development.

Timber harvests have occurred in Lower West Muddy Creek and Lower Hubbard Creek watersheds, and future aspen sales are foreseeable. Timber harvest, road maintenance and crossings often lead to incremental increases in sediment loads to streams. Increased sedimentation usually reduces available spawning habitat, which may have lastly impacts to fisheries recruitment. However, habitat loss may be prevented with proper actions. Furniss *et al.* (1991) suggests that closing native surface roads during the wet season is an effective way to reduce sediment delivery to streams and reduce road maintenance costs.

Other major impacts to fisheries include water depletion and storage. Within the analysis area, there are approximately a total of 14 active water structures (11 structures (2 impacted by the project) on FS land), which mainly include ditches. Structures were identified using geographic information systems and the corporate ‘Colorado Water Rights’ data layer, provided by the State Engineers Office for Division 4. Water depletions may incrementally increase stream water temperatures, decrease residual pool depth, and ultimately reduce habitat quality and quantity. Since there are no water depletions associated with this project, cumulative water development impacts are considered minimal.

Additional activities that may currently affect fish habitat for MIS and sensitive fish species include livestock use, Forest service system roads, and oil and gas development and conveyance. Three livestock allotments are integrated within the project area: Henderson/West Muddy C&S, Sheep Park S&G, and Condemn It Park S&G (USFS, 2005). Livestock management in the West Muddy sub-watershed appears to be satisfactory. However, habitat assessments of West Muddy Creek revealed that stream banks stability ranged from 50-61%, suggesting some level of natural or management disturbance is occurring. However, riparian vegetation seemed well managed. While localized impacts from livestock management may be occurring, they do not seem to be quantifiable at either the reach or watershed scale for West Muddy Creek.

More importantly, increasing road densities and roads within the water influence zone are associated with decreased success of spawning and rearing of non-anadromous salmonids in the upper Columbia River basin, and populations are negatively correlated with road density (Lee *et al.* 1997). For Lower West Muddy Creek sub-watershed, the road density is approximately 0.28 mi/mi^2; Little Henderson Creek sub-watershed has a road density of 0.79mi/mi^2; Lower Hubbard Creek sub-watershed has a road density of approximately 0.83mi/mi^2. Many studies have found negative correlations between roads and fish populations (Furniss *et al.* 1991). Road construction can lead to greatly accelerated erosion rates, alterations in channel morphology and the effects are long lasting on aquatic species (Beschta 1978, Reid and Dunne 1984, Furniss *et al.* 1991). However, few studies have set thresholds for road densities as they relate to fisheries. The Pacific Rivers Council generally uses the 1 mi/mi^2 rule for fish populations, but there are not published studies to support this generalization.

Road densities within the project area are relatively low; however, the several of these roads are located within or near the water influence zone (WIZ). The WIZ is defined by a minimum horizontal width of 100ft from the top of each stream bank (FSH 2509.25, Chapter 10, 12.1). Roads within the WIZ provide chronic inputs of sedimentation, increase surface runoff, and may reduce suitable habitat. It is believed that FSR 704 and FSR 265 may in part be responsible for some of the low bank stability readings in each of the stream surveys, since both surveys were conducted adjacent to FSR 704. Increases in surface runoff associated with these roads have likely led to increases in bank erosion along this reach of West Muddy Creek.

Oil and gas development is foreseeable to expand throughout the analysis area. Oil and gas development involves road construction and maintenance, often in-stream construction, pipeline/pad construction, and drilling operations. Cumulative effects may include short-term sediment delivery to downstream fish habitat as a result of newly constructed right of way, loss of stream habitat and riparian vegetation, and potential hazardous material contamination. Fine sediment delivery is expected to be moderate, but not expected to severely impact spawning and rearing habitat for trout located downstream. Proper revegetation and mitigation may prevent bank erosion and excess sedimentation. The implementation of BMPs, erosion control during and after construction, and reclamation of the ROW and stream crossings will minimize the potential of surface erosion and subsequent sedimentation to nearby streams and may reduce long-term impacts.

Determinations of Effect and Rationale

This section summarizes the effects and the determination of effects statements for each species. Table 43 lists the determination statements for each species.

Table 43. Determinations

Species	Determination
Bluehead Sucker	MII
Flannelmouth sucker	MII
Roundtail Chub	MII
Colorado River Cutthroat Trout; common trout	MII
Mountain Sucker	MII
Colorado Pikeminnow	No effect
Humpback Chub	No effect
Razorback Sucker	No effect
Bonytail chub	No effect

MII = may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing.
MA-LAA – May Affect – Not Likely to Adversely Affect

Bluehead sucker
The proposed activities may impact individual bluehead sucker or their habitat but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species. Indirect effects are anticipated to be minimal and would not result in a measurable change in downstream habitat due to the projects relative small disturbance area when compared to the total subwatershed acres.

Flannelmouth sucker
The proposed activities may impact flannelmouth sucker habitat downstream of the project area but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species. Indirect effects are anticipated to be minimal and would not result in a measurable change in downstream habitat due to the projects relative small disturbance area when compared to the total subwatershed acres.

Mountain sucker
The proposed activities may impact individual mountain sucker or their habitat but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species. Indirect effects are anticipated to be minimal and would not result in a measurable change in downstream habitat due to the projects relative small disturbance area when compared to the total subwatershed acres.

Roundtail chub
The proposed activities may impact individual roundtail chub or their habitat but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species. Indirect effects are anticipated to be minimal and would not result in a measurable change in downstream habitat due to the projects relative small disturbance area when compared to the total subwatershed acres.

Colorado River cutthroat trout/ Common trout
The proposed activities may impact individual Colorado River cutthroat trout or their habitat but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species. Indirect effects are anticipated to be minimal and would not result in a measurable change in downstream habitat due to the projects relative small disturbance area when compared to the total subwatershed acres.

Colorado pikeminnow, humpback chub, razorback sucker and bonytail
This project will have No Effect on Colorado pikeminnow, humpback chub, razorback sucker and bonytail since none of these species exist within the project area and there are no expected water depletions to affect these species downstream.

3.7.6 Management Indicator Species

Common Trout (cutthroat, rainbow, brook, brown trout)
GMUG NF LMP Amendment for MIS species (2005) has identified the assemblage of “common trout” to evaluate management affects to aquatic ecosystems.

3.7.6.1 Affected Environment Management Indicator Species

Distribution and Abundance
Streams within the GMUG National Forests historically held only one species of native trout, Colorado River cutthroat (*Oncorhynchus clarkii pleuriticus*). Aggressive stocking of brook, rainbow, brown trout, and other subspecies of cutthroat trout and/or rapid expansion of non-native trout populations in Colorado have resulted in the restriction of native cutthroat trout to headwater streams or lakes above natural barriers to trout movement. As non-native trout were stocked and invaded new habitats, the competitively inferior cutthroat were displaced by brook trout, or hybridized with rainbow trout or other subspecies of cutthroat trout. The remaining isolated populations are now susceptible to extirpation due to disturbance and/or anthropogenic factors, since there is no source for recolonization once isolated habitats are disturbed.

A recent review of Forest-wide fish sampling on the GMUG NF indicates that trout are widely distributed throughout the Forest. Common trout occur in most of the perennial water bodies on the GMUG National Forests, including streams, rivers, lakes, and reservoirs. Trout may be excluded from some areas due to chemical contamination below mines or by natural or human-caused barriers. At high elevations, trout may be absent due to water temperature limitations.

Statistics from GMUG NF LRMP (2005) suggests that there are approximately 1,200 miles of stream on the Forest that contain viable fish populations consisting of brook, rainbow, brown, and cutthroat trout. A total of 80 sites have been sampled on the GMUG NF since 2001, revealing that trout (>75mm) density ranges between 12 and 2,794 fish per mile, with a mean density of 589.8 fish per mile (USFS, unpublished data).

Habitat Associations

Colorado River cutthroat trout (CRCT) life history strategies and habitat requirements are generally the same as other identified common trout species in the project area, and would therefore serve as a surrogate to measure habitat and viability requirements for common trout. Some exceptions may include land management practices that affect specific life history patterns of CRCT and not other trout species. Refer to CRCT habitat associations section. One life history characteristics that differs for CRCT and other MIS species is during spawning. CRCT spawn in the spring and summer, while brook trout and brown trout spawn in the fall. West Muddy Creek contains both CRCT and brook trout and impacts to the species will vary depending on the time of year construction of the Sheep Gas Gathering System is taking place.

Existing Condition

Electrofishing surveys in 2005 indicate that brook trout and rainbow trout are the only MIS trout species present in the analysis area. However, suitable habitat is present for other trout species. Additionally, CDOW stocking records and visual observations suggest CRCT presence in West Muddy Creek. Existing condition of CRCT were discussed in the sensitive species section. The habitat requirements for brook trout and rainbow trout are similar to CRCT are summarized in the habitat associations and existing conditions section.

3.7.6.2 Environmemtal Consequences Management Indicator Species

3.7.6.2.1 No Action Alternative

The No Action Alternative would have no effect on Colorado River cutthroat trout or other common trout species. No activities would take place, therefore, habitat and population trends would continue at their existing level.

3.7.6.2.1 Proposed Action

Since the project proposes to cross West Muddy Creek where common trout reside and spawn direct impacts may occur to individuals killed or eggs smothered during project construction. To reduce the risk of direct mortality to individuals, in-stream work would take place during low-flow periods. To reduce the risk of smothering CRCT eggs, in-stream work should not occur during spawning from May through the end of July. If mitigation is accepted to restrict construction activities to after the end of July, there is still a high possibility that brook trout individuals may be killed or that eggs could be damaged by construction activities since they spawn from September-October. However, the risk of loss or damage to brook trout in West Muddy Creek is acceptable in efforts to conserve CRCT, which is a native and sensitive species. In effort to protect all MIS species, the proponent should complete all crossings of perennial streams by dewatering the channel, and when possible using naturally occurring side channels to circumvent the construction. This method would also facilitate continuous flow within the waterbody, minimize sediment discharge, and reduce the duration of increased turbidity.

Cumulative Effects

The discussions on indirect and cumulative effects of the Proposed Action also apply to common trout. Refer to that discussion for further detail.

Determinations of Effect and Rationale

This project would not affect the viability of trout species on the GMUG given the size and scale of the project. Indirect effects are anticipated to be minimal and would not result in a measurable change in downstream habitat due to the projects limited stream crossings of fish-bearing streams, and relative small disturbance area when compared to the total sub-watershed acres. Since the indirect effects of the project are minimal, and the project area comprises a small percent of the total habitat for trout Forest-wide, the viability of rainbow, cutthroat, brown, and brook trout would not be threatened by this project. Therefore, the proposed action may temporarily displace individuals or alter how individuals use affected habitat through habitat alteration and/or disturbance, but these effects will not result in a change in population numbers or trends at the project or Forest level scales.

3.8. RECREATION

3.8.1 Introduction

The Grand Mesa, Uncompahgre, and Gunnison National Forest provides a wide variety of recreational opportunities to visitors in all seasons. This area is known for its big game hunting opportunities, particularly for elk. Other recreational uses include dispersed camping, off-highway vehicle (OHV) and four-wheel-drive use, and hiking. Permitted hunting guides also operate in this area, on public lands, and private outfitting occurs on private lands as well. OHV use and summer dispersed camping related to this activity is increasing in on the forest.

3.8.2 Methodology for Analysis

This analysis evaluates short-term effects related to pipeline construction and associated activities, and long-term impacts related to the operation and maintenance of the facilities constructed. It analyzes the impacts of all actions connected to this action, including construction on private lands in and near the Forest Service portion of the project, Road maintenance activities required for construction, and road use related to the project. No forest plan amendment is planned in regards to this project. This analysis also determines if the project is consistent with the LMP. The analysis area for recreation is defined as the area encompassed by the 704, 265, and 851 roads, and the lands within that road system.

3.8.3 Regulatory Framework

Authorities to manage recreation come from the general laws related to National Forest management, including the Multiple Use-Sustained Yield Act of 1960, the Wilderness Act (1964), the Wild and Scenic Rivers Act (1968), the National Forest Management Act (1976), the Land and Water Conservation Fund Act (1964), the Architectural Barriers Act (1968), the Americans With Disabilities Act (1990) the National Trails System Act (1968), and the Forest and Rangeland Renewable Resource Act of 1974. In addition, many specific federal regulations (Code of Federal Regulations), policies (Forest Service Manual and Handbooks), and other guidelines direct management of the recreational resource for the National Forests. The Grand Mesa, Uncompahgre, and Gunnison National Forests Amended Land and Resource Management Plan (USDA 1983), provides specific direction for management of the recreational resource in the project area.

Management Direction

The project lies within three management prescriptions: 2A Semiprimitive Motorized Recreation, 6B Livestock Grazing, and 9A Riparian Area Management. A portion of the access road in the southeastern part of the project is within Aspen Management but will not be altered. Management Area prescriptions for the impacted area are discussed elsewhere in the Environmental Assessment.

3.8.4 Affected Environment

Currently, the Sheep Gas Gathering Line project area is utilized for a variety of recreational purposes. Primary activities in this area include big game hunting (deer, elk, and bear), small game hunting, OHV use, snowmobiling, camping, and hiking.

Several roads in the area (704, 265, 851) are used for these purposes. There are no established hiking trails in the immediate area, although trailheads exist on the 704 road for trails west of that road. There are numerous unclassified roads and trails in the area which are used for both motorized and nonmotorized traffic, especially during big game hunting seasons. Camping in the area is largely connected to big game hunting, and occurs near or in those seasons. Road use in the area is substantially higher during big game seasons than at other times in the year.

Commercial recreational use of the area includes permitted outfitting for big game and fish. Fishing in the area, however, is not a common recreational activity due to the water quality in West Muddy Creek and the lack of established fisheries in other water bodies.

In addition, the area does see random road-based sightseeing, especially during fall when the aspen leaves turn colors.

Recreation Opportunity Spectrum

The area along the 265 and 704 roads is classified as Roaded Natural. Roaded Natural area is characterized by natural appearing environments with moderate evidence of human presence. Interaction between land users may be moderate to high, with evidence of other users prevalent. Conventional motorized use is allowed. The area within the project area outside of the corridors of those roads is classified as Semi-Primitive motorized. This designation is for areas with less evidence of human use and lower interactions between users.

Big Game Hunting

Big game hunting is the primary recreational activity observed in the project area. Hunters use the area in all big game seasons, from archery through fourth rifle elk season. The project area lies within CDOW Game Management Unit (GMU) 521. During the 2005 season, 3792 hunters harvested 1016 elk in 18,488 days of effort (all seasons). 526 hunters harvested 237 deer in 2,481 days of effort. There were 31 bears taken in 146 days of effort in the 2005 seasons. Figures are for the entirety of GMU 521. Hunting effort in the project area is approximately proportional to the GMU as a whole.

There is one permitted outfitter/guide on public and private lands in the area with another outfitter using NFSR 704 to access camps located to the west. Private land outfitting also occurs in the private lands along the proposed route and surrounding areas.

Dispersed Camping

Dispersed camping occurs along forest roads in the area, primarily the 265, 851, and 704 roads. There are 22 identified dispersed campsites in this area based on presence of fire rings and persons camped during the 2006 big game hunting seasons. Overall, dispersed camping in this area is largely tied to big game hunting, although use does occur related to OHV recreation in summer months. Winter camping is not common in this area. There are no developed campgrounds in the analysis area.

Summer/fall Motorized Recreation

Motorized recreation is largely tied to big game hunting, although use does occur in summer months. OHV use on established roads and trails is increasing across the forest, and within the project area is concentrated mainly along established NFSR roads and trials. However, some motorized use does occur off of established trails in this area. Illegal use is associated primarily with big game hunting.

The area is also visited during the fall by people viewing fall colors, although this use is largely restricted to the 265 road.

Winter Motorized Recreation

Winter use involves almost exclusively recreational snowmobiling. The 851 and 851-1A roads are used in winter to access an existing gas well, and are plowed to access private lands. Winter recreational use occurs primarily on existing roads and trails.

Non-Motorized Recreation

Non-motorized use occurs on non-system trails, open roads, and roads closed to motorized use. Summer and fall recreation include hiking, mountain biking, and horseback riding. There are no non-motorized system trails within the project area, although one trail does lead off of the 704 road to the west. Winter recreation likely includes low levels of cross-country skiing, although road access is limited to public lands within the analysis area once the snow is established.

Other Recreational Activities

Fishing may occur in West Muddy Creek within the project area. However, this stream is typically turbid and is not known as a productive coldwater fishery. Access to this stream is along the 704 road or through private lands, and it is unlikely that the location where the proposed route crosses the creek is visited by recreational anglers in any numbers.

3.8.5 Environmental Consequences

3.8.5.1 No-Action Alternative

Effects of selection of the no-action alternative are anticipated to be a slight annual increase in all recreational activities resulting from population growth in the area.

3.8.5.2 Proposed Action

Direct impacts to recreational use of this area will occur during and immediately after construction. During construction, it is anticipated that the area will receive substantially less recreational use due to the large amount of construction-related traffic on the roads, the amount of disturbance to wildlife and the landscape caused by construction activities, and the increased human presence in the area. Long-term impacts include increased public access due to improved road conditions in the area and possible changes in hunting usage and methods due to the presence of the corridor in the area.

Recreation Opportunity Spectrum

The project is consistent with the ROS designations in the current forest plan. No change in the designations for the project area are proposed or anticipated. Motorized use should not increase along the corridor after completion of construction, and the corridor is not proposed as a motorized route. It may be used as a snowmobile route but this is less likely due to terrain and private inholdings along the route making it unsuitable as a loop segment in the existing landscape.

Big Game Hunting

Big game hunting will likely be disrupted during construction. Project activities are anticipated to occur into all of the fall elk seasons within GMU 521. Along the 851 and 704 roads, which will see substantial construction traffic, there are approximately fifteen sites which hunters use for camps during big-game seasons. Disturbance to both local elk populations, and to hunters whose camps are no longer accessible or desirable due to construction activities and/or traffic, is anticipated. As a result, changes to elk hunting pressure in both the immediate project vicinity and other portions of GMU 521 are expected. Hunters are likely to hunt other areas in GMU 521 during construction. It is unclear whether these disturbances will increase or decrease elk harvest within this GMU.

Because elk are very adaptable, and use a wide variety of habitats, the conversion of existing vegetation to a grass/forb cover type would not have any measurable effects. Creation of the corridor, especially where coincident with existing roadways, will create a wider open area without vegetative cover. Instead cover would be provided by horizontal and vertical bends in the corridor. Vulnerability to hunters could increase in the corridor, but abundant cover is found immediately adjacent to most of the corridor.

The elk population estimate for this DAU, based on 2004 post hunting statistics, was 11,570 elk, while the objective is 10,500. Because this area is well over the population objective, the potential increase in vulnerability to hunters as a result of the loss of cover is not expected to be an issue.

Disturbances during big game season apply to deer as well, and also apply to the permitted big game outfitter who uses the area.

Dispersed Camping

Dispersed camping will likely be disrupted during construction due to the increased traffic along roads. One of the 22 known campsites is also designated as an equipment staging area and would be unavailable for recreational use. However, the desirability of the area for camping will be decreased due to the construction and demand for campsites in this area should decrease accordingly. There are numerous other sites throughout the district, and overall camping pressure outside of hunting season is not expected to change as a result of this project.

Summer/Fall Motorized Recreation

Motorized recreation during summer and fall months, including hunting-related activity, will likely decrease in the immediate vicinity during the project. However, activity which would have occurred in this area is anticipated to shift to other areas of the district, so overall recreational use within the northern portion of the district should not be substantially altered.

Winter Motorized Recreation

Winter motorized recreation is not anticipated to change as a result of this project. No winter activities are anticipated, so no disturbance during construction should occur. The construction of the corridor does open up a linear route from Condemn-it-Park to Sheep Park. However, the terrain on this segment of the route is in places very steep and it is unlikely that substantial use will occur. The remainder of the proposed route intersects several private parcels, which makes utilization of the route for recreational snowmobiling or skiing difficult, and does not allow for the route to be used as a loop segment without trespassing on private lands. The majority of the route is also along existing roads, and construction will not alter the suitability of those portions for winter use.

Non-Motorized Recreation

Non-motorized recreation is not anticipated to substantially alter as a result of this project. There is a low level of current use due to the lack of trails and winter access. The lack of facilities or improvements makes this area less desirable for these activities than other areas on the district. Disturbance during construction, therefore, will likely not have substantial or long term impacts.

Other Recreational Activities

Due to the low use of this area for other activities, it is unlikely that disturbance during construction will cause changes in use patterns. Vegetative changes resulting from the project will also have minimal impacts on other recreational activities.

Cumulative Effects

The cumulative effects discussion considers past, present and reasonably foreseeable actions that occur within the analysis area. A list of the potential cumulative actions considered in this analysis is included in Appendix G. The cumulative effects analysis area for the recreation resource is defined for recreational hiking as the lower West Muddy Creek, lower Hubbard Ck 6th code HUC's as there are no system hiking trails in the area and for motorized and mechanized trails the lower West Muddy Creek, lower Hubbard Ck 6th code HUC's as there are no system motorized or mechanized trails in the area.

Short term effects associated with construction would occur near or adjacent to the selected route or access. A dispersed camping site, the staging area west of NFSR 704, will not be available during construction. Hunters may choose to utilize other camp locations or hunting area, still within GMU 521, during construction. Sightseers generally use NFSR 265 to access the areas of fall color and will probably choose this route to view aspen stands rather than use NFSR 704 when construction is in or adjacent to the road.

Long term effects are related to the operation, maintenance and existence of the pipeline on the landscape and how its presence affects the public's choice to utilize the area. Maintenance activity is expected to be 1-2 trips per day by a pickup truck during the snow free months. Hunters and sightseers may choose to use an area without the presence of gas activity; however that is unlikely as there is already evidence of well activity and pipelines in the area. There would be no long term change or a slight increase to the availability to view fall colors as road will be improved. Non-motorized users may use the pipeline ROW for access.

The pipeline route would be designated as non-motorized except for authorized use by the pipeline operator. There are no cumulative effects associated with snowmobiling. Road improvements may increase the public's use of the roads.

Changes in behavior patterns of the public use are difficult to predict and the cumulative effect on recreation is unknown.

3.9 CULTURAL RESOURCES

3.9.1 Introduction

Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations require inventory and consideration of potential effects of any federal undertaking on historic properties – (heritage resources) that are listed on or eligible for the National Register of Historic Places (NRHP). Construction activities associated with the SGGS could lead to impacts to historic properties and possibly to undiscovered heritage resources. To comply with the NHPA, Section 106 a cultural resource inventory was conducted of the pipeline corridor, compressor, and access roads.

In the event that undiscovered historic properties are identified during the construction phase the Forest Service would immediately implement practices to avoid and/or protect historic properties in accordance with the FLMP. If these resources are identified on private lands, the appropriate State regulations would be implemented by the Authorizing Officer.

3.9.2 Methodology for Analysis

The cultural resource analysis of the Proposed Action was conducted in compliance with the National Historic Preservation Act, the Colorado State Protocol Agreement, and other Federal law, regulation, policy, and guidelines regarding cultural resources. In general, cultural resources inventories are conducted to meet requirements of the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C 4321), the Federal Land Policy and Management Act of 1979 (43 U.S.C. 1701), and NHPA. These laws are concerned with the identification, evaluation, and protection of fragile, non-renewable evidence of human activity, occupation and endeavor reflected in districts, sites, structures, artifacts, objects, ruins, works of art, architecture, and natural features that were of importance in human events. Such resources tend to be localized and highly sensitive to disturbance.

Part of the inventory process is to ascertain the significance of any recorded cultural properties because the NHPA directs Federal agencies to ensure that Federally-initiated or authorized actions do not inadvertently disturb or destroy significant cultural resource values. Significance is a quality of cultural resource properties that qualifies them for inclusion in the National Register of Historic Places according to prescribed criteria given in the Code of Federal Regulations. Field assessments regarding significance are made as recommendations by the cultural resources consultant to the federal agencies and State Historic Preservation Officer (SHPO). The final determination of the site significance is made by the controlling agencies in consultation with the SHPO and the Keeper of the Register.

The Code of Federal Regulations (CFR) is used as a guide for the in-field site evaluations. Titles 36 CFR 50, 36 CFR 800, and 36 CFR 64 are concerned with the concepts of significance and (possible) historic value of cultural resources. Titles 36 CFR 65 and 36 CFR 66 provide standards for the conduct of scientific data recovery activities. Finally, Title 36 CFR 60.4 establishes the measure of significance that is critical to the determination of a site's NRHP eligibility, which is used to assess a site's research potential.

3.9.3 Regulatory Framework

Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, require that any federal undertaking consider impacts to historic properties. Historic properties would be identified and protected by completing heritage resource survey prior to any direct or indirect impact from the project. Cultural resource values can be protected effectively by implementing the provisions of the following federal laws and their respective regulations:

- National Historic Preservation Act of 1966 (P.L. 89-665 as amended)
- National Environmental Policy Act of 1969 (P.L. 91-190)
- American Indian Religious Freedom Act of 1978 (P.L. 96-341)
- Native American Grave Protection and Repatriation Act (P.L. 101-601)
- Religious Freedom Restoration Act of 1993 (P.L. 103-141)
- Historical, Prehistorical and Archaeological Resources Act (CRS 24-80-401)
- Unmarked Human Graves Act (CRS 24-80-1301)

In the event of accidental disturbance of historic graves or reinternment, the appropriate tribal, state and forest regulations and policies would be followed. The Forest Plan also establishes guidelines for protecting significant heritage resources sites from damage by project activities or vandalism through project design, specified protective measures, monitoring, and coordination. In addition, the guidelines specify the sites on the National Register of Historic Places be managed under approved management plans or annul operation plans (LMP).

3.9.4 Affected Environment

File searches were conducted for the Proposed Action through the Office of Archaeology and Historic Preservation (OAHP) and the Grand Junction Field Office of the USFS. The searches indicated that two isolated finds had been recorded within the corridor right-of-way, neither eligible for the National Register of Historic Places.

A thorough cultural resource inventory was conducted (SWCA, 2006) for the proposed pipeline along a 200-foot-wide corridor on National Forest lands. The proposed pipeline right-of-way trends through upper elevation vegetation including aspen, conifer, and oakbrush. Topography consists of rolling to rugged ridges, slopes and meadows, dissected by numerous seasonal and perennial drainages. No sites eligible to the National Register of Historic Places were recorded.

3.9.5 Environmental Consequences

The project alternatives are consistent with the Forest-wide goals to complete resource surveys prior to ground disturbing project(s) and avoid disturbance of known resources (Forest Plan, page III-11). All alternatives can meet these goals by implementing avoidance and protective measures for known and unknown heritage resources.

3.9.5.1 No Action Alternative - Direct and Indirect Effects

Under the No Action Alterative, the pipeline would not be built resulting in no direct impacts to cultural resources or identified traditional cultural properties. Indirect impacts due to illicit collection and/or vandalism are somewhat reduced by not opening up the area via construction of the pipeline.

3.9.5.2 Proposed Action - Direct and Indirect Effects

Construction activities may adversely affect undiscovered cultural resources in areas where surface visibility and deep soils may have obscured cultural resources. The construction of the proposed pipeline would not impact any known significant cultural resources. If any cultural resources are found, project activities will immediately cease and the Authorized Officer will be notified. Work will not resume until cultural resources are cleared by the Authorized Officer.

A cultural resource inventory of the Proposed Action area resulted in a SHPO determination, (letter in project file,12/19/2006) and concurrence that the "proposed project will result no historic properties affected" and the previously identified site and isolated finds were determined not eligible for the National Register of Historic Places. Specific design features are identified in Appendix A

Cumulative Effects

There are no environmental consequences and cumulative effects of the No Action Alternative as ongoing activities would not change.

Increased visitation and access to area could result in illegal collection or vandalism of unknown cultural resources.

3.10 WATERSHED AND SOIL RESOURCES

3.10.1 Watershed Introduction

The SGGS pipeline corridor would cross and parallel several ephemeral, intermittent and perennial stream segments and wetlands areas. This section analyzes the risk of impact from the construction, operation and maintenance of the pipeline to stream and wetland resources.

3.10.2 Watershed Methodology

A broad level geomorphic characterization of streams was conducted by the Forest Service based on Rosgen (1996). Those designated streams are illustrated on Appendix O and Table 44. Of the nearly 100 miles of Rosgen-classified streams on Forest Service lands, the majority (83%) are type "A". Stream type "A" generally has channel slopes from 4 to 10 percent and exhibit a high sediment transport potential and a relatively low in-channel sediment storage capacity. This is consistent with "source" reaches discussed earlier. Stream types "B" and "C" were also identified, 14% and 3%

of streams classified, respectively. The “B” stream types exist primarily on moderately steep to gentle sloped terrain. They are generally the result of the influence of structural contact zones, faults, colluvial-alluvial deposits, and structurally controlled valley side-slopes which tend to result in narrow valleys that limit the development of a wide floodplain. The “C” stream types are located in narrow to wide valleys, constructed of alluvial deposition. They have a well developed floodplain, are relatively sinuous with a channel slope of 2% or less.

The GMUG NF recently prepared a comprehensive evaluation on watershed conditions to be used in determining desired conditions, objectives and guidelines for the revised Draft Forest Plan released March 15, 2007 (GMUG 2005; Chapter 5. Sub-Watershed Condition Assessment, GMUG NF Comprehensive Evaluation Report, 2005). This assessment addressed physical sensitivity, which is the relative likelihood of a watershed response to disturbance, either natural or human induced. In this case the response may be changes to runoff timing, duration or magnitude; changes to groundwater storage/recharge; changes to soil productivity, including soil loss; and sediment production/export. They reflect inherent physical factors, which are not subject to short-term change or modification (geologic parent materials, landforms, topography, and climate). Specifically those factors which influenced response and the data were available forest-wide included: stream density; runoff potential based upon hydrologic soil group; potential erosion hazard based upon slope; annual rainfall energy, a climatic factor; and extent of low gradient response channels. Similarly an evaluation was made regarding watershed condition based upon land use factors (activities). Only factors that were available for the entire Forest were utilized. These included ownership pattern within the Forest boundary; road densities and road densities within stream corridors; hydrologic modification by dams and diversions; vegetative canopy treatments, including wildfires.

Both sensitivities and activities ratings were calculated for all 6th HUC code watersheds on the Forest. These ratings were based upon normalizing the range of values for each sensitivity or activity factor used. In other words a rating of 0.35 indicated a value that was 35% of the highest value for that particular factor on the Forest; a rating of 0.79 would indicate a value 79% of the highest value. All of the rating values were mathematically combined for a total sensitivity value or activity value and then distributed using a natural breaks analysis tool into a class 1, 2, 3 or 4. While these were intended for use to display the range of conditions across the entire Forest, it does provide some meaningful disclosure at the local scale. These two ratings for each sub-watershed (6th HUC code) were combined to characterize hydrologic integrity ratings and class (1, 2, 3, or 4). The derived ratings and classes are not absolute values nor is there a basis available to define thresholds for acceptable or unacceptable ratings. The results allow for relative comparison of condition and trend, suggesting the likelihood of systems being within the historic range of variation. Low integrity ratings do not imply the entire sub-watershed or stream network is in poor condition, but rather where local upland, riparian, or stream reach level degradation may have occurred.

A Geographic Information System (GIS) analysis was performed to calculate the amount of ROW area (in acres) within 100 feet of a stream (ephemeral, intermittent and perennial), and the amount of ROW within 100-feet of a stream was further stratified by slope class (slopes 20 to 35% and greater than 35%).

3.10.3 Watershed Regulatory Framework

GMUG NF LMP Direction –Watershed

Goals

- Manage surface uses to maintain water quality at or above federal, state, and local standards.
- Protect water quality in streams, lakes, riparian areas, and other water bodies.

Standards and Guidelines

- Design and implement activities in management areas to protect and manage the riparian ecosystem.
- Maintain all riparian ecosystems in at least an upper mid-seral successional stage based on the R2 Riparian Ecosystem Rating System.
- Manage riparian areas to reach the latest seral stage possible within the stated objectives.
- Maintain instream flows and protect public property and resources
- Improve or maintain water quality to meet State water quality standards. However, where the natural background water pollutants cause degradation, it is not necessary to implement improvement actions. Short-term or temporary failure to meet some parameters of the State standard, such as increased sediment from road crossing construction or water resource development may be permitted in some instances.
- Rehabilitate disturbed areas that are contributing sediment directly to perennial streams as a result of management activity to maintain water quality and re-establish vegetation cover.
- Reduce to natural rate any erosion due to management activity in the season of disturbance and sediment yields within one year of the activity through necessary design features such as water barring, and revegetation.
- Prevent or reduce debris accumulation in riparian areas that reduce stream channel stability or capacity.
- Prevent soil surface compaction and disturbance in riparian ecosystems. Allow use of heavy construction equipment for construction, residue removal, etc. during periods when the soil is least susceptible to compaction or rutting.
- Limit use of herbicides, pesticides, rodenticides or other chemical treatments as part of management activities to those times where possible transport to or by surface water has a low probability of occurrence. Follow all label requirements concerning water quality protection.

3.10.4 Watershed Affected Environment

3.10.4.1 Surface Water

The project area is located in a transition zone between the Colorado Plateau and Southern Rocky Mountains physiographic provinces. In general, landforms in the project area are moderately dissected rolling hills and ridges that separate the confined to moderately confined, gently sloping valleys. Hillslopes affected by the proposed project are generally gentle (0 – 20 percent) with some sections of moderate slopes (20 – 35 percent), and some sections of steep slopes (greater than 35 percent). Elevation ranges between about 7,000 to 9,000 feet.

The project overlaps three sixth-code hydrologic units (HUC) within the North Fork Gunnison River watershed (Fourth- Code HUC), which is part of the Gunnison River Subbasin and the Colorado River Basin. The primary surface water features in the project area are West Muddy Creek, Sheep Creek and Little Henderson Creek. West Muddy Creek transects the western part of the study area in a north-south direction and the southern part of the study area in a northwest-southeast direction. It eventually joins the East Fork Muddy Creek and ultimately flows in to the North Fork Gunnison River, a tributary to the Gunnison River. Sheep Creek, a major north-south valley tributary to West Muddy Creek, drains the central portion of the study area and includes a broad, relatively flat area known as Sheep Park. Little Henderson Creek flows into the East Fork Muddy Creek just east of the project area. See Appendix O for stream locations. The 6th-code HUCs, acres and major streams are identified in Table 44 and in Appendix J. The watershed hierarchy is as follows:

Table 44 Sixth-Code Hydrologic Unit Codes (subwatershed) and major streams within the project area.

HUC Name	HUC Number	HUC Size (acres)	Forest Service Acres	Streams
Lower West Muddy Creek	140200045501	31,027	23,356	West Muddy Creek, Sheep Creek, Ault Creek, Road Gulch
Little Henderson Creek	140200040905	5,328	5,296	Little Henderson, North Fork Little Henderson
Lower Hubbard Creek	140200045601	17,028	8,599	Willow Ck

The dominant channel-forming processes in these watersheds have been and remain annual bankfull discharge and flooding, peak flows, and high natural sediment rates. The nature in which channels respond to high flows and sediment supply depends, in part, on gradient.

Stream classes within the Lower West Muddy Creek, Little Henderson Creek and Lower Hubbard Creek subwatersheds are depicted on Appendix O). There are approximately 169 miles of mapped streams on Forest Service lands within the three subwatersheds, the majority of which are ephemeral (58%) (Table 45). An ephemeral stream is defined here as a stream that flows only during and for short periods following precipitation or snowmelt and flows in areas that do not have a defined channel (evidence of erosion scour). These areas are commonly referred to as swales. Streams potentially associated with stream pipeline crossings were field verified and mapping corrections made. In general, there was an overestimate of intermittent streams. Several streams at potential crossings were changed from intermittent to an ephemeral stream class.

Table 45 The amount (in miles) of ephemeral, intermittent and perennial streams by land ownership in three sixth-code HUCs.

	Ephemeral	Intermittent	Perennial	

HUC Name	FS	Private	Total	FS	Private	Total	FS	Private	Total	Grand Total
Lower West Muddy Creek	55	5	60	41	3	45	8	4	12	117
Little Henderson Creek	38	2	40	10	2	11	6	1	7	59
Lower Hubbard Creek	4		4	4		4	2		2	10
Grand Total	98	7	105	55	5	60	16	5	21	186

The variables identified in Table 46 characterize the physical sensitivity related to sediment and runoff generation, and subsequent routing through the channel network.

Table 46 Standardized subwatershed sensitivity variables and total for HUCs in the project area (from GMUG 2005).

6th-Code HUC	Forest Service Acres	Rainfall Intensity Factor	Stream Density	Severe & Very Severe Erosion Risk	High Runoff Potential	Adjustable Stream Channels	Total
Little Henderson Ck	5,296	0.56	0.80	0.08	0.00	0.00	1.44
Lower West Muddy Ck	23,356	0.56	0.38	0.11	0.02	0.00	1.07
Lower Hubbard Ck	8,599	0.61	0.31	0.37	0.16	0.00	1.46

These ratings reflect relative not absolute differences between subwatersheds. Those sub-watersheds with lower total ratings reflect lower physical sensitivity relative to those with higher totals. Therefore, they would be expected to have greater tolerance to disturbance. Conversely, those sub-watersheds with the highest totals are more sensitive and expected to be less tolerant or more responsive to disturbance. The three (3) 6th-code HUCs within the project area resulted in low (class 2) to moderate (class 3) level of sensitivity. When compared to all sub-watersheds considered on the GMUG, the Lower West Muddy Creek and the Little Henderson Creek subwatersheds were part of the 20% of all subwatersheds in Class 2; and the Lower Hubbard Creek subwatershed was part of the 47% of all subwatersheds in Class 3. What is not reflected in this sensitivity rating is geologic stability. Watersheds within the project area are prone to various forms of instability, but since the Forest did not have a comprehensive geologic instability rating for the entire Forest it was not possible to incorporate that factor into the ratings and class.

All three subwatersheds resulted in Management Activity ratings of low to moderate (Table 47). Lower West Muddy and Lower Hubbard Creek subwatersheds had management activity ratings of low (class 2) and the Little Henderson Creek subwatershed resulted in a moderate rating (class 3). When compared to all sub-watersheds considered on the GMUG, the Lower West Muddy Creek and the Lower Hubbard Creek subwatersheds were part of the 40% of all subwatersheds in Class 2; and the Little Henderson Creek subwatershed was part of the 25% of all subwatersheds in Class 3.

Table 47 Physical sensitivity, management activity total and class with resulting hydrologic integrity score for subwatersheds in the project area (GMUG 2005).

6th-Code HUC	Physical Sensitivity Total	Sensitivity Class	Management Activity Total	Activity Class	Hydrologic Integrity Score	Hydrologic Integrity Class
Little Henderson Ck	1.44	2	.83	3	1.19	2
Lower West Muddy Ck	1.07	2	.41	2	.44	1
Lower Hubbard Ck	1.46	3	.37	2	.54	1

The Lower West Muddy and Lower Hubbard Creek subwatersheds exhibited the lowest Hydrologic Integrity Scores of the three subwatersheds analyzed. Little Henderson Creek subwatershed had the highest score of the three subwatersheds analyzed. The lower score translates into a higher overall relative integrity. When compared to all sub-watersheds considered on the GMUG, all three subwatersheds fell in Class 1 or 2 and corresponded with the majority of subwatersheds on the GMUG.

The majority of the mainstem of West Muddy Creek, Sheep Creek and Little Henderson Creek are Rosgen stream type “B”. About one mile of West Muddy Creek is stream type “C”. The lower 2.5 miles of Ault Creek, located on private lands, is stream type “C”.

Table 48 The amount (in miles) of stream on Forest Service lands by Rosgen stream-type classification in three sixth-code HUCs.

	Rosgen Stream-type Classification			
HUC Name	**A**	**B**	**C**	**Grand Total**
Little Henderson Creek	12	4	0	16
Lower West Muddy Creek	43	7	1	51
Lower Hubbard Creek	27	2	2	31
Grand Total	82	14	3	99

Stream reach sensitivity is largely a function of gradient. Lower-gradient reaches tend to be sensitive to change, especially increases in sediment supply. Steeper, upland reaches (>4 percent) tend to be source sites where initial entrainment of bedload materials begins and are generally referred to as “source” reaches. Channel reaches that exhibit intermediate gradients (1.5 to 4 percent) function to transport material from source areas to low-gradient (0 to 1.5 percent) stream segments, generally known as “response” reaches. Stream slope (gradient) data provided by the Forest Service is summarized in Table 49 and illustrated on Appendix P. The majority of streams mapped (about 90%) represent source reaches. About 10% of mapped streams represent “transport” reaches and no mapped reaches had a gradient less than 1.5% n Forest Service lands. Ault Creek, located on private lands in the eastern part of the Lower West Muddy Creek subwatershed, is the only mapped stream with gradients less than 1.5%.

Table 49 The amount (in miles) of stream on Forest Service lands by gradient class in three sixth-code HUCs.

	Gradient Class			
HUC Name	**>4%**	**1.5 - 4%**	**<1.5%**	**Grand Total**
Little Henderson Creek	33	4	0	37
Lower West Muddy Creek	74	8	0	82

Lower Hubbard Creek	35	4	0	39
Grand Total	142	16	0	158

For this analysis, the project area is defined as the construction ROW corridor in which ground-disturbing activities are proposed to occur. This is approximately a 100-foot linear feature. The long term ROW is 50-feet. The project area also includes specific roads and a staging area that will be necessary for the construction, operation and maintenance of the pipeline system.

The Proposed Action Alternative would result in ground disturbing activities within 100-feet of streams in Little Henderson Creek, Lower Hubbard Creek, and Lower West Muddy Creek subwatersheds. The majority of pipeline construction would occur in the Lower West Muddy Creek subwatershed, including all perennial stream pipeline crossings.
The proposed action alternative would result in approximately 22 acres of construction (100-foot) ROW within 100-feet of ephemeral, intermittent or perennial streams. The majority (90%) of this would be associated with ephemeral and intermittent streams. Less than 10% of the acres within 100-feet of a stream would be associated with perennial streams. The following Table 50 shows the acres of construction (100-foot) ROW on Forest Service lands within 100-feet of a stream by 6th-code HUC:

Table 50 The amount (in acres) of proposed 100-foot construction ROW within 100-feet of an ephemeral, intermittent or perennial stream.

	Stream Class									
	EPHEMERAL			INTERMITTENT			PERENNIAL			Grand Total Probable Disturbance
HUC Name	FS	Private	Total	FS	Private	Total	FS	Private	Total	
Little Henderson Creek				0.46	0.48	0.94	0.11		0.11	1.05
Lower Hubbard Creek	0.24		0.24	2.76		2.76	0.86		0.86	3.86
Lower West Muddy Creek	12.93	0.97	13.89	3.31	1.81	5.11	0.99	1.33	2.32	21.32
Grand Total	13.17	0.97	14.13	6.52	2.28	8.81	1.96	1.33	3.29	26.23

Of the 37,251 Forest Service acres represented by the Lower West Muddy Creek, Lower Hubbard Creek and Little Henderson subwatersheds (from Table 44); about 16% of the topography on Forest Service lands is slopes greater than 35% (Table 51).

Table 51 The amount (in acres) of landscape on slopes greater than 20%.

	Forest Service			All Owners
HUC Name	>35%	20-35%	Total	Total
Lower Hubbard Creek	1,212	2,186	3,399	3,399
Lower West Muddy Creek	4,237	9,821	14,058	14,285
Little Henderson Creek	681	2,024	2,705	2,843
Grand Total	6,130	14,032	20,162	20,526

Slopes from 20% to 35% are considered to have a moderate potential for erosion. Slopes over 35% are considered to have a high potential for erosion (Appendix R). Approximately a half-acre (0.6 acre) of the estimated 26 total acres of disturbance would be located on slopes greater than 35%. This equates to about 2.3% of Forest Service acres within 100-feet of a stream being disturbed on slopes greater than 35%. About 4-acres of disturbance is proposed on slopes 20 – 35%. The proposed acres of disturbance on slopes greater than 20% are all within the Lower West Muddy Creek subwatershed.

The steeper the slope the greater the potential for downslope impacts to occur. The acres of 100-foot ROW within 100-feet of a stream were further stratified to consider slope steepness. See Table 52.

Table 52 The amount (in acres) of proposed 100-foot construction ROW on slopes greater than 20 percent within 100-feet of an ephemeral, intermittent or perennial stream.

	Forest Service									
HUC Name	Ephemeral >35%	20-35%	Total	Intermittent >35%	20-35%	Total	Perennial >35%	20-35%	Total	All Owners Total
Little Henderson Creek										
Lower Hubbard Creek										
Lower W. Muddy Creek	0.5	3.4	3.9	0.1	0.9	1.0		0.1	0.1	5.0
Grand Total	0.5	3.4	3.9	0.1	0.9	1.0		0.1	0.1	5.0

50-foot Long-term Right-of-Way

The proposed action alternative would result in approximately 11 acres of long term ROW within 100-feet of an ephemeral, intermittent or perennial stream. The majority (90%) of this would be associated with ephemeral and intermittent streams. Less than 10% of the acres within 100-feet of a stream would be associated with perennial streams. The following Table 53 shows the acres of long term ROW (50') on Forest Service lands within 100-feet of a stream by 6th-code HUC.

Table 53 The amount (in acres) of proposed 50-foot ROW within 100-feet of an ephemeral, intermittent or perennial stream.

	Stream Class									
	Ephemeral			Intermittent			Perennial			
HUC Name	FS	Private	Total	FS	Private	Total	FS	Private	Total	HUC Total
Little Henderson Creek				0.23	0.24	0.47	0.02		0.02	0.49
Lower Hubbard Creek	0.14		0.14	1.38		1.38	0.47		0.47	1.99
Lower W. Muddy Creek	6.62	0.48	7.10	1.50	0.85	2.34	0.47	0.62	1.09	10.54
Grand Total	6.76	0.48	7.24	3.11	1.08	4.20	0.97	0.62	1.59	13.02

The acres of 50-foot ROW within 100-feet of a stream were further stratified to consider slope steepness. The following Table 54 displays the amount of ROW area within 100-feet of a stream by slope class. As stated earlier, slopes from 20% to 35% are considered to have a moderate potential for erosion. Slopes over 35% are considered to have a high potential for erosion. Less than a half-acre (0.2 acre) of the estimated 13 total acres of disturbance would be located on slopes greater than 35%. This equates to about 1.5% of Forest Service acres within 100-feet of a stream being disturbed on slopes greater than 35%. About 2.5-acres of disturbance is proposed on slopes 20 – 35%. The proposed 2.5 acres of disturbance on slopes greater than 20% are within the Lower West Muddy Creek subwatershed and associated with the proposed crossing of West Muddy Creek.

Table 54 The amount (in acres) of proposed 50-foot ROW on slopes greater than 20 percent within 100-feet of an ephemeral, intermittent or perennial stream.

	Forest Service										
	Ephemeral			**Intermittent**			**Perennial**			**FS**	**All Owners**
HUC Name	**>35**	**20-35**	**Total**	**>35**	**20-35**	**Total**	**>35**	**20-35**	**Total**	**Total**	**Total**
Little Henderson Creek											
Lower Hubbard Creek											
Lower W. Muddy Creek	0.2	1.9	2.1	0.0	0.3	0.3		0.1	0.1	2.5	2.5
Grand Total	0.2	1.9	2.1	0.0	0.3	0.3		0.1	0.1	2.5	2.5

Field reconnaissance of the proposed and alternative pipeline routes was conducted during July and August 2006 to identify stream crossings that could potentially be impacted and to verify stream class (i.e. ephemeral, intermittent and perennial). Appendix O displays streams and their typing within the project area. In general, the Forest Service hydrography layer over estimated the amount of intermittent streams. The stream class (ephemeral, intermittent or perennial) at stream pipeline crossings was field verified and mapping corrections made accordingly. The Proposed Action Alternative would result in about 22 acres of construction ROW and 11 acres of long-term ROW within the 100-feet of an ephemeral, intermittent or perennial stream course on National Forest lands. Of these acres, about 78% occurs in the Lower West Muddy Creek subwatershed. Less than 1 percent of the Forest Service acreage proposed for construction activities are on slopes greater than 35% and are within 100-feet of a stream. Figure 7 displays the acres of 100-foot and 50-foot ROW disturbance that may occur within 100-feet of an ephemeral or intermittent stream. There are no activities proposed on slopes greater than 35% within 100-feet of perennial streams. Note that no activities are proposed near streams on slopes greater than 35% in the Lower Hubbard Creek or Little Henderson Creek subwatersheds.

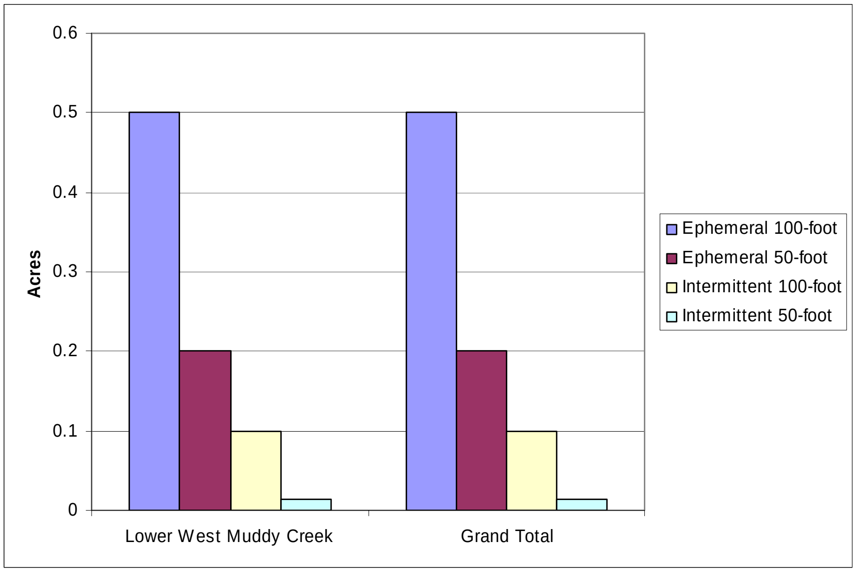

Figure 8. Amount (in acres) of construction and long-term ROW on slopes greater than 35 percent near ephemeral or intermittent streams.

Water Quality and Supply

This analysis focuses on a 100-foot buffer area adjacent to all ephemeral, intermittent and perennial streams potentially affected by the proposed pipeline and alternative routes

The general geology underlying the project area is comprised of the Wasatch Formation (Cryer and Hughes 1997). Basically, it's characterized as Tertiary sedimentary rocks comprised of claystone, siltstone, and sandstone; also shale and lignite at its base. It is important to note that West Muddy Creek has naturally occurring high turbidity and sedimentation rates due to clay-rich soils formed from the Wasatch Formation, even during small to moderate runoff events. An evaluation of geologic factors in the project area has been completed by Wright Water Engineers, Inc (WWE 2006).

Monthly temperature averages (weather station at Redstone, Pitkin County) range from 20°F to 60°F, with July documenting the warmest daily maximum and daily minimum temperatures. Based on the high elevation (above 7,000 feet), it is not uncommon to have minimum temperatures below freezing for most of the year. Precipitation is dominated by winter snowfall. 75% percent of all precipitation falls as snow during the winter months. High intensity-short duration rainfall occurs during the summer months of June, July and August.

The majority of runoff results from snowmelt during April through July (See Table 55). The timing of peak flows varies considerably by elevation. Records indicate that peak flows occur as early as mid April, but generally occur in May.

Table 55. Typical monthly streamflows for USGS gages in or near the project area. The period of record is 7 to 13 years.

Stream Gage Site (USGS Gage # and Name)	Jan (cfs)	Feb (cfs)	Mar (cfs)	April (cfs)	May (cfs)	Jun (cfs)	July (cfs)	Aug (cfs)	Sept (cfs)	Oct (cfs)	Nov (cfs)	Dec (cfs)
09130600 West Muddy Creek near Ragged Mt, CO	0.37	0.4	1.0	8.1	26.5	13.6	2.54	1.12	0.83	0.91	0.83	0.55
09130800 West Muddy Creek near Bowie, CO	2.7	2.6	6.0	50.	110.	37.	6.3	1.9	3.2	4.6	4.6	3.1
09131200 West Muddy Creek near Somerset, CO	5.0	5.1	9.9	65.	167.	75.	15.	6.3	8.7	8.5	7.4	5.7

The classified uses for waters of the North Fork Gunnison River are aquatic life, recreation, water supply and agriculture (WQCC 2006). None of the streams in the project area are listed or proposed for listing on the State's 303(d) water quality limited stream segment list. The Colorado Department of Public Health and Environment, Water Quality Control Commission 305(b) report (CHD 2004) reaffirmed that the designated beneficial uses for the North Fork Gunnison River and upper Colorado River are being met.

3.10.4.2 Groundwater

The analysis area for direct and indirect effects to ground-water resources includes the area immediately surrounding the length of the 100-foot temporary construction ROW. The cumulative effects area analysis area is the same as the direct and indirect effects analysis area.

The occurrence and distribution of shallow ground water resources in the project area are linked to the topography and underlying geology. The Sheep Pipeline route crosses several geologic units, each of which have varying capabilities to store and transmit ground water. For the purposes of this analysis these units will be referred to as hydrostratigraphic units to describe their hydrogeologic characteristics.

Portions of the pipeline route cross the Wasatch Formation which consists of siltstones, claystones, shales and sandstones, and will be referred to as the bedrock hydrostratigraphic unit. Based on the primary rock types being fine-grained, the Wasatch Formation is generally not considered to be an aquifer, although it can locally support low volume wells (Ackerman and Brooks, 1986 and Brooks, 1983). However, no water wells are known to be completed in the Wasatch Formation in the project area. Seasonal seeps and springs may occur in areas where the Wasatch has been subject to mass wasting (i.e. landslide) events.

Portions of the route also cross unconsolidated surficial deposits that include mapped landslide deposits and eroded basalt that has been covered with a shallow layer of glacial debris (Tweto, etal, 1978), and small scale alluvial deposits along stream courses. These will collectively be referred to as the unconsolidated deposit hydrostratigraphic unit.

These unconsolidated surficial deposits have hydraulic properties sufficient to store and transmit ground water, however the limited areal extent of these deposits do not make them sources of substantial ground water resources. These deposits support seasonal seeps and springs in the project area.

Alluvial deposits exist along the perennial stream courses in the project area. These deposits range from a few, to tens of feet in thickness, and are generally estimated to be less than 30 feet thick in the project area (CGWA, 2000). These deposits have limited areal extents, and occur immediately adjacent to existing stream courses. Ground water discharge from these units supports perennial and intermittent stream flows. One ground water well is known to occur in alluvial deposits on the north end of the project area. This well is 30 feet deep, and produced 15 gallons per minute. The water level was recorded to be 10 feet below ground surface in 1978 (Ackerman and Brooks, 1986). A near-surface water table is known to exist in the alluvial deposits adjacent to Little Henderson Creek at the north end of the project area. Ground water was encountered about 5 feet below the surface on the Henderson No. 1 gas well pad.

The project area lies within the greater Gunnison River basin alluvial aquifer system. Topper, et al, identify unconsolidated Quaternary-aged alluvial aquifers associated with major river systems as one of the principal types of aquifers in the state. In the Gunnison River Basin, it is acknowledged that surface water is the main water resource in this area.

Ground-water occurring in the unconsolidated hydrostratigrapic unit and exposed or mass wasted portions of Wasatch Formation bedrock hydrostratigraphic unit exists under unconfined or ‘water table’ conditions. Under these conditions, the local water table fluctuates in response to recharge events and atmospheric changes. It is estimated that the water table can vary seasonally (dependent on topographic location) from between several feet of the surface to ten or more feet of the surface.

Principle recharge to the ground-water system is from direct infiltration of precipitation into the subsurface. In the project area, precipitation is estimated to range between 21 and 30 inches/year (Wright Water Engineers, 2003), about seventy-five percent of which falls as snow in the winter months (Gill, 2006). About 2 % of precipitation is estimated to infiltrate the subsurface and recharge the shallow ground-water system in the project area (Colorado School of Mines, undated). A minor amount of this recharge goes to deeper underlying hydrostratigraphic units. A review of soil types in the area indicates that most the soils have moderate to slow permeabilities suggesting that recharge runs off overland rather than infiltrating the subsurface. The hydric soils associated with wetlands in the project area indicative of shallow water tables and are generally associated with stream courses.

Primary ground-water discharge occurs from seasonal springs in the unconsolidated hydrostratigraphic unit, and to stream courses flowing through the project area (CGWA, 2000). In general, the direction of ground-water flow is the same as that of surface water flow.

Water quality data in the project area is limited, however data from surrounding areas can be used to extrapolate existing water quality. The USGS collected field parameters at a spring in the Wasatch Formation and found the pH to be 7.5 and specific conductance to be 285 microsiemens per cm. This value is consistent with values measured by Cordilleran Compliance Services in 2002 for a surface water source to the south of the project area that found a pH of 7.5 and specific conductance of 284 micromhos per centimeter. Wright Water Engineers reported the results of sampling 2 water wells and one spring to the south and southeast of the project area. Results showed calcium-carbonate type water, with low total dissolved solids.

Ground water in the project area is used for wildlife and ecosystem support. There are no known developed domestic uses of ground water in the area. A review of range improvements indicate that stock watering sources are ponds constructed along the course of existing drainages to trap surface runoff, and one stock pond (878P22, see Chapter 3.5.4) is noted to be spring fed. SWCA (2006) noted one seep in NWSE section 29, T 11S, R 91W (referred to as Wetland 7). This corresponds to stock pond 878P22.

3.10.4.3 Wetlands/Fens

There are no wetland areas along the pipeline corridor that are identified as fens. The wetland types that would be impacted by the proposed action include those wetlands associated with riparian or riverine bottomlands, and transitional/emergent wetlands. Both of these types of wetlands along the project area are associated with either stream systems both perennial or intermittent (West Muddy Creek, Sheep Creek, Ault Creek, associated tributaries) or small poorly defined drainages, with vegetation more adapted to seasonally wet/dry conditions. The hydrology of these two types of wetlands is dominated by surface influx rather than a subsurface influx which is more typical of a fen. In addition, the wetlands identified along the project corridor did not have the hydric soils indicative of a fen. These would include soils dominated by organic matter or classed as a histosols (peaty, mucky, etc.).

3.10.5 Watershed Environmental Consequences

3.10.5.1 No Action Alternative

The No Action Alternative would result in no pipeline construction activities and therefore no measurable difference between current conditions and the No Action Alternative. All forces acting on watershed resources would remain the same. The Shallow ground-water resource would not be affected by project activities. On-going variations associated with climatic variables will continue. The No Action Alternative would not contribute to any cumulative impacts, beyond that of the current condition, to watershed and soil resources.

3.10.5.2 Proposed Action Alternative

The Proposed Action would construct a natural gas gathering system (pipeline) with associated facilities within the Little Henderson Creek, Lower West Muddy Creek and the Lower Hubbard Creek subwatersheds within the North Fork Gunnison River Subbasin of the GMUG National Forest. The entire system would consist of approximately 10.8 miles (about 130 acres of probable disturbance), of which 6.6 miles (about 80 acres of probable disturbance) would be on National Forest lands. Although the Proposed Action spans three subwatersheds, greater than 80% of the pipeline would occur in the Lower West Muddy Creek subwatershed, including two perennial stream pipeline crossings on Forest Service lands.

The Proposed Action Alternative would result in about 22 acres of construction ROW and 11 acres of long-term ROW within the 100-feet of an ephemeral, intermittent or perennial stream course on National Forest lands. Of these acres, about 78% occurs in the Lower West Muddy Creek subwatershed. Less than 1 percent of the Forest Service acreage proposed for construction activities are on slopes greater than 35% and are within 100-feet of a stream. Figure 7 displays the acres of 100-foot and 50-foot ROW disturbance that may occur within 100-feet of an ephemeral or intermittent stream. There are no activities proposed on slopes greater than 35% within 100-feet of perennial streams. Note that no activities are proposed near streams on slopes greater than 35% in the Lower Hubbard Creek or Little Henderson Creek subwatersheds.

Potential impacts to surface water resources from the action alternatives include increased turbidity and sedimentation to watercourses, increased but localized short-term runoff, and potential contamination of surface waters from fuels and other chemicals spills. The potential for adverse impacts would be greatest during construction activities and will decrease in time due to reclamation, revegetation efforts and natural stabilization. The magnitude of these potential impacts depends on proximity of the disturbance to stream channels, hillslope gradient, soil type, duration and timing of activities, and the success of reclamation, erosion control, BMPs, design features and mitigation measures. Impacts will vary depending upon weather and ground conditions during construction activities. It is assumed that construction activities will be limited dry conditions.

To minimize or ameliorate the amount of potential sediment reaching stream channels, sediment control devices would be employed as directed by the Forest Service along slopes or stream crossings. Stream crossings would be constructed in a manner that maintains/restores stable banks and generally crosses at right angles to the stream. Overall, impacts from increased sedimentation are greatest during construction and decrease to immeasurable levels within a few years. Due to the high natural sediment load, any potential increase would be un-measurable. Regardless, this analysis assumes that Forest Service Best Management Practices, State Storm Water Prevention Practices and project design features will be required and implemented to protect watershed resources.

Field reconnaissance has determined the best location in which to cross Sheep Creek and West Muddy Creek. As previously discussed, these crossings are located on Rosgen type “B”, low to moderate gradient (1.5 – 4%) stream reaches that are very resilient to impacts (transport reaches). The proposed crossings are perpendicular to the stream channel and floodplain. The West Muddy Creek crossing provides a natural place in which to temporarily divert stream flow into a natural flood flow channel. A design feature will require a site-specific design for crossing West Muddy Creek, a longitudinal profile and at least two cross sections will be surveyed. The measurements will be used to document pre-construction conditions for future monitoring and aid in peak flow calculations. Calculations of mean annual peak flow and 100-year return interval flood flow using nearby gauging station records and *Streamflow Characteristics In Western Colorado* (USGS, Report 85-4086) will be completed.

Potential impacts of the proposed and alternate pipeline routes center around three areas:

- Clearing of the ROW and construction of the pipeline
- Reconstruction and use of access roads
- Potential for contamination of surface waters through toxic spills

Probably the largest short-term risk to watershed resources is the construction activities associated with direct pipeline crossing of stream channels. There are five (5) proposed pipeline crossings of perennial streams, the only major one of which is the proposed crossing of West Muddy Creek on NF lands (See Appendix T for photos). The other perennial stream crossings are of Sheep Creek (See Appendix T for photos), two on private and one on NFS lands, and Ault Creek on private land. There are six (6) intermittent (three (3) are on NF) and nine (9) ephemeral (seven (7) are on NF) stream crossings identified from maps and field reconnaissance. The two perennial stream pipeline crossings on National Forest are characterized as follows:

- West Muddy Creek - The crossing at West Muddy Creek is a Rosgen type "B", low to moderate gradient (1.5 - 4%) segment dominated by cobble and small boulder substrate (see Appendix T.2.). Due to high background levels of sedimentation, fine sediments within the stream channel are prominent (see Appendix T.4.). Streambanks at the proposed crossing are stable and the floodplain is well vegetated with riparian species.
- Sheep Creek - The proposed Sheep Creek pipeline crossing is located at the site of a previously constructed, but washed out, earthen dam used to pond water for livestock (see Appendix T.7.). The stream channel is mapped as a Rosgen type "B", low to moderate gradient (1.5 - 4%) segment dominated by small boulder, cobble and fine sediment substrates. Streambanks are stable except for the section of dam that has been washed out.

Assuming that Forest Service Best Management Practices, Storm Water Prevent Practices and project design features are implemented consistently and correctly implemented, there would be no significant impacts to watershed or soil resources from the Proposed Action Alternative.

Surface Water

This analysis focuses on a 100-foot buffer area adjacent to all ephemeral, intermittent and perennial streams potentially affected by the proposed pipeline and alternative routes. Increased short-term sedimentation to stream channels from surface disturbance within 100-feet of a stream could potentially occur during pipeline construction due to increased erosion during snowmelt and precipitation events. Increased turbidity could affect aquatic organisms in West Muddy Creek, the primary stream in the project area (See Chapter 3.7). West Muddy Creek however, has naturally occurring high turbidity and sedimentation rates due to clay-rich soils formed from the Wasatch Formation, even during small to moderate runoff events.

Where possible during field construction, simple avoidance of stream crossings is the best protection against impacts. However, many of these crossings are unavoidable or by avoiding them and using a different route, more significant resource damage would be likely to occur. The implementation of BMPs, erosion control during and after construction, and reclamation of the ROW and stream crossings will minimize the potential of surface erosion and subsequent sedimentation to nearby streams.

Since construction will occur during summer low flow and dry ground conditions, no diversion of Sheep Creek will be necessary. Construction of stream crossings is anticipated to take no more than one or two days each and will occur during a summer period of low flow (to be determined and approved by Forest Service personnel).

There are proposed stream pipeline crossings, most of which would occur in the Lower West Muddy Creek subwatershed. Based on field reconnaissance, the proposed stream pipeline crossings of Sheep Creek and West Muddy Creek are the best location. Design and timing criteria were identified earlier in this section. The implementation of BMPs, erosion control during and after construction, and reclamation of the ROW and stream crossings will minimize any potential of surface erosion and subsequent sedimentation.

Water Quality and Supply

As part of the Proposed Action, 21 miles of existing Forest Service roads and one temporary road (267 feet) would be used for access to the construction ROW. No new permanent roads would be constructed. Due to the existing condition of NFSR 704, it may be necessary to reconstruct and surface specific segments to improve accessibility. While there may be some short-term impacts related to sedimentation from reconstruction activities, surfacing and reconstruction would constitute a long-term benefit by reducing sediment delivery to West Muddy Creek compared to the current condition. Note that the background sediment and turbidity level in West Muddy Creek is extremely high, even at moderate to low runoff events. Therefore, the potential short-term sediment contributions from reconstruction and surfacing are likely immeasurable.

A proposed temporary road would cross one small ephemeral stream between private land (Martin aka Parker) and the ROW (Appendix 0). In addition, a construction-staging area is proposed near Condemn It Park. The implementation of BMPs, erosion control during and after construction, and reclamation of the staging area and temporary road will minimize the potential of surface erosion and any subsequent sedimentation. These areas are located on flat ground nowhere near perennial streams and pose minimal to no risk to watershed resources.

Increased short-term sedimentation to stream channels from surface disturbance within 100-feet of a stream could potentially occur during pipeline construction due to increased erosion during snowmelt and precipitation events. Increased turbidity could affect aquatic organisms in West Muddy Creek, the primary stream in the project area (See Chapter 3.7.4). West Muddy Creek however, has naturally occurring high turbidity and sedimentation rates due to clay-rich soils formed from the Wasatch Formation, even during small to moderate runoff events.

There are proposed stream pipeline crossings, most of which would occur in the Lower West Muddy Creek subwatershed. Based on field reconnaissance, the proposed stream pipeline crossings of Sheep Creek and West Muddy Creek are the best location. Design and timing criteria were identified earlier in this section. The implementation of BMPs, erosion control during and after construction, and reclamation of the ROW and stream crossings will minimize any potential of surface erosion and subsequent sedimentation.

To minimize or ameliorate the amount of potential sediment reaching stream channels, sediment control devices would be employed as directed by the Forest Service along slopes or stream crossings. Stream crossings would be constructed in a manner that maintains/restores stable banks and generally crosses at right angles to the stream. Overall, impacts from increased sedimentation are greatest during construction and decrease to immeasurable levels within a few years. Due to the high natural sediment load, any potential increase would be un-measurable. Regardless, this analysis assumes that Forest Service Best Management Practices, State Storm Water Prevention Practices and project design features will be required and implemented to protect watershed resources.

Water produced from extraction of natural gas can contain high concentrations of salts and hydrocarbons. The proposed pipeline construction includes the placement of a 6-inch steel pipeline to transport produced water. While there is always a risk of spills from water pipeline breakage, this analysis assumes that every possible measure, including POD implementation, would be taken to avoid pipeline breakage and spills. Additionally, there is the potential for spills of fuel or other hazardous liquids from storage containers, equipment working near streams, and fuel transfers. Spills that reach a water body could have harmful impacts on water quality. In the event of a spill, it is assumed the area would be contained immediately and cleaned up in accordance with GEC's Spill Prevention Control and Countermeasures Plan (SPCC in POD).

Alterations to the streamflow regime, including timing and magnitude of peak flows, are not likely to be affected by the proposed action. There is not enough vegetation being removed to influence runoff characteristics. Changes in flow are generally not measurable until over 25 percent of the basal area of a forested watershed is removed. In this case, the majority of the ROW is not forested but composed of shrub and grass. Therefore no effects to flow regimes are expected. There is not enough vegetation being removed to change or impact flow regimes. Clearing equates to about 0.2% of the overall subwatershed area assuming the entire watersheds were forested, which they are not. The proposed staging area and temporary road are located on flat ground away from streams and pose a minimal or no risk to watershed resources.

There is not enough vegetation being removed to change or impact flow regimes. Clearing equates to about 0.2% of the overall subwatershed area assuming the entire watersheds were forested, which they are not. The proposed staging area and temporary road are located on flat ground away from streams and pose a minimal or no risk to watershed resources.

Groundwater

Pipeline construction could encounter shallow ground-water resources and cause temporary alterations to the existing flow system. The scope of these alterations depends on the underlying geology, season of use, and topography.

Where trenching crosses portions of the unconsolidated hydrostatigraphic unit, ground water could be encountered in the trench. It is considered more likely that shallow ground water would be encountered in the trench where it crosses areas that are at a topographic low and have a developed shallow ground-water system, such as perennial stream courses and wetlands. In the proposed action, the pipeline ROW would cross or encounter perennial stream course at four places, once on West Muddy Creek, twice on Sheep Creek and at the pipeline interconnect on Little Henderson Creek. The proposed pipeline route would cross wetlands in 12 locations (on NFS and private lands), all of these wetland locations are associated with drainage courses.

It is also considered more likely that shallow ground water would be encountered in the period of time directly following snowmelt and seasonal runoff, estimated to be May to June when local water tables are expected to be higher than other times of year. Performing perennial drainage crossings during times of year when the shallow ground water table is lower will reduce the amount of shallow ground water encountered and reduce the effects to the flow system.

Trenching may encounter near-surface ground water where it crosses landslide deposits and glacial debris. It is expected that construction later in the summer season would encounter lesser amounts of shallow ground water.

Trenching through the unconsolidated hydrostratigraphic units where the deposits are saturated will temporarily alter the flow regime by creating an artificial discharge point into the trench. This affect could occur over an estimated 10 percent of the pipeline route on NFS lands. This affect is considered to be temporary as the trench would be backfilled with native materials between 2 to about 14 days of initial disturbance. Within the trenched area itself, the hydraulic conductivity of the materials may be temporarily increased creating conditions where ground water would travel more rapidly, however this is forecasted to be a temporary effect, and is not expected to impart a noticeable or measurable change. The existing unconsolidated materials are estimated to have transmissivity in the range of 100 to 200 square feet per day (ft^2/day). The magnitude of a temporary increase within the trench is not expected to be measurable on this scale.

It may be necessary to pump ground water out of the trench to facilitate pipeline installation. Should this be needed, the ground water would be discharged to the surface. Since this effect is most likely to occur where perennial drainages are crossed, ground-water could also be placed in the temporary channel along with diverted surface water. This effect is anticipated to occur for 3 to 5 days, and upon backfilling return to about pre-disturbance conditions. It is not possible to quantify the amount of ground water that may be encountered as it could be variable due to specific climatic conditions of the time. The mitigation noted for constructing across stream channels after the runoff season would ensure that the minimal amount of ground water is affected.

Stock pond 878P22 is supported by seep that is uphill from the ROW. The source of the seep is estimated to emit from the unconsolidated hydrostratigraphic unit and is recharged from a location at higher elevation that the ROW. Construction of the ROW is not expected to affect this seep given it's location uphill and removed from the ROW.

Shallow ground-water quality may be affected by spills of fuels or lubricants. Any spills would be handled according to the Spill Containment and Countermeasure Plan approved by the Forest Service POD. The spill plan will include provision for cleaning contaminated soils to reduce the likelihood that contaminants could leach into the ground water. Shallow ground-water quality could also be affected if the water pipeline developed a leak. Should this occur, water of lesser quality could enter the shallow system. This would cause a degradation in water quality immediately surrounding the source. This change in quality could include raising the TDS, conductance, salinity, and trace element content of shallow ground-water. It is expected that should a water pipeline leak occur, that repairs would be made in a timely fashion to limit the amount of lesser quality water entering the shallow system. Long term, measurable effects to the shallow ground-water system are no anticipated, as natural attenuation of constituents would occur.

Vegetation removal along the ROW will alter the existing recharge regime by reducing the amount of transpiration. However given the local nature of the project, small scale disturbance, revegetation requirements, this effect is not expected to be measurable.

Groundwater Mitigations

Ground water impacts will be minimized by use of the following mitigations:

1. Constructing perennial stream crossings at times of year when water table is lower (generally June and later) effectiveness on shallow ground-water resources is considered to be moderate to high. The range of effectiveness is based on the unpredictability of climatic conditions from one year to the next; however June is consistently the driest month (in terms of precipitation) in this area. The effectiveness is known because of experience with other projects on the Forest for constructing stream crossings for roads and other pipelines during various times of year that indicate the best time to conduct these activities is post-runoff.

2. Properly managing ground water pumped from trenches, divert flow into temporary surface water channels is highly effective at protecting ground water quality.

Cumulative effects

Other activities contributing to cumulative effects on watershed and soil resources include additional oil and gas development, grazing, recreation, road maintenance and reconstruction, past and future forest management activities (logging), and other activities located on private lands. Some of these activities are occurring now or in the recent past, while others are expected to be proposed in the future.

Potential future projects are speculative. Therefore, site-specific data related to spatial context, timing and magnitude are not known at this time. With increased cumulative activities, there would be a greater potential for increased sedimentation and slope movements.

Since there are no other known actions taking place that affect ground-water, cumulative effects are limited to those related to variations in the ground water regime by on-going geologic and climatic process that would cause variations. Construction of stock ponds on drainage courses that pond water have small influences on localized recharge, however these effects are considered negligible. On-going uses for wildlife and ecosystem support are expected to continue at current levels after project implementation.

3.10.6 Soils Introduction

This is an analysis of the affect and impact the SGGS project would have on soil resources.

3.10.7 Soils Methodology

A GIS analysis was performed to calculate the acres of potential disturbance within the construction (100-foot) and long-term (50-foot) ROW and the distribution of these acres by slope class.

3.10.8 Soils Regulatory Framework

GMUG NF LMP Direction – Soils

Goals

- Conserve soil resources.
- Maintain long-term land productivity.
- Protect the water quality in streams, lakes, riparian areas, and other water bodies.

Standards and Guidelines

- Maintain Soil Productivity, minimize human caused soil erosion and maintain the integrity of associated ecosystems.
- Give roads and trails special design considerations to prevent resource damage on capability areas containing soils with high shrink-swell capacity.
- Provide adequate road and trail cross drainage to reduce sediment transport energy.
- Revegetate all areas capable of supporting vegetation, disturbed during road construction and or reconstruction to stabilize the area and reduce soil erosion.
- Provide permanent drainage and establish protective vegetative cover on all new temporary roads or equipment ways, and all existing roads that are being removed from the transportation system.
- Restore soil disturbance caused by human use to soil loss tolerance levels commensurate with the natural ecological processes for the treatment areas.
- Obliterate and rehabilitate all disturbed areas identified for return to resource production.
- Reduce; through designed management practices and appropriate erosion measures the project caused on-site erosion rates by 75% within the first year after disturbance, and by 95% within 5 years.
- Design continuing mitigation/restoration practice and follow-up maintenance activities to insure 80% original ground cover (vegetation) recovery occurs within 5 years after disturbance.

3.10.9 Soils Affected Environment

The Proposed Action would allow construction of a natural gas gathering system (pipeline) with associated facilities within the Little Henderson Creek, Lower West Muddy Creek and the Lower Hubbard Creek subwatersheds within the North Fork Gunnison River Subbasin of the GMUG National Forest. The entire system would consist of approximately 10.8 miles (about 130 acres of probable disturbance), of which 6.6 miles (about 80 acres of probable disturbance) would be on National Forest lands. Although the Proposed Action spans three subwatersheds, greater than 80% of the pipeline would occur in the Lower West Muddy Creek subwatershed, including two perennial stream pipeline crossings on NFS lands.

100-Foot Construction Right-of-Way

The Proposed Action Alternative would result in approximately 131 acres of overall ground disturbance; 81 of these acres are on Forest Service lands within the construction (100-foot) ROW and an associated staging area. Table 56 shows the acres of estimated (GIS derived) soil disturbance by 6^{th}-code HUC:

Table 56. The amount (in acres) of soils disturbed within the proposed construction (100-foot) ROW (all soil types).

HUC Name	Forest Service	Private	Grand Total
Little Henderson Creek	7	7	14
Lower Hubbard Creek	10		10
Lower W. Muddy Creek	64	43	107
Grand Total	81#	50	131#

including staging area

On disturbed soils the potential for erosion increases as slope increases. The following Table 57 displays the amount of area in this alternative by slope class. Slopes from 20% to 35% are considered to have a moderate potential for erosion. Slopes over 35% are considered to have a high potential for erosion. Approximately 3 acres of the estimated 130 total acres of disturbance would be located on slopes greater than 35%. This equates to about 3.7% of Forest Service acres being disturbed on slopes great than 35%.

Table 57. The amount of area (in acres) within the proposed construction (100-foot) ROW on slopes greater than 20 percent.

HUC Name	Slopes >35%			Slopes 20-35%			Total
	FS	Private	Total	FS	Private	Total	Slopes >20%
Little Henderson Creek	0	0	0	4	0	4	4
Lower Hubbard Creek	0	0	0	1	0	1	1
Lower W. Muddy Creek	3	0	3	22	0	22	25
Grand Total	3	0	3	27	0	27	30

Slopes in this category within 100-feet of an ephemeral, intermittent or perennial stream were discussed earlier in the Watershed section. Table 58 displays the surface erosion hazard by category for the 100-foot construction ROW.

Table 58 Acres by surface erosion hazard in the construction (100-foot) ROW on Forest Service lands by 6th-code HUC.

Surface Erosion Hazard Rating	Lower Hubbard Ck	Lower W. Muddy Ck	Little Henderson Ck	Total
Low	0	26	3	29
Low to Moderate	1	1	0	2
Moderate to High	9	33	4	46
High	0	3	0	3

50-foot Long-term Right-of-Way

The proposed action alternative would result in approximately 40 acres of overall ground disturbance on Forest Service lands within the long-term (50-foot) ROW. The following Table 59 shows the acres of soil disturbance by 6th-code HUC:

Table 59 The amount (in acres) of soil disturbed within the proposed long-term (50-foot) ROW (all soil types).

HUC Name	Forest Service	Private	Total
Little Henderson Creek	3	4	7
Lower Hubbard Creek	5	0	5
Lower W. Muddy Creek	32	21	53
Grand Total	40	25	65

Table 60 displays the amount of area in this alternative by slope class. Slopes from 20% to 35% are considered to have a moderate potential for erosion. Slopes over 35% are considered to have a high potential for erosion. Approximately 2 acres of the estimated 65 total acres of disturbance would be located on slopes greater than 35%. This equates to about 5% of Forest Service acres being disturbed on slopes great than 35%. Slopes in this category within 100-feet of an ephemeral, intermittent or perennial stream were discussed in the Watershed section.

Table 60 The amount of area (in acres) within the proposed long-term (50-foot) ROW on slopes greater than 20 percent.

	Slope >35%			Slope 20-35%			Total
HUC Name	FS	Private	Total	FS	Private	Total	Slopes >20%
Little Henderson Creek	0	0	0	2	0	2	2
Lower Hubbard Creek	0	0	0	0	0	0	0
Lower W. Muddy Creek	2	0	2	11	0	11	13
Grand Total	2	0	2	13	0	13	15

3.10.10 Soils Environmental Consequences

3.10.10.1 No Action Alternative

Implementation of the No Action Alternative would result in no pipeline or related construction activities. All forces currently acting on watershed and soil resources would remain the same. The No Action Alternative would not contribute to any cumulative impacts, beyond that of the current condition, to watershed and soil resources.

3.10.10.2 Proposed Action Alternative

The impacts to soils would vary based on the actions that occur within the ROW corridor. In general the soil would be bladed, scraped, piled, excavated, displaced, backfilled, and compacted. In most cases this would alter the soils natural horizons, bulk densities, infiltration rates, aeration and percolation characteristics. Overall, the vegetative cover would be removed and the topsoil would be bladed off the ROW and stockpiled. Within this cleared area a trench would be excavated and the soil would be removed to a depth of at least 36 inches, and piled out of the way, with the topsoil being separated from the subsoil. After the pipe is laid, the trench would be filled in with the subsoil first and the topsoil last.

Soil that is excavated, piled and then replaced can drastically alter soil characteristics from their natural condition. The excavation (3 to 5 ft. deep) of these soils would alter natural soil characteristics, to the point where it can be considered permanent. This relates to a long-term loss of productivity of those areas. If properly treated and reclaimed, the trenched area will likely be able to grow a good vegetative cover of grass and forbs, but soil characteristics will be permanently altered. For the purpose of analysis, the trench area alone (32 inches wide) for the Forest Service portion of the total length amounts to about two (2) acres that would be permanently altered for this alternative. The removal and fill of soil material could cause the mixing or blending of shallow soil horizons, resulting in soil conditions with different soil characteristics. This would modify physical characteristics including structure, texture, and rock content, and potentially lead to reduced soil productivity in the most heavily disturbed areas. On steep side slopes, side cuts would be necessary to provide a working surface for the heavy equipment. On these steeper sections of the landscape, cuts may be necessary. Cut-fills will alter the soil characteristics and affect soil productivity. Work areas would be compacted, and rutted, causing some displacement and destruction of natural soil structure. This would alter aeration, permeability, water holding capacity and runoff characteristics. An increase in surface runoff may result, potentially causing increased sheet, rill, and gully erosion, within the ROW corridor. Construction activities and traffic, during wet periods could result in increased short-term erosion.

For analysis purposes it is assumed that the potential impacts to soils would occur within the construction (100-foot) and long-term (50-foot) ROWs. The factors evaluated here include:

- Total amount of soil disturbance by each alternative
- Total amount of soil disturbance in various slope classes
- Total amount of disturbance by erosion hazard rating

A short-term potential for soil material to migrate outside of the construction ROW and become sediment in the stream network, or would be deposited as a sediment plume on adjacent vegetation.

Design features would be implemented to minimize erosion, reduce sediment and provide for a protective vegetative cover for the soils within the areas disturbed by the construction activities. This analysis assumes that the required Forest Service Best Management Practices, State Storm Water Prevention Practices and project design features will be implemented to protect soil and watershed resources. In addition, all appropriate design criteria and mitigation measures described in the R-2 Soil and Water Conservation Practices Handbook, FSH 2509.25 will be used.

Cumulative Effects

Other activities contributing to cumulative effects on watershed and soil resources include additional oil and gas development, grazing, recreation, past and future forest management activities (logging), and other activities located on private lands. Some of these activities are occurring now or in the recent past, while others are expected to be proposed in the future. Potential future projects are speculative. Therefore, site-specific data related to spatial context, timing and magnitude are not known at this time. Given the high background levels of turbidity and sedimentation due to the clay-rich soils derived from the Wasatch Formation, adverse impacts to watershed resources would be relatively minor in extent and distribution, and would have a low degree of long-term, irreversible impact.

Assuming that Forest Service BMP, R-2 Soil and Water Conservation Practices Handbook, Storm Water Prevent Practices and project design features are implemented consistently and correctly implemented, there would be no significant impacts to soil resources from the Proposed Action Alternative.

3.11 SOCIAL AND ECONOMICS

3.11.1 Introduction

The Sheep Mountain Pipeline is proposed for the remote northwest corner of Gunnison County, very close to the Delta County line. The pipeline itself would be located only in Gunnison County, with some road access located in Delta County. The nearest community to the project site is Paonia, about 25 miles to the south via Forest Road 701 or 30 miles via Colorado Highway 133 and Gunnison County Road 265. Other communities nearby include Hotchkiss and Somerset, each about 7 miles on either side of Paonia along Colorado Highway 133. All of these towns are within Delta County. The nearest comparable community in Gunnison County is Crested Butte, 50 miles to the southeast over Kebler Pass on gravel-surfaced County Road 12, a route that is closed in winter. Marble, a small community of 100 residents in Gunnison County, is located about 25 miles over McClure Pass to the east. The primary analysis area for social and economic effects is Delta and Gunnison Counties.

Gunnison County is characterized by a strong tourism economy supported by outdoor recreationists visiting public lands. Curecanti National Recreation Area and Blue Mesa Reservoir, Crested Butte Mountain Resort, five Wilderness Areas, Paonia State Park, and world-class big game hunting and fishing are some of the outdoor attractions that draw visitors to the area. The city of Gunnison is the county seat and home to Western State College, a four-year liberal arts institution with enrollment of 2,400 students. The other populated area of the county is Crested Butte and Mt Crested Butte, two tourism-based communities serving visitors to Crested Butte Mountain Resort.

Delta County is characterized by a strong natural resource economy, anchored by agricultural production and a significant energy sector. Three large coal mines in the North Fork Valley of the Gunnison River dominate the mining sector. The largest municipality and county seat is Delta, located on US Highway 50 between two high-growth communities of Montrose to the south and Grand Junction to the northwest. Other important municipalities include Paonia and Hotchkiss, located up the North Fork Valley and home to many coal mine workers, and Cedaredge and Orchard City, agricultural communities located along State Highway 65 as it rises toward the Grand Mesa.

3.11.2 Affected Environment

Population and Housing

Delta and Gunnison Counties are rural areas of Colorado's Western Slope. Based on 2005 estimates, Delta County, with about 30,000 residents, is roughly twice the population of Gunnison County. About half of each county's population lives outside of incorporated municipalities.

Age and gender are two demographic measures that differentiate the counties. Delta County has an older population with nearly a fifth of the residents age 65 and older. This same age group in Gunnison County accounts for only seven percent of all residents. Gunnison County also has a much higher percentage of men. Between the ages of 20 and 64, there are five men for every four women. In Delta County the ratio is nearly equal. The strong outdoor recreation industry in Gunnison County may be one reason for these age and gender differences.

State forecasts for each county show a much higher growth rate anticipated for Delta County. Table 61 shows that Delta County is expected to grow faster than either Gunnison County or Colorado as a whole. A more temperate climate combined with easy access to major medical facilities in Grand Junction is expected to draw more retirees to the Delta area. Gunnison County, known for very cold winters, is expected to grow at a rate somewhat slower than the state average.

Table 61– Population Estimates and Projections, 2000-2020

State/County	2000	2005	2010	2015	2020
Colorado	4,301,261	4,722,755	5,209,892	5,729,644	6,257,281
Avg Annual % Chg	-----	*1.7%*	*2.0%*	*1.9%*	*1.8%*
Delta	27,834	30,257	34,545	40,163	46,306
Avg Annual % Chg	-----	*1.6%*	*2.7%*	*3.1%*	*2.9%*
Gunnison	13,956	14,264	15,237	16,520	17,892
Avg Annual % Chg	-----	*0.4%*	*1.3%*	*1.6%*	*1.6%*

Source: Colorado State Demographers office, http://www.dola.colorado.gov/dlg/demog/pop_cnty_forecasts.html

The ethnic mix of each county is shown Table 62. Delta County has a sizeable Hispanic population, especially in the city of Delta. More than 22 percent of Delta's population is Hispanic. Employment opportunities in nearby Montrose and Grand Junction combined with a reasonable cost of living makes Delta an attractive location for all populations, and as such has attracted a Hispanic community. Gunnison County, in contrast, has a very small Hispanic population. Hispanics in the entire county number less than half of those living in the city of Delta alone. Neither county has a significant population of other ethnicities.

Table 62 - Population by Race and Hispanic Origin, 2000

State/ County/ Municipality	Total	Non-Hispanic					Multi Race	Hispanic, Any Race
		White	Black	American Indian	Asian or Pacific Islander	Other Race		
Colorado	*4,301,261*	*74.5%*	*3.7%*	*0.7%*	*2.3%*	*0.1%*	*2.8%*	*17.1%*
Delta County	27,834	*96.5%*	*0.5%*	*0.8%*	*0.3%*	*0.1%*	*1.8%*	*11.4%*
Cedaredge	1,854	*91.9%*	*0.1%*	*0.2%*	*0.6%*	*0.0%*	*1.8%*	*5.4%*
Crawford	366	*96.2%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*1.6%*	*2.2%*
Delta	6,400	*75.3%*	*0.2%*	*0.5%*	*0.3%*	*0.1%*	*1.0%*	*22.5%*
Hotchkiss	968	*88.5%*	*0.0%*	*0.3%*	*0.4%*	*0.1%*	*1.2%*	*9.4%*
Orchard City	2,880	*89.6%*	*0.0%*	*0.7%*	*0.5%*	*0.0%*	*1.2%*	*7.9%*
Paonia	1,497	*93.7%*	*0.1%*	*0.5%*	*0.2%*	*0.3%*	*0.9%*	*4.5%*
Gunnison County	13,956	*96.5%*	*0.5%*	*0.7%*	*0.6%*	*0.1%*	*1.7%*	*5.0%*
Crested Butte	1,529	*95.4%*	*0.1%*	*0.7%*	*0.7%*	*0.0%*	*0.4%*	*2.7%*
Gunnison	5,409	*89.7%*	*0.6%*	*0.6%*	*0.5%*	*0.1%*	*1.6%*	*6.9%*
Marble	105	*99.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*1.0%*
Mt Crested Butte	707	*94.5%*	*0.0%*	*1.6%*	*0.0%*	*0.1%*	*0.3%*	*3.5%*
Pitkin	124	*75.0%*	*0.0%*	*0.0%*	*4.8%*	*0.0%*	*0.0%*	*20.2%*

Source: Colorado State Demographers Office, http://www.dola.colorado.gov/dlg/demog/race_colo.html

The two counties differ in the price, affordability, and availability of housing. Housing in Delta County is generally quite affordable; not so in Gunnison County. In 2002, the average cost of a 2,000 square foot home was about $170,000 in Delta County. In contrast, the same size home in Gunnison County was over $310,000. From 2001 to 2005, the housing vacancy rate in Delta County was 10 percent, while the rate in Gunnison was over 40 percent. Both the prices and vacancy rates for Gunnison County are strongly influenced by a significant second home market, which accounts for over a third of all housing in the county.

Employment and Income

Delta and Gunnison Counties have a labor force that is largely employed. The number of jobs in both counties is very similar, a surprise to some given the large difference in populations. Delta and nearby areas are increasingly becoming “bedroom communities” for Montrose and Grand Junction. Commuters take to U.S. 50 each workday for employment outside of the county. Gunnison County is not adjacent to larger population centers, and thus the commuting workforce is negligible. In 2000, 96 percent of workers living in Gunnison County also worked there, while only 79 percent of workers in Delta County also worked in the county.

Table 63 highlights some sectors of importance to this analysis. Mining is very important to these counties. Gunnison County shows a larger mining workforce because several mines are located in the county. The workforce, however, lives in the nearby communities of Paonia, Hotchkiss, and Delta in Delta County. Oil and gas extraction has been a very small industry in these counties, but recent development in both counties may change this. During well drilling and facility development, employment can be somewhat robust. Both counties have a large construction industry that can support such development locally. Once the facilities are in place, however, the oil and gas industry does not require a large number of employees for production.

Agriculture is an historic industry for Delta County, and remains an important part of its livelihood. Agriculture includes both livestock and crop production, and accounts for over 11 percent of all jobs.

Table 63 – Selected Employment and Income Indicators, 2004-2005

Indicator	Year	Colorado	Delta County	Gunnison County
Jobs				
Agriculture	2005	45,912	1,384	334
Mining, Except Oil & Gas	2005	12,895	257	705
Oil & Gas Extraction	2005	6,446	16	15
Construction	2005	213,631	1,008	1,255
All other	2005	2,486,624	9,696	8,839
Total	2005	2,765,508	12,361	11,148
Unemployment Rate	2005	5.0%	4.9%	4.0%
Income				
Average Earnings per Job	2004	$45,208	$22,312	$27,822
Per Capita Personal Income	2004	$36,113	$22,844	$28,309
Per Capita Current Transfer Receipts	2004	$3,543	$5,449	$2,232
Per Capita Dividends, Rent, & Interest	2004	$6,078	$4,653	$7,978

Source: Colorado State Demographers Office, http://www.dola.colorado.gov/dlg/demog, and U.S. Bureau of Economic Analysis, http://www.bea.gov/regional/reis/CA30fn.cfm

Earnings and income in the area lags behind the Colorado average. Earnings range from 50 to 60 percent of that found statewide. Personal income per capita, however, does not differ as much. Higher than average transfer payments, such as Social Security, in Delta County and dividends, rent, and interest in Gunnison County boost per capita income to levels that are about two-thirds of the Colorado average.

Consistent with lower incomes in Delta and Gunnison Counties, poverty is somewhat more prevalent in the area than Colorado as a whole. Table 64 shows that one in nine residents of Gunnison County is in poverty, as is one in eight residents of Delta County. Median household incomes are between 70 and 80 percent of statewide averages. In Colorado’s Western Slope, these median incomes place Delta and Gunnison Counties between the lowest ones found in the San Luis Valley and the highest medians found along the I-70 corridor.

Table 64 - Estimates of All Ages in Poverty and Median Household Income: 2004

State/County	Total Population	People of All Ages in Poverty		Median Household Income
		Number	Percent	Dollars
Colorado	4,653,139	466,804	*10.0*	$50,105
Delta	29,288	3,661	*12.5*	$35,280
Gunnison	13,325	1,519	*11.4*	$38,979

Source: US Bureau of the Census, http://www.census.gov/cgi-in/saipe/saipe.cgi#SA11

State and Local Governments

Mineral extraction can provide significant revenues to state and local governments in Colorado, especially when on Federal lands. Mineral production is taxed as a part of local property tax assessments and the statewide severance tax. Mining facilities are also assessed for property tax purposes. Minerals extracted under lease on Federal lands are obligated to pay royalties to the United States on the value of production. Approximately half of the royalty collections are distributed back to the states from which the minerals were taken. Coal, oil, and natural gas are the most common minerals extracted under lease from the Federal government.

Table 65 displays tax revenues and Federal mineral lease distributions from mineral properties and production for 2006. Coal mining generates most tax revenues and Federal lease payments accruing to Delta and Gunnison Counties. Gunnison County has larger property tax revenues because the coal mines are located in the northwest corner of the county. Delta County has larger Federal Mineral Lease Payments because Colorado law directs these revenues based on the residence of mine employees. The table also shows three state funds that receive significant shares of these Federal payments.

Table 65 – Selected Tax and Federal Mineral Lease Revenues by County and State Fund, All Jurisdictions, 2006 ($1,000)

Jurisdiction/Fund	Property Tax	Severance Tax	Federal Mineral Lease Payments	Total
Delta County	$14,245.3	$517.5	$2,142.4	$16,905.2
Gunnison County	$25,488.3	$9.2	$1,411.9	$26,909.5
All Other Counties	$5,258,568.3	$16,169.2	$16,328.2	$5,291,065.7
Colorado State Public School Fund	-----	-----	$70,399.0	$70,399.0
Colorado Water Conservation Board	-----	-----	$14,405.9	$14,405.9
Colorado Local Govt Mineral Impact Fund	-----	-----	$39,372.0	$39,372.0

*Direct distribution to local governments only.
Source: Local Government energy and Mineral Impact Assistance Program, Thirtieth Annual Report – 2006, Colorado Department of Local Affairs, 2007.

Local governments no only receive revenues, but also incur various costs when mineral extractions—whether coal, oil, or natural gas—are located within their jurisdictions. Road maintenance, traffic management, and various utilities are examples of public facility operations affected by the mining industry, while education, health, and social services are examples of care provided to employee households. Although these costs are generally recognized, there are no estimates of the fiscal strain on local jurisdictions.

3.11.3 Environmental Consequences

The social and economic effects of this proposal are disclosed in two sections. The first covers impacts to communities and local governments; the second shows financial and economic efficiency consequences. Unless otherwise stated, the No Action alternative has no effects or consequences. For this reason, only the Proposed Action is shown and discussed.

Community Impacts – Employment, Income, Population, and Housing

Employment and income effects for Delta and Gunnison Counties are displayed in Tables 66 and 67. There are two distinct phases of the Proposed Action that affect each county differently. During the one to two-year construction phase, Delta County is affected. Construction of the pipeline and associated facilities will be done by a local firm using primarily local employees. About 38 employees living in Delta County will work on pipeline construction during a five month period (mid May-mid October) each year. Three to four jobs each season should be generated locally by the construction activity. All of this employment is supported by the project, sustaining existing local jobs. Another 12 employees are expected to arrive from outside the area each season, reside temporarily in communities in the North Fork Valley, and then return home. Less than one additional job each season should be generated through non-local employee spending. It is unclear whether the skills necessary for these positions are available in Delta County. Average earnings for these jobs should greatly exceed the current average in Delta County.

Table 66 –Employment and Income Effects, Delta County

Indicator	Current		Proposed Action (Change)	
	Year	Quantity	During Construction	After Construction
Jobs (average annual)				
Agriculture	2005	1,384	0	0
Mining, Except Oil & Gas	2005	257	0	0
Oil & Gas Extraction	2005	16	0	0
Construction	2005	1,008	25	0
All other	2005	9,696	8	0
Total	2005	12,361	33	0
Income (annual)				
Average Earnings per Job	2004	$22,312	$45,000	---

Table 67 – Employment and Income Effects, Gunnison County

Indicator	Current		Proposed Action (Change)	
	Year	Quantity	During Construction	After Construction
Jobs (average annual)				
Agriculture	2005	334	0	0
Mining, Except Oil & Gas	2005	705	0	0
Oil & Gas Extraction	2005	15	0	0
Construction	2005	1,255	0	20
All other	2005	8,839	0	7
Total	2005	11,148	0	27
Income (annual)				
Average Earnings per Job	2004	$27,822	---	$39,000

Once construction is complete, wells connected by the pipeline can begin production. Maintenance of the pipeline can be accomplished with existing personnel, and thus no additional jobs will be created or sustained in the area.

As the wells and pipeline come to full operation levels, taxes and Federal lease royalties will be collected. As shown in Table 68, annual severance tax and Federal lease payments distributed to Delta and Gunnison Counties are not expected to be sizeable. This estimate is based on existing Colorado law and the 2006 distribution of revenues originating in Gunnison County. The largest source of revenue from these wells and the SGGS pipeline will be property taxes in Gunnison County. At full production levels (20,000 mcf/day), a wellhead price of $5.00/mcf, and a mill levy of 45, property taxes for all affected jurisdictions in Gunnison County would reach over $1.5 million annually. If these additional revenues were used to finance new construction in the county, between 25 and 30 jobs would be created and sustained. Average earnings per job of $39,000 per year would exceed the current county average by 40 percent. Production and price estimates have been provided by the proponent. Significant departures from these estimates would, in turn, create sizeable departures from the revenue, employment, and income estimates for the Proposed Action.

Table 68 – Distribution of Annual Tax and Federal Mineral Lease Revenues by County and State, All Jurisdictions, under Full Production

Revenue Source	Current (2006)	Proposed Action (Change)	
	$1,000	$1,000	Percent
Delta County			
Severance Tax	$ 517.5	$0.0	---
Federal Mineral Lease Payments*	$2,142.4	$15.5	0.7%

Revenue Source	Current (2006)	Proposed Action (Change)	
	$1,000	$1,000	Percent
Gunnison County			
Property Tax	$25,488.3	$1,548.0	6.1%
Severance Tax	$9.2	$0.0	---
Federal Mineral Lease Payments*	$1,411.9	$0.2	<0.1%
All Other Colorado Counties			
Severance Tax	$16,169.2	$0.0	---
Federal Mineral Lease Payments*	$16,328.2	$121.1	0.7%
State – Funded by Federal Mineral Lease Payments Only			
Colorado State Public School Fund	$70,399.0	$1,095.0	1.6%
Colorado Water Conservation Board	$14,405.9	$219.0	1.5%
Colorado Local Govt Mineral Impact Fund	$39,372.0	$739.0	1.9%

*Does not include grants from Mineral Impact Fund

Gunnison County would not be the only entity in Colorado to benefit from natural gas revenues. All three state funds supported by Federal Mineral Lease Payments would increase between 1.5% and 1.9% over 2006 levels. The Colorado State Public School Fund would be the largest beneficiary, reaping up to $1.1 million.

Because employment effects in Delta and Gunnison Counties are expected to be small, no population effects are anticipated. Minority and low-income populations would not experience disproportionate effects of the Proposed Action. The price, affordability, and availability of housing in each county should not be affected, during construction or operations.

Efficiency Analyses

Financial and economic efficiency analyses were conducted over the life of this decision, a period of thirty years. All parties and their identifiable market-priced costs and benefits were included.

These analyses recognize that some benefits and costs can be expressed in monetary terms, while other benefits and costs are best expressed in non-monetary terms. Costs expressed in dollar terms include pipeline construction; road and fencing improvements; permit issuance and administration, and pipeline operations. Wells supplying gas to the pipeline are assumed to be drilled and ready for production upon completion of the pipeline. Most local GEC wells have been drilled and await pipeline operations. Benefits expressed in dollar terms vary by party and include such things as taxes, fees, royalties, forage value, and sale of natural gas. Because there is no effective alternative for transporting gas production from local GEC wells to market, the sale of natural gas from connected wells is attributed to the proposed action. Other costs and benefits, such as watershed health or air quality, have not been assigned dollar values; therefore, they are expressed using quantitative and qualitative terms in other sections of this document and in the project record.

CHAPTER 4: PREPARERS, CONSULTATION AND COORDINATION

4.1 PREPARERS AND CONTRIBUTORS

This section lists those individuals, agencies and cooperators that have contributed to this analysis.

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The following federal, state and local agencies, tribal governments, businesses, organizations and individuals were either contacted during scoping or submitted comments during scoping on the Proposed Action

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CHAPTER 5: ACRONYMS AND GLOSSARY

5.1 ACRONYMS

ACHP – Advisory Council on Historic Preservation
ACOE – Army Corps of Engineers
ANSI – American National Standards Institute
APCD - Air Pollution Control Division
APEN – Air Pollution Emission Notice
AQRV - air quality related values
AQTR - Air Quality Technical Report
ATV – All-terrain vehicle
BBS – Breeding Bird Survey
BLM – Bureau of Land Management
BMP – Best Management Practice
CAAQS – Colorado Ambient Air Quality Standards
CDPHE - Colorado Department of Public Health
CDOW – Colorado Department of Wildlife
CEQ – Council on Environmental Quality
CFR – Code of Federal Regulation
CO – Carbon monoxide
CO2 – Carbon dioxide
COGCC – Colorado Oil and Gas Conservation Commission
CRCT – Colorado River Cutthroat Trout
DAU – Data Analysis Unit
DOT – Department of Transportation
EPA – Environmental Protection Agency
ESA – Endangered Species Act
NFSR – Forest development road
FS – Forest Service
FSM – Forest Service Manual
FWS – Fish and Wildlife Service
GCVTC - Grand Canyon Visibility Transport Commission
GEC - Gunnison Energy Corporation
GIS – Geographic Information System
GMUG – Grand Mesa, Uncompahgre and Gunnison National Forests
HUC – Hydrologic Unit Code
IDT – Interdisciplinary team
IMPROVE - Interagency Monitoring of Protected Visual Environments
IRA – Inventoried Roadless Area
LAU – Lynx Analysis Units
LCAS – Lynx Conservation and Assessment Strategy
LMP – Land and Resource Management Plan
LRLV - likely to result in a loss of viability
MAOP – Maximum allowable operating pressure
MII - may adversely impact individuals
MIS – management indicator species
MMSCFD – Million Standard Cubic Feet Per Day
NAAQS – National Ambient Air Quality Standards
NADP - National Acid Deposition Program
NEPA – National Environmental Policy Act
NFMA – National Forest Management Act
NFS – National Forest System
NHPA – National Historic Preservation Act
NLAA - not likely to adversely affect
NOx – Nitrogen oxides

NRHP – National Register of Historic Places
PM – particulate matter
PM2.5 - particulate matter less than 2.5 microns
PM10 - particulate matter less than 10 microns
POD – Plan of Development
Psig – pounds per square inch gauge
RMNG - Rocky Mountain Natural Gas
ROS – Recreation Opportunity Spectrum
ROW – Right of Way
SIO – Scenic Integrity Objective
SHPO – State Historic Preservation Office
SMS – Scenery Management System
Sox – Sulfur oxides
SWCA - SWCE Environmental Consultants
TES – Threatened, Endangered and Sensitive species
TSP - Total Suspended Particulate
TUA – Temporary use areas
USDA – United States Department of Agriculture
VOC - volatile organic carbons
VQO – Visual Quality Objective
VRM – Visual Resource Management
VRPP - Visual Resource Protection Program
WRAP - Western Regional Air Partnership
WRNF – White River National Forest
WWE - Wright Water Engineers

5.2 GLOSSARY

Aboveground Appurtenant Facilities – facilities associated with the pipeline, such as block valves, pipeline markers, meter stations, pigging facilities and cathodic protection equipment
Access Routes – Accessing construction pipeline ROW for daily construction activities traffic, crew pick
ADT – County yearly average daily traffic count reports.
All weather access – road is open and passable year round by motorized vehicles.
Block Valve - A block valve is a mechanical device (valve) installed in a pipeline that can be closed to block the flow of oil or gas through the line.
Cathodic protection – a method to reduce external corrosion by placing a small electrical charge on the steel pipe
Code of Federal Regulations (CFR) - The codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the federal government. The Code is divided into 50 titles that represent broad areas subject to regulation.
Compressor Station - A facility that is used to compress natural gas in order to create additional pressure to increase the amount of gas a pipeline can hold, help move it through a pipeline, or to move it into or from storage.
Corrosion - Corrosion is the deterioration of a material, usually a metal, which results from a reaction with its environment. Common rust is an example of corrosion of iron. Steel pipe is subject to corrosion damage.
Finding of No Significant Impact (FONSI) - A Finding of No Significant Impact is a document prepared by a federal agency showing why a proposed action would not have a significant impact on the environment and thus would not require preparation of an environmental impact statement. An FONSI is based on the results of an

environmental assessment.

Fugitive dust – a non-point source of air pollution, such as from unpaved roads, agricultural croplands and construction sites.

Haul Routes – Accessing the right-of-way to transport heavy equipment to use during construction of pipeline ROW (mobilization and demobilization of heavy construction equipment).

Management Indicator Species (MIS) - Representative species whose habitat conditions and/or population changes are used to assess the impacts of management activities on species in similar habitats in a particular area.

Maximum Allowable Operating Pressure (MAOP) - Maximum allowable operating pressure is the maximum pressure at which a pipeline or segment of a pipeline may be normally operated under 49 CFR Part 192.

Monitoring - The periodic evaluation of management activities to determine how well objectives were met and how management practices should be adjusted. See also, adaptive management.

National Forest System (NFS) lands - Federal lands designated by Executive Order or statute as National Forests, National Grasslands, or purchase units or other lands under the administration of the U.S.D.A. Forest Service.

Outfitter/Guide - A special-use permit holder that provides all commercial outfitting operations involving services for accommodating guests, transporting persons, providing equipment, supplies, and materials. The permit holder also provides guiding activities wherein the guide furnishes personal services or serves as a leader or teacher.

Pig – a plug designed to be pushed along the inside of a pipeline. Pigs can be used to separate materials, clean or inspect the pipeline surface.

Pig launcher/receiver – a short section of pipe controlled by valves that interconnect with the main pipeline to launch and receive cleaning and inspection tools (pigs) that travel inside the pipeline.

Proposed Action - A proposal made by a federal agency to authorize, recommend, or implement an action on public lands to meet a specific purpose and need. The Proposed Action is subject to public notice and comment provisions.

Right-of-Way (ROW) – as defined in 43 CFR 288 – a document authorizing a non-possessory, non-exclusive right to use specified federal lands for the limited purpose of construction, operation, maintenance and termination of a pipeline. Typically the grant includes agency stipulations, conditions imposed on the project as a result of the National Environmental Policy Act review, a complete plan of development and approvals from other federal agencies.

Road Maintenance Levels:

- Maintenance Level 1 is assigned to service roads during the time they are closed to vehicular traffic. The closure period must exceed 1 year. Basic custodial maintenance is performed to keep damage to adjacent resources to an acceptable level and to perpetuate the road to facilitate future management activates. Emphasis is normally given to maintain drainage facilities and runoff patterns. Appropriate traffic management strategies are “prohibit and eliminate”. While being maintained at the **Level 1,** roads are closed to vehicular traffic, but may be open and suitable for non-motorized uses. Public access can be restricted (vs closed) on a **Level 1** road for a permittee who may have authorized access. These roads are open to authorized traffic only. (USDA Forest Service 1986).

- Maintenance Level 2 is assigned to roads open for use by high clearance vehicles. Passenger car traffic is not a consideration. Road objectives are usually for 12’-14’

single lane for resource management, administrative, permitted, and dispersed recreation use. Log haul may occur at this level. The public is allowed to use Level 2 roads, but the Forest Service does not manager them as a public road. Appropriate traffic management strategies are either to (1) discourage or prohibit passenger cars or (2) accept or discourage high clearance vehicles. These roads are open to public use and can be restricted year-round or seasonally. (USDA Forest Service 1986). Maintenance is performed as needed to maintain drainage structures and a road surface passable by high clearance vehicles. • Maintenance Level 3 is assigned to roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities. Roads are low speed, 12'-14' single lane roads with turnouts and spot surfacing (USDA Forest Service 1986). Typically, the road surface is gravel and suitable for passenger cars during the fall and summer months. Maintenance Level 3 roads come under the requirements of the Highway User Safety Act, Manual on Uniform Traffic Control Devices (MUTCD) standards and are managed as public roads. Appropriate traffic management strategies are either "encourage" or "accept." Commercial use required a permit. • Maintenance Level 4 is assigned to roads open and maintained for travel in a standard passenger car that provides a moderate degree of user comfort and convenience at moderate travel speeds. Most roads are double-lane and aggregate surfaced. However, some roads may be single land with turnouts. Some roads maybe paved and/or dust abated. The most appropriate traffic management strategy is "encourage". On the other hand, the "prohibit" strategy may apply to specific classes of vehicles or users at certain times. Commercial use required a permit.
RUP – Road use permits are required to authorize the use of existing National Forest System roads. Permits include conditions for road use and for the protection and management of National Forest. RUP authorizes non-Federal commercial use of a National Forest System road. Included in the permit are appropriate investment sharing and maintenance requirements and rules of use as terms of the permit.
Scoping – The procedure by which a federal agency identifies important issues and determines the extent of analysis necessary for an informed decision on a proposed action. Scoping is an integral part of environmental analysis.
Temporary Roads - Roads authorized by contract, permit, lease, other written authorization, or emergency operation not intended to be a part of the national forest transportation system and not necessary for long-term resource management. All temporary roads will be reclaimed.
Trench - A trench is a long narrow ditch dug into the ground and embanked with its own soil and used for concealment and protection of line pipe. Trenches are usually dug by a backhoe or by a specialized digging machine.
µg/m3 - Millionths of a gram per cubic meter; a unit of concentration in liquids or gases.
Valve - A valve is a mechanical device installed in a pipeline and used to control the flow of gas or liquid.
Wetland - Land transitional between an obvious upland and an aquatic environment; an area inundated by surface or groundwater with a frequency sufficient to support vegetation or aquatic life that requires saturated or seasonally saturated soil conditions. Wetlands generally include marshes, bogs, wet meadows, river overflows, mud flats and natural ponds; they are generally highly productive environments with abundant fish, wildlife, and aesthetic and natural resource values.

CHAPTER 6: REFERENCES

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APPENDICES

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Appendix A

Design Features of the Proposed Action

Resource	Design feature	*Source*
Geologic Hazards and Soils	Preventing slumping, mass wasting or landslide activities. Minimize the amount of sideslope cuts on NFS and private lands (especially in geologically unstable and areas with moderate/steep slopes). Completely avoid areas of high geologic hazards. Complete avoidance of slopes and features that show active geologic instability. Perform pipeline construction in areas of moderate geologic stability during dry times of the year to minimize the likelihood of soil movement. Seed and mulch areas of disturbance immediately upon completion of pipeline construction.	*FSM 2880, Forest Plan* *BMP* *Forest Plan, Oil and Gas EIS* *Forest Plan, WCPH, BLM's Gold Book* *BMP* *BMP*
Wildlife -	Riparian and Wetland Species Avoid contruction through ponded wetlands from May 1 through August 31 if surveys detect use by breeding amphibians. Big Game Install wildlife crossovers (trench plugs) with ramps on either side at maximum ¼ mile intervals and at well defined trails to facilitate passage of big game across the trench and to prevent wildlife from becoming trapped in the trench, during such time as the trench is open. Install at ¼ mile intervals in	*POD* *POD*

Resource	Design feature	*Source*
	sections of open trench. Raptors Conduct general preconstruction nesting raptor surveys in suitable nesting habitat (mature aspen and coniferous woodlands). Conduct pre construction surveys, each spring prior to construction, to identify active goshawk, boreal and flammulated owl nests. Construction activities will not be permitted within ¼ mile of active nests between March 1 and July 31 or until fledging and dispersal of the young. If no surveys are conducted, suitable habitat will be considered as occupied and Construction activities will not occur between March 1 and July 31 in Aspen, spruce/fir and aspen/conifer habitats. Hazardous materials would be stored in secure locations, and over 200 ft from waterbodies or wetlands.	 *POD* *POD & LMP* *POD*
Recreation	Implement noise abatement measures that could include a schedule that minimizes impacts or mufflers, if necessary, for adjacent recreational use by hikers and hunters.	
Visuals and Scenery	Confine activities including personal and company vehicles/equipment to designated areas only. Designated areas of equipment/material storage should be placed in areas of previous disturbance wherever possible. To increase visibility, during period of activity, actively suppress dust and minimize its creation.	*LMP* *LMP*

Resource	Design feature	*Source*
	During clearing operations, removal of vegetation will be minimized to reduce visible disturbance wherever possible. Incorporating all three dimensional planes, plan, design and locate vegetative manipulation in a scale and shape which retains the form, line, color, texture of the characteristic landscape, borrowing from natural features. Manipulate ROW clearing to conform to natural vegetative pattern. Maximize and retain any existing vegetative screening potential in visually sensitive areas where feasible. Blend soil disturbance into natural topography to achieve a natural appearance, reduce erosion and rehabilitate ground cover. Gently grade ground surface to achieve a naturally undulating surface, matching surrounding landform. Compile indigenous plant palette to fit in surrounding landscape for later plantings and rehabilitation work. Species list should include: shrubs, herbaceous plants and grasses, and groupings of trees for screening along sensitive areas.	*LMP* *LMP* *LMP* *LMP* *LMP* *LMP*
Transportation/Roads	Gunnison Energy Corp. must provide specific improvement and use parameters using the AASHTO design criteria (Guideline for geometric design of very low volume roads (2001 edition) and Design guide for pavement structures (1993 edition)) or as approved by Forest Engineer, to be designed by a Colorado Registered Professional Civil Engineer, and	*LMP*

Resource	Design feature	*Source*
	submitted for Forest Service approval for each road segment. The Engineer's recommendations must be approved and implemented before any project related traffic may use that part of the Forest Road system. Prior to hauling any pipeline construction equipment, cattleguards not up to State legal load limits will not be crossed with heavy equipment and will be replaced prior to use to safely support project and public traffic. Work with landowners at the end of NFSR 851 & .1A, 704 to accommodate their access. Rocks and logs would be placed on the surface of the ROW, where locally available, during reclamation to provide barriers to deter illegal motorized use.	 *LMP* *BMP* *WCPH*
Range Resources	Access along roads should be maintained for livestock management purposes Protect all range improvements, any damage must be repaired as soon as possible. Loss of water to ponds and spring developments, due to project, will be repaired immediately or replaced with a comparable functional water development agreeable to permitttee. The pipeline will be located to avoid all stockponds. A buffer of 100 feet is adequate, as long as the pipeline does not negatively affect the flow of water from any spring or seep that might be feeding the pond. Damage to any range improvement will be repaired as quickly as possible.	*LMP, Management Area 6B* *LMP, Management Area 6B* *LMP, Management Area 6B*

Resource	Design feature	*Source*
	All toxic substances need to be housed so that livestock and wildlife are not poisoned. Any fences that are crossed need to have gates kept closed or cattleguards installed to prevent livestock from crossing. Where the ROW crosses a fence line, work with the permittee and/or the private landowners to prevent livestock crossing this gap. Electric fencing, or some other type of approved fencing, will be bridging the gap at these locations when the crew is not working onsite and at night. Closing gates or temporary fencing will eliminate cattle from accessing other pastures and prevent overgrazing or unauthorized grazing.	*POD* *LMP, Management Area 6B*
Noxious Weeds	All equipment from outside of Delta County will be cleaned at a wash station prior to entering the national forest to reduce the risk of transporting noxious weed seeds. The SUA holder shall also be responsible for prevention and control on noxious weed and exotic plant infestation which are not within the authorized area, but which are determined by the FS to have originated within the authorized area.	*FSM 2081* *FSM 2080*
Reclamation/Revegetation	SUA holder shall prepare and submit for approval a restoration/reclamation plan (part of the POD) that will include seedbed preparation, seeding methods, timing, seed mix (certified weed free), etc. Slopes that are 3:1 or flatter should be drill seeded while slopes greater	*POD*

Resource	Design feature	Source
	than this should be broadcast seeded. Raking or harrowing immediately before and after broadcasting is highly recommended. Use certified weed free straw or hay	 *SUA*
Travel Management	Right-of-way access following construction would be accomplished by foot, horseback or other non-motorized method. Use of motorized vehicles, except for those segments within existing ROWs, for noxious weed control, administration or monitoring is prohibited. Motorized vehicles would only be authorized to drive along the ROW for emergency repairs on a case-by-case basis as approved by the FS.	*SUA Operating Plan*
Air Quality	Right-of-way clearing slash will not be burned on site unless approved by FS Dust abatement techniques shall be used, as directed by the FS to maintain a dust free traveled way. Only water will be used for dust abatement.	*Regulatory Requirement* *WCPH - BMP* *POD*
Fisheries	Restrict construction of the West Muddy Creek crossing to August through and October. This limited period of operation will protect Colorado River cutthroat trout, bluehead sucker, and mountain sucker spawning, incubation, and emergence periods. Keeping heavy equipment out of streams during fish spawning, incubation, and emergence periods is a design criteria specified by the WCP Handbook to protect aquatic resources (FSH 2509.25, chapter 10, 12.1(c)). Restrict construction of the West	*WCPH* *WCPH*

Resource	Design feature	*Source*
	Muddy Creek crossing to periods of base-flow conditions and dry ground conditions. Operating at low-flow conditions will minimize sediment transport and maintain long-term stream health. Additionally, heavy equipment should be kept out of the stream, except to cross at the designated points to reduce the release of petroleum products into the water and sustain stream integrity.	
	Dewater West Muddy Creek during construction of the crossing. Use plastic lining, filter cloth, or corrugated pipes to minimize sediment transport from the construction activities. Diverting flow away from construction activities will reduce sediment discharge and turbidity and downstream impacts to fish populations may be minimized (See Chapter 3.10). Constructing disturbed sites to minimize sediment discharge into streams is consistent with the WCP Handbook (FSH 2509.25, chapter 10, 13.2(b)).	*WCPH*
	Replant riparian corridor with native riparian species (i.e. willows). Revegetation is critical to reduce sedimentation and bank erosion. Stable banks with cover are important habitat parameters for fish viability. Restoring ground cover using certified local native plants and avoiding persistent or invasive exotic plants is a design criteria specified by the WCP Handbook to reduce increased runoff and protect the hydrologic function of the watershed (FSH 2509.25, chapter 10, 11.2(b)).	*WCPH*
	Install enclosures around the newly planted riparian area. d riparian	*WCPH*

Resource	Design feature	*Source*
	area. Elk, deer, and livestock foraging is present in the project area. Enclosures may allow the vegetation to mature and recover while preventing excess sediment discharge and bank erosion, by allowing stream banks to stabilize. Successful restoration of ground cover with native plants is consistent with the WCP Handbook restoration measures for maintaining both hydrologic function and riparian areas (FSH 2509.25, chapter 10, 11.2 and 12.1).	
	Conduct pre-project longitudinal profile and at least two cross sections of West Muddy Creek where the conveyance line crosses West Muddy Creek. One cross-section will be located upstream of the conveyance line, outside of the influence of the conveyance line, and the other cross-section will be located downstream. These measurements will help establish stream morphology and fish habitat conditions following the installation of the conveyance line and will be used to document pre-construction conditions for future monitoring (See Chapter 3.10). Monitoring channel pattern, geometry, and stability is consistent with the WCP Handbook to conduct actions so that stream health is maintained (FSH 2509.25, chapter 10, 12.3).	*WCPH*
	Water quality monitoring: This will establish baseline conditions to evaluate changes in water quality should hazardous spills or leaks occur. The proponent should select water quality parameters that are most effective at detecting spills/leaks related to the conveyance of natural gas.	*WCPH*

Resource	Design feature	*Source*
	Selection of these parameters should be coordinated with the Forest hydrologist. Failure to establish baseline conditions and a water quality monitoring plan would make it unfeasible for water resource specialists to detect or quantify changes in stream conditions related to spills/leaks and how these effects relate to fish populations. Monitoring should be carried out on an annual basis. Water quality monitoring is consistent with the WCP Handbook (FSH 2509.25, chapter 10, 15.1). Monitor sediment movement into streams and sediment effects on aquatic habitat and biota, as described in the monitoring section of the sediment control management measures of the WCP Handbook (FSH 2509.25, chapter 10, 13.2). Establishing baseline data on sedimentation is necessary to track changes in stream condition and aquatic biota caused by the construction and operation of the conveyance system.	 *WCPH*
Cultural Resources	During project implementation, in the unlikely event of an inadvertent encounter of Native American remains or grave objects, the Native American Graves Protection and Repatriation Act (NAGPRA) requires that all activities must cease in their discovery area, that a reasonable effort be made to protect the items found or unearthed, and that immediate notification be made to the agency Authorized Officers as well as the appropriate Native American group(s) (IV C.2). Notice of such a discovery may be followed by a 30-day delay (NAGPRA Section 3(d)). Further actions may also	*NAGPRA*

Resource	Design feature	*Source*
	require compliance under provisions of the NHPA and the Archaeological Resources Protection Act. During project implementation, in the event of an inadvertent discovery of any other cultural resources not covered under NAGPRA (above), work should cease and an archaeologist should be notified to investigate the resource.	 *NAGPRA*
Watershed	To minimize downstream effects from construction of the West Muddy Creek pipeline crossing, the following activities would occur (See Appendix B – Photo Library for illustrations): A small earthen berm would be constructed instream at the point of diversion using local and adjacent boulder and cobble substrates. Access to the existing flood flow channel would be enhanced by excavating and stockpiling approximately five (5) feet of streambank (two feet deep). The earthen berm may need to be lined with plastic temporarily in order to divert as much flow as possible into the flood flow channel. Stream crossing construction would then proceed from the west (in an easterly direction, from Condemn It Park) until the crossing of the main channel of West Muddy Creek is complete. The earthen berm would then be dismantled and the streambank accessing the flood flow channel restored. Boulders and substrate used in the construction of the berm would be replaced as to restore instream conditions.	*WCPH - BMP* *WCPH - BMP*

Resource	Design feature	*Source*
	Once the berm and streambank of the flood flow channel are restored, pipeline construction would continue easterly across the remainder of the floodplain. The operator will be required to prepare a stormwater runoff plan and post it at key locations, i.e., staging areas, field office, etc An erosion control plan will be developed and submitted to the agency representative for review and approval. This may contain elements similar to the State's stormwater plan. All erosion control measures will be kept current and functioning. An emergency spill and containment plan will be prepared and submitted to the local forest office for review and approval. No fuel or chemicals will be stored in the riparian area or floodplain. No equipment will operate within the Water Influence Zone, except where pipeline crossings occur. Measures to prevent rutting within these areas may include planking, low ground pressure or other measures as agreed to by the agency representative. Extent of pipeline disturbance will be kept to the minimum feasible and reclamation earthwork activities will follow pipeline installation as soon as feasible. Wet and winter season operations will be limited to those approved by the agency representative	*State Regulatory requirement* *WCPH - BMP* *WCPH - BMP* *POD* *WCPH* *POD* *WCPH - BMP* *LMP*
Soils	***Avoid Highly unstable areas***	***FSM, NFMA, FSH,***

Resource	Design feature	*Source*
		WCPH & BLM's Gold Book,2006
	If avoidance is not possible: • ***Have appropriate Geo-Tech evaluation on slopes that have Moderately High-High Geologic Hazard ratings.*** • ***Provide specific engineering design to withstand slope movement pressures where Geo-Tech evaluations indicate are necessary.***	***FSM, NFMA, FSH, WCPH & BLM's Gold Book,2006***
	Design should also include movement monitoring devices, both immediate slope situations and pipeline alignment	***WCPH***
	To reduce overall impact to the soil resource and potential for erosion and sedimentation, minimize as much as possible the amount of scraping, blading excavating and other surface disturbance to only what is absolutely necessary. This is especially important on steeper slopes.	***WCPH***
	All spoil material will be contained within the construction ROW, this includes, sliver fill material, stockpiled topsoil, excess rocks/boulders, etc	***WCPH***
	Snow and frozen soil material is not to be used in construction of fill areas and dikes or berms	***WCPH***
	A proper seed bed will be prepared prior to final seeding, to provide adequate conditions for seedling	***WCPH***

Resource	Design feature	*Source*
	growth and establishment. (decompacted, good tilth, and appropriate amounts of organic matter) ***Monitor dust abatement, if chemicals are used extra filtering may be needed at crossings and in close proximity to live water and wetlands to prevent movement into these areas.***	***POD***

WCPH - Water Conservations Practices Handbook (FSH 2509.25, chapter 10)

Mitigation

Resource	Mitigation
Watershed	1. To reduce the effects on shallow ground-water resources, construct perennial stream crossings at times of year when water table is lower, generally June and later. The effectiveness of this mitigation is considered to be moderate to high. The range of effectiveness is based on the unpredictability of climatic conditions from one year to the next, however June is consistently the driest month (in terms of precipitation) in this area. The effectiveness is known because of experience with other projects on the Forest for constructing stream crossings for roads and other pipelines during various times of year that indicate the best time to conduct these activities is post-runoff. 2. To effectively manage ground water pumped from trenches, divert flow into temporary surface water channels. The effectiveness of this mitigation is considered to be high. This comes from use of BMPs and standard operating procedures.

Appendix B

Appendix B1

Appendix C

Appendix D

Appendix E

Appendix F

Appendix G – LIST OF CUMULATIVE ACTIONS

This section summarizes the list of potential cumulative effects actions known as of March 15, 2007 to be considered for cumulative effects analysis for the Sheep Gas Gathering System. Cumulative actions relevant to this project occurring after this date will be disclosed and considered in the Final EA. Each resource analysis section in Chapter 3 discloses the specific cumulative effects for that particular resource area. Refer to those sections for a specific discussion of cumulative effects.

Scope of the Cumulative Effects Area (CEA)

The cumulative effects area would be at a minimum the project area. In addition, some resources would use a larger CEA such as 6^{TH} Code HUC subwatersheds (**See Appendix J**). The time period used for including past actions is 20 years before present (1985-2006).

GMUG NF CEA Analysis Area Direction

Wildlife: area includes 1 mile on either side of the project

Timber and Fuelwood harvest: area includes past, present and reasonably foreseeable projects in the following 6^{th} code HUCs.

Lower West Muddy Creek, Lower Hubbard Ck

Recreational Hiking-

- Lower West Muddy Creek, Lower Hubbard Ck 6^{th} code HUC's as there are no system hiking trails in the area

Motorized and mechanized trails-

- Lower West Muddy Creek, Lower Hubbard Ck 6^{th} code HUC's as there are no system motorized or mechanized trails in the area

Range

- Condemn-it Park, Sheep Park S&G and Henderson-West Muddy grazing allotment boundaries

Air Quality- refer to the Ch. 3 Air Quality section..

Soils, Aquatics and Watershed- the following HUCs,

- Lower West Muddy Creek, Lower Hubbard Ck and Little Henderson Creek

Transportation & Roads- refer to Ch. 3.4 Transportation section.

Visual Quality- refer to Ch. 3.2 Visuals section.

Oil and Gas

- NFSR 701 (Stevens Gulch Road), from CO HWY 133 north to NFSR 265 (Buzzard Divide Road); then northeasterly along NFSR 265 through the Delta County/Gunnison County line to the junction with HWY 133, southwest of McClure Pass. Following HWY 133 south and westerly to the junction with the NFSR 701.
- The adjacent areas were drilling has occurred, or Application for Permits to Drill (APDs) have been approved or submitted.

Past, Present and Reasonably Foreseeable Future Actions

The following list of cumulative effects actions have been considered for this project. The following tables summarize past, present and reasonably foreseeable future actions with a description of the activity.

Table P- 1. List of Past Management Actions-GMUG NF-Paonia RD- (20 years BP To 2007)

Activity Name	Year	Activity Description
Ragged Mountain Pipeline	**1983**	Reauthorized existing pipeline in 2002
Well recompletions: Federal 10-8	2002	Use existing pad and road
Henderson No.1	**2001**	**Reworked well and added production equipment**
Henderson No. 1 Flowline	**2002**	**Constructed flowline between Henderson No. 1 and 10-8**
Aspen Timber Sales (1)	2006	Near Condemn-It Park, by NFSR 265.
Henderson Lateral Pipeline	**2005-2006**	**Gas pipeline to hook up Bull Mountain Unit wells to existing Ragged Mountain Pipeline system.**
Timber activities - Abram Wildlife treatments (3)	**1995** **1985, 1993, 1996**	**Timber sale** **Wildlife prescription timber treatments**

Table P- 2. List of Past Management Actions-Private lands (20 years BP To 2007)

Activity Name	Year	Activity Description
Wells drilled, pipelines, roads		See project record drilling maps Approximately 20 miles of pipeline, some within existing road ROW Approximately 2 miles of upgrades to existing roads

Table P- 3. List of Present/Ongoing Actions- GMUG NF-Paonia RD - (Ongoing)

Activity Name	Year	Activity Description
Recreation Use	**ongoing**	**Camping, hiking, biking, hunting etc.**
OHV Trails Use	**ongoing**	**On designated road system**
Livestock grazing & facility construction and maintenance	**ongoing**	**Condemn-it Park, Sheep and Henderson/ West Muddy grazing allotments.**
Public firewood cutting, fuelwood cutting,	ongoing	**Ongoing recreational uses for firewood.**
Trail Maintenance and decommisioning	**ongoing**	**Ongoing normal trail maintenance and decommissioning of unauthorized trails**
Road Maintenance and decommisioning	**ongoing**	**Ongoing normal road maintenance and decommissioning of unauthorized roads**
Special Use Permits	**ongoing**	• Ault Reservoir and appurtenant ditch (SUA) • Allen (SUA-Outfitter Guide) • **Roger Cesario (SUA-Outfitter Guide)**
Reworking of the Ragged Mountain Compressor Station at the 30-4 pad	2006-2007	**Reconfiguration of compressor station and adding new equipment within pipeline ROW for existing pipeline**
Ongoing access to existing producing gas wells and maintenance activities	ongoing	**Ongoing**
H28 water pipeline	2006-2007	Water pipeline from the Henderson #1 well to the Federal 10-8 in NFSR #851 and 851.1a adjacent to existing gas pipeline.

Table P- 4. List of Present/Ongoing Actions- Private lands-(Ongoing)

Activity Name	Year	Activity Description
Outfitting and Guiding	**ongoing**	**Summer hiking, packing, fishing and hunting trips**

Activity Name	Year	Activity Description
Livestock grazing	**ongoing**	**Cattle and sheep grazing on private lands**
Water facilities	**ongoing**	**Ponds, ditches and canals for irrigation of private lands**
Bull Mountain pipeline (private lands)	ongoing	**Pipeline construction to hook up existing wells and operation**
Oil and gas activities	ongoing	**Well drilling (3 permitted wells expected to be drilled in 2007 including Jacobs (not included previously), pipelines and road work (mainly upgrading existing roads)**
County road maintenance	ongoing	**General maintenance (blading, cleaning ditches, etc.)**

Table P- 5. List of Reasonably Foreseeable Future Actions- GMUG NF-Paonia RD - (2007+)

Activity Name	Year	Activity Description
SG redrilling wells on 10-8 & Henderson #1 pad. Potential plug and abandon existing well bore.	**2007**	**Minor pad disturbance, use of existing pads & roads**
See ongoing routine maintenance activities	**2007+**	**Including travel on roads and equipment on pads**
See ongoing activities in Table P-3	**2007 +**	
Bull Mountain Pipeline	2008+	Proposal submitted, Draft EIS published 11/2006, expect a decision in 2007. Bull Mountain Pipeline is not a connected action, as defined in 40 CFR §1508.25(a), but a cumulative action.
Aspen Timber Sales (1)	ongoing	Near Condemn-It Park, by NFSR 265, not sold.
Vegetation Management Prescription & Mechanical treatments	2009+	In Schedule of Proposed Action, but no scoping or implementation date planned.

Table P- 6. List of Reasonably Foreseeable Future Actions- Private lands Paonia side (2007+)

Activity Name	Year	Activity Description
Gas exploration/development of the Bull Mountain Unit	**2007+**	**SG Interests I - well drilling (see project well drilling maps, expected to drill 2 with one multi-well pad) and associated access roads, gathering pipelines and facilities.**
Falcon-Seaboard Pipeline & Jacobs pipeline	**2007 +**	**Pipeline construction to hook up existing private wells to existing pipeline system (Henderson lateral)**
Lone Pine Well Area	**2007+**	**14 wells on BLM and Private. Gunnison Energy Leases (see project well drilling maps, many of the wells included in BLM list below)**
Oil and gas actions from Montrose BLM	**2007+**	**1 existing well and 3 proposed APDs on 3 pads section 18, 12s, 89w; 1 existing well section 17, 12s, 89w; 1 approved APD section 19, 12s, 89w; 1 existing well section 24, 11s 90w; 2 proposed APDs section 26, 1 proposed APD in section 11 and 1 proposed APD in section 35, 11s, 90 w; and 1 existing well in section 12, 11s, 90w.; (many of wells listed are also included in GEC & SG notes above).**

APPENDIX H

Lists of wildlife species considered for this analysis

a. Threatened, Endangered or Candidate Species Considered for Evaluation
b. Forest Service Sensitive Species Considerations
c. Management Indicator Species Considerations

a. Threatened, Endangered or Candidate Species Considered for Evaluation

Species	Scientific Name	Habitat Description and Requirements	Habitat in Project Area?
Canada Lynx	*Lynx canadensis*	Spruce/fir, mixed conifer, lodgepole pine forest (primary), or mixed deciduous/conifer (secondary)	Yes
Black-footed ferret	*Mustela nigripes*	Lower elevation steppe and shrub habitats with prairie dog towns	No
Bald Eagle	*Haliateeus leucocephalus*	Major river systems, reservoirs, upland areas supporting carrion and other foraging opportunities.	No
Yellow-billed cuckoo	*Coccyzus americanus*	Low elevation river corridors, cottonwoods	No
Uncompahgre fritillary butterfly	*Boloria acrocnema*	Alpine regions of the southern San Juan mountains.	No
Clay-loving wild buckwheat	*Erigonium pelinophilum*	Specific microhabitats along toe slopes in adobe soils of Mancos shale in sage and shadscale near 5270' elevation	No
Uinta Basin Hookless Cactus	*Sclerocactus glaucus*	Grows on fine-textured soils derived from Mancos shale in shadscale, greasewood and juniper community types at elevations generally near 5,000 ft.	No
Yellow-billed cuckoo*	*Coccyzus americanus*	Low elevation river corridors, cottonwoods	No

*Also initially considered as a sensitive species in below table.
For fish see Table 35

b. Documentation of the Presence or Absence of Forest Service Sensitive Species.

Species	Present and Affected by Project	Habitat Description and Requirements
Pygmy shrew	Possible	Moist boreal habitats above 5500 feet. May also be present in various other habitats.
Fringed myotis	Possible foraging area but use not impacted by project	Most common in coniferous woodlands and greasewood, oakbrush, and saltbrush shrublands at elevations from 5,000 to 7,500 feet. Caves, mines, and stone buildings serve as roost sites, both for day and night roosting, as well as for hibernation .

Spotted Bat	Possible foraging area but use not impacted by project	Likely 6,000-8,000 feet in Colorado. Cliffs, ponderosa pine, pinyon-juniper, desert scrub; rough, arid, desert terrain. Wet meadows used for foraging
Townsend Big-eared Bat	Possible foraging area but use not impacted by project	Up to approximately 9,500 feet. Variety of scrub and forest habitats. Cool places like mines, caves, buildings. Rock fissures used for roosting and hibernation. Forages in open woodlands, along forest edges, and over water.
White-tailed prairie dog	No	Inhabits open shrublands, semidesert grasslands, and mountain valleys at elevations up to 10,000 ft.
Gunnison's prairie dog	No	Inhabits grasslands and semi-desert or montane shrublands at elevations of ~5,900-12,000 ft
Kit fox	No	Found exclusively in arid and semi-arid desert and shrub-steppe habitat. Dens in burrows; apparently, vast majority of dens are located in existing holes expanded by the foxes--most often prairie dog burrows, badger digs, and natural water-drainage tubes; however, can dig own burrows
River otter	No	'Requires permanent water, of relatively high quality. Specializes on fish; requires suitable den and resting sites. Nearest resident population in Gunnison River, no occurrences above Bowie (K. Madariaga, Pers. Comm).
American marten	Possible	Subalpine, spruce-fir and lodgepole pine forests, alpine tundra and occasionally Montane forests. Generally associated with older growth or mixed age stands of spruce fir and lodgepole pine
Wolverine	Possible but unlikely	Sagebrush to alpine. Uses a large variety of habitat types, although usually remote and inaccessible to humans. Riparian areas may be important especially in winter.
American Bittern	No	< 9,300 feet. Cattail marshes and sometimes adjacent wet meadows. Rarely outside of marshes around lakes and in riparian areas, primarily in spring and fall migration. Not known to occur on the Paonia district.
Northern goshawk	Possible	Up to 11,200 feet. Spruce/fir, Douglas fir, mixed conifer, aspen, ponderosa pine, lodgepole pine. Uses a variety of forest structural stages although mature forests are required for nesting.
Ferruginous Hawk	Possible but unlikely	Below 6,000 feet, rarely to 9,500 feet. Large open grasslands and shrub lands.
American Peregrine Falcon	No nesting potential, possible foraging but no impacts to foraging use.	Usually below 10,000 feet, very rare to 11,500 feet. Nest on cliffs, forage over adjacent coniferous and riparian forests, and other habitats. Migrants occur mostly around reservoirs, rivers, and marshes, but also grasslands, agricultural areas, and other habitats.
Northern harrier	Possible	Breeding habitat includes open wetlands, marshy meadows, wet pastures, and marshes; also (more predominantly in the western U.S.) dry upland prairies, mesic grasslands, drained marshes, croplands, cold desert shrub-steppe, and riparian woodlands.
Columbian sharp-tailed grouse	No	Open grasslands and shrublands. Project is outside of known range.
Gunnison sage grouse	No	Primary habitat is large, contiguous, and gently rolling areas of sagebrush; also in summer native or cultivated meadows, grasslands, aspen, and willow thickets adjacent to or interspersed with sagebrush. Outside of known populations.
White-tailed ptarmigan	No	Alpine habitats, montane forests. Not known or expected to occur in this portion of the GMUG or at this elevation.

Yellow-billed Cuckoo	No	Accidental above 6,000 feet. Lowland riparian forests and urban areas with tall trees. Mature closed-canopy forests.
Burrowing Owl	No	Below 9,000 feet. Grasslands and rarely semi-desert shrublands, in or near prairie dog towns.
Boreal Owl	No	Above 9,200 feet. Spruce/fir, mixed conifer/aspen, Douglas fir. Project is below elevational range for this species.
Flammulated Owl	Possible	6,000-10,000 feet. Old growth and mature ponderosa pine, Douglas fir, lodgepole pine, spruce/fir mixed with aspen, pinyon-juniper, hardwood forests.
Black Swift	Possible foraging area but use not impacted by project	(< 14,000 feet. Forages over all types of terrain. Nests in crevices, ledges, caves on high rocky cliffs, preferably near or behind waterfalls or over pools. No nesting habitat present near project area. Not known to occur in area.
Lewis' Woodpecker	Possible but unlikely	Below 8,000 feet, very rare accidental to 10,000 feet. Lowland and foothill riparian forests and agricultural areas, urban areas with tall deciduous trees (cottonwood). Open ponderosa pine and oak, especially in logged or burned areas. Rare in pinyon-juniper. Prefers a good understory of grasses and shrubs to support insect populations. Favored nest trees are ponderosa pine and cottonwood.
American three-toed Woodpecker	Possible	8,000-11,500 feet. Spruce/fir, Douglas fir, lodgepole pine, ponderosa pine, and burned forests of older age classes.
Olive-sided Flycatcher	Probable	< 11,500 feet. Open mature spruce/fir and Douglas Fir, especially with abundant dead trees bordering meadows, bogs, and other open foraging areas. Other coniferous, aspen, and riparian forests used less often. Forages in woodlands near edges, clearings, bogs, streams, and burned areas. Uses tall exposed perches in tops or high exposed limbs of trees.
Purple Martin	Yes	< 10,000 feet. Old growth aspen, mixed aspen/ponderosa pine or Douglas fir, deciduous riparian woodlands, burns with snags especially when near water and open foraging areas (parks, forest openings, open grassy river valleys, lake shores, marsh edges, agricultural areas, open woodlands, towns). Nests built in cavities in trees and cliffs, loose rock, and crevices in old buildings.
Loggerhead Shrike	Possible	Rare above 6,000-9,000 feet. Open riparian areas, agricultural areas, grasslands, shrublands, sometimes open pinyon-juniper.
Brewer's sparrow	Yes	Breeds primarily in sagebrush shrublands and in alpine meadows. Nests in small shrubs or low trees, usually less than one foot above ground.
Sage sparrow	No	Suitable breeding habitat of interior subspecies: generally extensive, unfragmented tracts of open to semi-open dry chaparral, desert scrub, sage shrublands <6,500 ft associates most often with big sagebrush; also uses saltbush, bitterbrush, shadscale, rabbitbrush, greasewood, chamisa, Project is above elevational range of this species.
Boreal Toad	Possible	7,000-11,860 feet. Marshes, springs, wet meadows, margins of streams, beaver ponds, lakes, glacial ponds, irrigation ditches.

Northern Leopard Frog	Possible	Up to 11,000 feet. Variety of usually permanent water sources (especially rooted aquatic vegetation) including banks and shallow areas of marshes, ponds, lakes, reservoirs, streams, springs, and irrigation ditches. Wet meadows and grassland are also used. Breeding pools commonly contain algae mats, vegetation, and clear water.
Great Basin Silverspot	No	Associated with *Viola* spp. Wet meadows, seeps, sloughs from 5200 to 9000 feet. No *Viola* present along project route.
Lesser panicled sedge *Carex diandra*	No	Wetlands, typically montane and subalpine fens. Not known on GMUG. Not found in plant surveys along route.
Lesser yellow lady's slipper *Cypripedium parviflorum*	No	Not known on GMUG. Not found in plant surveys along route.
Whitebristle cottongrass *Eriophorum altaicum* var. *neogaeum*	No	Uncommon resident in bogs about 3000 meters (10,000 feet) in Rocky Mountains. Outside of elevational range of this species. Not known to occur on Paonia RD. Not found in plant surveys along route.
Slender cottongrass *Eriophorum gracile*	No	Near-neutral-pH fens, margins of small lakes and ponds, with abundant water supply, 8100-12000 feet. Not found in plant surveys along route.
Simple bog sedge *Kobresia simpliciuscula*	No	Mesic to wet tundra, fens. Not known or expected to occur in this area, habitat not present. Not known on GMUG. Not found in plant surveys along route.
Park milkvetch *Astragalus leptaleus*	No	Sedge-grass meadows, swales, hummocks, along willows. Not known on GMUG. Not found in plant surveys along route.
Wetherill's milkvetch *Astragalus wetherii*	No	Open sites primarily in pinyon-juniper woodlands. Not known on Paonia district. Not found in plant surveys along route.
Smooth northern rock-cress *Braya glabella*	No	Alpine habitats in calcareous soils. Not known on Paonia district. Not found in plant surveys along route.
Rocky Mountain thistle *Cirsium perplexans*	No	Clay soils derived from the shales of the Mancos or Wasatch formations with pinon-juniper woodlands, sage, saltbrush, and mixed shrublands, usually disturbed. Not found in plant surveys along route.
Roundleaf sundew *Drosera rotundifolia*	No	In Region 2, fens. No habitat present for this species along route. Not known on Paonia district. Not found in plant surveys along route.
Stonecrop gilia *Gilia sedifolia*	No	Dry, rocky talus of tuffaceous sandstone, above treeline in known Colorado population. No habitat present along route. Not known on Paonia district. Not found in plant surveys along route.
Colorado tansyaster *Machaeranthera coloradoensis*	No	Montane to alpine in a variety of habitats. Not known on Paonia district. Not found in plant surveys along route.
Kotzebue's grass of parnassus *Parnassia kotzebuei*	No	Moist subalpine areas, boggy soils, along creeks. Mossy ledges and seeps. Habitat not present in project area. Not known on GMUG. Not found in plant surveys along route.
Ice cold buttercup *Ranunculus karelinii*	No	Dry, rocky alpine habitats above 10,000 feet within its Region 2 range. Habitat not present along proposed route. Not known on Paonia district. Not found in plant surveys along route.
Arizona willow *Salix arizonica*	No	Subalpine wet meadows and streams. Single known CO occurrence is above 10,000 feet. Not known on GMUG. Not found in plant surveys along route.

Autumn willow *Salix serissima*	No	Associated with permanently saturated soils with peat present. Not known on GMUG. Not found in plant surveys along route.
Cathedral Bluff meadow-rue *Thalictrum heliophilum*	No	Sparsely vegetated, dry shale talus slopes of the Green River Formation at elevations of 6300-8800 ft. (Spackman et al 1997) Not known on Paonia district. Not found in plant surveys along route.

For fish see Table 35

C. Management Indicator Species Considerations

Species	Present and Affected by Project	Habitat Description and Requirements
Elk	Yes	Various habitats including oak, sage, aspen, and conifer forests. Winter range includes lower elevation oak and sage, summer range primarily higher elevation forest.
Abert's squirrel	No	Obligate to ponderosa pine. Mature pine and pine-oak habitats, primarily on the Uncompahgre Plateau. Project area is outside of range of this species.
Brewer's Sparrow	Yes	Breeds primarily in sagebrush shrublands and in alpine meadows. Nests in small shrubs or low trees, usually less than one foot above ground.
Northern goshawk	Possible	Up to 11,200 feet. Spruce/fir, Douglas fir, mixed conifer, aspen, ponderosa pine, lodgepole pine. Uses a variety of forest structural stages although mature forests are required for nesting.
Merriam's wild turkey	Yes	Associated with Gambel oak, pinyon-juniper, ponderosa pine, and neadow edges.
Pine marten (American marten)	Possible	Subalpine, spruce-fir and lodgepole pine forests, alpine tundra and occasionally Montane forests. Generally associated with older growth or mixed age stands of spruce fir and lodgepole pine
Red-naped sapsucker	Probable	Mature aspen, including aspen with a riparian willow component.

For fish see Table 35

Appendix I

Lynx Management Direction

The Canada Lynx was listed as threatened in March 2000. In August 2004, the Second Edition of the Canada Lynx Conservation Assessment and Strategy (LCAS) was released, to provide a consistent and effective approach to conserve Canada lynx on federal lands. The Canada Lynx Conservation Agreement (USDA 2005a) identifies the Science Report (Ruggerio et al, 2000) and the LCAS (Ruediger et al, 2000) as including the best available science on habitat and identify conservation measures. Both of these documents, along with local information are to be used for project analyses.

Table 3A. LCAS Project Level Standards and Guidelines

Project Level Standards	Compliance
Conservation Measures Applicable to all Programs and Activities	
1. Within each LAU, map lynx habitat.	Done
2. Within a LAU, maintain denning habitat in patches >5 acres, comprising at least 10% of lynx habitat. Where <10% denning is currently present, defer any management actions that would delay development of denning habitat structure.	No impacts to denning habitat.
3. Maintain habitat connectivity within and between LAUs.	Connectivity will not be affected by this project.
Conservation Measures Applicable to Other Human Developments	
1. On projects where over-snow access is required, restrict use to designated routes.	Not Applicable, no winter activities.
Project Level Guidelines	**Compliance**
Conservation Measures Applicable to Other Human Developments	
1. If activities are proposed in lynx habitat, develop stipulations for limitations on timing of activities and surface use and occupancy at the leasing stage.	Not Applicable, no winter activities.
2. Minimize snow compaction when authorizing and monitoring developments.	Not applicable, no winter activities.

Appendix J

Appendix K

Landbirds

The USFS signed a MOU with USFWS for management of landbirds in 2001. This MOU includes direction on incorporation of habitat management guidelines identified in Bird Management Plans. The Colorado Land Bird Conservation Plan (PIF 2000) identified priority bird species by habitat, for physiographic areas across the state. Priority species identified by habitat in the Bird Conservation Plan are shown in Table A-5. All habitats identified for the two physiographic areas (62 and 87) are already being analyzed as habitat for sensitive or management indicator species. No additional analysis will be done for these species.

Table A. Landbirds (based on CO Land Bird Conservation Plan, PIF 1/2000)

Habitat	Habitat present along ROW?	Priority species for PA 62 and 87	Within species distribution?
Alpine tundra	No		
Aspen	Yes	Broad-tailed hummingbird	Yes
		Red-naped sapsucker	Yes, and analyzed as MIS
		Purple martin	Yes, and analyzed as a sensitive species
		Violet green swallow	Yes
Cliff/rock	No		
High elevation riparian	Yes	Cordilleran flycatcher	Yes
		American dipper	Yes
		MacGillivray's warbler	Yes
		Wilson's warbler	Yes
Lowland riparian	No		
Mixed conifer	Yes	Blue grouse	Yes
		Williamson's sapsucker	Yes
Mountain shrubland	Yes	Virginia warbler	Yes
		Green-tailed towhee	Yes
		Common poorwill	Yes
Pinyon juniper	No		
Ponderosa pine	No		
Sagebrush shrublands	Yes	Brewer's sparrow	Yes, and analyzed as a sensitive species
		Northern sage grouse	No
		Sage sparrow	No
Semidesert shrublands	No		
Spruce/fir	Yes	Boreal owl	Yes, and analyzed as a sensitive species
		Olive-sided flycatcher	Yes, and analyzed as a sensitive species
		Hammond's flycatcher	Yes
Wetlands	Yes	Willet	No
		Short-eared owl	No

Habitat	Habitat present along ROW?	Priority species for PA 62 and 87	Within species distribution?
		Northern Harrier	Yes

Appendix L

Old Growth

The GMUG Forest Plan includes direction to maintain structural diversity of vegetation on units of land 5,000 to 20,000 acres in size, or fourth-order watersheds, which are dominated by forested ecosystems. Direction also says "in forested areas of a unit, 5-12% or more (where biologically feasible) will be in an old growth forest classification…".

The GMUG has not mapped old growth forests. To identify where old growth forest would be most likely to be found, habitat structural stage 4 (mature forest) was reviewed. The structural stages are broken into A, B and C, based on canopy cover. Hoover and Wills (1987) was reviewed to identify which categories would be most likely to have old growth characteristics, based on forest type.

Of the forest types found in the GMUG portion of the project area, these are aspen and spruce/fir. Table D-2 shows the percent of these forest types that are mature, based on structural stage 4 (mature forest). There is no 4C (the densest stands) for either of these forest types. Old growth would be a subset of the mature stands.

Within 1 mile of the project centerline, there are 5836 acres of aspen. None of this is classified in CVU as "large" or "very large", indicating it is unlikely to be old growth forest. Examination of stands along the route confirmed that none of the forest near the route is old growth, although there are some larger aspens along portions of the project coincident with roads on the southern end of the route and above Ault reservoir.

Of the 218 acres of spruce-fir within 1 mile of centerline, 95 acres are classified as "large" and may have some old-growth characteristics. The 1.9 acres of spruce-fir within the 100-foot construction corridor is within a polygon classed as "large". During field visits to the site, that portion of the spruce-fir forest was determined to actually be a riparian area and did not exhibit any old-growth characteristics. Therefore, implementation of the proposed action would not reduce old-growth forest in this area.

Appendix M

Appendix N

Appendix O

Appendix P

Appendix Q

Appendix R

Appendix S

Appendix T – Photo Library

Proposed Sheep Gas Gathering System

Watershed and Soils Report
January 2007

West Muddy Creek and Sheep Creek Pipeline Crossing
Proposed Action Alternative

Figures

Figure 1 Proposed pipeline crossing of West Muddy Creek (looking northeast).

Figure 2 Proposed pipeline crossing of West Muddy Creek (looking upstream, northwest).

Figure 3 Point of diversion into natural flood flow channel, West Muddy Creek.

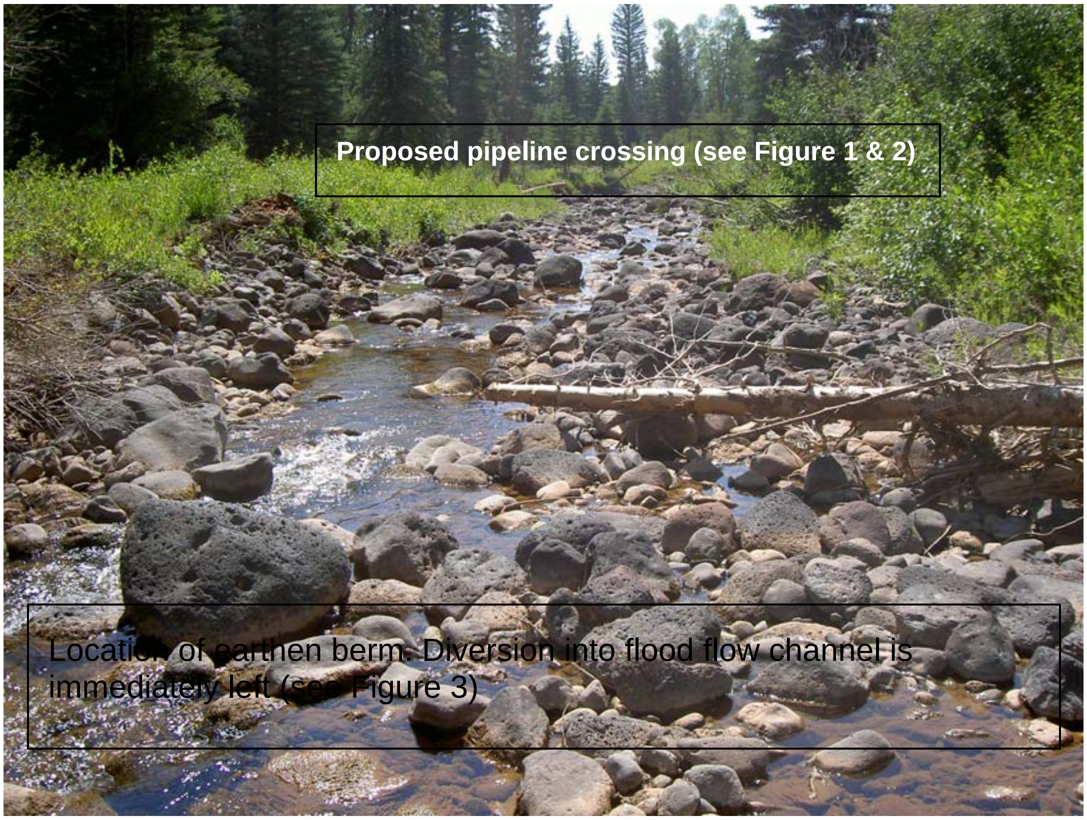

Figure 4 Location of earthen berm to temporarily divert West Muddy Creek into flood flow channel during construction (lookin downstream, southeast).

Figure 5 West Muddy Creek looking upstream from proposed crossing at point of diversion and earthen berm.

Figure 6 Example streambank erosion downstream of proposed crossing, indicative of high background sediment levels.

Figure 7 West Muddy Creek looking downstream of proposed crossing at eroding streambank/hillside, indicative of high background sediment levels.

Figure 8 Proposed pipeline crossing of ephemeral stream north of Condemn It Park. Ephemeral stream is typical of project area.

Figure 9 Looking at proposed Sheep Creek crossing, looking east.

Figure 10 Proposed Sheep Creek pipeline crossing at old earthen dam (see Figure 9).

Appendix U

SHEEP GAS GATHERING SYSTEM PROJECT

Scoping Comment

1.0 List of Respondents to Scoping Period (30-days: September 15th to November 14th, 2006)	
Letter #	Agency, Organization, Business, or Individual
1.	Mike Anderson, 3654.75 F ½ Rd,Palisade, CO 81526 a 1 page letter received via David Ludlum email on September 27, 2006
2.	David Baumgarten, County Attorney, Gunnison County, 200 E Virginia Ave., Gunnison CO 81230. 6-page Letter with 12 page attachment, dated September 20, 2006
3.	Dan Morse, High Country Citizens Alliance, P.O. Box 1066, 724 Elk Ave., Crested Butte, CO 81225 (8-page USPS letter dated September 20, 2006).
4.	Derek Potter, 675 35 Rd., Clifton, CO 81520 a 1 page letter received via David Ludlum email on September 27, 2006
5.	Andy Nilsen, 3146.5 W. Mandarin Ct., Grand Junction, CO 81504 a 2 page letter received September 26, 2006 via email
6.	USDI-Office of Environmental Policy and Compliance, Denver, CO. 80225. 3 page Letter dated November 02, 2006
7.	Gunnison Energy, Lee Fyock, 1801 Broadway, Suite 1200, Denver, CO 80202, received September 26, 2006.
Letters were mailed to 137 agencies, tribal governments, groups and individuals on September 13th, 2006. In addition, PAO press releases were sent local newspaper and radio media outlets on September 15th, 2006. The formal comment period ended on November 14, 2006.	

Issues raised in comments

Respondent #1: Mike Anderson, 3654.75 F ½ Rd,Palisade, CO 81526 a 1 page letter received via David Ludlum email on September 27, 2006	
Comment	Comment Analysis and FS Response
1.1 The gathering line will help GEC complete their exploration and development project on the GMUG national forest. This development (if feasible) could be a small part of energy independence…	See Chapter 1.3

Respondent #2: David Baumgarten, Gunnison County Attorney, Gunnison County CO. (Email with Memorandum attachment dated September 20, 2006)	
Comment	Comment Analysis and FS Response
2.1 Alternative locations should be considered that follow existing pipeline and or existing roads.	See Chapter 2 2.3
2.2 We understand that a portion of the proposed project will be in relatively close proximity to a) existing residences; b) planned residences; c) agricultural operations; and d) historic and current hunting and fishing The impacts of the project on these four uses must be carefully analyzed and mitigated.	a. The landowners closest to the pipeline have agreements with GEC pertaining to the occupancy of their lands. There are several residences that might be impacted by construction traffic. b. None according to Gunnison County Planning c. See Chapter 3. 5 d. See Chapter 3.8
2.3 The project will impact Gunnison County roads as well as Forest Service roads maintained by Gunnison County. Construction equipment needed for this project may have significantly net adverse impacts on road integrity, especially during wet months. Please provide a traffic analysis that identifies traffic impact of the proposal, including the numbers of trips per day to be generated by employees during construction, operation and restoration/reclamation, road and safety conditions in the project area, in the and the haul route(s), including ingress/egress, parking and loading areas, on-site circulation, estimate of number of truck per day on the average and maximum number of trucks per day.	See Chapter 3.4 for traffic impacts. See Appendix E for anticipated road use during construction. Appendix D for the transportation system and staging area. An engineering analysis will be required as a design feature required before the project will start. This analysis will identify the existing road conditions, if any road work or upgrades are necessary and implementation standards. The Plan of Development (POD) Environmental Protection Plan (project file) includes restoration/reclamation information.
2.4 GEC and USFS need to clarify all areas where the information provided has been vague and overly general. a. pipeline diameter b. corridor width c. use of temporary areas d. disturbance rehabilitation e. season and duration of construction activity f. type of permanent access to pipeline	See Chapter 2.2.2.
2.5 Dust control must be included as a part of the management plan, including road construction and road maintenance particularly where there are adjacent existing homes in the area.	Design features and the POD, Fugitive Dust Control Plan (project files), include measures for dust control during the project.
2.6 It is requested that GEC provide the same standards of reclamation on private property as are required on public lands.	Not in the scope of this project.

Respondent #2: David Baumgarten, Gunnison County Attorney, Gunnison County CO. (Email with Memorandum attachment dated September 20, 2006)	
Comment	Comment Analysis and FS Response
2.7 Reclamation/vegetation should be accomplished to comply with Colorado Revised Statutes 35-5.5, et seq; the Colorado Noxious Weed Act and with recommendations of the Gunnison Basin Weed Specialist.	The project will comply with USFS regulations regarding noxious weeds and reclamation/revegetation. See Chapter 3.5 and also included in the POD, Environmental Protection Plan (project files). To our knowledge this would ensure compliance with CRS 35-5.5, et seq.
2.8 Various sources of power for on-site or off-site generation must be considered at each location to ensure the impacts are minimized.	No off site generation of power anticipated. Onsite equipment powered by diesel or gasoline.
2.9 The potential impacts and mitigations strategies must include potential failures caused by subsidence and/or earthquake.	It is not likely the proposed action, as well as reasonably foreseeable future actions, will cause subsidence. Subsidence related to oil and gas activities (pipelines, drilling) are primarily restricted to karst terrains, where the predominate local geology is carbonates/limestones. Within the project area, the predominate geology is sandstones/shales/siltstones, which are not subject to dissolution by drilling fluids on the scales needed for subsidence. It is not likely the proposed action will cause earthquakes. Earthquakes related to oil and gas activities (pipelines, drilling) are primarily restricted to injection sites. Within the nearby Bull Mtn Unit, a water injection well is proposed, but because the downhole hydrologic conditions are not known at this time, it is not possible to determine what effects this proposed well may have on seismicity. Typically the earthquakes associated with these locations are small (see Jon P. Ake, Microseismicity Induced by Fluid Injection in the Paradox Valley of Southwestern Colorado, [abstract only] 63 Seismological Research Letters 19 (1992)). Many factors are responsible to whether or not a injection well may cause seismic actively (see 2002, Meremonte, et al., Investigation of an Earthquake Swarm near Trinidad, Colorado, August-October 2001, USGS Open-File Report 02-0073).
2.10 Scoping must include the reasonable probability that, at some point, this pipeline will be abandoned. Therefore, a strategy must be identified now for the circumstance.	See Chapter 2.2.2, also the Special Use Authorization addresses removal of improvements.
2.11 In determining the scope of the likely impact of a project, the Council on Environmental Quality's regulations require that federal agencies consider "connected actions" and cumulative actions" together with "direct" and indirect" impacts.	See Appendix G for connected and cumulative actions. Indirect and direct impacts are included in each resource section in Chapter 3.
2.12 Any project approval should emphatically note the requirement for compliance with the Gunnison Colorado Temporary Oil and Gas Regulations.	GEC, in the Special Use Authorization, must "comply with all applicable Federal, State, and local laws, regulations and standards…".

Respondent #2: David Baumgarten, Gunnison County Attorney, Gunnison County CO. (Email with Memorandum attachment dated September 20, 2006)		
	Comment	Comment Analysis and FS Response
2.13	A description of water to be used by the proposed project…including source amount and quality of such water, the applicant's right to use the water, including adjudicated decrees, application for decrees, proposed points of diversion and changed in the points of diversions, and the existing uses of the water. If an augmentation plan for the proposed project has been decreed or an application for such plan filed with the court, the applicant must submit a copy or that plan or filing.	The only anticipate use of water is for dust abatement. The water right and augmentation plan, approved by the State, are included in the project files.
2.14	Description of all hazardous, toxic and explosive substances to be used, stored, transported, disturbed or produces in connection with the proposed project, including the type and amount of such substances, their location and practices and procedures to be implemented to avoid accidental release and exposure.	Only gas, diesel and other general heavy equipment substances (hydraulic fluid) will be used. No explosive substances are expected to be used. Spill procedures are included in the Hazardous Materials Management and Spill Prevention, Containment and Countermeasure Plan and Environmental Protection in POD (project files)
2.15	Need for the proposed project in the County, particularly in relation to existing and/or permitted facilities….	See Chapter 1.3 and Chapter 2.2.3
2.16	Technical and financial feasibility of the project: a. estimated construction costs a.1. period of construction b. revenues and operating expenses c. amount and security of debt and servicing d. details of contract or agreement for revenues or services e. who will pay for/use services & who will benefit f. financial and technical capabilities of GEC g. demonstrate project completed in reasonable length of time	a. GEC has provided the financial documents required by the Special Use Authorization. It has been determined that they have the financial and technical feasibility to construct, operate and maintain the proposed project. The documents containing financial data are considered privileged information. a.1. See Chapter 2.2.2 b. See Chapter 3.11 c. Not within the scope of the project d. Not within the scope of the project e. GEC will pay for/use the pipeline. The local and regional natural gas markets and consuming public will benefit from more gas becoming available. f. See 2.16 a. g. See 2.16 a.
2.17	Existing environmental and impacts - analysis of existing structure of each significant element and system	See Chapter 3
2.18	Surface water - a. map and description of all surface water impacted b. monthly streamflows, lake and res. levels c. physical stream features including dimensions, capacities and functions d. chemical and biological quality and fisherery community e. present uses and use classification and designation f. instream flow requirements and minimum bypass requirements g. impact and net effects on quantity and quality of surface water	a. See Chapter 3.10 and Appendix O for surface water impacted. b. No lakes or reservoirs impacted. Monthly average streamflows for West Muddy Creek are found in Chapter 3.10 table 55 on page 176 c. The Design features, Appendix A, requires a study to be completed prior to construction which will include the physical features, dimensions and capacities. d. See Chapter 3.10 and Chapter 3.7 e. On file with State Department of Water Resources f. See 2.18.e. The project will not stop the flow of West Muddy Creek, only divert it to another existing channel. g. See Chapter 3.10.1.4

Respondent #2: David Baumgarten, Gunnison County Attorney, Gunnison County CO. (Email with Memorandum attachment dated September 20, 2006)	
Comment	Comment Analysis and FS Response
2.19 Ground water - a. map and description of all aquifers impacted b. aquifer recharge areas c. geology of strata overlying aquifers d. season levels of the water table in confined aquifers and artesian pressure in confine aquifers e. chemical, physical and biological water quality of aquifer f. uses of aquifers g. impacts of proposed project on quality and quantity of groundwater	See Chapter 3.10.1.3 and 3.10.1..4
2.20 Floodpalins, Wetlands and Riparian Areas a. map and description of all floodplains, wetlands and riparian area impacted b. structural and functional values	See Chapter 3.10.3 and 3.10.4, Appendix M and project files
2.21 Air quality - a. map and description of air quality classification of airsheds b. description of airshed to be impacted c. map and description of ambient air quality d. impact to ambient air quality, visibility and microclimates during construction and operations	See Chapter 3.6.3 and 3.6.4 and Appendix N for airshed map
2.22 Impacts to terrestrial and aquatic vegetation - a. land classification, b. map and description of terrestrial and aquatic vegetation to be impacted by the project. c. Description of the impact and net effects to terrestrial; and aquatic vegetation.	See Chapters 3.2.3, 3.2.4, 3.7.3 and 3.7.4
2.23 Impacts to terrestrial and aquatic animals and habitat a. map and description of terrestrial and aquatic animals and habitat to be impacted by the project b. description of food webs to be impacted c. map of critical wildlife habitat and livestock range to impacted by the project d. description of streamflows and lake levels needed to protect aquatic environment e. map and description of any gold medal and wild trout waters or other designations f. description of existing management of any fisheries to be impacted	See Chapter 3.2.3, 3.2.4 and 3.7.3 and 3.7.4 No lakes impacted. b. No critical habitat as defined by ESA. e. No known "gold medal and wild trout waters or other designations" . f. See Chapter 3.7.3
2.24 Impacts to the Threatened, endangered species or unique to Colorado species a. map and description of any TES plant or animal species or an species that are unique in CO.	See Chapter 3.2.3, 3.2.4 and 3.7.3, 3.7.4 and Appendices H & I.
2.25 Impacts to Visual quality a. description of current visual qualities b. map of all access and travel routes, public area, rec. trails, resorts or other rec. facilities & other areas have a view of the project.	See Chapter 3.3.3 and 3.3.4

Respondent #2: David Baumgarten, Gunnison County Attorney, Gunnison County CO. (Email with Memorandum attachment dated September 20, 2006)		
	Comment	Comment Analysis and FS Response
2.26	Impacts to noise, vibration and odors a. map and description of current levels of noise, vibration and odors	COGCC (rule 802) states the "Any operation involving pipeline or gas facility installation or maintenance, …is subject to the max. permissible noise levels for industrial zones." Between 7am and the next 7pm industrial zones allow 80db(A). "If there are no occupied building units impacted, sound levels shall be measured at a distance of 25' or more from the property line radiating the noise." We anticipate a short term increase in noise. No know limits for vibration or odors.
2.27	Impacts to soils and geology a. map and description of soils and geologic conditions	See Chapter 3.1.3. and 3.1.4.
2.28	Socioeconomic impact analysis	See Chapter 3.11
2.29	Impacts to recreation and tourism a. map and description of present and potential recreational uses with and without proposed project on both public and private lands & economic benefit b. description of streamflows and lake levels needed for minimum and optimum rec. use	a. See Chapter 3.8.3, 3.8.4 and 3.11 No additional potential recreation uses anticipated b. No lakes impacted, only 2 perennial crossings of streams. West Muddy Creek receives minimal recreational use and water flow will not be interrupted, therefore no impact to recreation. Streamflows are in Table 55, page 176.
2.30	Impacts to agriculture and grazing a. map and description of present and potential agriculture operations and grazing on public & private lands also existing and potential economic benefits	See Chapter 3.5.3, 3.5.4 and 3.11 a. See Appendix M for range improvements impacted We anticipate short term inconvience and a slight increase in forage, but no long term loss of agricultural production.
2.31	Impacts to transportation system a. map and description of transportation system b. map and description of current commuting patterns, traffic volumes, types of vehicle use and resulting from settlement patterns during construction and operation	See Chapter 3.4.4 a. See Appendix D b. List of expected road usage is Appendix E. Descriptions of the affected environment can be seen in Chapter 3.4.3 and 3.4.4.
2.32	Impacts to Population a. Description of permanent and seasonal resident population including age, number per household, income levels, etc. b. Description of the visitor population by season and recreational user days c. Impacts on seasonal and visitor populations including in-migrations	See Chapter 3.11 Size of the project, both construction and operations phases, is well beneath that necessary to prompt long-term changes in employment, population (seasonal and permanent), settlement patterns, or in-migration. b. See Chapter 3.8.3 c. See Chapter 3.8.3
2.33	Impacts to Employment	See Chapter 3.11 Characteristics of the area economy, including employment, are found in the Social and Economic CER, Draft Forest Plan Revision. Because the project is so small, "lag" time is considered negligible.
2.34 2.35	Impacts to public service and facilities A. Existing levels, demand for and adequate public services and facilities	See Chapter 3.11.
2.36	Impact to local government revenues and expenditures a. Description of current and past annual total revenues and expenditures of County and municipalities that would be financially impacted	See Chapter 3.11

Respondent #2: David Baumgarten, Gunnison County Attorney, Gunnison County CO. (Email with Memorandum attachment dated September 20, 2006)	
Comment	Comment Analysis and FS Response
2.37 Impacts to housing a. Describe existing seasonal and permanent housing, number of units, condition, types, cost, locations and persons per household.	See Chapter 3.11
2.38 Impact on Education	Most of the employees already live in Delta County. No indication that out-of-area temporary workforce will include dependents.
2.39 Impacts on construction material and energy resources a. Describe sources of energy and construction materials required for construction and operation b. describe potential sources of energy and construction materials in development area c. impacts on sources of energy and construction materials including overall percentage of energy efficiency, loss or gain of local renewable and nonrenewable resources	a. Gasoline and diesel are the main energy sources, available in the local area. Pipe and associated specialized equipment will be procured elsewhere. All other general materials expected to be purchased in the area. b. See 2.14 and 2.39a. c. See 2.39a.
2.40 Impact to land use a. describe all property rights including water, surface, mineral, ROW and easements that must be obtained, eliminated or impacted and identify of owner and methods of acquisition. b. map and description of existing land uses and densities	a. water rights see 2.13 above b. no mineral right needed to implement project. c. ROW & easements - surface agreements in place with impacted private landowners. Landownership available at Gunnison County. b. Existing land uses and densities available at Gunnison County. No indication that private land use will change.
2.41 Impacts on special areas	No special areas identified in project area.
2.42 Mitigation	See Appendix Afor design features and mitigation is included in each resource area in Chapter 3.
2.43 Description of following if applicable: 2.44 a. Transmission lines 2.45 b. power sources and substations 2.46 c. corridor locations 2.47 d. sources of power being generated or transmitted 2.48 e. map of power transmission lines 2.49 f. map of major facility of public utility 2.50 g. design capacity of each utility 2.51 h. population trends 2.52 i. types of development to be served 2.53 j. facilities upgraded to accommodate 10 yr. projected increase in demand 2.54 k. Why public convenience and necessity require a facility of the size and nature proposed 2.55 l. users needs and use patterns fulfilled	 a. No power transmission lines b. No power sources and substation involved c. No power corridors impacted d. No power being generated or transmitted e. No power transmission lines f. No major facility or public utility affected g. No public utility affected h. Not in the scope of this project i. Not in the scope of this project j. Pipe sized with potential future demands included. i. See Chapter 1.2 k. See Chapter 1.2 l. See Chapter 1.2

Respondent #3: Dan Morse, High Country Citizens Alliance, P.O. Box 1066, 724 Elk Ave., Crested Butte, CO 81225 (8-page USPS letter dated September 20, 2006).	
Comment	Comment Analysis and FS Response
3.1 Inadequate level of detail in scoping notice.	See Chapter 2.2

Respondent #3: Dan Morse, High Country Citizens Alliance, P.O. Box 1066, 724 Elk Ave., Crested Butte, CO 81225 (8-page USPS letter dated September 20, 2006).	
Comment	Comment Analysis and FS Response
3.2 Describe environmental and social conditions: a. Soils b. Ground and surface water c. Riparian areas d. Upland vegetation e. Wildlife habitat f. Presence of threatened and endangered species and their habitat g. Management Indicator Species as identified in the amended GMUG Forest Plan h. Species of concern and species of interest in and around the project area i. Scenic Quality conditions and objectives j. Air Quality k. Ambient Noise l. Recreation uses and objectives m. Existing cultural and historic resources n. Grazing use and management objectives o. Forest resources, forest resource uses, and forest management objectives p. Regional socioeconomic conditions	See Chapter 3 a. 3.10.2 b. 3.10.1 c. 3.10.1 and project file d. 3.2 e. 3.2 f. 3.2 and 3.7 g. 3.2, 3.7 and Appendix H h. 3.2, 3.7 and Appendix H i. 3.3 j. 3.6 k. Only construction noise associated with the project. Impact will be short term as construction moves. l. 3.8 m. 3.9 n. 3.5 o. See regulatory framework in each Chapter 3 resource. p. 3.11
3.3 Alternative created to address concerns or conflicts	See Chapter 2.2.
3.4 consolidate gathering pipelines	See Chapter 2.2
3.5 call for an new programmatic EIS for GMUG Gas Leasing and Development	Not in the scope of this project.

Respondent #4: Derek Potter 675 35 Rd, Clifton, CO 81520 a 1 page letter received via David Ludlum email on September 27, 2006	
Comment	Comment Analysis and FS Response
4.1 By designing this project with technical and environmental considerations, there should be no impacts to natural and cultural resources. These considerations may include, avoiding or minimizing disturbances in riparian areas, avoiding geologic hazards and areas of high erosion potential, conducting the appropriate cultural and biological surveys, and identifying the most appropriate mitigation measures where necessary.	See Chapter 3

Respondent #5: Andy Nilsen, 3146.5 W. Mandarin Ct., Grand Junction, CO 81504 a 1 page letter received via David Ludlum email on September 27, 2006	
Comment	Comment Analysis and FS Response
5.1 Transporting the resource to market is preferable to flaring or venting gas into the atmosphere.	Not in the scope of this analysis

Respondent #6 USDI-Office of Environmental Policy and Compliance, Denver, CO. 80225. 2 page Letter with a 4 page attachment dated September 20, 2006

Comment	Comment Analysis and FS Response
6.1 Suggests a mitigation that indirect draining of, or direct disturbance of, wetland areas will be avoided if at all possible, and a commitment to replace in kind such unavoidably impacts wetlands.	6.1 Proposed action avoided wetlands, where possible, and no filling or draining of wetlands is planned.
6.2 Complete avoidance of disturbance to any fen wetland	No fens identified, see Chapter 3.10.1.3.
6.3 Where feasible, recommend use of directional drilling for routing under all water crossings and associated floodplains, wetlands and forest lands.	6.3 Directional drilling not practical due to geography.
6.4 Wetlands mitigation plan should be provided for the project. USFS should require mitigation of wetland disturbance during project operating time and be concurrent with disturbance or even prior to project construction is possible.	Design features and mitigations for wetlands are found in Appendix A and 3.10.1.4, We will refine after review by Army Corps of Engineers in spring 2007.
6.5 Encourage delineation and marking of perennial seeps and spring and wetlands on maps and on the ground for avoidance during construction.	By design, we have avoided all the seeps, springs and wetlands that we can. Maps in project files
6.6 Recommend establishment of wetland and riparian habitat buffer zones (100' of native vegetation around each mitigation site) to avoid adverse impacts to streams, wetlands and riparian areas.	Native vegetation outside of disturbed area. Design features and mitigations will minimize impacts.
6.7 Use soil bioengineering techniques to stabilize stream banks if disturbed.	We will use where appropriate and material is available (WCPH BMP's). It will be included in the SUA operating plan.
6.8 Describe water bodies and ground water resource within analysis area which may be impacted.	See Appendix O, P and Q along with Chapter 3.10.1.3.
6.9 Describe area geology, topography, soil and stream stability in terms of erosion and mass failure potential and potential risk to surface and subsurface water quality and quantity, aquatic habitat, and other resources from specific project activities.	See Chapter 3.1.3, 3.1.4, 3.10.1.3., 3.10.1.3., 3.10.1.4., 3.10.2.3, 3.10.2.4 and Appendix R and S.
6.10 Appropriate State-identified BMP to reduce potential non-point sources of pollution from this project should be designed into the project.	6.10 We will be in compliance with State BMP's using WCPH.
6.11 Frequency or likelihood of vehicular spills of hazardous or toxic materials and describe spill and release response capabilities.	See 2.14 above

Respondent #6 USDI-Office of Environmental Policy and Compliance, Denver, CO. 80225. 2 page Letter with a 4 page attachment dated September 20, 2006	
Comment	Comment Analysis and FS Response
6.12 Storm water management should include a. preserving existing vegetation during clearing and grading, b. diverting runoff c. sediment barriers d. protect from gullying e. sediment traps and settling basins f. store chemicals in covered containers in specific locations g. identify areas and procedures for fueling and provide protected vehicle washout h. preserve vegetation near all waterways i. ensure materials and education for cleaning up spill and leaks	See Appendix A, POD in the project file
6.13 Evaluate effects of any proposed road improvement, new road construction, and general ROW construction and operation activities. Include: a. Increased access b. Travel management & enforcement c. Impacts to flora and fauna d. Dust particulates from construction and ongoing operations on roadways and plans for control e. Sedimentation run-off	a. See Chapter 3.4.4 b. See Chapter 3.4.4 c. See Chapter 3.2.4 and 3.7.4 d. POD, Fugitive Dust Control Plan in the project file. e. See 6.10 above
6.14 Noxious weeds and invasive plants control plan including: a. Prevention, detection & control b. reseeding disturbed areas c. cleaning equipment and tires prior to ingress into project area d. Certified weed free hay/straw.	The Noxious Weed Management Plan, POD, is in the project file a. See Chapter 3.5 and POD (project file) b. POD and Environmental Protection Plan (POD) in project file. c. See Appendix A d. See Appendix A
6.15 Disclose effect on ecology, including vegetation, wildlife and their habitat, as well as recreational hunting and fishing activities. Site preparation and construction activities should be timed to avoid plants and animals during crucial seasons in their life cycle.	See Chapter 3 for resource sections.
6.14 Specific BMP’s identified.	See Appendix A and project file.
6.15 Equipment and materials should not be places or stored in any environmentally sensitive areas.	See Appendix A and Chapter 3
6.16 Examine cumulative impacts, direct and indirect effects.	See Chapter 3 for each resource section and Appendix G.

Respondent #7: Gunnison Energy, Lee Fyock, 1801 Broadway, Suite 1200, Denver, CO 80202, received September 26, 2006.	
Comment	Comment Analysis and FS Response

Respondent #7: Gunnison Energy, Lee Fyock, 1801 Broadway, Suite 1200, Denver, CO 80202, received September 26, 2006.	
Comment	Comment Analysis and FS Response
The Forest Service must give special emphasis to GEC's goals and objectives when defining the purpose and need for the proposed gathering line. "Where an action subject to NEPA [National Environmental Policy Act of 1969] review is triggered by a proposal or application from a private party, it is appropriate for the agency to give substantial weight to the goals and objectives of that private actor."	See Chapter 1.3 for the purpose and need, and the proposed Action is addressed in Chapter 2.2.2

Appendix V

SHEEP GAS GATHERING SYSTEM PROJECT

Scoping Comment

List of Respondents to Scoping Period (30-days: April 13th to May 14th, 2007)	
Letter #	**Agency, Organization, Business, or Individual**
1.	Howard Giese, 10690 6300 Rd., Montrose, CO 81401 a one page letter received on May 2, 2007
2.	Chance Fisher, 10349 Tongue Creek Rd., Austin, CO 81410 a one page letter received on May 2, 2007
3.	Arthur Beavers, P. O. Box 638, Paonia, CO 81428 a one page letter received on May 2, 2007
4.	Dustin Carson, 5359 Highway 348 Delta, CO 81416 a one page letter received on May 2, 2007
5.	Kimberly Sanden, 17352 Surface Creek Rd., Cedaredge, CO 81413 a one page letter received on May 2, 2007
6.	William Ryan, 5367 Highway 348, Delta, CO 81416 a one page letter received on May 2, 2007
7.	Tom Richards, 447 Orchard Ave., Hotchkiss, CO 81419 a one page letter received on May 2, 2007
8.	Independent Petroleum Association of Mountain States, 410 Seventeenth Street, Suite 1920, Denver, CO 80202 a 3 page letter received May 11, 2007
9.	High Country Citizens' Alliance, Western Colorado Congress and Western Slope Environmental Resource Council, P. O. Box 1612, Paonia, CO 81428, a nine page letter delivered to the Paonia Ranger District office on May 14, 2007
10.	Douglas Gill, 39529 Hadley St., Paonia, CO 81428 a 5 page letter and a one page addendum received via email on May 14, 2007. Addendum #2 was received via email on May 15, 2007
11.	Gunnison Energy, Lee Fyock, 1801 Broadway, Suite 1200, Denver, CO 80202, an eight page letter received on May 10, 2007.
Letters were mailed to the respondents to scoping on April 13th, 2007 and 5 requestors. In addition, legal notices were published in the Grand Junction Daily Sentinel, the paper of record, on April 13, 2007 and the Delta County Independent on April 18, 2007. The formal comment period ended on May 14, 2007.	

Respondent #1: Howard Giese, 10690 6300 Rd., Montrose, CO 81401 a one page letter received on May 2, 2007	
Comment	**Comment Analysis and FS Response**
1.1 Exploration The Sheep Mountain Environmental Assessment should be approved without delay so the operators can move toward having a clearer picture of the resources which are or are not below the surface. Anyone who has dealt with the exploratory phase of natural gas knows you just do not start drilling holes in the ground and them instantly know what is under the ground. It would be nice if natural gas exploration was that simple, but in realitya company must test an entire geologic formation, before they can determine whether or not an area has significant resources for production.	Position statement. No response needed.

Respondent #1: Howard Giese, 10690 6300 Rd., Montrose, CO 81401 a one page letter received on May 2, 2007	
Comment	**Comment Analysis and FS Response**
1.2 Reclamation record In addition to exploration, it is important to mention that Gunnison Energy has a proven track record for reclamation. In Gunnison Energy's past work demonstrates that they are truly committed to the long term impacts associated with a pipeline and drilling for natural gas. Gunnison's work with the Spaulding Peak Environmental Assessment is just one example of how this company is very much concerned with reclamation. As a matter of fact, in most areas it is very difficult to tell where they have even been operating.	Positions statement. No response needed.
1.3 Energy Independence Thank you for the opportunity to comment of the Sheep Mountain Environmental Assessment. I urge you to keep with the spirit of the 2005 Energy Policy Act and vote to allow Gunnison to explore production possibilities and help America to reduce her dependency on foreign gas and oil. The future energy security of our nation depends on the increased production of oil and natural gas to meet the growing demand.	Closing remarks. This project will be facilitating the movement of natural gas to the local market; however the impact on reducing dependence on foreign supplies is unknown due to the small size of this proposal. Effects will be more measurable on the local demand or supply of natural gas

Respondent #2: Chance Fisher, 10349 Tongue Creek Rd., Austin, CO 81410 a one page letter received on May 2, 2007	
Comment	**Comment Analysis and FS Response**
2.1 Exploration A few test sites here and there is not what is meant when someone talks about exploration for natural gas. By approving the Sheep Mountain Environmental Assessment, you allow the Gunnison Energy Co. to move one step closer to seeing what resources are or are not in the area.	Opening remarks. No response needed.
2.2 Exploration It is very difficult to examine the cumulative affects of development in an area if you do not fully understand the amount of resources below the surface. When companies in the Sheep Mountain region are fully able to explore their leases, then everyone will have a clear picture as to the potential resources.	Position statement. No response needed.
2.3 Exploration Please move forward with the Sheep Mountain gathering system to expedite the current exploratory activities by Gunnison Energy. The gathering system will allow Gunnison to determine how the gas and pressures function in the actual gathering system, which is a different measurement than pressures measured at the well head of a capped, stranded well.	Position statement. No response needed.

Respondent #2: Chance Fisher, 10349 Tongue Creek Rd., Austin, CO 81410 a one page letter received on May 2, 2007	
Comment	**Comment Analysis and FS Response**
2.4 FONSI I appreciate the opportunity to be able to comment on the Sheep Mountain Environmental Assessment and I encourage you to issue a finding of no significant impact and allow Gunnison Energy to move forward in determining the volume of the amount of natural gas in the area.	Closing statement. No response needed.

Respondent #3: Arthur Beavers, P. O. Box 638, Paonia, CO 81428 a one page letter received on May 2, 2007	
Comment	**Comment Analysis and FS Response**
3.1 Exploration Exploring for natural gas is no easy task and those of us who know can tell you that stranded wells have no value from a cumulative impact perspective. Gas within the gathering system is needed to test the pressure and to determine the feasibility of the resource at hand. The bottom line is that more exploration is needed to determine the feasibility of the resource at hand. The bottom line is that more exploration is needed to determine how much natural gas is in the Sheep Mountain EA and if it is economically feasible to extract it sometime in the future.	Position statement. No response is needed.
3.2 Energy Independence The National Energy Policy Act of 2005 stresses the security need to reduce the consumption of foreign gas and oil. In the spirit of this act it only seems reasonable to allow Gunnison Energy the opportunity to move forward with the Sheep Mountain gathering system to expedite the current exploration. Without this exploration, the cumulative impacts will not be fully understood. Until the leases are fully executed, it is hard to say whether or not there is a vast volume of natural gas in the Sheep mountain EA region.	This project <u>will</u> be facilitating the movement of natural gas to the local market; however the impact on reducing dependence on foreign supplies is unknown due to the small size of this proposal. Effects will be more measurable on the local demand or supply of natural gas Leasing does not necessarily equate to development of a lease. Position statement. No additional response needed.
3.3 Reclamation record Gunnison Energy has a proven record of hard work, honesty, and integrity. Just look to the Spaulding Peak Environmental Assessment for an example of their proven record. In Delta and Gunnison Counties, where Gunnison Energy has had a presence, no one could tell they were operating in the area.	While an EA for Spaulding Peak development on the forest has been prepared, no development has occurred in the area covered by this document. All of GEC's development in the area has occurred on private. Position Statement. No response needed.
3.4 FONSI Finally, I want to thank you for the opportunity to comment on the Sheep Mountain Environmental Assessment. I look forward to reading a finding of no significant impact.	Closing remarks. No response needed.

Respondent #4: Dustin Carson, 5359 Highway 348 Delta, CO 81416 a one page letter received on May 2, 2007	
Comment	**Comment Analysis and FS Response**
4.1 Reclamation Record I am wiring you in regard to the Sheep Mountain Environmental Assessment. Gunnison Energy Company has an outstanding tract record for reclamation. This can be seen on their projects on the other side of the valley near Spaulding peak. Gunnison Energy went the extra mile to ensure once the pipeline was buried that reclamation was successful and that disturbance was no longer visible from the surface..	See response 3.3. Position statement. No response needed.
4.2 Reclamation record In addition to the Gunnison Energy proving themselves through their Spaulding Peak Environmental Assessment, they have also showcased pictures of their reclamation project around Delta and Gunnison Counties. I encourage you to approve the Sheep Mountain Envirnmental Assessment, because Gunnison Energy has made good on their projects in the past and will continue to do so in the future.	See response 5.3. Position statement. No response needed.
4.3 Energy Independence Every ounce of domestic natural gas going to market is less that has to be supplied by foreign nation which have a negative or hostile impression of the United Stated of America. While the Sheep Mountain Environmental Assessment is small in the over all picture of the nation's energy plan, it is non the less integral to America's energy security	See Beavers response to comment 3.2.
4.4 FONSI Once again, thank you for listening to my comment and I look forward to read of your finding of no significant impact.	Closing statement. No response needed.

Respondent #5: Kimberly Sanden, 17352 Surface Creek Rd., Cedaredge, CO 81413 a one page letter received on May 2, 2007	
Comment	**Comment Analysis and FS Response**
5.1 Socio-Economic Since Delta county is not a highly educated county, only one in five citizens have a college education, making it very difficult for a local chamber of commerce or economic partnership to attract highly paying jobs to the county.	Position statement. No response needed.

Respondent #5: Kimberly Sanden, 17352 Surface Creek Rd., Cedaredge, CO 81413 a one page letter received on May 2, 2007	
Comment	**Comment Analysis and FS Response**
5.2 Socio-Economic Gunnison Energy joins the coal mines of the North Fork Valley in providing high paying jobs to citizens of Delta county. These jobs are non-seasonal and provide work to literally hundreds of people. Gunnison Energy has a proven track record in Delta county and this record o commitment provides a solid foundation for approving the Sheep Mountain exploratory gathering system.	Position statement. No response needed.
5.3 Reclamation record The work Gunnison Energy did in the Spaulding Peak Environmental Assessment actually exceeds the APF standards for reclamation. Through out Delta and Gunnison Counties, Gunnison Energy has showcased displays depicting their many reclamation projects.	Spaulding Peak EA- no work has been done on for this project and therefore no reclamation completed. Reclamation requirements were developed in the Spaulding Peak EA by both the company and the FS. Position statement. No additional response needed.
5.4 FONSI/Energy Indepencence Thanks for the opportunity to comment and I hope you will consider the finding of no significant impact. This finding will help move the nation closer and closer to being energy secure.	Closing statement. See Beavers response to comment 3.2.

Respondent #6: William Ryan, 5367 Highway 348, Delta, CO 81416 a one page letter received on May 2, 2007	
Comment	**Comment Analysis and FS Response**
6.1 Comment It is my understanding the Grand Mesa, Uncompahgre, and Gunnison National Forest Service Office are accepting comment for the Sheep Mountain gathering system. I have two comments which I would like you to consider when drafting the final Environmental Assessment.	Opening statement. No response needed.
6.2 Exploration First, stranded wells have little value from a cumulative impacts point of view compared to how well produce and function. Data, in the context of gas within it gathering system is needed to pressure test and determine feasibility of the resource at hand. Gunnison Energy should have the opportunity to examine what resources do or do not exist in the Sheep Mountain region.	The purpose of the gathering line is to transport gas from existing leases to market. Development of leases is not being analyzed in this document. Position statement. No additional response needed.
6.3 Socio-Economic Second, I support Gunnison Energy and the coal mining industry within Delta County, because they supply long-term, non-seasonal, high paying jobs to citizens. The Sheep Mountain gathering system is important to our economy.	Position statement. No response needed.

Respondent #6: William Ryan, 5367 Highway 348, Delta, CO 81416 a one page letter received on May 2, 2007	
Comment	**Comment Analysis and FS Response**
6.4 Socio-Economic/Reclamation record These two facts coupled with Gunnison Energy's proven track record in Delta County provides for a solid foundation in approving the Sheep Mountain exploratory gathering system.	"Exploration" refers to the drilling and testing of new wells in an area that has not previously been developed This project is a gathering system to deliver established production of natural gas to the local market. Position statement. No additional response needed.

Respondent #7: Tom Richards, 447 Orchard Ave., Hotchkiss, CO 81419 a one page letter received on May 2, 2007	
Comment	**Comment Analysis and FS Response**
7.1 Energy Independence Over the past twenty-five years the demand for natural gas in America has risen sharply, whereas the supply has been fairly stagnate. Because of this fact we are importing more and more natural gas from overseas counties which seem to have very hostile views of the United States. Energy produced domestically gives these anti-American nations less and less leverage against the United States. For this reason I think the Sheep Mountain gathering system is very important in implementing our nations energy policy and inreascing domestic supply.	See Beavers response to comment 3.2. .
7.2 Exploration Gunnison Energy must have the opportunity to move forward in their exploration of natural gas in the areas by bringing the Sheep Mountain gathering system online. Pressures and performance in a gathering system is different than pressures which are measured at the stranded well heads. Gunnison Energy's Sheep Mountain leases may be a small portion of the National Energy Policy Act of 2005's objectives, but it is none the less helping make America less dependant of foreign gas.	See response 6.4. Position statement. No response needed.
7.3 FONSI I whole heartily support giving Gunnison Energy the finding of no significance e and allowing them to use the gathering system for determining the resource at hand. Thank you for considering my comment.	Closing remarks. No response needed.

Respondent #8: Independent Petroleum Association of Mountain States, 410 Seventeenth Street, Suite 1920, Denver, CO 80202 a 3 page letter received May 11, 2007	
Comment	**Comment Analysis and FS Response**

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8.1 FONSI The Independent Petroleum Association of Mountain States ("IPAMS") would like to thank the United States Forest Service ("Forest Service") for the opportunity to comment on the Sheep Gas Gathering System Environmental Assessment ("Sheep Gathering EA"). IPAMS is an organization of over 400 member independent oil and gas producers and associated service and supply companies, financial institutions, and consultants dedicated to environmentally responsible exploration and development of oil and natural gas resources. IPAMS supports Gunnison Energy Corporation's Proposed Action (also the Forest Service's Preferred Alternative) and encourages the Forest Service to issue a finding of no significant impact ("FONSI") and Decision Notice for the Sheep Gas Gathering System as soon as possible. The proposal has already been pending with the Forest Service for an entire year, and we understand Gunnison Energy extensively discussed potential routes for the Sheep Gas Gathering System with the Forest Service before submitting a formal proposal last summer.	Gunnison Energy Corporation's Sheep Gas Gathering System proposal was submitted to the Forest Service July 31, 2007. Opening and position statements. No response needed.
8.2 FONSI Based on our review of the Sheep Gathering EA, it is apparent the project will not have a significant impact on the environment. In all total, the gathering system is less than 11 miles long, only 6.6 of which are on National Forest Service System lands. The installation and construction of the pipeline will disturb approximately 130 acres, most of which will be immediately reclaimed, re-vegetated, and returned to productive habitat. Importantly, the route selected by Gunnison Energy, in consultation with the Forest Service, does not pass through any inventoried roadless areas, wilderness areas, areas with geologic instability, or designated crucial wildlife habitat. The Forest Service has also appropriately determined that the proposed action will have "no effect" on any species listed as threatened or endangered under the Endangered Species Act. It appears the Forest Service and Gunnison Energy have selected a route, and developed appropriate design criteria, to support the immediate issuance of a FONSI. *See* 40 C.F.R. § 1508.27(b) (2006) (listing factors used to determine whether a proposed action may significantly impact the human environment).	A FONSI will be issued at the discretion of the FS Authorized Officer and must accompany a decision which is also subject to appeal. Restatement of Proposed Action.

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8.3 Energy Independence The Forest Service should expedite the completion of the approval process for the Sheep Gas Gathering System as soon as possible as required by Executive Order 13212. *See* Executive Order No. 13212. 66 Fed. Reg. 28357(May 22, 2001). Executive Order 13212 was specifically amended in 2003 to address projects impacting pipeline safety. *See* Executive Order 13302, 68 Fed. Reg. 27429 (May 20, 2003). The installation of the Sheep Gas Gathering System will facilitate the production of domestic energy supplies, thereby assisting the regional economy. The gathering system will also allow Gunnison Energy to test natural gas wells previously drilled in the area without flaring the gas for long periods of time as can otherwise be required.	Approval will be consistent with the requirements of the NEPA process requiring an appeal period after a decision is issued. See also Beaver response to comment 3.2.

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8.4 Range/Noxious Weeds IPAMS is concerned, however, that the Forest Service is inappropriately attempting to shift the responsibility to control noxious weeds in the area to Gunnison Energy. IPAMS is confident that Gunnison Energy, like any of its members, will take appropriate steps to prevent the spread of noxious weeds caused by its activities. However, the Forest Service states on page 47 that the "proponent would be responsible for noxious weed control on project disturbed areas and along forest access roads." It thus appears the Forest Service is attempting to require Gunnison Energy to control and eliminate noxious weeds in the entire project area, including those already in existence along public roads. The Forest Service's own EA indicates that noxious weeds are already within the project area, particularly along existing roads or trails. Sheep Gathering EA, pg. 122. It would be inappropriate for the Forest Service to require GEC to treat noxious weeds not attributable to its activities, especially along public roads that are used by a variety of users.	Effects to Noxious weed are disclosed in EA, Chapter 3, 3.5.4.2, Appendix A. and the POD. The Special Use Permit will include the standard Noxious Weed Clause: . Noxious Weed Control (R2-D-103). 1. The holder shall be responsible for the prevention and control of noxious weeds and/or exotic plants of concern on the area authorized by this authorization and shall provide prevention and control measures prescribed by the Forest Service. Noxious weeds and exotic plants of concern are defined as those species recognized by the Forest Service in which the authorized use is located. 2 When determined to be necessary by the authorized officer, the holder shall develop a site-specific plan for noxious weed and exotic plant prevention and control. Such plan shall be subject to Forest Service approval. Upon Forest Service approval, the noxious weed and exotic plant prevention and control plan shall become a part of this authorization, and its provisions shall be enforceable under the terms of this authorization. 3 The holder shall also be responsible for prevention and control of noxious weed and exotic plant infestations which are not within the authorized area, but which are determined by the Forest Service have originated within the authorized area. Replace "….along forest access roads" with or in locations determined by the Forest Service where infestations originated within the authorized area.. The responsibility for noxious weed control will be throughout the life of the pipeline, including reclamation from abandonment. The Paonia District also maintains weed agreements with the counties.

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8.5 Wildlife/MIS IPAMS is aware of the legal controversy surrounding the Planning regulations issued by the Forest Service in 2005 and the impact recent court rulings in California may have upon site-specific authorizations. In particular, IPAMS is aware of potential controversy surrounding the type and quantity of data required regarding so-called Management Indicator Species ("MIS"). The GMUG National Forest properly and successfully amended its Land and Resource Management Plan ("LRMP") to reduce the number of MIS for the GMUG National Forest and, consistent with the regulations in effect at the time, eliminated the requirement to prepare site-specific population surveys for MIS at the time of project approval. Nonetheless, based on IPAMS' review of the EA, it appears the Forest Service prepared adequate analysis regarding MIS such that the Forest Service is clearly meeting its obligations under the 1982, 2000, or 2005 Planning Regulations. IPAMS encourages the Forest Service to more clearly explain its compliance with requirements to monitor MIS in the Decision Notice for the Sheep Gas Gathering EA so the procedures and requirements are clear to every member of the public.	In May 2005 the Forest Supervisor on the Grand Mesa, Uncompahgre and Gunnison National Forests (GMUG) issued an amendment that, in part, revised the list of Management Indictor Species (MIS). This list revision was completed under the authority and guidance provided in 36 CFR 219.19 (1982 Rule). Also as part of this amendment, the GMUG used authority provided in 36 CFR 219.14(f) in the 2005 planning Rule (2005 Rule) to make monitoring of MIS populations discretionary. However, on March 30, 2007 the Forest Service was enjoined by the 9th Circuit District Court from implementation of the 2005 Rule. That ruling invalidated the authority provided by 36 CRF 219.14(f). Revision of the GMUG list of MIS was completed under authorities provided in the 1982 Rule and, therefore, remains valid and in effect. However, since the 2005 Rule has been enjoined and, therefore, authority granted in 36 CFR 219.14(f) invalidated, the GMUG has reinstated MIS requirements per the 1982 planning regulations to monitor both habitat and <u>populations</u>. Regardless of the planning rule in effect, the GMUG has considered and will continue to consider the "best available science" in forest and project level planning, including data and analysis needs for MIS. The scope of analysis for management indicator species is determined by forest plan management direction, specifically, its standards and guidelines (Chapter II) and monitoring direction (Chapter IV). The GMUG National Forest's Forest Plan (Forest Plan) establishes monitoring and evaluation requirements that employ both habitat capability relationships and, at the appropriate scale, population data. The analysis completed for this project examined how the project directly or indirectly affects selected MIS habitat and populations and how these local effects could influence Forest-wide habitat and population trends (see EA Wildlife and Fisheries MIS sections). Further the analysis indicates that the project contributes to meeting Forest Plan direction for MIS. See EA, Chapter 3.2.9The

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8.6 Socio-Economic IPAMS encourages the Forest Service to complete the analysis for the Sheep Gas Gathering System in a timely manner so that Gunnison Energy can transport and sell natural gas. Doing so serves the National Energy Policy, will foster economic development, and will provide important revenues to the local, state, and national governments. In particular, Gunnison County will receive potentially substantial revenues from property taxes. The State of Colorado and federal government will also potentially receive important revenues from natural gas production off federal leases.	See EA, Chapter 3, 3.11.3. See also 8.3 response
8.7 FONSI IPAMS appreciates the opportunity to comment on this important project, and encourages the Forest Service to quickly issue a FONSI and Decision Notice on the Sheep Gas Gathering System	Closing remarks. No response needed.

Respondent #9: High Country Citizens' Alliance, Western Colorado Congress and Western Slope Environmental Resource Council, P. O. Box 1612, Paonia, CO 81428, a nine page letter delivered to the Paonia Ranger District office on May 14, 2007	
Comment	**Comment Analysis and FS Response**
9.1 Thank you for the opportunity to comment on the Sheep Gas Gathering System Environmental Assessment, which proposes to allow construction by Gunnison Energy Corporation of 6.6 miles of pipeline with a permanent 50 foot ROW with a 30-year lifetime on Forest Service land. High Country Citizens' Alliance, Western Colorado Congress, and the Western Slope Environmental Resource Council represent thousands of citizens living in western Colorado who live near and regularly use the affected area. Our primary interests lie in seeing that environmental health is maintained and that cumulative impacts from activities on public lands do not degrade or overwhelm their ecological integrity nor threaten public health and safety. We provide the following comments to register our intent to be considered interested and affected parties for this proposal.	Opening statement. No response needed
9.2 Introduction The proposed project area is of special concern to our members because it provides high-quality habitat for big game and non-game wildlife species that use the area year round. Dispersed recreation, including hunting, is popular in the area and one of our concerns is the effect on hunting during the construction phase (see below).	Effects of the Proposed Action on big-game, dispersed recreation and hunting were identified as key issues for the analysis (EA, Section 1.7). Effects to wildlife are disclosed in Section 3.2, and effects to recreation (including hunting) are disclosed in Section 3.8 of the EA.

9.3 We commend the work that has been done to analyze potential impacts on wildlife, vegetation, soil, water, and traffic. It is clear that Gunnison Energy Corporation, the project's proponent, has tried to design a project with minimum impact. From talking with Forest Service staff and reviewing the document, it is our impression that the Forest Service has worked hard to select the best option for a route and are outlining appropriate steps for mitigation including stream crossings, sediment control, weed control, reseeding, etc. (However, please see our comment below on under the heading "Impacts to Roads" for discussion of an alternate route.) We also note that the design of the project will not require new roads or motorized routes once construction is finished. One of our reviewers, who have analyzed many NEPA documents, said that this EA stood out as singularly comprehensive.	The Proposed Action was developed through a series of field and POD reviews to find the best placement for the pipeline based on geologic, watershed, wildlife, accessibility and other concerns (EA, Section 2.2.2 and 2.2.3). The project was designed to include Design features to minimize effects (EA, Appendix A).
9.4 Some favorable aspects of the proposed project include: 1) The chosen pipeline route would decrease impacts to the National Forest compared to other possible routes, in part because roughly 40% of the proposed pipeline is on private land. Of 10.8 total miles, 4.4 would be on private land, which are off-limits to the public.	Restatement of Proposed Action. No response required
9.5 2) Recreationists will be less affected than were the pipeline to be on easily accessible public land. Most of the 6.6 miles of pipeline planned for National Forest land is now inaccessible to the public because access is via private roads which are gated. The same private roads would form much of the ROW of the pipeline.	Effects to recreational opportunities is discussed in the EA, Section 3.8
9.6 3) With the exception of vent pipes, route markers, and a manhole cover, all of the surface facilities (e.g. water tanks) would be on private lands.	Effects to recreational opportunities is discussed in the EA, Section 3.8. Restatement of proposed action.
9.7 4) The entire project would be within an area designated in the *Mountains to Mesas* (M2m) Conservation Management Alternative as *low use compatible*, rather than in recommended wilderness. In proposed M2m low-use compatible areas, limited extractive activities may occur while maintaining habitats for current and future wildlife and plant species.	The M2m concept was forwarded as part of the GMUG Forest Plan revision process. The GMUG has not adopted a revised Forest Plan, therefore this project is being considered under the existing Forest Plan which identifies the management prescriptions (MA 2A - Semi-primitive motorized recreation experience, MA 6B-Livestock Grazing and MA 9A Riparian Area Management) in the project area (EA, Section 1.5.3). The project is consistent with the Forest Plan direction, standards and guidelines (EA, Section2.2.2.15

9.8 5) The direct impact of the two-mile stretch of pipeline that follows FS route 704 is far enough south as to be removed from contact with the Terror Trail across the Electric Mountain roadless area to the west. The trail's eastern terminus is on FS 704 several miles to the north. These are prized assets for hikers and hunters: Electric Mountain is proposed as wilderness in the M2m plan and the newly-rebuilt Terror Trail is the most valuable public access trail in the area.	We anticipate no effects to the Terror Trail in association with this project. See also Response 9.7.
9.9 Procedural concerns and regional impacts As is the case with other proposed natural gas projects on the GMUG National Forests, we have concerns about NEPA procedures, specifically that this project could be authorized prior to revision of the 1993 GMUG Oil and Gas EIS[1]. Other projects already approved or under consideration by the Forest Service, notably the Spaulding Peak and Hightower projects, will collectively exceed the 47 wells anticipated in the 1993 GMUG Oil and Gas EIS. The pipeline project under consideration in this EA, while not itself including wells, would be part of a gas development system with many wells whose cumulative impacts have not been analyzed.	For clarification, this project (a pipeline off a lease) falls under the FS special uses program (EA, Sections 1.4, 1.5.1 and 1.5.2), therefore, issues related to the oil and gas leasing analysis are not germane to this Proposed Action and Purpose and Need (EA, Section 1.4 and 2.2.2). Where reasonably foreseeable, the EA has included the effects of known drilling proposals in the analysis (EA, Appendix G, and Chapter 3, Cumulative Effects analysis in each resource section). No wells are being approved or proposed based on this pipeline proposal.

[1] Final Oil and Gas Leasing Environmental Impact Statement, GMUG National Forests, April 1993

9.10 Indeed, by providing an effective way of getting gas to market, the Sheep Gas Gathering System, like the Bull Mountain Pipeline, will provide an incentive for drilling wells on existing leases and/or for purchasing leases where available. Additional wells and associated gas development that could be reasonably seen as part of the Sheep Gas Gathering System therefore should be analyzed by this EA. What would be likely impacts if the gas field served by the Sheep Gas Gathering System proves productive and more wells are drilled than the two additional mentioned in the EA (page 134)?	Although the presence of the Sheep pipeline would create a situation in which the area is more attractive for natural gas production operations, there are no assurances that other leases in the area would be developed by drilling because natural gas development depends on gas price and demand, among many other variables. There are too many variables to predict future activities with any certainty, beyond what is currently proposed or under approval (EA, Appendix G). Additionally, this gas gathering system is intended to support existing leases many of which are privately owned (fee) leases on private lands. There is also no guarantee that GEC would allow use of their pipeline by any other potential operator. The scope of cumulative analysis was carefully considered, and it is unreasonable to expect the EA to include the analysis of effects associated with speculative oil and gas development. Further, we believe that an increasing nationwide demand for clean-burning natural gas is the primary driving force behind the growing level of exploration and development in the Rocky Mountain region during the last several years. Additional infrastructure to transport gas is a result, not a cause, of development.

9.11 Aside from page 120 where the EA briefly discusses the effect of possible simultaneous construction of the Sheep Gas Gathering System and Bull Mountain Pipeline on transportation, there is little discussion of how the Bull Mountain Pipeline and other projects listed in Appendix G would contribute to cumulative effects. In fact, on page 50 the EA states that "The Bull Mountain Pipeline has not received federal approval therefore this document cannot be based on a decision that has not been made. (*sic*)" We strongly disagree with this conclusion and point out that the Forest Service's NEPA documents frequently take into account unapproved but reasonably foreseeable projects like the Bull Mountain Pipeline. Under NEPA, the agency is required to consider cumulative effects. A project's "cumulative impact," is:"the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions_… Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." It would be difficult to argue that the Bull Mountain Pipeline project is not "reasonably foreseeable" when a proposal for the project is already in the NEPA process on the same national forest, in the same drainage and with a possibility of coincidental construction schedules using the same Forest Road. It is readily apparent that the Sheep Mountain EA must consider the cumulative impacts of the Bull Mountain Pipeline in a more complete manner.[2]	The Bull Mountain pipeline was identified as an action to be considered in the cumulative effects analyses (EA, Appendix G). To the extent potential activities related to the Bull Mountain pipeline would have cumulative effects with activities related to Sheep pipeline based on overlap with the cumulative effects area for a particular resource, these effects are disclosed in the cumulative effects section for each resource in the EA, Chapter 3. With respect to the comment on page 50, the context of that discussion is in the section Alternatives Considered but Eliminated from Detailed Study. The discussion presents the rationale for why the option of connecting Sheep pipeline to Bull Mountain was not considered. See also response 9.13.
9.12 Where there are large-scale plans for regional development, NEPA requires both regional (or programmatic) and site-specific EISs.[3] Although the quality of the site-specific analysis in this EA is generally high, it falls far short of regional analysis across the GMUG that takes into account reasonably foreseeable connected, cumulative, and similar actions as required to meet the spirit and the legal requirements of the National Environmental Policy Act (NEPA) and the National Forest Management Act (NFMA)[4].	This Proposed Action responds to a project-specific application forwarded by private entity (EA, Section 1.2 and 1.3). Under current federal regulations, the affected federal land management agencies are required to analyze proposals and reasonable alternatives. The project effects are being documented on their own merits in a site-specific NEPA analysis appropriate for the type and extent of action. The type and scale of action does not require a regional or programmatic level document. There are no regional plans or proposals for gas transport systems owned by individuals of entities in the vicinity of the project. As an example, these types of regional proposals would be evaluated by agencies such as FERC (Federal Energy Regulatory Commission) and related to inter-state developments.

[2] 40 C.F.R. §§ 1508.25, 1508.7, 1508.8.
[3] City of Tenakee Springs v. Clough, 915 F.2d 1308, 1312 (9th Cir. 1990).

9.13 Following are three other areas where cumulative impacts of multiple development projects should be analyzed: ● **Muddy Creek watershed**. Few sections of Chapter 3 contain sufficient analysis of cumulative effects resulting from the development of natural gas across the Muddy Creek watershed. Indeed, although the EA lists the proposed Bull Mountain Pipeline as an activity under "Past, Present and Reasonably Foreseeable Future actions" in Appendix G, Table P-1, page 247, there is almost no discussion in the document of how this large-scale project would contribute to cumulative impacts. Each of the analyses in Chapter 3 should, at a minimum, include discussion of the number of wells expected in the region and on the Bull Mountain Pipeline.	Each resource section in the EA, Chapter 3 identifies a cumulative effects analysis area, or uses a default area of the 6th level Hydrologic Unit Code (HUC or subwatershed) which include the Little Henderson Creek and Lower West Muddy Creek HUCs (EA, Appendix J). The Past, Present and Reasonable Foreseeable activities occurring in the cumulative effects area are included in the EA, Appendix G. Most of the existing natural gas wells on National Forest, in the Muddy Basin, are outside this area. Of the COGCC permitted wells, 9 out of 10 wells are located in the Little Henderson Ck, Lower West Muddy Ck and Lower West Muddy Ck. HUC's, although 2 of the wells are redrills on existing pads. Where applicable, existing or foreseeable wells in the cumulative effects are included in Appendix G, and their cumulative effect considered by resource (EA, Chapter 3) if applicable. The Jacobs #1 well has been added to the Cumulative Affects table P-6 as it was permitted by COGCC on 5/15/2007.

[4] A NEPA document must include an analysis of three types of actions and three types of impacts - those that are connected, cumulative, and similar. 40 C.F.R. §§ 1508.25, 1508.7, 1508.8.; Id. at § 1508.25(a).

9.15 ● **Capacity of Ragged Mountain Pipeline**. In order to understand cumulative impacts of the entire gas system in this region, there should be analysis of how carrying capacity of the different pipelines affects total gas development. For example, we note below that the proposed Sheep Gas Gathering System would use twelve-inch pipe, while the existing Ragged Mountain Pipeline uses six-inch pipe. We acknowledge that diameter is not the only factor determining pipeline capacity. Nonetheless, because the Sheep Gas Gathering System could carry more than the Ragged Mountain Pipeline we expect that construction of the Sheep Gas Gathering System will create pressure to either upgrade the Ragged Mountain Pipeline or to build another pipeline. Therefore, the EA should analyze the impact of all reasonably foreseeable pipelines that might be triggered by construction of the Sheep Gas Gathering System. We do not want to see a situation where the Sheep Gas Gathering System is analyzed and approved as a stand-alone project, and then the existence of the Sheep Gas Gathering System is used as justification for construction of more pipeline that is not analyzed at this time, e.g. the environmentally controversial Bull Mountain Pipeline that proposes to traverse several roadless areas.	The Forest Service has analyzed the cumulative effects based on reasonably foreseeable activities known at this time (EA, Appendix G). The proponent desire not to cause disturbance with additional pipelines in the future. The difference in the diameters between the proposed pipeline and the existing Ragged pipeline does not make a replace or addition to the Ragged pipeline reasonable or foreseeable. There is no proposal to connect Bull Mtn. and SGGS. Nor do either of the projects rely on one another. We know of no evidence that pipeline capacity would affect gas development. Further, according to GEC, operator of the Ragged Mountain pipeline, the Ragged Mountain Pipeline is not currently at maximum capacity. Gas transportation capacity is currently limited by the firm transport available on the Rocky Mountain Pipeline to which the Ragged Mountain Pipeline connects. The pipeline situation in the area is very dynamic as several companies to the north of leasehold acreage owned and operated by GEC have recently expanded their pipeline infrastructure. Should these companies relinquish their current transport on the Rocky Mountain pipeline, additional capacity could become available to GEC. The capacity of the Rocky Mountain Pipeline, and therefore the capacity of the Ragged Mountain Pipeline, is largely dependent on factors completely outside of GEC's authority or control. The Sheep Gas Gathering System is designed to connect to a regional pipeline for long-term testing of existing oil and gas wells (up to a year) and potentially production. According to GEC (project file) the 12" pipe proposed for the Sheep gas gathering system will allow gas to flow with a lower pressure drop over the length of the pipeline, thus the backpressure from the pipeline on the wells would be reduced. With a reduced line pressure, less compression would be required to run the system because the 12" inch line reduces overall pressure in the system. That the 12" Sheep Gas Gathering Pipeline connects to the 6" Ragged Mountain Pipeline is not relevant and will not create operational difficulties mandating additional compression. In the event that additional capacity is required in the future, the proposed 12" pipeline should handle any additional natural gas production or discoveries. This will prevent GEC from needing to upgrade the pipeline in the future. Because the 12" pipe also helped reduce backpressure, a 12" pipe was recommended by engineering in an attempt to eliminate the need for a future disturbance in the

9.16 ● **Lynx**. Cumulative analysis with respect to Lynx on pages 79 to 80 seems cursory. The EA states that grazing, outfitting and guiding, and water development will occur at similar to present levels, and that future gas development on private lands would occur in unsuitable habitat for lynx. The assertion that future oil and gas work on National Forest land, as detailed in Appendix G, would "occur on already disturbed sites" is unsubstantiated. Clearly, the Bull Mountain Pipeline will not occur on mostly disturbed sites, many new well pads are likely to be developed, and much of the Sheep pipeline will be constructed on undisturbed sites. Therefore, this claim seems off target and should be re-evaluated or more clearly supported. Possible effects of increased recreational traffic on lynx are discussed below under the heading "Recreation."	Under current direction and agreement with the US Fish and Wildlife Service, lands outside of designated lynx analysis units (LAUs) are not considered to be suitable lynx habitat, and habitat alteration there is not considered alteration of lynx habitat. Much of the project, and much of the past, present, and reasonably foreseeable future actions in the area occur outside of the LAUs and thus are not within suitable lynx habitat. Future oil and gas work on NFS lands in the area can only be considered as "reasonably foreseeable" if the Forest Service has, in hand, proposals or plans for surface development of current leases, or has already permitted specific actions. Without a specific proposal, the FS cannot assume that development will occur on a lease merely because the lease exists, and can not quantify possible future impacts unless those proposals exist. Therefore, analysis of future development on NFS lands in the area was limited to actions which were, at the time of analysis, either permitted and not yet implemented, or had been proposed and were under analysis

9.17 <u>Project specific comments</u> ● **Recreation.** The EA predicts on page 199 that improvements to the Forest Service roads as a result of this project "over time would cause an increase in traffic from recreational use in addition to the expected commercial uses." This increase in human activity could contribute to hunting pressure and displacement of lynx and other wildlife from the project area. On page 80 in the section on lynx Cumulative Effects, the EA states that "improved road conditions may slightly increase hunting and other recreational traffic in this area during summer and fall," but this characterization of the increase as slight is nowhere substantiated. Because, as noted in the EA on page 73, Section 3.2.5.2, human presence can be a significant stressor for elk and other wildlife, the EA should do a more in-depth analysis of the possible effects of upgrading the roads, including analysis of how traffic has increased following past upgrades in recreational land.	The "slight" increase in hunting and other recreational traffic was based upon several items. There are no developed recreational sites in the area, and no specific recreational destinations (such as lakes, viewpoints, scenic loops, etc) which would attract visitors to the area. Dispersed camping opportunity is limited to existing sites, and during big game hunting season (the primary recreational period) those sites are at or near capacity (D. Garrison, personal observation). Elk populations in the area are not anticipated to increase (if anything, they are expected to decrease to meet DOW objectives). Without an increase in recreational opportunities, campsites, or numbers of game animals, I do not see a substantial increase in hunting-related recreation. Improvement of the road, however, will provide an opportunity for vehicles which might currently not be suitable for the road (low clearance passenger vehicles) to drive into the area. Traffic levels in the area are being monitored and are discussed in the transportation section of the EA. Hunter numbers within Game Management Units are dictated by sales of tags by DOW, and those numbers are not impacted by this proposal. Hunters who are issued a tag for a particular GMU must hunt only within the limits of their tag, and thus would not be able to move out of the GMU even if construction interfered with their hunting opportunities. Based upon discussions with hunters in the area during the 2006 season, and personal experience, I concluded that the most logical result would be hunters moving away from the immediate construction area and dispersing throughout the rest of the GMU, but remaining as close to their original destination as they were comfortable. As campsites are limited in the area, and throughout the basin, it is unlikely that all hunters would abandon the immediate area of the pipeline and travel elsewhere within the GMU. In 2006, hunters were camped near and hunted in the immediate area of ongoing gas operations at other sites within the Muddy drainage (D. Garrison, personal observation).

9.18 The EA reports hunter participation numbers under “Big Game Hunting” on page 158 and concludes on page 160 that hunting is likely to be disrupted during pipeline construction. The EA theorizes that hunters may switch to other areas in the same hunting unit, but concedes that hunter behavior cannot be predicted. We request that the EA analyze cumulative impacts to hunting across the Muddy Creek region. We also assume that the Forest Service and/or Gunnison Energy Corporation has had discussions with the outfitter using the area about the impact on their business, and we would like to see a report on financial impact to the outfitter in the EA.	The outfitter using the area affected by the proposed action is also an adjacent landowner who has granted GEC a ROW for the pipeline to cross his property. The outfitter is aware of the project and the potential effects on his business..
9.19 Our greatest concern with respect to hunting is the long-term cumulative effect of this project and other gas projects in the region on game populations. As mentioned above, there is good reason to believe that this project will increase human access to what is now a relatively remote region. What will be the cumulative effect on wildlife of increased access due to this project, other proposed projects in Appendix G, and other foreseeable developments that have not yet been proposed?	See HCCA response to comment 9.17 for the cumulative effects on wildlife. The proposal uses the minimum transportation system necessary to support the project. Only County rd. 265, NFSR 265, 851 and 704 are accessible by the public due to private land ownership. See EA, Section 3.4. The ROW will be closed to motorized traffic (EA, Section 2.2.2.13, Appendix A and POD) We cannot predict what the increase in public motorized traffic or access might be. See response 9.17. But we are monitoring the traffic as the County and FS have existing traffic counters in place (project file) with others to be in place by summer of 2007..
9.20 ● **West Muddy Creek Crossing.** The pipeline crossing at West Muddy Creek could affect water quality, fisheries, stream-bank vegetation and soils. The methodology used to construct the pipeline crossing is critical in controlling the scope of these impacts. The Fisheries prescription at page 150, Section 3.7.5.2, states “any construction through fish bearing streams should divert all flow around the instream work to minimize downstream impacts.” This recommendation is reemphasized on page 156 under section 3.7.6.2.1, which states “the proponent should complete all crossings by perennial streams by dewatering the channel…” These prescriptions should be adopted.	Changed in EA to reflect diversion of streamflow as stated in Fisheries section**.**

9.21 The descriptions of Waterbody Crossings at page 42, Section 2.2.2.12, contradict the prescriptions in Sections 3.7.5.2 and 3.7.6.2.1 for dewatering the channel, and they should be brought in line. At the moment Section 2.2.2.12 says “After the pipeline is installed beneath the waterbody using one of the methods described above,” which methods include the open-cut method, namely trenching through the stream bed while it is carrying water. The possibility that the project would use an open-cut methodology to cross a flowing waterbody is unacceptable. The proposed alternative should instead require that the project use side channels or a flume to divert the flow above construction, guaranteeing that the flow is separated from the digging operation. Presumably this failure to specify use of side channels or a flume is an oversight, given that page 43, Section 2.2.2.12 specifies that the flume method should be used for *intermittent* waterbodies flowing at the time a crossing is constructed.	See HCCA response to comment 9-20
9.22 ● **Wetlands**. Page 43 states “In general, equipment refueling and lubricating would take place in gentle upland areas that are 100 feet or more from the edges of the water outside the water influence zone.” This should be stated as a requirement rather than a “general” suggestion.	*BMP 12.1 - Management Measure (3)* In the water influence zone next to perennial and intermittent streams, lakes, and wetlands, allow only those actions that maintain or improve long-term stream health and riparian ecosystem condition. The water influence zone (WIZ) includes the geomorphic floodplain (valley bottom), riparian ecosystem, and inner gorge. Its minimum horizontal width (from top of each bank) is the greater of 100 feet or the mean height of mature dominant late-seral vegetation. Changed from “In general” to “It will be required that”__cite source on page 43
9-23 Page 44 states “non-essential equipment would be allowed to travel through wetlands only once.” Why should non-essential equipment be permitted to travel through wetlands at all, given the possibility of rutting or other damage?	BMP 13.1 - Management Measure (9) states**:** Limit roads and other disturbed sites to the minimum feasible number, width, and total length consistent with the purpose of specific operations, local topography, and climate Since there are no anticipated areas where there is no reasonable access to the ROW except through wetland, the entire sentence will be removed (Otherwise, non-essential equipment would be allowed to travel through wetlands only once.)

9.24 ● **Impacts to Roads.** The area the roads go to may not be of the highest conservation value in the M2M proposal, but it still remains valuable, prized low-altitude recreation land, a worthy alternative to alpine recreation. It is covered with aspen which makes it visually serene in the summer and dazzling in the fall, and productive for hunters. This is why the Forest Service rebuilt the Terror Trail. The land accessed by FS 704 attracts a lot of recreation use.	**Position statement. No need for response.** The Forest Service acknowledges the recreational use occurring in the vicinity of FR 704 (EA, Section 3.8). A traffic counter will be installed in 2007 to quantify use. Refer Also to 9.17. Effects to the Terror Trail were not raised as a issue to be addressed in the analysis See Responses 9.7 and 9.8.
9.25 Problematic issues include: ◦ While the potential impacts to CR 265 from this project alone are discussed at some level, the EA fails to adequately characterize the rapidly increasing levels of impact to this road from all activity in the area. Local residents continue to describe accidents and near accidents as a result of increased activity in the region as well as increasingly degraded road surface from high levels of truck traffic. The document should include a discussion of the total use levels anticipated from all area projects and the mitigations necessary to keep CR 265 safe and usable road for local residents and other forest users. The existing analysis fails to capture the existing and potential impacts that may result.	AASHTO provides Guidelines for Geometric Design of Very-Low Volume Local Roads (ADT ≤ 400) –(ADT=average daily traffic) the Forest Service prescribes that as the controlling guidance on roadway design standards as referenced in The Gold Book (4th Edition, 2006). As ADT's increase in excess of 50-100 vehicles per day depending on type of traffic use, generally the roadway section will need to be upgraded from a single lane to way traffic to single lane with turnouts, or even to a double lane section. Activities, from commercial gas traffic and other users, including cumulative actions identified in Appendix G, will impact the roads and mixed use traffic. Total traffic from all cumulative actions is expected to exceed 100 ADT on 265 requiring major upgrades to road segments. However, traffic related to this project will not exceed ADT thresholds. The Road Use Permit, POD and/or the Special Use Permit Operating Plan would include provisions for traffic control, speed limits, signing and other measures to prevent accidents. CR 265 use will be permitted by Gunnison County with their applicable traffic control measures.

9.26 ◦ The Forest Service expects 10-15 roundtrips a day by heavy equipment, something it calls “moderate” use. All of this heavy truck traffic will stress FS 265 where it goes up the steep east side of Ranger Hill, then switchbacks down the other side. Erosion and the noise of jake brakes will be the obvious result.	FS 265 will be brought up to FS standard to accommodate the expected traffic prior to project implementation. This road work will also lessen erosion and sedimentation. The SUP requires that “the holder shall comply with all applicable Federal, State, and local laws, regulations, and standards…” . COGCC (rule 802) states the “Any operation involving pipeline or gas facility installation or maintenance, …is subject to the max. permissible noise levels for industrial zones.” Between 7am and the next 7pm industrial zones allow 80db(A). “If there are no occupied building units impacted, sound levels shall be measured at a distance of 25’ or more from the property line radiating the noise.” Gunnison County regulations are similar to those listed above. We anticipate a short term increase in noise. No know limits for vibration or odors.
9.27 ◦ The proposed access for the two-year heavy construction traffic is from the north: West from the base of McClure Pass via Route 265, first the Gunnison County section, then the FS section, followed by going south on FS 704. These roads are heavily used by recreationists. Trying to mingle jeeps, motorcycles, ATVs and campers with semitrailers is asking for trouble.	Prior to commencement of work, a motorized mixed-use engineering analysis should by prepared and finding issued by a FS engineer. This is prepared at the discretion of the Authorized Offer.

9.28 Therefore, a major alternative access route from the south not considered in the Forest Service EA should be analyzed. The route going north from Highway 133, starting between Juanita Junction and Somerset, generally following Bear Creek, goes through a major private inholding and is gated off from the public about 2.5 miles north of 133. It is also gated off at the northern end. Thus, here there would be no recreation conflict. And it should be preferable economically to the pipeline constructors since it provides direct access to the construction area for trucks coming up the North Fork valley. Consequently, the mileage would be perhaps 75% less than the proposed rout that goes northeast to McClure Pass, then West on Route 265, then back south on FS 704. We understand this route was cut by a landslide some years back, but it is still worth analysis given its potential advantages.	The Forest Service accepted GECs special use application which included the proposal to use the NFSR contained in the Proposed Action. The Forest Service did not identify that use of the NFSRs described in the proposal would not be feasible or allowable (EA, Section 2.2.2). As the Bear Creek road is on private lands, the FS is not in the position to require its use instead. In addition, the Bear Creek Road is a very narrow, very steep, one-lane road that brings forward safety concerns for GEC's employees and contractors who would use it on a regular basis. There is also some historical inferences as to the geologic instabilities of the Bear Creek road, requiring substantial work to stabilize them. Further, according to GEC, the grade of the road makes it very unlikely vehicles with large loads would be able to safely navigate the road without the assistance of heavy equipment. In addition, the Bear Creek Road is also impossible for most operations related to the proposed action because it passes through an existing railroad truss which is far too narrow to facilitate the equipment and trucks used to construct the Sheep Gas Gathering System. GEC's previous experience with the road demonstrates that the train truss is too narrow to accommodate the types of trucks that will be used to haul pipeline segments into the Project Area.

9.29 ●**Water systems.** The EA correctly, while not specifically, recognizes that the whole area in which this gathering system is to be constructed is dominated by unstable slopes, numerous ephemeral streams, springs, seeps and non-fen wetlands. The plan also recognizes that much of the terrain for the selected option is prone to slumping and debris flows as are all the hillsides underlain by the Wasatch Formation. Thus the selected option is recognizably the best of bad alternatives. Of particular concern should be Site C and that segment of the Ault portion near Site D. Movement of heavy equipment in these areas during the construction phase is more likely than not to initiate, or set up the conditions for initiation, of debris flows (Site C) and increased sedimentation in the wetlands below the slope at Site D. It would be better to avoid all construction activities in this kind of terrain. Given the unreality of that, it would be best if this construction in these areas took place in that narrow window between spring runoff and the beginning of the summer afternoon rains.	The analysis in the EA discloses that implementation would incorporate design features to mitigate any issues related to slope stability that may arise (EA, Appendix A) As stated in the EA (pg 62), Site C (incidentally this site covers both private and USFS land) does have some minor potential for mass movements. However, because of the relatively shallow slopes and the lack of recent activity, the likelihood of pipeline construction initiating mass movement is extremely low. Historic geologic instability in the vicinity of Site C all are relatively shallow, and not deep seeded. Future reactivation of these movements will not be deep enough to effect the pipeline, and would likely be across the top of structure. Site D, does contain moderate slopes. Vegetation in the area does show some minor movement, but nothing large scale is evident. Mass movement, however unlikely, should it occur the proposed design features in the Plan of Development will protect the wetlands and minimize, to the extent possible, soil loss in the area of construction. In addition, a design feature of the proposal is, "*Perform pipeline construction in areas of moderate geologic instability during dry times of the year to minimize the likehood of soil movement.*" (ref. EA pg. 221)
9.30 Air pollution. Air pollution associated with gas production and storage facilities has become recognized as a serious threat to the environment and human health. Venting from storage tanks, compressor station(s) and evaporation from waste pits releases VOCs (e.g. benzene, toluene, xylene, formaldehyde, hexane, toluene, acetaldehyde). These gases are also found in high concentrations coming off of compressors and processors (distillers). A survey of air-quality-related complaints registered in the COGCC files indicates that inspectors found that reported eye, nose, and throat irritations were immediately traceable to venting and waste pit contamination.	There are no condensate tank proposal associated with the Sheep GGS as the proponent currently collects VOC’s in a existing tank located near the compressor. We are not anticipating any waste pits. There are 10 permits approved by COGCC within the cumulative affects area. Two of the permits are redrilling of wells on NF lands and will be completed prior to construction. The other 8 wells may or may not be drilled while construction of SGGS is taking place.

9.31 Beginning on page 126, The Sheep Gas Gathering System EA discusses air pollution associated with construction of the pipeline, and concludes that the "Since the emissions would are low, temporary and localized it is highly likely that any ambient air quality standards would be violated (page 133)." The assumption made by the Forest Service is that because the pipeline would not use a compressor and that water storage tanks are on private land, there would be no significant long-term release of pollutants. However, the Forest Service should analyze possible contamination from the private-land holding tanks because a) Forest Service approval of the project results in the tanks being built and b) gases escaping from the tanks on private land could make their way to people using Forest Service land, dependent on air conditions and topography.	With the exception of the condensate, which they are not anticipating to produce, the produced water will be stored temporarily (a few days) in a water tank on private land and transported via pipeline to a state permitted existing injection well. With the exception of pressure release valve on the water tank if water displaced enough of the air in the tank to create excessive pressure, which is not anticipated because it will enter the water line as there is room in the line. Therefore with this closed-loop type system, impacts addressing the compressor, vehicular traffic, and oil and gas related cumulative effects. Have been addressed. No exceedances of any air quality standard will occur with this project. Air quality standards will not be exceeded based on activities whether or not they occur on FS or private. See Air Quality section.
9.32 Air Quality The EA should contain the following: ◦ an estimate of the tonnage of VOC off-gassing from the tank facilities and an analysis of whether these VOCs could reach Forest Service land.	See Response 9.31. The compressor bullet tank is not within the cumulative effects area. However, the bullet tank is used to run the compressor and any time the tank is abouve 50% the tank is normally emptied, per GEC.. Production water processing of liquids….to bullet tank carted off and sold.
9.33 Air Quality ◦ a description of technologies that will be used by Gunnison Energy Corporation to limit emissions from the holding tanks. There are new technologies available for building these facilities so that they trap the largest part of the gases and keep them from being released.	The compressor is typically run at the maximum safe operating pressure and the situation is not expected to change. See Response 9.32.
9.34 Air Quality ◦ a discussion of whether gas reaching the Ragged Mountain Compressor Station from the Sheep Gas Gathering System will contribute to emissions from the compressor	These affects have already been considered in the Air Quality Section. See HCCA response to comment 9.33.
9.35 Pipeline engineering ◦ an analysis of whether additional compressors might be needed in the future and what their effect would be on emissions (see next bullet).	Prediction of whether additional compressors would be need is conjectural at this point. Compression increase is based on volume of gas, temperature, etc. See HCCA comment 9.15
9.35 Air Quality ◦ an analysis of emissions from future wells that might be built if the field turns out to be productive. We note that other than a generalized estimate of drill rig emissions for the two possible "additional" wells, there is no analysis of drill rig emissions in the EA	The cumulative effects includes rig emissions from drilling wells known to be approved or for which applications have been received to date that lie within the cumulative effects area. To forecast beyond what is currently known or proposed would be speculative and outside "reasonably foreseeable" as required by NEPA.

9.36 Pipeline engineering ● **Additional compressors**. The EIS states that the existing Ragged Mountain Compressor Station will be used and that no new compressors will be needed. However, it is our understanding that if well-head pressure is lower than pressure in the Ragged Mountain pipeline then at least one more compressor could be needed to buck the Sheep Gas Gathering System gas into the Ragged Mountain pipeline, and that compressors could be needed for each well head. We would like to see analysis of whether construction of an additional compressor(s) might be required under certain circumstances. If so, there should be analysis of effects of said compressor(s) on air quality.	A note of clarification, this analysis is an EA, not an EIS. According to GEC (project file), the 12" pipe was proposed to allow gas to flow with a lower pressure drop over the length of the pipeline, thus the backpressure from the pipeline on the wells would be reduced. With a reduced line pressure, less compression would be required to run the system because the 12" inch line reduces overall pressure in the system. Further, with the ability to test one or two wells at a time, no new compression is anticipated with the proposed Sheep Gas Gathering System at this time. Further, GEC indicates that additional compression is not required at this time, and is not foreseeable because additional capacity would depend upon additional take away capacity being available from the Rocky Mountain Pipeline. Presently additional capacity is not available at the Rocky Mountain line, the destination fr the gas transported by the Sheep gas gathering system. Therefore, additional compression is not needed in the air quality analysis
9.38 ● **Size of pipeline:** We would like to see justification for the size of the pipeline, i.e. why is a twelve-inch pipeline required rather than a six-inch pipeline as used in the Ragged Mountain Pipeline and in the Rocky Mountain Natural Gas Pipeline that the Ragged Mountain Pipeline feeds into. If the justification for a twelve-inch pipeline is future well development, then this potential development should be analyzed under cumulative impacts	GEC has proposed the installation of a 12" gathering line for the sheep gas gathering system in part to 1) minimize surface disturbance and minimize air emissions. The fact that the 12" Sheep Gas Gathering Pipeline connects to the 6" Ragged Mountain Pipeline is not relevant, and does not crate the need for additional disturbance, as the construction right-of-way needs for either a 6" or a 12" pipe are the same. GEC also brought forward use of a 12" pipe to help reduce backpressure on the wells, and to eliminate the need for a future disturbance in the area. Although future production can not be estimated, nor is future production necessarily foreseeable at this time, GEC desires to minimize its potential environmental impact by providing for potential future production. In addition, the Sheep Gas Gathering System is designed to connect existing oil and gas wells to a regional pipeline for long-term testing and potentially production. Building a pipeline does not guarantee future wells. Future wells cannot be anticipated until an effective test of the existing wells has been completed and analyzed.

9.39 ● **Economic.** We would like to see analysis of the economic viability of this pipeline. Given the recent experience with Spaulding Peak wells, in which a pipeline was constructed but the wells are apparently not producing, is there a way to test before pipeline construction whether wells in the area that would be served by the Sheep Gas Gathering System will be productive enough to justify the pipeline?	The choice to apply for and the intent to construct a pipeline is a business decision made on the part of an oil and gas company. Individual wells can be pressure tested, but without continually flaring wells (i.e. wasting the gas), there is no way to tell if the wells would be productive enough to justify the line. Additionally, if it was known how much a well would ultimately produce, there would be no speculation in the business and testing and exploration would be unnecessary.
9.40 Thank you for your consideration.	**Closing statement. No need for response.**

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Comment	**Comment Analysis and FS Response**
10.1 FONSI The Forest Service has done an excellent—no, let's say fabulous—job of both analyzing and minimizing impacts of the proposed pipeline's 10.8 mile long corridor. Not only impacts to the land have been minimized, also damage to the public's recreation experience is just about eliminated since the chosen corridor is already behind gates leading to private land which the public cannot use anyway.	Position statement no response required.
10.2 Impacts SUMMARY OF POINTS RAISED HERE: THE NEED TO ADDRESS WIDER AREAS AND ISSUES. However, the impact of the pipeline would extend far beyond the corridor itself. I think the EA must be amended either to consider the following wider issues not mentioned, or to analyze an alternative not considered to problems that were addressed:	As required by NEPA, the EA considers key and non-key issues (EA, Section 1.7), a range of alternatives (EA, section 2.2), direct, indirect and cumulative effects (EA, Chapter 3, Appendix G).

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10.3 Transportation/Recreation 1) The conflict between heavy recreation use on FS 265 and FS 704, the route that must bear the brunt of two-thirds of the construction traffic for two years, *is* addressed. I would sure hate to be riding an ATV up the west side of Ranger Hill when I come head-on with a semi rig hauling pipe going the other way, swinging wide down the switchbacks. *However, the EA did not mention an apparently viable alternative route up from the south that could also provide access to the southern end of the project, where there would be no conflict with recreation traffic.*	Mixed use of NFSRs 265 and 704 are addressed in the EA, Section 3.8 and 3.4 and with HCCA comment 9.27 and 9.28. The Forest Service accepted GECs special use application which included the proposal to use the NFSRs contained in the Proposed Action. The Forest Service did not identify that the use of the NFSRs described in the proposal would not be feasible or allowable (EA, Section 2,2,2). As the Bear Creek road is on private lands, the FS is not in the position to require it's use instead. In addition, the Bear Creek Road is a very narrow, very steep, one-lane road that brings forward safety concerns for GEC's employees and contractors who would use it on a regular basis. There is also some historical inferences as to the geologic instabilities of the Bear Creek road, requiring substantial work to stabilize them. Further, according to GEC, the grade of the road makes it very unlikely vehicles with large loads would be able to safely navigate the road without the assistance of heavy equipment. In addition, the Bear Creek Road is also impossible for most operations related to the proposed action because it passes through an existing railroad trss which is far too narrow to facilitate the equipment and trucks used to construct the Sheep Gas Gathering System. GECs previous experience with the road demonstrates that the train truss is too narrow to accommodate the types of trucks that will be used to haul pipeline segments into the Project Area.

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10.4 Cumulative Effects 2) Once the Sheep pipeline provides a route to market for gas wells drilled between the southern and northern ends of the line—between the major southern inholding that thrusts up from Highway 133 and the intersection of County 265 and FS 851—I predict there will be a rush to lease and drill in the national forest to the east and west of the pipeline. The whole area could be disfigured by drillpads, the impact of which must be assessed. Air pollution also becomes an issue to the extent new compressors are required to increase the wellhead psi of the new wells so their gas can get into the new Sheep line, and there are new water tanks venting condensate on or near public land. Confirming the likelihood of new wells along the Sheep line is the fact that in the August 2006 lease sale on the GMUG, a big number of leases were taken on the western portion of the Clear Fork roadless area, roughly paralleling the route the Bull Mountain pipeline would take. This in face of the obvious legal and political delays that would face development of any lease granted on a roadless area post-2001.	This EA analyzes the effects of a specific project proposal for pipeline installation. To the extent they are known, gas drilling proposals have been included in cumulative effects (EA, Appendix G and cumulative effects analyses in chapter 3). Although the presence of the Sheep Gas gathering system could create a situation in which the area is more attractive for natural gas production operations, there are no assurances that other leases in the area would be developed by drilling. Natural gas development of specific lease holds depends on gas price and demand, among many other variables. Thus, there are too many variables to predict future activities with any certainty. Therefore, to the extent they are known, gas drilling proposals have been included in cumulative effects (EA, Appendix G and cumulative effects analyses in chapter 3). Any future proposals will be evaluated under NEPA on their own merits and those effects disclosed. The bulk of the NFS lands in vicinity of the proposed Sheep pipeline are available and authorized for oil and gas leasing per the terms of the GMUGs Oil and Gas Leasing EIS and ROD (1993). A good portion of these lands have already been leased. The leases in the Clear Creek IRA are outside of the cumulative effects area for this project (EA, Appendix J). This pipeline EA does not grant additional leasing authority, nor does it authorize site-specific wells, both of which would require NEPA analysis on their own merits.

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10.5 3) Pipeline Engineering The Bull Mountain pipeline itself must be part of any EA analyzing the impacts of the Sheep line, for it appears the latter makes no sense without further takeaway to processing and interstate outlets beyond the Muddy area. Sheep will be a large 12' diameter line; if it uses just a small part of its capacity it could easily overwhelm the takeaway capacity in the Ragged Mountain gathering system at the northern terminus. I understand that Ragged Mountain is only a 6" line, and is already running at a high utilization level. The Rocky Mountain Natural Gas trunk line it feeds into is also just a 6" line running between the Wolf Creek storage field on the east to the Collbran processing plant in the West, then on to the Trans Colorado pipeline interstate outlet. Therefore, if an only partly utilized 12" line tries to feed into these heavily used 6' lines, a bottleneck clearly looms. Hence the need that would create for the Bull Mountain line, slated to be a large 20". My pipeline maps show that the proposed Bull Mountain right of way seems directly aimed to hook up with a large 14"-20" Questar pipeline on the other side of the mountain, headed for processing and interstate outlets in Rifle. *This is just the new outlet from the Muddy area that would be needed to make any kind of reasonable utilization of the Sheep line possible*. Therefore, the Forest Service must address both lines together; the FS cannot allow the Sheep line proponents to get away with getting Sheep approved as a stand-alone project, and then saying "Well, you let us build Sheep, now you have to let us build Bull Mountain as well. The fact that it's a post-2001 project proposed for the Clear Fork roadless area is not a fatal defect since it's trumped by the fact that now you've let us put all this new Sheep gas into the Muddy area, where it's all dressed up with no place to go."	See HCCA response to comment 9.15

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10.6 **DETAILED COMMENTS** **B) WHERE THE SHEEP PIPELINE EA SHINES: MINIMIZING CONFLICT BETWEEN THE 11 MILE PIPELINE CORRIDOR AND RECREATION USE** 1) All of the chosen pipeline route would decrease impacts to the National Forest compared to other possible routes, in part because roughly 40% of the proposed pipeline is on private land. Of 10.8 total miles, 4.4 would be on private land, which are off-limits to the public. The remaining 6.6 miles are on National Forest land, but are mostly inaccessible to the public because access is via private roads which are gated. The same private roads, behind gates on FS 851 and FS 849 which connect to County 265, would form much of the ROW of the pipeline.	Restatement of proposed Action. No response needed.
10.7 2) Major surface facilities (e.g. water tanks) would be on private lands.	Restatement of proposed Action. No response needed.
10.8 3)The entire project would be within the area designated as the Raggeds Addition in the *Mountains to Mesas* (M2M) land use proposal for the GMUG forest, presented as the Citizens' Forest Plan Alternative for national forest planning. The Raggeds Addition is in a category deemed *low use compatable:* not of the highest value worthy of wilderness designation.	The M2m concept was forwarded as part of the GMUG Forest Plan revision process. The GMUG has not adopted a revised Forest Plan, therefore this project is being considered under the existing Forest Plan which identifies the management prescriptions in the project area (EA, Section 1.5.3). The project is consistent with the Forest Plan direction, standards and guidelines (EA, Section 2.2.2.15). Wilderness designation is made by Congress not the national forest. See also Response 9.7.
10.9 4) The direct impact of the two-mile stretch of pipeline that follows FS route 704 is far south enough not to come into contact with the Terror Trail across the Electric Mountain roadless area to the west. The trail's eastern terminus is on FS 704 several miles to the north. These are prized assets for hikers and hunters: Electric Mountain is proposed as wilderness in the M2M and the newly-rebuilt Terror Trail is the most valuable public access trail in the area.	See HCCA response to comment 9-24..________

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10.10 Transportation **C) NEEDED IMPROVEMENTS TO THE EA: GOING TO THE WIDER ISSUES AND AREAS** **1) Impacts to Roads.** The area the roads go to may not be of the highest scenic value in the M2M proposal, but it still remains very valuable, prized low-altitude recreation land, a very worthy alternative to alpine recreation. It is covered with aspen which makes it visually serene in the summer and dazzling in the fall, and productive for hunters. This is why the Forest Service rebuilt the Terror Trail. The land accessed by FS 704 attracts a lot of recreation use. Thus the problem arises on the route that will carry 66% of the construction traffic: The portion of Route 265 starting at the FS boundary and going to the west, then FS 704 to the south. The Forest Service expects 10-15 roundtrips a day by heavy equipment, something it calls “moderate” use. All of this heavy truck traffic will stress FS 265 where it goes up the steep east side of Ranger Hill, then switchbacks down the other side. Erosion and the noise of jake brakes will be the obvious result. At the Muddy Ranger Station at the base of Ranger Hill the route goes south on FS 704, directly past the huge Columbine ranch and several cabins close to the road—all of whose peace and quiet would be ruined. Also, all these roads are heavily used by recreationists from outside the area..Trying to mingle jeeps, motorcycles, ATVs and campers with semitrailers is asking for trouble.	NFSR 265 from the FS boundary to NFSR 851 is expected to accommodate 75% of the proposed traffic. NFSR 265 from the junction of NFSR 851 to NFSR 704 is expected to accommodate 25% of the proposed traffic. In it’s current condition, the surface of 265 and 704 could be impacted by even limited heavy truck use. That is the reason we will be requiring the proponent to upgrade the structural section of access roads to accommodate the heavy axle loadings projected for this project. (EA, Chapter 3, Section 3.4.4.2 and Appendix A) See also Response 9.7, 9.8, 10.8. See HCCA response to comment 9.26 for noise and Gill comment 10.3 for motorized mixed use.

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10.11 Transportation **<u>Major Alternative Not Considered</u>:** Therefore, a major alternative access route from the south not considered in the Forest Service EA should be analyzed. The route going north from Highway 133, starting between Juanita Junction and Somerset, generally following Bear Creek, goes through a major private inholding and is gated off from the public about 2.5 miles north of 133. It is also gated off at the northern end. Thus, here there would be no recreation conflict. And it should be preferable economically to the pipeline constructors since it provides direct access to the construction area for trucks coming up the North Fork valley. Consequently, the mileage would be perhaps 75% less (about 7 miles vs about 30) compared to going "around the horn" on Highway 133 east to Paonia Reservoir, then north to McClure Pass, then west on County Route 265, then west on FS 265, then back south on FS 704. We understand this route was cut by a landslide some years back, but the cost of removing that and upgrading the road may still not be unacceptably more than upgrading FS 265 and 704, considering the route's other basic advantages. This road goes through private land, but it must have its own ROW. Therefore, private owners should not be able to block its reconstruction and use.	See response to HCCA 9.28

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Comment	**Comment Analysis and FS Response**
10.12 Pipeline Engineering **2-Pipeline Economics—the Bigger Picture.** It seems the Sheep gathering pipeline makes no general economic sense unless the Bull Mountain trunk line is also built, to take Sheep's gas away to processing and interstate pipe connections to the north, in the center of the Piceance Basin. The Ragged Mountain gathering line along FS 265, the terminus of Sheep, cannot take much more gas on a long term basis, certainly nowhere close to what would be provided by the full field development of the wells at Sheep's input end. Now we are told that Sheep is needed to take gas away from just the first wells in the area, to allow a 2-3 year production test, to examine whether the operator should go ahead to develop the full field. Given the chance for quick decline to uneconomic status—the fate of Gunnison Energy Corp's first wells north of Cedaredge—we are told the operator needs a longer term gauge of potential profitability than could be provided by a conventional drillstem test where the wells are not actually put on production. However, this is just a temporary expedient to allow the line to be built now. Surely if the operators are putting in a large 12" line—over 25% of the size of the largest 40-46in interstate transmission lines—they believe they have a major producer on their hands.	See response to HCCA comment 9.11.
10.13 This raises three broader issue economic questions: --If Sheep is a stand-along project, as the proponents claim, then *does the Forest Service have the same multiple use obligation to provide a takeaway pipeline to production on adjacent private land as it would for production authorized on forest land itself?*	The Forest Service has no authority to regulate activities on private lands. However, it is the obligation of the FS to consider proposals from proponents if operations cannot be conducted on private land.
10.14 --Pipeline Engineering/Bull Mtn But if Sheep really makes no sense without Bull Mountain, as I believe the evidence shows, if Sheep is the drink and Bull Mountain is the chaser, why is the Forest Service considering Sheep now, before Bull Mountain has been authorized? The two lines must be analyzed together in the same EA. If this proves to be impossible because Bull Mountain is years of litigation away since it violates a roadless area and is vulnerable to legal attack since it is a new, post 2001 proposal*, then the Sheep proposal should be put away until Bull Mountain's legal status becomes clearer.* I sympathize with the plight of the producers, walled off in their private inholding by Forest Service land from outlet to market for their gas*, but they must have known the risks when they started this. It is not the obligation of the taxpayer to bail them out*.	The Sheep Gas gathering System and Bull Mountain are projects brought forth by differing proponents, and are each being considered on their own merits. Effects of the Bull Mountain pipeline as applicable to the cumulative effects areas for each resource for this project have been included in the EA (Chapter 3, Appendix G and J). Further the Bull Mountain pipeline is not a NEPA decision being made by the Forest Service, rather it is under the jurisdiction of the BLM. The approval of Sheep is not dependent on the status of the Bull Mountain project, hence will proceed on it's own merits. And see HCCA response to comment 9.15. See Comment from proponent 11.10.

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10.15 --The flip side: What if it turns out that *neither* Sheep line nor Bull Mountain are needed? If Sheep line is built and then the wells on this inholding prove to be just as much of a flash in the pan as GEC's wells north of Cedaredge, then our National Forest lands will have been scarred with another useless or at best severely underutilized pipeline ROW, just as I understand happened near Cedaredge. Or, if the wells on this inholding prove to be barely economic underperformers, then another air quality issue looms. In this case, their wellheads may not provide enough pressure to buck the Sheep line gas into the Ragged Mountain line 11 miles north, which is well-utilized and running at a high pressure. New compressors at the south end of the Sheep line could then be needed. The existing Ragged Mtn compressor might not be adequate in this case to suck the Sheep gas into the existing line. An expanded EA shou	See HCCA response to comment 9.15. Based on estimated production (8mmcfd) from the Bull Mountain Unit on Private and State leases there would not be sufficient capacity in the Ragged Mountain Pipeline to accommodate build out of that unit, in fact is estimated to be between 2 and 6 mmcfd short based on capacity of the Ragged Mountain Pipeline.
10.16 D) THE FOREST SERVICE'S MULTIPLE USE DECISION *1) The Different Perspectives* <u>*Recreation User*</u> —Is the shaky foundation presented by the above three economic question marks a sufficient *present* economic mandate for a pipeline to offset the negatives of damage to forest land along the pipeline's route—however well mitigated that might be in the Forest Service's EA? And to offset the dangers inherent in turning rural byways FS 265 and 704 into construction equipment highways for two seasons? To be sure, both private and public lands in the pipeline corridor may be gated off to the public now, but there is the real possibility that through future land exchanges or purchases the inholders could be bought out and a higher public recreation value would be put on the whole corridor it. What's more, not just the specific pipeline corridor itself, but also adjacent land now open to the public is at risk. Once a pipeline is permitted and is being built, there will be a land rush by drillers to lease and develop wells on forest land now accessible to the public in the general vicinity, since now there would be a way to get the gas to market. As noted above, the whole area could be disfigured by new wellpads.	See response 9.10 and 9.17. There are no land exchanges or acquisitions proposed in the area. Private leases or private mineral reservations already occur on these private lands, often owned by a third party. The Forest Service is considering this project under the legal authorities and obligations brought forward in the EA, Section 1.5. The Proposed Action is consistent with the GMUG Forest Plan (EA, 2.2.2.15).
10.17 <u>*Gas Production User--*</u>Is the obvious desire of the gas well operators to see some cash flow from their investment *on private lands adjacent to the forest* enough of a multiple use offset to the above?	This comment is out of the scope of the proposed action, therefore, a response is not required.

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10.18 *2-Need to Address the Impact of Bull Mountain Pipeline-*Finally, the FS must be aware that if they make a decision to approve an isolated project without considering the big picture, a completed 12" Sheep gathering line with a commensurate amount of gas production behind it would by itself be a powerful encouragement to sequentially approve the Bull Mountain takeaway line. But Bull Mountain is not being addressed in the current Sheep pipeline EA	See GEC comment 11.10. The Bull Mountain pipeline is a separate project that is being evaluated on its own merits. Effects of the Bull Mountain pipeline as applicable to the cumulative effects areas for each resource for this project have been included in the EA (Chapter 3, Appendix G).
10.19 *As a constituent of the Forest Service's recreation mandate, I would hate to see the Sheep pipeline become a stalking horse for the Bull Mountain line.*	Position statement, no response required.
10.20 *Need for a No Action Alternative*. Obviously, it cannot be predicted beforehand how productive the wells at Sheep pipeline's input end will prove to be, once they are put on pipeline, and their long term capability is assessed after they have enough production history. Thus, it can't be assessed now the extent to which Bull Mountain will be needed to get Sheep's gas to market. Thus as a fail-safe move, Sheep's current EA must include Bull Mountain. *However, if as the draft Sheep EA says the FS cannot consider Bull Mountain now because it is "another project which has not yet been approved," then a No Action alternative is the only correct option for Sheep until Bull Mountain's status has become clear.*	Per requirements of NEPA, the Sheep gas gathering System EA considers the No Action Alternative (EA, Section 2.2.1). See also response to HCCA response to comment 10-9 The Bull Mountain pipeline is a separate project that is being evaluated on it's own merits. Effects of the Bull Mountain pipeline as applicable to the cumulative effects areas for each resource for this project have been included in the EA (Chapter 3, Appendix G).
10.21 ADDENDUM Re: My view that a 20" Bull Mountain pipeline must be considered in the EA, since it is an almost inevitable second project that would be required to take away to market the throughput from a large 12" Sheep Pipeline, if that line runs at enough volume to make its construction economically viable..	The Bull Mountain pipeline is a separate project that is being evaluated on it's own merits. See GEC's comment 11.10. Effects of the Bull Mountain pipeline as applicable to the cumulative effects areas for each resource for this project have been included in the EA (Chapter 3, Appendix G
10.22 Beware of assertions that the existing 6" Ragged Mountain gathering line, proposed to connect with the northern end of 12"Sheep, could simply be "pressured up" to carry significant volumes from a line 2x larger, even if it is already running at high levels.	See response 9.38.
10.23 This oversimplification has three fatal flaws: I know because from 2000 to 2006 I was editor of the major national natural gas midstream newsletter *Gas Processors Report*, published by Hart Publications in Houston. Pipelines are a major area of coverage	Position Statement. No response required

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10.24 **1) Ragged Mountain is an old pipeline**. I don't know exactly when it was built, but probably before 1985. The steel used then was inferior to what is being used today. What's more, it is buried and doubtless corroded in places that are hard to inspect. Therefore, there are serious limits to the extent to which it can be "pressured up" without the danger of catastrophic failure. Remember what happened to BP's above-ground pipelines at Prudhoe Bay, where they were above ground, amenable to inspection, and running at relatively low pressures since they were carrying oil, not natural gas. For that matter, the 6" Rocky Mountain Nat Gas line Ragged Mtn feeds into probably of the same vintage and in the same condition.	GEC maintains the Ragged Pipeline to DOT Standards which include proper scheduled maintenance and inspections. There is no indication that the pipeline is substandard. Ragged Pipeline was permitted in 1983 and built by 1984.
10.25 2) **Extra compression costs money**. Gas that would otherwise be sent to market has to be diverted to run the compressors harder. Pipeline operators try to avoid this like the plague because it runs up their daily operating costs, The trend today is to make a one-time capital investment to build a larger line that could carry the same amount of gas at lower pressures, avoiding compression wherever possible. This is precisely the strategy that would be followed in building a 20" Bull Mountain line as the followup to take gas from a 12" Sheep pipeline to market.	See response 9.15 and 10.26.
10.26 **3) Extra compression would require major new construction at the existing Ragged Mountain compressor**. Even if the above problems didn't exist, a major upgrading would be required here, contrary to the EA which says the existing station would be adequate. This would have to be considered in a new EA, since major new air pollution would result.	Additional compression has not been proposed and is not reasonably foreseeable at this time (project file). If additional compression is proposed in the future, it would be considered on its own merits. The Ragged Mountain compressor was upgraded in 2006. Also see response to HCCA comments 9.15.
10.27 Thank you, Ms. Schwieger, for your patience in reading my comments. Again, congratulations on the excellence of what you have already done and/or supervised. It just didn't go far enough.	Position statement, no response required

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10.28 COMMENTS ON SHEEP PIPELINE—**FINAL** ADDENDUM #2 Ms Schwieger: Please accept this *last, final* addendum: I didn't hear about the Sheep pipeline until last Thursday, it's been a bit of a Chinese fire drill to get my thoughts in order about this important project., critical to an area I know and love. *Also, late yesterday I came across a major piece of important new information I want to deal with.*	Introductory remarks, no response required
10.29 *1-Pipeline hydraulics indicate the need for Bull Mountain to follow Sheep Pipeline*. The $64 question is: How much gas will the existing Ragged Mountain compressor be able to suck up from the south along the Sheep pipeline, and how much of that will it be able to compress and *safely* cram into the existing Ragged Mountain and connecting Rocky Mountain Natural Gas pipeline to send it along north to market? I believe pipeline hydraulics tell us that, given the assumption that a significant amount of gas will be found at the southern and eastern input ends of Sheep pipe, there is always going to be more gas coming up from the south and east than can be sent along to the north. *Hence the implied need for The Bull Mountain pipe to take a way the difference.*	See response 9.15 and GEC comment 11.10.
10.30 --There is more space available in the Sheep line than the Ragged Mtn and Rocky Mountain lines: One is 12" wide and empty, the other two are only 6" wide, much of which space is already full with other gas.	See HCCA response to comment 9.15
10.31 --The distance traveled is much shorter for the gas to be sucked up from the south and east than for the gas to be compressed and sent along north.	Position statement. No response needed.
10.32 *Both factors indicate that at a given level of suction/compression at the Ragged Mtn line in the Muddy region, much more gas is going to be coming in from the south and east, at a lower pressure, than will be able to go out to the north.* Even if it is somehow possible to equilibrate these two streams by applying less suction on Sheep and more compression on Ragged Mtn etc. this solution doesn't get away from the issues of how much more compression can safely be applied to the northern lines (not that much), and how much producable gas is going to be left in the ground at the southern and eastern ends of Sheep (a lot)? There will always be agitation by the producers in the inholding areas to get that leftover gas to market. How? Via Bull Mountain. How else?	See HCAA response to comment 9.10 and 9.15
10.33 All these points need to be addressed in an expanded EA.	The EA, as revised, is adequate to comply with NEPA, the umbrella laws and policies.

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10.34 *2-Risk of Drilling in the National Forest New Information* This is what I called "the flip side:" What happens if it turns out only a small amount of long-term producable reserves are found in the inholdings at the southern and eastern (Ault extension) ends of Sheep? *In that case the risk of massive gas drilling in the national forest along both legs of Sheep is the greatest*. In order to get acceptable economic return from its pipeline investment, Gunnison Energy will do all it can to induce drilling along its line to provide more throughput. It will discount the tariff to users; it may even farm into the leases that already exist if it has to do this to get them drilled up.	See response to HCCA comment 9.10
10.35 *The new information*: I just discovered that in the August 10 2006 lease sale, a huge "U" shaped swatch of Gunnison National Forest land, cupped around the southern end of the Sheep Park inholding, was leased. The eastern arm of the U extends almost to the private land on the east. *The Ault lateral ROW runs right through it*. It wouldn't surprise me at all to learn that Gunnison Energy took out those leases itself—Preparing for the inevitable drilling along the Sheep pipeline it was then planning. Perhaps it is planning to drill these extra national forest supplies for its pipeline anyway, regardless of how many reserves it finds in the inholdings.	See response to HCCA comment 9.10
10.36 All this needs to be considered in an expanded EA. The drilling that would take place doubtless far exceeds what was envisioned in the existing 1993 EIS Thank you for your consideration.	See HCCA response to comment 9.9.

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11.1 FONSI Gunnison Energy Corporation (GEC) is pleased to comment on the Sheep Gas Gathering System Environmental Assessment (Sheep Gathering EA). GEC applauds the United States Forest Service (Forest Service) for the quality and thoroughness of the analysis contained in the Sheep Gathering EA. The Sheep Gathering EA clearly satisfies the twin purposes of the National Environmental Policy Act of 1969 (NEPA): to consider the potential impacts of a proposed federal action and to inform members of the public of those potential impacts. *See Baltimore Gas & Electric v. Natural Resources Defense Council*, 462 U.S. 87, 97 (1983). The Forest Service adequately analyzed the potential impacts of installing the proposed pipeline in the Sheep Gas Gathering Project Area to a wide variety of resources, under a sufficient range of alternatives. The analysis prepared by the Forest Service, together with the mitigation measures identified in the Sheep Gathering EA, demonstrate that the approval of the proposed natural gas gathering system does not constitute a major Federal action that would significantly affect the quality of the human environment. As such, the Forest Service should issue a finding of no significant impact and a Decision Notice for the Sheep Gas Gathering System as soon as possible.	 Opening remarks, no response needed.

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11.2_ FONSI **<u>General Comments and Recommendations</u>** **The Forest Service Should Issue a Finding of No Significant Impact** The Forest Service has prepared adequate environmental analysis under NEPA for the Sheep Gas Gathering System. Under NEPA, a federal agency is required to prepare an Environmental Impact Statement (EIS) whenever a major Federal action would significantly affect the quality of the human environment. 42 U.S.C. § 4332(2)(C) (2006). When it is unclear whether a proposed action requires the preparation of an EIS, the agency may prepare an Environmental Assessment (EA) to evaluate the potential impacts of the proposed activity. If the EA leads the agency to conclude that the proposed action will not significantly affect the human environment, the agency may issue a finding of no significant impact (FONSI) and need not prepare an EIS. 40 C.F.R. § 1501.4(e) (2006); *see also Greater Yellowstone Coalition v. Flowers*, 359 F.3d 1257, 1274 (10th Cir. 2004). In determining whether a Federal action will significantly affect the quality of the human environment, the Forest Service must consider both the context in which the action will take place and the intensity of its potential impacts. 40 C.F.R. § 1508.27 (2006). The factors relevant to this determination include the following: the impacts that may be both beneficial and adverse; the degree the Proposed Action affects public health and safety; the unique characteristics of the geographic area; the degree to which the potential effects on the environment are highly controversial; the degree to which the potential impacts involve highly uncertain or unknown risks; the degree to which the potential action may establish a precedent for future actions; whether the action is related to other actions with individually insignificant but cumulatively significant impacts; the potential adverse effects on highways, structures, or historical resources; the degree to which the Proposed Action may adversely affect endangered or threatened species; and whether the Proposed Action threatens a violation of local, state, or Federal laws imposed for the protection of the public. 40 C.F.R. § 1508.27(b) (2006).	Position statement, no response needed.

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11.3 FONSI A review of each of the above criterion demonstrates that the proposed natural gas gathering system described in the Sheep Gathering EA will not significantly affect the quality of the human environment and, thus, the Forest Service should issue a FONSI for the Sheep Gathering System.	 Position statement, no response needed.
11.4 **Socio-Economic, Energy Independence** *Impacts that May be Both Beneficial and Adverse* Implementation of the Proposed Action would result in both beneficial and potentially adverse effects. Effects to socioeconomic resources, particularly employment, royalties, and taxes, would benefit the communities in the analysis area. The project would also have beneficial impacts because it would facilitate the transmission of domestic energy supplies. Certain other resources could potentially experience short term adverse direct and indirect effects from the disturbances that would occur from the proposed natural gas gathering system, but no significant adverse impacts are anticipated. The Proposed Action meets the purpose and need for the project while maintaining appropriate protection for the resources in the vicinity of the natural gas gathering system through mitigation and potential conditions of approval.	 Restatement of proposed action. No response needed.

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Comment	Comment Analysis and FS Response
11.5 Pipeline Engineering *The Degree the Proposed Action Affects Public Heath and Safety* The Proposed Action would have minimal effects on the health and safety of the public in the analysis area. Implementation of the Proposed Action would not increase any risk to the public's health and safety. Activities associated with the installation and operation of a natural gas gathering system are well developed, well known, standardized, and would be evenly distributed along the right-of-way. Thousands of miles of natural gas gathering systems have been installed in Colorado with little risk to the public's health and safety. There is no credible evidence or analyses suggesting the approval of the Sheep Gas Gathering System would have negative impacts on public health and safety. The project design and mitigation measures reduce the risk to public health and safety to minimal levels.	Position statement, no response needed.

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11.6 Pipeline design *Unique Characteristics of the Geographic Area* Although the proposed natural gas gathering system passes through areas with potentially unique characteristics such as wetlands and riparian areas, the approval of the Proposed Action will not significantly impact these resources. GEC is not aware of any prime farmlands, rangelands, or forest land as defined in the Secretary of Agriculture's Memorandum Number 1827, Supplement 1, within the Project Area. There are no identified parklands or Wild and Scenic Rivers in proximity to the project. The Proposed Action was designed to minimize impacts, with special consideration to potential impacts to riparian areas, wetlands, and areas with steep slopes or geologic instability. *See* Sheep Gathering EA, pgs. 30, 178, 180.[5] The actual location of the proposed gathering system was carefully selected by GEC in consultation with the Forest Service and recognized experts, such as Wright Water Engineers, to ensure minimal impacts along the route. The Sheep Gathering EA has not identified any unique characteristics which cannot be adequately protected by the mitigation measures developed by the Forest Service.	 Restatement of proposed action. No response needed.

[5] The pagination of the EA does not appear to be consistent. Versions printed directly off the Forest Service website have different pagination from versions printed from the compact disk provided by the Forest Service. Whenever possible, references to particular portions of the document will be referenced by section and page.

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11.7 Minimal effect on resources *Effects on the Quality of the Human Environment with Potential to be Controversial* In the NEPA context, the term "controversy" does not relate to public concern or opposition to a proposed Federal action. Rather, the term refers to "a substantial dispute as to the size, nature, or effect of the action." *Middle Rio Grande Conservancy Dist. v. Norton*, 294 F.3d 1220, 1229 (10th Cir. 2002). Overall, the implementation of the Proposed Action would result in positive short term and long term socioeconomic effects. Selection of the Proposed Action would allow for the sale and transportation of natural gas, which would contribute to the nation's supply of natural gas and would contribute to the economic development in Gunnison and Delta Counties, Colorado. Protection measures have been developed for the proposed natural gas gathering system which would minimize adverse effects to the human environment, including cultural resources, visual resources, wildlife, wetlands and riparian areas, geologic hazards, transportation, and recreation. The scope of the Proposed Action is well defined and the potential short-term impacts of the proposal are well understood. There is no credible dispute regarding the size, nature, or potential impacts of the proposed gathering system.	Restatement of proposed action. No response needed.

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Comment	**Comment Analysis and FS Response**
11.8 Cumulative Effects *Effects on the Human Environment that could be Uncertain or Involve Unknown Risks* No uncertain or unknown risks are expected to occur. Natural gas gathering systems have been developed throughout Colorado, including the GMUG National Forest. *See, e.g.,* Gunnison National Forest Oil and Gas Leasing Environmental Impact Statement ("1993 Leasing EIS") (1993), pgs. III-65 – III-66. The decision is not unique to this area as existing gathering systems are already present on the GMUG National Forest. The potential direct, indirect, and cumulative effects of natural gas development have been extensively evaluated and documented in various NEPA documents, including the Sheep Gathering EA, the Hotchkiss Federal EA CO-150-2006-022 (2006), the EA for Gunnison Energy Corporation's Proposed Exploratory Development Gas Drilling Project (2003), and the 1993 Leasing EIS. The implementation of the Proposed Action would involve the same methods and techniques presently used throughout Colorado and the general area. Thus, no uncertain or unknown risks are expected.	 Position statement. No response needed.

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Comment	**Comment Analysis and FS Response**
11.9 Cumulative effects *The Degree to which the Action Establishes a Precedent for Future Actions* The actions considered in this decision would not establish a precedent for future actions. As discussed in the Sheep Mountain EA, the Proposed Action is a discrete project designed to allow the sale and transportation of natural gas from existing wells and leases in the area. The approval of the Sheep Gathering System will not automatically lead to or cause other development activities in the area or the GMUG National Forest, nor will it establish a binding precedent for future actions. Furthermore, the development of natural gas and natural gas transportation systems is specifically authorized by the Amended Land and Resource Management Plan for the GMUG National Forest (GMUG LRMP). Further, the installation of natural gas transportation systems has already occurred within the GMUG National Forest and within the vicinity of the project area, as demonstrated by the fact the Sheep Gathering System will connect to the existing Ragged Mountain Pipeline. For all the above reasons, the approval of the Sheep Gas Gathering System would not establish a precedent for future actions.	 See HCCA response to comment 9.10.

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Comment	**Comment Analysis and FS Response**
11.10 Cumulative effects *Whether the Action is Related to Other Actions with Individually Insignificant but Cumulatively Significant Impacts* The Sheep Gas Gathering System is a small, discrete project which is designed solely to help GEC transport and sell natural gas from existing wells and oil and gas leases. Although there are other natural gas exploration and development activities proposed and ongoing in other portions of the GMUG National Forest, the Sheep Gas Gathering System is not connected to or related to those projects. The Sheep Gas Gathering System has independent utility from other proposed natural gas related activities, especially from the proposed Bull Mountain Pipeline which has been proposed by a separate company. The Sheep Gas Gathering System is designed to connect to the existing Ragged Mountain Pipeline and it not dependent upon or connected to the Bull Mountain Pipeline. The proposed installation and construction activities are short term. Finally, the cumulative impacts analyses in the Sheep Gathering EA demonstrates that the proposed action will not have a significant impact on the human environment even when coupled with other past and ongoing natural gas development activities in the area.	 See HCCA response to comment 9.11

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Comment	**Comment Analysis and FS Response**
11.12 Cultural Resources *Adverse Effects on Highways or Other Structures, Scientific, Cultural, or Historical Resources* Implementation of the Proposed Action would not result in adverse effects to historic properties, cultural resources, or other structures of scientific importance. Project design, special construction techniques, and mitigation measures and conditions of approval, as appropriate, would ensure the installation of the Sheep Gas Gathering System would occur in a manner that minimizes any effects to historic properties or cultural resources. Surveys of the entire proposed pipeline route indicated there are no cultural or historical resources that would be impacted. Resources discovered accidentally during construction activities will be adequately protected and mitigated if necessary. When implementing the decision, any previously unidentified sites inadvertently discovered would be avoided or mitigated. The Proposed Action will not have any significant negative impacts upon highways or other structures of scientific importance in the area.	Restatement of proposed action. No response needed. Also see Appendix A.
11.13 Wildlife *Degree of Adverse Effect on Threatened or Endangered Species* Implementation of the Proposed Action would not result in unacceptable effects to species listed as threatened or endangered by the United States Fish and Wildlife Service. The analysis in the Sheep Gathering EA demonstrates the installation and operation of the gathering system would have no impact or no effect upon any listed, sensitive, or Management Indicator Species (MIS). The proposed route, planned construction techniques, and mitigation measures would ensure that installation and operation of the gathering system would occur in a manner that minimizes any effects to these species.	Restatement of proposed action. No response needed.

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Comment	Comment Analysis and FS Response
11.14 *Whether the Action Threatens Violation of Federal, State, or Local Law Requirements for the Protection of the Environment* The Proposed Action will not violate federal, state, or local laws, or other requirements for the protection of the environment. GEC has already filed an application with Gunnison County, Colorado for the installation of the gathering system, and will obtain any and all other required permits. The construction practices and designed features, as well as mitigation measures and potential conditions of approval, will ensure the installation and operation of the Sheep Gas Gathering System will meet the requirements of federal, state, and local laws and regulations.	Restatement of proposed action. Also a requirement of the Special Use Permit: Compliance with Laws, Regulations, and other Legal Requirements. The holder shall comply with all applicable Federal, State, and local laws, regulations, and standards, including but not limited to, the Federal Water Pollution Control Act, 33 U.S.C. 1251 et seq., the Resource Conservation and Recovery Act, 42 U.S.C. 6901 et seq., the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S. C. 9601 et seq., and other relevant environmental laws, as well as public health and safety laws and other laws relating to the siting, construction, operation, and maintenance of any facility, improvement, or equipment on the property

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Comment	Comment Analysis and FS Response
11.15 FONSI *The Sheep Gas Gathering System Will Not Significantly Impact the Quality of the Human Environment* Based on a review of the Sheep Gathering EA, the context of the Sheep Gas Gathering System, and the elements of intensity described above, the Forest Service must decide that the approval of the Sheep Gas Gathering System does not constitute a major Federal action significantly affect the quality of the human environment. The minor potential environmental impacts will be very short-term in duration and are well understood. With the help of the Forest Service, GEC has developed and included numerous mitigation measures to minimize the potential impacts of the proposed gathering system. No significant environmental impacts are associated with the approval of the proposed action. Therefore, the Forest Service should issue a FONSI and a Decision Notice for the Sheep Gas Gathering System, and need not prepare an EIS.	Position statement, no response needed.

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Comment	Comment Analysis and FS Response
11.16 MIS **The Forest Service Must Consider the Best Available Science** As the Forest Service is aware, the applicability of the Forest Service's planning regulations, 36 C.F.R. part 219, is currently in a matter of legal uncertainty. On March 30, 2007, the United States District Court for the Northern District of California issued a decision enjoining the implementation of the 2005 Planning Regulations (70 Fed. Reg. 1023 (Jan. 5, 2005)). *See Citizens for Better Forestry, et al., v. United States Department of Agriculture*, No. 05-CV-1144, 2007 WL 966985 (March 30, 2007). As a result, the Forest Service is most likely required to comply with the 2000 Planning Regulations, 65 Fed. Reg. 67514 (Nov. 9, 2000), as amended and interpreted by subsequent regulations and interpretive rules issued prior to January 5, 2005—the date on which the 2005 Planning Regulations were promulgated. *See* 66 Fed. Reg. 1864 (Jan. 10, 2001) (interpretive rule regarding appeal procedures); 66 Fed. Reg. 27552 (May 17, 2001) (interim final rules extending compliance dates for 2000 Planning Regulations); 67 Fed. Reg. 35431 (May 20, 2002) (extending compliance dates for 2000 Planning Regulations); 68 Fed. Reg. 53294 (Sept. 10, 2003) (interim final rule extending the transition period for site-specific project decisions under the 2000 Planning Regulations); 69 Fed. Reg. 58055 (Sept. 29, 2004) (interpretive rule regarding use of best available science for site-specific authorizations implementing forest plans). Often, the effect of vacating a rule is to reinstate the rule previously in force. *See California ex rel. Lockyer v. U.S. Dept. of Agriculture*, 459 F.Supp.2d 874, 916 (N.D.Cal. 2006); *Paulsen v. Daniels*, 413 F.3d 999, 1008 (9th Cir.2005); *Cumberland Med. Ctr. v. Secretary of Health and Human Services*, 781 F.2d 536, 538 (6th Cir.1986); *Abington Memorial Hosp. v. Heckler*, 750 F.2d 242, 244 (3d Cir.1985); *Bedford County Memorial Hosp. v. Health and Human Services*, 769 F.2d 1017, 1024 (4th Cir.1985); *Desoto Gen. Hosp. v. Heckler*, 766 F.2d 182, 186 (5th Cir.1985); *Menorah Med. Ctr. v. Heckler*, 768 F.2d 292, 297 (8th Cir.1985); *Lloyd Noland Hospital and Clinic v. Heckler*, 762 F.2d 1561, 1569 (11th Cir.1985)). As such, the planning regulations in effect immediately prior to 2005 Planning Regulations are most likely currently in effect and should be given due consideration.[6] Assuming the 2005 Planning Regulations are no longer in force, the Forest Service would authorize site-specific projects under the 2000 Planning Regulations and the Interim Final Rule issued on	See response 8.5

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Comment	**Comment Analysis and FS Response**
11.17 The Sheep Gas Gathering System Conforms to the Existing Forest Plan The Forest Service's approval of the Sheep Gas Gathering System is consistent with the general guidance and objectives set forth in the GMUG LRMP. *See* 36 C.F.R. § 219.8(a)(1) (2005) (requiring all approved projects and activities to be consistent with the applicable forest plan components); 36 C.F.R. 219.10 (2001) (same); 36 C.F.R. § 219.10(e) (1999)(same).[7] As noted in the Sheep Gathering EA, the Forest Service's approval of the Sheep Gas Gathering System is consistent with the management guidance and directives in the GMUG Forest Plan. The GMUG LRMP requires the Forest Service to act on special use applications that contribute to increased economic activity associated with National Forest resources, such as rights-of-way to facilitate oil and gas development. *See* GMUG LRMP, pg. III-71. The 1993 Leasing EIS and LRMP amendment also analyzed and acknowledged the need for oil and gas production facilities. *See* 1993 Leasing EIS, pgs. II-6 – II-7, Appendix G-12. The transportation of natural gas is clearly consistent with the approved GMUG LRMP.	See Gill response to comment 10.33.

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Comment	**Comment Analysis and FS Response**
11.18 FONSI **Expedite the Decision Notice** Given the fact the Sheep Gathering EA demonstrates the approval of the project would have very minimal potential impacts, and given the importance of the project to facilitating energy production from the North Fork Valley, the Forest Service should expedite the Decision Notice for the Sheep Gas Gathering System as much as possible. If the Forest Service expedites the Decision Notice for the Sheep Gas Gathering System, GEC could hopefully complete installation operations this summer and reclamation operations later this fall on at least portions of the system. Doing so would minimize potential impacts to wildlife and other resources by completing construction activities in one season. By completing preliminary reclamation activities this fall, GEC and the Forest Service would also be able to maximize reclamation success by taking advantage of increased precipitation in the winter and the benefit of a full spring and summer growing season in 2008.	Decision process will be consistent with NEPA and subject to appeal.
11.19 Specific Comments on the Sheep Gathering EA GEC additionally offers these specific comments on the Sheep Gathering EA:	Position statement, no response required.

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Comment	**Comment Analysis and FS Response**
11.20 Chapter 1 – Introduction **Section 1.5 – Authorizing Actions and Agency Jurisdictions** The Forest Service appropriately recognizes that Section 28 of the Mineral Leasing Act (MLA) authorizes the Forest Service to grant a right-of-way for pipeline purposes for the transportation of oil and natural gas. 30 U.S.C. 185 (2006); *see also* 36 C.F.R. § 251.53(e). The authority for the Forest Service to install the water pipeline in the same trench as the gas pipeline, however, is found in Section 501 of the Federal Land Policy and Management Act (FLPMA). 43 U.S.C. § 1761(a)(1) (2006); *see also* 36 C.F.R. § 251.53(l)(1)(2006); Forest Service Manual (FSM) 2726.31 (Amend. No. 2700-2006-1, April 3, 2006). Although the two pipelines will be co-located, the Forest Service must issue two separate rights-of-way in order to comply with the MLA, FLPMA, and the Forest Service's implementing regulations. The Forest Service should clearly note in the Decision Notice that it is issuing separate rights-of-way under the MLA and FLPMA.[8]	Change EA to include FLPMA. One Special Use Permit will be issued using both authorities.
11.21 MIS The Forest Service fails to acknowledge on page 22, Section 1.5.3, that the GMUG LRMP was most recently amended in May of 2005 in two important respects. First, the list of MIS for the GMUG National Forest was amended to include: Elk; Albert's squirrel; Brewers sparrow; Merriam's wild turkey; Pine (American) marten; Red-naped Sapsucker; and the Common trout. Second, the GMUG amended the requirements to prepare site-specific monitoring and surveying for MIS in connection with a site-specific authorization. These amendments modify the Forest Service's obligations under the GMUG LRMP and should be noted.	The Biological Assessment, Biological Evaluation and Wildlife Specialist Report (project file) has been amended to reflect the June 4, 2007 list of Federal Threatened, Endangered, Proposed and Candidate Species and the April 30, 2007 Region 2 Sensitive Species list and species matrix. See response 8.5.

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Comment	**Comment Analysis and FS Response**
11.22 Energy Independence **Section 1.7 – Issues** Improperly, the Forest Service did not include the production of domestic energy supplies as a key issue for consideration in the Sheep Gathering EA. The Forest Service, like every Federal agency, is required to facilitate the production of domestic energy under Executive Order 13212. *See* Executive Order No. 13212, 66 Fed. Reg. 28357(May 22, 2001). Executive Order 13212 was specifically amended in 2003 to address projects impacting pipeline safety. *See* Executive Order 13302, 68 Fed. Reg. 27429 (May 20, 2003). Federal agencies are required to expedite their review of permits or take other actions, as necessary, to accelerate projects to increase the production and transportation of domestic energy supplies. As recognized by the Forest Service in Section 1.3, pg. 16, the very purpose and need for the Proposed Action is the transportation of natural gas supplies to contribute to the need for regional energy supplies. The transportation of natural gas and increased domestic energy supplies should have been considered as a key issue in the Sheep Gathering EA.	 Domestic Energy production is outside the scope of the project as it is a national concern not specific to this project. Expediting review does not exempt projects from required reviews such as NEPA and engineering submittals.
11.23 Chapter 2 – Alternatives in Detail **Section 2.2.2 – Proposed Action (Preferred Alternative)** GEC appreciates the cooperation it received from the Forest Service Interdisciplinary Team (IDT) to develop a proposed route for the proposed gathering pipeline that minimized potential environmental impacts and the Forest Service's assistance in developing the Proposed Action Design Features that further reduce potential impacts while still facilitating the transportation of natural gas to the regional market.	 Position statement. No response needed.

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Comment	**Comment Analysis and FS Response**
11.24 Transportation **Section 2.2.2.10 – Road Use and Access** The Forest Service does not consistently identify which roads will be improved if the Proposed Action is approved. On page 37, the Forest Service indicates that improvements will be made to all existing access roads in order to accommodate the oversized and heavy construction equipment needed for the installation of the pipeline. In Section 3.2.2.2, page 65, however, the Forest Service states that only the "majority of the access roads" will need reconstruction or improvement. In Appendix A, pages 223 – 224, of the Sheep Gathering EA the Forest Service does not identify which roads will be updated, but merely indicates that road improvements must meet certain design and engineering criteria. In the Decision Notice, the Forest Service should clearly identify exactly which roads would need improvement, and to what standards	The Transportation Section 3.4.4.2 and Appendix A state that GEC must provide specific improvement and use parameters using the AASHTO design criteria and Design guide for pavement structures or as approved by Forest Engineer, to be designed by a CO Registered Professional Civil Engineer, and submitted for FS approval for each road segment. The Engineer's recommendations must be approved and implemented before any project related traffic may use the part of the Forest Road system. The wording on page 37 and in Section 3.2.2.2, of the EA, will be changed to state those roads identified in the required road engineering study. Any forest service roads (level 3, 4 and 5) that are open to the public are subject to the AASHTO Standards.
11.25 Section 2.2.2.13 – Pipeline / ROW Operation On page 46 of the Sheep Gathering EA, the Forest Service inaccurately suggests that aerial patrols would be conducted at least annually. Given the topography and the vegetation in the project area, aerial patrols may not be feasible or useful. The pipeline route will be surveyed at least every 15 months, but not necessarily by aerial patrols.	Aerial and ground inspection of the pipeline will be in compliance with Colorado Public Utilities Commission requirements and will occur yearly as discussed in the POD, Section 4.1.

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11.26 Range/Noxious Weeds The Forest Service states on page 47 that the “proponent would be responsible for noxious weed control on project disturbed areas and along forest access roads.” Because the majority of the roads utilized for the installation of the proposed gathering system are open to the public, the Forest Service cannot assume all noxious weeds along these roads are caused by GEC’s activities. In fact, the Forest Service acknowledges in Section 3.5.3, page 122, that noxious weeds are already within the project area, and particularly along existing roads or trails. “Most of the noxious weed populations were concentrated in or near disturbed areas such as roads or trails.” *See* Sheep Gathering EA, pg. 122. It would be inappropriate for the Forest Service to require GEC to treat noxious weeds not attributable to its activities, especially along public roads that are used by a variety of users. Further, the potential design criteria/condition of approval, as expressed in Appendix A, pg. 225, does not clearly define when GEC’s obligation to control noxious weeds terminates. Although GEC will take reasonable steps to control noxious weeds, this sentence should be redrafted and clarified to state that GEC will be responsible for noxious weed infestations on project disturbed areas and access roads that are caused by GEC’s activities.	See IPAMS response to comment 8.4

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Comment	**Comment Analysis and FS Response**
11.27 Section 2.2.3 – **Alternatives** Considered but Eliminated from Detailed Study From a NEPA standpoint, the agencies have developed and analyzed an appropriate range of alternatives in the Sheep Gathering EA. The Forest Service properly considered, but did not analyze in detail, various alternatives that do not meet the purpose and need of the proposed activity. For example, the Forest Service properly eliminated from detailed study alternatives that may not have been practical given geologic hazards, numerous stream crossings, wetlands, or areas where it would be impossible to safely construct a pipeline. *See* Sheep Gathering EA, pgs. 48 – 50. "Alternatives that do not accomplish the purpose of an action are not reasonable and need not be studied in detail by the agency." *Citizens' Comm. to Save our Canyons v. United States Forest Service*, 297 F.3d 1012, 1030 (10th Cir. 2002) (citations and internal punctuation omitted). "NEPA does not require agencies to analyze the environmental consequences of alternatives it has in good faith rejected as too remote, speculative, or impractical or ineffective." *Id.* at 1030-31. The Council on Environmental Quality (CEQ) has described reasonable alternatives as "those that are <u>practical or feasible</u> from the technical and economic standpoint and using common sense, rather than simply desirable." *CEQ's Forty Most Asked Questions,* Question 2a, 46 Fed. Reg. 18026, 18027 (March 23, 1981) (emphasis added). Clearly, the alternatives eliminated from detailed study were not practical or feasible given the topography and geology of the area.	Restatement of proposed action. No response needed.
11.28 Chapter 3 – Environmental consequences Overall, the analysis of the potentially affected environment contained in the Sheep Gathering EA is thorough and complete. The Forest Service has provided a detailed and informative description of the existing conditions in the vicinity of the proposed gathering system and the potential environmental impacts the approval of the project would have upon the human environment.	Position statement. No response needed.

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Comment	**Comment Analysis and FS Response**
11.29 Roadless/Wilderness Importantly, the Forest Service clearly informs the public, on page 55 of the Sheep Gathering EA, that no Wilderness or Inventoried Roadless Areas are within or adjacent to the project area.	Restatement of proposed action. No response needed.
11.30 Geology **Section 3.1 – Geology and Geologic Hazards** As noted in the Sheep Gathering EA, the proposed pipeline alignment avoids all significant geologic hazards, most steep slopes, and wetland areas. As also noted in Section 3.1.4 of the EA, numerous design features have been developed and would be implemented to avoid any geologic instability. *See* Sheep Gathering EA, pgs. 56 – 64. The proposed pipeline route minimizes construction in areas of potential geologic instability, unlike construction of the pipeline along existing roads. *See* Sheep Gathering EA, pgs. 48, 64. The Forest Service properly determined that construction and installation of the pipeline along existing roads is not feasible and may actually have more adverse environmental impacts and an increased risk to public health and safety than the proposed route. The Forest Service should approve the proposed route for the Sheep Gas Gathering System.	Position statement. No response needed.

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Comment	**Comment Analysis and FS Response**
11.31 Wildlife **Section 3.2.6.2 – Canada Lynx** The Forest Service does not consistently identify its determination regarding the potential impacts the Proposed Action would have upon the Canada lynx, *Lynx canadensis.* Table S-3, page 6, indicates that the Proposed Action will have no effect on the Canada lynx. Section 3.2.1 indicates that Table 15 identifies species considered in the EA and lists potential impacts. In actuality, Table 15 on pages 66 – 67 is entitled "compliance with Relevant Plan and Wildlife Standards and Guidelines," and contains no information regarding individual species. Table 19 on pages 74 – 75 does contain information regarding threatened and endangered species, but does not indicate the Forest Service's determination regarding the potential impacts to said species. Finally, in Section 3.2.6.2, page 80, the Forest Service indicates that the proposed action "may effect, but is not likely to adversely affect" the lynx. *See* Sheep Gathering EA, pg. 80. The distinction between a "No effect" and a "May affect, but is not likely to adversely affect" is critical because it determines whether the Forest Service is required to obtain a concurrence of its determination from the United States Fish and Wildlife Service (USFWS). If the Forest Service has determined that the Proposed Action will have "No effect" on listed threatened and endangered species, the Forest Service is not required engage in formal consultation with the USFWS or obtain USFWS's concurrence to its determination. *See Forest Guardians v. Veneman*, 392 F.Supp.2d 1082, 1086 (D. Ariz. 2005); *Southwest Center for biological Diversity v. United States Forest Service*, 100 F.3d 1443, 1447-47 (9th Cir. 1996); 50 C.F.R. § 402.14 (2006). If the Forest Service has determined that the Proposed Action "may effect, but is not likely to adversely affect" the lynx, the Forest Service must obtain the written concurrence of the USFWS. *See* 50 C.F.R. §§ 402.13(a), 402.14(a) (2006). The Forest Service must come to a single determination regarding the potential impacts to the Canada lynx and comply with the applicable procedures under the Endangered Species Act and its implementing regulations. Regardless of the Forest Service's eventual	See response 9.16

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Comment	**Comment Analysis and FS Response**
determination, the Forest Service failed to acknowledge that no designated critical habitat for the Canada lynx is located within the Sheep Gas Gathering System Project Area, or anywhere in the State of Colorado. See 71 Fed. Reg. 66008 (Nov. 9, 2006) (to be codified at 50 C.F.R. §§ 17.11(h), 17.95(a)). The USFWS made this determination primarily because of the protections provided the Canada lynx on Federal lands, and particularly Forest Service System lands. See 71 Fed. Reg. 66008, 66010. The Forest Service also made this determination because the Southern Rockies, including Colorado, "do not have features that are essential to the conservation of lynx and require special management." See 71 Fed. Reg. 66008, 66029. Including this information in the Sheep Mountain EA may have assisted the reader in understanding the current regulatory status of the Canada lynx within the GMUG National Forest. This information also demonstrates the likelihood that the Proposed Action will not adversely impact any threatened or endangered species.	
11.32 Wildlife **Section 3.2.7.6.1 – American Marten Affected Environment** On page 85, the Forest Service indicates that winter track surveys and baited camera stations were planned for the winter of 2006 and 2007. If those surveys took place, the Forest Service should update the information in the project file for the Sheep Gas Gathering System.	EA will be changed to include the results of the surveys.

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Comment	**Comment Analysis and FS Response**
11.33 Wildlife **Section 3.2.9 – Management Indicator Species** The Forest Service's analysis contains detailed information regarding the various MIS for the GMUG National Forest. *See* Sheep Gathering EA, pgs. 103 – 108, 155 - 157. The Forest Service should clarify that the requirement to select and analyze population changes for MIS is contained in the 1982 Planning Rules (47 Fed. Reg. 43037 (Sept. 30, 1982)), not the planning rules promulgated in 2000 or 2005. *See* 65 Fed. Reg. 67568 (November 9, 2000); 70 Fed. Reg. 1055 (Jan. 5, 2005). The 1982 Forest Planning Regulations were entirely superseded in November of 2000 when new planning regulations were promulgated. *See Ecology Center, Inc. v. United States Forest Service*, 451 F.3d. 1183, 1190 (10th Cir. 2006); *Utah Environmental Congress v. Richmond*, No. 05-CV-72-TC, 2007 WL 1241655, at *2, *5 (10th Cir. April 30, 2007). Further, in 2005, under the direction of the 2005 planning rules, the GMUG Forest Service amended the GMUG LRMP to eliminate the requirement to prepare site-specific population data trends and analysis for MIS species. *See* 36 C.F.R. 219.14(f) (2005). The GMUG LRMP thus specifically provides that "site-specific monitoring or surveying of a proposed project or activity area is not required." *See* GMUG LRMP, Chapter IV, pg. IV-1 (as amended May 2005). Despite the legal uncertainty surrounding the Forest Service's Planning Rules, and their impact on site-specific authorizations, and despite the Amendment to the GMUG LRMP in May of 2005, the Forest Service prepared adequate analysis regarding the status of the various MIS, including population data trends, to satisfy the requirements of the 1982, 2000, or 2005 Planning Rules, including any requirements potentially implicated by the various interpretive and transition rules issued prior to the adoption of the 2005 Planning Rule. *See* 66 Fed. Reg. 27522 (May 17, 2002); 69 Fed. Reg. 58055 (September 29, 2004). The Forest Service should be commended for its analysis. Nonetheless, the Forest Service should also consider referring to and incorporating the excellent analysis and information regarding MIS in the October 2005 Environmental Assessment for the Spaulding Peak Natural Gas Exploration and Development Area Wide Plan.	See 8.5 response.

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11.34 Section 3.4 – Transportation When considering the degree of construction and engineering that will be required to existing and temporary National Forest Service Roads (NFSRs), the Forest Service should carefully consider the environmental impacts of such roads. Oftentimes small, two track roads are safe for construction equipment and can be reclaimed more efficiently and effectively. The Forest Service should carefully consider the design and size of roads necessary for the installation and monitoring of the proposed gathering system. This is especially important given the very minor increase in traffic associated with the Proposed Action. On page 116, the Forest Service indicates only a 3% increase in traffic during the construction stage of the Proposed Action on NFSR #265.	See GEC response to comment 11.24.
11.35 Transportation **Section 3.4.4.2 – Proposed Action** The Forest Service suggests on page 115 that 1 semi pass equals the degradation of approximately 10,000 passenger vehicles. The Forest Service should reference its support for that statement, as it seems incredulous in light of logging and other vehicles that routinely use the forest roads in this area.	From the AASHTO 1993 Design Guide (Appendix D). On page D-2 there is a reference to the AASHO Road Test (1960's) based equations. **<u>THE METHODOLOGY</u>** The Equivalency Factors are noted only down to 2 kip axle loads. This is versus the 18,000# (18 kip) equivalent axle we use for designing a pavement surfacing section. A 2000# passenger car would likely have 1 kip per axle. Even giving the benefit of just halving the load factor (conservative since the change is actually exponential), the passenger car load factor would be 0.0001 or less according to the tables. Take the reciprocal of this fraction (1 / 0.0001) equals the 10,000 highway pavement engineers often quote.

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11.36 Transportation The Forest Service indicates on page 119 that maintenance activities on roads presently performed by government entities may be "entirely transferred to commercial users for roads they use." Given the fact the majority of roads utilized for the construction of the Sheep Gathering System are open to public or other permitted users, this statement appears to be incorrect. It would be inappropriate and potentially illegal for the Forest Service to require GEC to solely maintain roads open to the general public.	The EA will be changed to read "Maintenance/repair/reconstruction activities, authorized under the RUP and SUP, will be performed by the commercial users for roads they use." See 16 USC 535, 36, 36 CFR 217.5, 36Cfr 212.6B, FMS 7730.5, FSM 5460 and FSM 7731.3 The RUP requires the commercial companies to keep records of any traffic over 10,000 lbs GVW (3/4 ton pickup) using the permitted roads. With traffic counters in place, we can record total use and figure out commensurate usage..
11.37 Range/Noxious Weeds **Section 3.5.4.2 – Proposed Action, Noxious Weeds** On pages 125 – 126 the Forest Service includes a draft condition of approval for the Special Use Authorization (SUA) regarding the control of noxious weeds. As currently drafted, the SUA would require GEC to "take all reasonable precautions to prevent the introduction, establishment, and spread of noxious weeds on lands covered by this authorization and adjacent thereto." This provision must be revised because the Forest Service cannot legally require GEC to treat or control noxious weeds not associated with its use of Forest Service System lands. In its current form, the SUA would make GEC solely or primarily responsible for noxious weed control. The provision of the SUA should be redrafted as follows: "The holder shall take all reasonable precautions to prevent the introduction, establishment, and spread of noxious weeds on lands covered by this authorization and adjacent thereto attributable to its actions." Unless redrafted, this provision is unacceptable.	See IPAMS comment response 8.4.

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Comment	**Comment Analysis and FS Response**
11.38 Section 3.7.5 – Environmental Consequences (Fisheries) In the section of the Sheep Gathering EA regarding potential environmental consequences to fisheries, the Forest Service fails to acknowledge the potential benefits re-contouring and resurfacing roads within the project area may have upon fish species and habitat. The Forest Service admits that existing roads in the area are causing increased sedimentation. *See* Sheep Gathering EA, pgs. 148, 153. On page 180 of the EA, however, Section 3.10.5.2, the Forest Service acknowledges that while "there may be some short-term impacts related to sedimentation from reconstruction activities, surfacing and reconstruction would constitute a long-term benefit by reducing sediment delivery to West Muddy Creek compared to the current condition." *See* Sheep Gathering EA, pg. 180. Based on the Forest Service's own analysis it appears the proposed reconstruction activities associated with the Sheep Gas Gathering System may actually improve fish habitat over the long-term. The Forest Service should note this important fact in the Decision Notice for the project.	The FS acknowledges that road reconstruction may lessen sediment reaching West Muddy Creek. But there is no way to quantify any improvement in fish habitat in an already sediment filled stream. No change will be made to the EA
11.39 Section 3.11 – Social and Economics As discussed above, the Sheep Gas Gathering System would have beneficial impacts on the local, state, and national economies. The construction of the pipeline will require approximately 38 employees and contractors, most from the local community, who will earn higher than average salaries for the area. The Sheep Gathering EA notes that "[a]verage earnings for these jobs should greatly exceed the current average in Delta County." *See* Sheep Gathering EA, pg. 195. The construction of the gathering system, and production from existing wells, could also generate significant income for local governments including Gunnison County.	Restatement of EA. No response needed.

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Comment	**Comment Analysis and FS Response**
<u>11.40 GEOLOGY</u> **<u>APPENDIX A – DESIGN FEATURES OF THE PROPOSED ACTION</u>** **Geologic Hazards and Soils** On page 221, the Forest Service indicates GEC would incorporate and utilize the "BLM's Gold Book." As the Forest Service is aware, the Gold Book (Fourth Edition – 2006) was prepared and distributed by both the BLM and the Forest Service and applies to lands managed by both agencies.	Position statement. No response needed.
11.41 Recreation On page 222, the Forest Service indicates the implementation of "standard noise abatement measures," but does not define or list such potential measures. The Forest Service should clearly indicate potential noise reduction measures in the Decision Notice so that GEC and the public are aware of such measures and so GEC can take advantage of its rights under 36 C.F.R. part 251, subpart C, if necessary.	See response to comments 9.26
11.42 Transportation/Roads As noted above, the Forest Service has not clearly defined which roads would need to be improved in connection with this project.	See GEC 11.24 and response to comment 9.25.
11.43 Noxious Weeds The draft design criteria/condition of approval on page 225, does not clearly define when GEC's obligation to control noxious weeds terminates. Although GEC will take reasonable steps to control noxious weeds, this potential mitigation measure should be redrafted and clarified to state that GEC will be responsible for noxious weed infestations on project disturbed areas and access roads that are caused by GEC's activities.	See IPAMS 8.4 response to comment. Weed control along the pipeline will last the duration of the ROW including post reclamation.

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11.44 Watershed On page 231, the Forest Service indicates that "[n]o equipment will operate within the Water Influence Zone [WIZ], except where pipeline crossings occur." On page 148, however, Section 3.7.4, the Forest Service indicates that "the majority of these roads [in the project area] are located within or near the water influence zone (WIZ)." Read literally, the Forest Service's design criteria could be interpreted as prohibiting the use of trucks and equipment on roads within the project area. The Forest Service must revise the Design Criteria on page 231 to read as follows: "Except for travel on designated NFSRs, or as otherwise approved by the Forest Service, no equipment will operate within the Water Influence Zone, except where pipeline crossings occur."	**EA, Appendix A, will be changed to include the reference to NFSR's and ROWs , or as otherwise approved by the FS.**
11.45 Wildlife **Appendix H – Lists of Wildlife Species Considered in this Analysis** The Forest Service failed to list the Common Trout in Table C of Appendix H. As the Forest Service notes in Section 3.7.6, the common trout became a Management Indicator Species for the GMUG National Forest in 2005. The Forest Service has, however, properly disclosed the potential impacts to the common trout in section 3.7.6.	EA (Table C of Appendix H) changed to reference Table 35 for fish.
11.46 Gunnison Energy Corporation appreciates the opportunity to comment on the Sheep Gas Gathering System Environmental Assessment. Please do not hesitate to contact me at 303-296-4222 with any questions you have regarding these comments.	Closing statement. No response needed.