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Draft Environmental Assessment

Dunckley Gravel Pit Project

Yampa Ranger District, Medicine Bow-Routt National Forests and Thunder Basin National Grasslands
Rio Blanco County, CO

Legal: T2N, R88W, Section 10, 11 and 14
T3N, R87W, Section 19 and 36
T3N, R86W, Section 30

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Summary

The United States Department of Agriculture, Forest Service (FS) is proposing the Dunckley Gravel Pit Project on the Yampa Ranger District of the Medicine Bow-Routt National Forests and Thunder Basin National Grasslands. The FS has prepared a draft environmental assessment (EA) to analyze the impacts and effects of this project.

We propose to expand two existing gravel pits and use three temporary stockpile areas as stockpile sites. The first pit is located approximately two miles west of the Dunckley Pass summit on the north side of National Forest System Road (NFSR) 16, also known as Dunckley Pit #2. This pit is currently approximately five acres in size. This project would reopen the gravel pit, to generate material (gravel and pit run) for use on county roads, forest roads and other forest projects. Any oversized material (boulders) left over from the crushing activities would be utilized in pit development, the rehabilitation and for erosion control (watershed) projects.

The other pit is located at the end of NFSR 969 (0.8 miles) just south of National Forest System Trail (NFST) 1112, where the road forks. This pit is known as the Rough Creek pit, which is currently approximately four acres in size. Material from the Rough Creek Pit would be used mostly as pit run (native material of varying sizes**)** and boulders which are used to stabilize road sub-grade as well as various watershed projects.

Three temporary stockpile sites have been identified for gravel storage. These sites vary in size from one half acre to an acre and a half and have been previously disturbed. These areas are currently used as dispersed camping sites, although one site was used as a gravel source and another as a log decking area sometime in the past.

The access roads into the three temporary stockpile sites are in need of improvement. Proper drainage for these roads would be installed at this time and the roadbeds would be graveled. The sites are free from vegetation and would need very little, if any, clearing prior to use. After these sites are used, enough gravel will be retained (2 to 4 inches) on site to protect the resources from erosion. Except during the time these sites are used as stockpile sites they would be available for current uses.

The proposed action would provide gravel and pit run for maintenance of forest and county roads. Having a close gravel source would reduce maintenance cost and in turn produce a safer road surface on roads in this area. Traffic on NFSR 16 (Dunckley Pass Road) has increased over the last five years and is expected to continue to increase in the future, therefore, maintenance cost are expected to increase as well. The proposed action would also develop rehabilitation plans for both pits and improve some dispersed camping and parking areas.

In addition to the proposed action, the Forest Service also evaluated the following alternative:

1) No action. The pits would not be expanded, the stockpile sites would not be used and no watershed improvements would be implemented.

Based upon the effects of the alternatives, the responsible official would decide if the project would be implemented. If implemented, would the decision include the whole project or parts of this project?

CHAPTER 1 PURPOSE AND NEED FOR ACTION

1.1 Introduction

Document Structure
This Environmental Assessment is in compliance with the National Environmental Policy Act (NEPA) and other relevant federal and state laws and regulations. It discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. The document is organized into four parts:

- *Introduction*: The section includes information on the history of the 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 Forest Service informed the public of the proposal and how the public responded.
- *Comparison of 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. These alternatives were developed based on key issues raised by the public and other agencies. This discussion also includes possible best management practices. Finally, this section provides a summary table of the environmental consequences associated with each alternative.
- *Affected Environment and Environmental Consequences*: This section describes the environmental effects of implementing the proposed action and other alternatives. This analysis is organized by resource area. Within each section, the affected environment is described first, followed by the effects of the No Action Alternative that provides a baseline for evaluation and comparison of the other alternatives that follow.
- *Agencies and Persons Consulted*: This section provides a list of preparers and agencies consulted during the development of the environmental assessment.
- *Appendices*: The appendices 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 Yampa Ranger District Office in Yampa, CO.

1.2 Background

Three gravel pits are located from Dunckley Pass along NFSR 16 to Ripple Creek Pass (see Appendix C). These include Dunckley Pit #1, Dunckley Pit #2, and the Rough Creek Pit. It is unclear as to how long these pits have been used. However, they have been used for years to provide gravel for maintenance of roads in the area. They were also used when the scenic byway and other roads were constructed in the area. The last entry into Dunckley Pit #2 was 1990. Enough material was crushed and stockpiled for general maintenance during the last entry to last until now.

The stockpile sites have been used as dispersed camping areas for years. During wet weather, the surface at these sites becomes soft and therefore ruts and erodes easily. Due to continued use, the access roads and the camp sites have become rutted allowing soil erosion to occur. Erosion concerns exist on all access roads with a small gully forming along the side of the pull through access road.

Recreational and commercial use of the scenic byway and other roads in the project area have been increasing and are expected to continue to increase in the future. This requires the need for increased road maintenance

and repair, increasing operating cost. A close gravel source would provide an economically efficient source of material to improve and maintain road surfaces.

1.3 Purpose & Need for Action

The purpose and need of this action is to provide a high quality economical source of gravel, pit run and boulders for short and long-term use by the Forest Service and Rio Blanco County.

1.3.1 Existing Condition

There are currently 3 gravel pits in the project area: Dunckley Pit #1, Dunckley Pit #2, and the Rough Creek Pit. Dunckley Pit #2 and Rough Creek Pit have not been rehabilitated nor do they have rehabilitation plans. Dunckley Pit #2 currently has a small stockpile of gravel remaining from the last entry. This stockpile will not last long, in response to increasing road maintenance needs. The Rough Creek pit does not have any material available from the last entry.

Evaluation of Dunckley Pit #1 determined that this area no longer contains usable material. The evaluation of Dunckley Pit #2 and Rough Creek Pit determined the presences of usable material for producing gravel, pit run and boulders.

The roads (see transportation report) in the project area (including the scenic byway) have become worn and degraded from increasing use over time. They are subject to wash boarding and dust concentrations, causing concerns for safety and visual quality. In addition, erosion of roads and recreational use areas are contributing to undesirable effects across the watershed. As use increases and road surfaces become degraded maintenance cost continues to increase.

1.3.2 Desired Future Condition

The desired condition includes maintaining high quality and economical gravel, pit run and boulders available for use by the Forest Service and Rio Blanco County on roads and other projects in the general area. More economical material sources would allow for improving road conditions by allowing more funds to be available for road maintenance. It would also make it possible to regravel more roads, thereby reducing future blading costs. These sources would also provide materials for other Forest Service projects such as erosion control, traffic control, and fish structure projects.

To achieve this, we propose to expand two gravel pits, Dunckley Pit #2, Rough Creek Pit and designate three stockpile sites. A boulder stockpile for Forest Service watershed projects would be maintained at the pits. The stockpile sites would be hardened and erosion problems corrected prior to being used. These stockpile sites may be used for gravel storage for future projects.

Both pits would have rehabilitation plans developed and would be rehabilitated once the project is complete. Reseeding and/or hydro mulching may be used to lessen visual impacts, if needed, while pit expansion is proceeding. Reseeding would also be part of the rehabilitation plan.

1.3.3 Objectives

The project objectives include:

1. Provide gravel and pit-run for Forest Service projects and county road projects. Measured in tons. This objective is from the Forest Plan, it is a desired condition for travelway maintenance (pg 2-34).

2. Reduce erosion and watershed impacts in stockpile sites, access roads and NFSR roads. Measured in tons of sediment. The Forest Plan water and aquatic standards drive this objective (pg. 1-6 to 1-7).
3. Rehabilitate both pits. Measured in tons of sediment. From the water and aquatic standards in the Forest Plan (pg. 1-6 to 1-7).
4. Reduce maintenance cost. Measured in cost per mile for maintenance.

1.3.4 Land and Resource Management Plan

The revised1997 Revised Routt National Forest Land and Resource Management plan (Forest Plan) provides travel management direction for the Dunckley Gravel Pit Project area.

This action responds to the goals and objectives outlined in the Forest Plan, and helps move the project area towards desired conditions described in that plan.

The project area includes the following Management Areas (MA) from the Forest Plan:

1.32 Backcountry recreation nonmotorized with winter limited motorized: Areas are managed to provide backcountry recreation opportunities in a landscape with a natural appearance.
Desired condition: Some primitive roads may exist in this area although they would be closed to summer motorized recreation. The transportation guidelines permit motorized vehicles on a limited, case-by-case basis to facilitate management activities.

The Rough Creek Pit, NFSR's 967 and 969 are in this management area. Both the NFSR's 967 and 969 are listed as open to motorized travel under the Final Environmental Assessment for Travel Management on the Parks and Yampa Ranger Districts (Travel Management Plan, signed October 10, 1997). The pit, two trailheads (Transfer and Cyclone) and the two roads are pre-existing uses (before the revised Forest Plan, February 1998). The roads would be hardened and erosion problems corrected, there would be no construction of roads or facilities.

4.2 Scenery: Areas are managed for scenic values and recreation uses of designated scenic byways and other heavily used scenic travel corridors. The Dunckley Pit #2 and two of the stockpile sites (one along NFSR 16 and NFSR 967) are in this MA. All three are screened from the Flattop Scenic Byway.
Desired condition: The landscape would provide high quality scenery, while allowing multiple use management such as timber harvest, wildlife management, recreation activities, mineral extraction and grazing to occur. Travelways would be clearly marked and maintained to facilitate large numbers of visitors. The transportation guideline is to design proposed roads and trails to blend with the landscape.

5.11 General Forest and Rangelands-Forest Vegetation Emphasis: Areas are managed to provide wildlife habitat along with forest products, livestock, forage and recreation. There is one temporary stockpile site (NFSR 949.1a) in this MA.
Setting: Uses include wildlife habitat, grazing, wood production, mineral exploration and development…"
Desired condition: Temporary openings would be created to provide for a wide range of habitat structural stages as well, as the production of wood fiber. Roads would range from primitive to those with maintained, gravel surfaces.

Roadless Areas
The Bunker Basin Roadless area includes NFSR 697 and the Transfer Trailhead. The stockpile site boarders the roadless area. This road and trailhead existed prior to the area becoming roadless. NFSR 697 is listed as an open motorized road in the Travel Management Plan.

1.4 Proposed Action

The proposed action would expand the two existing gravel pits (Dunckley Pit #2 and the Rough Creek Pit) and provide three temporary gravel stockpile sites. The two pits would be expanded back into the hillsides with large equipment. A rock crusher would be used within the already disturbed area to crush material to produce gravel, pit run and boulders.

The Dunckley Pit #2 expansion would increase the pit size by as much as 1 acre. The total maximum size would not exceed 6 acres, including the current acreage. The Dunckley Gravel Pit is located just off NFSR16; the legal is T3N, R87W, Section 19.

The Rough Creek Pit expansion would increase the pit size 2 acres. The total maximum pit size would not exceed 6 acres, including the current acreage. The legal for Rough Creek Pit is T2N, R88W, Section 10.

The stockpile sites would be used temporarily (2-4 years), while resurfacing roads in the area. One stockpile site is on NFSR 949.1A, one on a pull though off the NFSR16 (T3N, R87W, Section 36), and the third on NFSR 967. Access roads and the stockpile sites would also be graveled/graded. There are 2-3 miles of access road. The stockpile sites would encompass 1 ½ to 4 ½ acres. It is also proposed to correct any erosion concerns associated with the stockpile sites. Some material would be also be stockpiled in the pits.

A gravel pit development and rehabilitation plan would be developed which would include specifications for extraction and rehabilitation for each pit. The Forest Service plans to begin implementation of this action in the summer of 2004.

1.5 Decision Framework

Given the purpose and need, the deciding official reviews the proposed action and the other alternatives in order to make the following decisions:

Does this environmental assessment meet the requirements of the National Environmental Policy Act (NEPA), the Revised Land and Resource Management Plan for the Routt National Forest, Forest Service direction and other Federal laws.

1.6 Public Involvement

Public scoping included listing the proposal in the Schedule of Proposed Actions starting in April of 2002. The public scoping letter was sent to 25 interested and concerned individuals, organizations and affected stakeholders, on February 25, 2003. The Yampa Ranger District received 2 written responses. The scoping letter is in the correspondence database.

Using the comments from the public, specialists and other agencies, the interdisciplinary team developed a list of issues to address (see issues below).

1.7 Issues

The ID team separated the issues into key and non-key issues. Key issues were defined as those directly or indirectly caused by implementing the proposed action.

The key issues identified include:
1. The Dunckley Pass Pit can currently be seen by driving north on NFSR16 in one area of the scenic byway (5-6 miles away), for approximately one mile.
Indicator: Miles.
2. Temporary dislocation of recreationists from the three dispersed camp areas, where we would stockpile gravel. Indicator: Number of camps.
3. Possible Forest Plan amendment, because the gravel pit, roads and trailheads are not consistent with backcountry recreation management objectives (MA 1.32). Indicator: Standards and guidelines.
4. Erosion in the pull though stockpile site. Indicator: sediment.
5. Possible Lynx and Sandhill Crane habitat impact. Indicator: Disturbance
6. What is envisioned for the pits? Rehabilitation plans are required. Indicator: Rehabilitation plans.
7. Operation during hunting season (the 3rd week in October to the middle of November. Indicator: Timing.
8. Scenic quality along the Flat Tops Scenic Byway may be reduced by enlarging pits. Indicator: Visitor complaints.

Non-key issues were 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. The Council for Environmental Quality (CEQ) and NEPA regulations require this delineation in Sec. 1501.7, "…identify and eliminate from detailed study the issues which are non key or which have been covered by prior environmental review (Sec. 1506.3)…"
A list of non-key issues and reasons regarding their categorization as non-key may be found in Appendix B, Public Comment and Response.

Project permits. A storm water discharge permit would need to be obtained by the Forest Service for the project area. Removal of material would require a special use permit from the Forest Service issued to the county/contractor.

CHAPTER 2 COMPARISON OF ALTERNATIVES, INCLUDING THE PROPOSED ACTION

This chapter describes and compares the alternatives considered for the Dunckley Gravel Pit project. It includes a description and maps of the action alternative considered. This section also presents the alternatives in comparative form, sharply defining the differences between each alternative and providing a clear basis for choice among options by the decision maker and the public. Some of the information used to compare the alternatives is based upon the design of the alternative (i.e., helicopter logging versus the use of skid trails) and some of the information is based upon the environmental, social and economic effects of implementing each alternative (i.e., the amount of erosion or cost of helicopter logging versus skidding). Below is a reasonable range of alternatives developed by the interdisciplinary team. The 2 alternatives were kept because they are feasible, meet the purpose and need, follow regulation and laws, and protect the resources.

2.1 Alternative 1-No Action

Alternative one is required by NEPA, but does not meet the purpose and need. Under the No Action alternative, current management plans would continue to guide management of the project area. Once the current stockpile is depleted there would be no gravel or pit run available for local projects. This material would have to come from outside sources, which would raise the cost of future projects significantly. No stockpile sites would be used or hardened. Boulders, a byproduct of this project, would not be available for future projects.

There would be no displacement of users. Erosion problems in dispersed camping sites (not designated as developed campgrounds) and access roads would not be corrected.

Without reentry into existing pits, rehabilitation would be unlikely due to increasing operational costs.

2.2 Alternative 2-Proposed Action.

The proposed action would expand the existing Dunckley Pit #2 and the Rough Creek Pit and would provide three temporary gravel stockpile sites. The two pits would be expanded back into the hillsides with large equipment. A rock crusher would be used within the already disturbed area to crush material to produce gravel, pit run and boulders.

The Dunckley Pit #2 expansion would increase the pit size up to 1 acre. The total maximum size would be 6 acres, including the current acreage. The Dunckley Pit #2 is located just off NFSR16; the legal is T3N, R87W, Section 19.

The Rough Creek Pit expansion would increase the pit size 2 acres. The total maximum pit size would be 6 acres, including the current acreage. The legal for Rough Creek Pit is T2N, R88W, Section 10.

The stockpile sites would be used temporarily (2-4 years), while roads are being resurfaced in the area. One stockpile site is on NFSR 949.1A, one on a pull though off the NFSR16 (T3N, R87W, Section 36), and the third on NFSR 967. Access roads and the stockpile sites would also be graveled/graded. There are 2-3 miles of access road. The stockpile sites would encompass 1 ½ to 4 ½ acres. Also it is planned to correct erosion problems associated on access roads and/or stockpile sites. Minimal tree removal would be required.

A gravel pit development and rehabilitation plan would be developed which would include specifications for extraction and rehabilitation for each pit. The Forest Service plans to implement this action in the summer of 2004.

2.3 Alternatives considered, but not studied in detail

The following alternatives were identified during scoping. They were not considered in further detail.

1. One alternative would exclude the Rough Creek Pit. Only Dunckley Pit #2 would be used. All the same stockpile sites would be used. This alternative would eliminate a large amount of the pit run and boulder source for projects. The alternative was dropped, because it did not meet the purpose and need. The purpose and need included the need for pit run for road improvements and other projects, which would not be as available in the Dunckley Pit #2.

2. The other alternative was to complete a Forest Plan amendment. It would change MA 1.32 to MA 4.2 along NFSR's 967 and 969, as well as the Rough Creek Pit. This alternative was dropped because the proposed action is not in violation of any Forest Plan standards. Under the Travel Management Plan, the NFSR 967 and 969 in MA 1.32 were shown as roads to be kept open.

2.4 Mitigations and Best Management Practices for the Proposed Action

In response to public comments on the proposed action, best management practices were developed to ease some of the potential impacts it may cause. These practices may be applied:

2.4.1. Mitigations

Aquatics:

- If amphibian breeding sites are found and it is determined that the gravel pit operations and associated activities would negatively affect the site, then operations would cease in that area until mitigations could be implemented.

Heritage:

- Persons associated with operations under this organization must be informed of the need to protect cultural, and paleontological resources. If they are encountered, the proponent shall immediately suspend all activities and notify the Medicine Bow-Routt National Forest authorized officer of the findings. The discovery must be protected until notified in writing to proceed by the authorized officer (36 CFR800.110 and 112, 43 CFR 10.4).
- Any new ground disturbing actions not covered in cultural surveys completed for the project would need to be surveyed prior to implementation.

Wildlife

The summary of mitigations below was developed from the Biological Evaluation and Biological Assessment as well as in the Wildlife Specialist Report.

- The Poose Creek riparian area below the Rough Creek pit will be surveyed for nesting Sandhill cranes prior to excavation and grinding of the gravel. If Sandhill cranes are found to be nesting in Poose Creek, excavation and grinding will be delayed until July 1.
- If a goshawk is found to be nesting in close proximity to the gravel pits or haul sites, excavation, grinding, hauling, and/or dumping of gravel will be delayed until August 15 to minimize disturbance to nesting and foraging individuals.
- If at any time the actions of extracting, grinding, hauling, and/or dumping of gravel are deemed as a disturbance to denning lynx, these actions will be delayed until August 1.

2.4.2 Best Management Practices

Hydrology:

- Require a storm water discharge permit.
- Prior to implementation of the project, a pit rehabilitation plan would be developed which includes the desired outcome, time frames for completion, appropriate rehabilitation techniques, and funding to complete the rehabilitation (See Appendix A).

Recreation:

- There would be safety signing for the public on the Scenic Byway.

- We would avoid any use of Dunckley Scenic Overlook and interpretive pullout.

Visual Resources:

- Retain and maintain the vegetative screening adjacent to gravel pit and stockpile sites, from Forest Highway 16 corridor to minimize the visual impact.
- Rehabilitate gravel pits by shaping cut and fill slopes, embankments and other areas and revegetate disturbed soils with native seed mixture to blend and complement the surrounding landscape as shown in the rehabilitation plan.

Wildlife:

- Operations could be limited or shut down during major hunting seasons from the 3rd week in October to the middle of November.

2.5 Comparison of Alternatives

This section provides a summary of the effects of implementing each alternative. Information in the table is focused on activities and effects where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives.

2.5.1 Key issue comparison of Alternatives chart

ISSUES	ALTERNATIVE 1	ALTERNATIVE 2
1. Dunckley Pit #2 can be seen at one point of the scenic byway	The pit may be seen from 5-6 miles away for approximately 1 mile along NFSR 16.	The pit may be seen from 5-6 miles away for approximately 1 mile along NFSR 16. Visibility should be less obtrusive after the pit is rehabilitated.
2.Displacement of dispersed campers.	No displacement	Temporary displacement would occur. Improvement of the dispersed campsites and access roads would result.
3. Rough Creek Pit in MA 1.32	The Rough Creek Pit existed prior to the revised management classification. Standards and guidelines in MA 1.32 do not exclude pits.	The Rough Creek Pit existed prior to the revised management classification. Standards and guidelines in MA 1.32 do not exclude pits.
4.Unstable geology (erosion) at the one stockpile site.	The erosion problem would not be repaired.	The erosion problem would be corrected.
5. Possible Lynx or Sandhill Crane habitat	No effect	May affect Lynx winter forage (See BABE). Avoidance is added for Sandhill Crane nesting, if present.
6. Avoid Big Game hunting season	Avoidance	Any operations would be highly unlikely to occur by the 3rd week in October due to the weather. Crushing for projects is planned early in the operating season (summer).
7. What is envisioned for the pits	No rehabilitation	Rehabilitation plans for both pits would be developed and implemented.
8. Scenic quality would be decrease by enlarging	No rehabilitation. Scenic quality would	Best management practices and rehabilitation plans would lessen the impact to scenic quality of the pit in the long

the pit.	stay the same.	term. Possible negative short term effects can also be lessened.

2.5.2 Relevant Resource comparison Chart

RESOURCE	ALTERNATIVE 1	ALTERNATIVE 2
Engineering	Material would have to be brought in at an increased cost.	A more economical material would be available for roads, projects, etc.
Hydrology/Soils	Erosion from the roads, dispersed sites and the pull through site would continue.	Erosion from roads, dispersed sites and the pull through site would be corrected.
Recreation	Degrading of disperse camp sites would continue. No displacement of users.	Improvement of dispersed sites and access roads. Users would be temporarily displaced.
Transportation	Roads would continue to degrade.	Roads would be safer with reduced maintenance costs.
Visual	Visuals would not change.	Visuals maybe impacted in the short term. Long term Visuals would improve.
Wildlife-TES-Canada Lynx	Existing habitat would remain the same.	Convert Lynx acres of "Winter Forage" and "Other" to "Unsuitable".
Wildlife-TES-Cockerell's Striate Disc Snail	Erosion from the pits and stockpile sites would continue to erode sediment into area creeks. This would decrease habitat for the snail.	Hardening of the stockpile sites and reclaiming the pits would reduce erosion and sediment into area creeks in the long term.
Wildlife-Big game	Existing habitat would remain the same.	May displace individuals, but would not cause population declines.
Wildlife-Sandhill Crane	Existing habitat would remain the same.	If cranes are nesting below the Rough Creek Pit, operations would be delayed.

CHAPTER 3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Introduction

This section summarizes the physical, biological, social and economic environments of the affected project area and the potential changes to those environments due to implementation of the alternatives. It also presents the scientific and analytical basis for the comparison of alternatives presented in the chart above.

3.1.1 Impacts to the environment

Impacts are composed of three parts: direct, indirect and cumulative effects. Direct effects are caused by the action and occur at the same place and time. Indirect effects are caused by the action and occur later in time or

further removed in distance. Cumulative effects are a result from the incremental impact of the action when added to other past, present and possible future actions.

3.1.2 Cumulative effects

Included in the cumulative effects analysis are the effects of future activities identified within the cumulative effects areas for each resource. The cumulative effects area varies depending on the resource and issue. Therefore the future activities included in each cumulative effects analysis would also vary.

The following table is a summary of cumulative effects for the analysis area. Part or all of these activities would be used by the specialist in their cumulative effects report, depending on which activity (ies) affects their resource.

CUMULATIVE EFFECTS CHART
Date for present action is summer 2004

PAST ACTIONS	PRESENT ACTIONS	FUTURE ACTIONS
Dispersed recreation camps, 2 northern sites and NFSR 967.	Dispersed recreation-camps, 2 northern sites and NFSR 967	Dispersed recreation-camps, 2 northern sites and NFSR 967
Outfitters	Outfitters	Outfitters
Livestock grazing	Livestock grazing	Livestock grazing
Weed spraying-NFSR16	Weed spraying-NFSR 16	Weed spraying-NFSR16
Scenic Byway-NFSR 16	Scenic Byway-NFSR 16	Scenic Byway-NFSR 16
Gravel pits	Gravel pits	
NFSR 968 landing Transfer/Cyclone Timber Sale completed 2000. North side of the NFSR16		Federal Highway minor road reconstruction NFSR16 and resurfacing

3.2 Aquatics

3.2.1 Affected Environment

Introduction

The Dunckley Gravel Pit Project Area encompasses portions of the Bunker Creek, Oak Creek and Poose/Rough Creek sixth level planning watersheds. Named streams in the project area include East Fork Williams Fork River, Poose Creek, Bunker Creek and Oak Creek. All streams are tributaries to the Yampa River, which flows into the Colorado River.

Species Presence

All fish species present in the project area or that may be affected by the proposed project are listed in Table 1. Information used to create Table 1 is based on information contained in the Colorado Division of Wildlife database for streams on the Routt National Forest and the Colorado Natural Heritage Program database.

Table 1 lists all the aquatic sensitive species that USDA Forest Service Region 2 has identified to be on the Routt National Forest (USDA 2003). Table 1 also includes all the federally listed aquatic species that may be

affected by the proposed action (USFWS Letter dated February 6, 2004). The following list of aquatic species was reviewed and all species were considered in the effects of the proposed actions.

Table 1. Fish Species that may be affected or are present in the project area.

Fish Species	Scientific Name	Native or Non-native	State Status	Federal Status
Bonytail	*Gila elegans*	Native	Endangered	Endangered
Razorback Sucker	*Xyrauchen texanus*	Native	Endangered	Endangered
Colorado Pikeminnow	*Ptychocheilus lucius*	Native	Threatened	Endangered
Humpback Chub	*Gila cypha*	Native	Threatened	Endangered
Colorado River Cutthroat Trout	*Oncorhynchus clarki pleuriticus*	Native	Species of Special Concern	R2 Sensitive Species
Brook Trout	*Salvelinus fontinalis*	Non-native	None	None

The four federally endangered fish species, Colorado pikeminnow (formerly squawfish), razorback sucker, humpback chub and the bonytail are present in the Colorado River basin. The U.S. Fish and Wildlife Service believe that the major causes for the decline of these species include the effect of impoundments and water depletions from the Colorado River and its tributaries. No water depletions are proposed for the Dunckley Gravel Pit Project Area. There are no threatened or endangered aquatic or riparian (wetland)-dependent species or habitats documented within the project area. Therefore, the project would have no effect on the four endangered fishes.

Management Indicator Species

The Routt National Forest has selected the Colorado River cutthroat trout and the wood frog (*Rana sylvatica*) as a Management Indicator Species (MIS). Indicator species are selected based on relevancy to the project and those with habitat most likely to be changed by Forest management activities. The wood frog would not be an appropriate MIS for this project because in Colorado it is only known to occur in North Park along the slopes of the Park, Rabbit Ears and Medicine Bow ranges in Jackson County (Puttmann and Kehmeier 1994). Disjunctive (separated) populations also occur in the upper Laramie River drainage in Larimer County and along the eastern slope of the Never-Summer Range in Grand County. An additional population occurs in Fox Park, Albany County, Wyoming (Haynes and Aird 1981).

The Colorado River cutthroat trout is native to tributaries in the Upper Colorado River basin. Colorado River cutthroat trout evolved in isolation from rainbow and other trout. For this reason, the subspecies is vulnerable to hybridization (interbreeding) with rainbow trout and to replacement by brook trout and brown trout (Behnke 1992).

The Colorado River cutthroat trout is classified as a sensitive species by Regions 2 and 4 of the USDA Forest Service and is designated as a Species of Special Concern in Colorado. This species has recently been petitioned for listing under the Endangered Species Act. It is important to note that the streams in the project area probably were once historical habitat for the Colorado River cutthroat trout.

The streams in the project area are in the Yampa River Geographic Management Unit (GMU) as defined in the Conservation Agreement and Strategy for Colorado River Cutthroat Trout (*Oncorhynchus clarki pleuriticus*) in the States of Colorado, Utah and Wyoming, April 2001 (CRCT Task Force 2001). The Conservation Strategy includes three primary activities: 1) Protect existing and restored ecosystems, 2) Restore degraded ecosystems and 3) Coordinate and plan. Streams in the project area were not identified as having conservation populations but have been identified as having CRCT populations with genetic a purity rating of B- or less or unknown. Streams identified as having CRCT populations are Poose Creek, Trout Creek and East Fork Williams Fork. Therefore, streams in the project area meet the goals outlined in the Conservation Strategy, which are:

- To assure the long-term prosperity of Colorado River cutthroat trout throughout their historic range by establishing two self-sustaining meta-populations in each GMU.
- To maintain areas which currently support abundant Colorado River cutthroat trout and manage other areas for increased abundance,
- To maintain the genetic diversity of the species and to increase the distribution of Colorado River cutthroat trout where ecologically and economically feasible.

In summary, the Routt National Forest Plan (USDA 1998) selected the Colorado River cutthroat trout (CRCT) as one of the Management Indicator Species for aquatic environments. Streams in the project area contain CRCT, all streams in the project area are considered historical habitat and meet the goals of the Conservation Agreement.

Amphibians-Existing Condition

Rough Creek Pit: Down the hill from the pit is a large beaver complex in a tributary of Poose Creek. There is no evidence that the existing pit is affecting the function or adding sediment to the complex. Within the existing pit there is a wet area that supports wet vegetation types such as willows. This is probably a result of an impermeable layer preventing surface water to seep through the soil. The area is small and would not be considered to have the characteristics of a wetland and would also not be considered amphibian habitat.

Dunckley Pit #2: It's located in headwater tributaries to Bunker Creek. This is an upland site surrounded by aspen. There is an ephemeral (water is on the surface in parts of the area) draw just east of the existing pit and there is no evidence that the pit is adversely affecting this draw.

NFSR 967 Stockpile Site: This area is a dry meadow upland site on the road that accesses NFST 1172 in the Poose Creek watershed. No water sources are close by.

NFSR 949.1A Stockpile Site: This site is immediately adjacent to the road in the Oak Creek watershed. This is a dry upland site. Oak Creek is about 500 feet away from the proposed site, which is ample distance from any proposed disturbance.

Pull Through Stockpile Site: This site lies just off the Dunckley Pass Road in the Oak Creek watershed.

Amphibian breeding habitat mainly consists of standing water, such as ponds, that are shallow along the shoreline, usually no more than 12 inches. The shoreline also needs a sunny exposure.

After the breeding season, amphibians are largely a terrestrial species. Adults and juveniles can be found near permanent water including the margins of ponds, lakes and streams and in marshes. They can also be found in moist areas in montane (high plateau or mountain) coniferous forests. By early September all amphibian

species have metamorphosed and are moving towards over wintering habitat. Amphibians hibernate in small mammal burrows, beaver lodges and dams, under trees and leaf liter and even slash piles (Leoffler 2001).

Amphibian surveys have been done throughout the project area and the surrounding area since 1998. Tiger salamanders and chorus frogs were found in several places in the project area. No toads were found in the project area. Historical sighting information for the project area and surrounding area, found in the Colorado Natural Heritage Database, stated that no amphibians have been sighted in the project area or surrounding area. The project area has potential habitat for two out of the three sensitive amphibian species listed in Region 2 (Table 2).

Table 2. Regional Amphibian Sensitive Species List

Species	Scientific name	State Status	Federal Status
Boreal Toad	*Bufo boreas boreas*	State Endangered	Candidate
Northern Leopard Frog	*Rana pipiens*	Species of Concern	R2 Sensitive Species
Wood Frog*	*Rana sylvatica*	Species of Concern	R2 Sensitive Species

*See discussion under Management Indicator Species. No known wood frog populations exist in the project area.

3.2.2 Environmental Consequences

Fish and aquatic habitat can be affected by a variety of management activities and practices, including road construction, timber harvesting, livestock grazing, fire management, recreation management, water depletions and diversions, and mineral management.

Many studies have shown that fine sediment (particle size less than 6 mm) can be detrimental to fish egg survival and fish production (Bjornn et al 1977; Chapman and McLeod 1987; Lisle 1989). When sediment is added to aquatic systems because of watershed disturbance and erosion, the result can be an elimination of aquatic insect habitat, a reduction in the permeability of spawning gravels, and the degradation of pools, over wintering areas and rearing areas (Marcus et al 1990). Roads are considered the greatest potential sediment source over both the short-term and long-term (Furniss et al. 1991).

Effects to Amphibians

Roads can cause the direct loss of amphibians from impacts with vehicles using the road. Roads often create barriers to water flow and root propagation, which can indirectly result in alterations to adjacent plant communities with the potential of indirectly affecting amphibian habitat (Loeffler 2001). Another indirect effect of roads comes from fragmentation of amphibian populations, which ultimately results in loss of the population given a prolonged period of isolation.

Cumulative Effects and Foreseeable Actions

Management activities contributing to cumulative effects in the area include livestock grazing, recreation, timber harvesting, gravel pit and road construction. These activities have the potential to increase stream sedimentation. Water yield increases associated with past timber harvest are declining with regeneration. Grazing would not contribute to additional adverse cumulative effects as long as riparian areas are maintained in proper functioning condition or on an upward trend towards proper functioning condition.

Foreseeable future actions include minor reconstruction and resurfacing of NFSR 16, dust and traffic from NFSR 16 resurfacing and dust and traffic from hauling gravel for other projects. Typically reconstruction and

resurfacing is a benefit to aquatic resources because those activities usually fix prior problems and reduce sedimentation. It is anticipated that these projects would not add to cumulative effects.

Alternative 1- No Action
Direct and indirect effects
There would be no change from the existing condition under this alternative. Road problems would not be improved and the gully next to the pull through stockpile site would continue to erode. Fish habitat and fish populations would not be affected by this alternative. Amphibian habitat and populations would also not be affected by this alternative.

Cumulative effects
There would be no additional adverse cumulative effects from past, present and reasonably foreseeable actions other what has been discussed above under this alternative. There would be no irreversible or irretrievable commitment of resources. This alternative is consistent with Forest Plan direction for the aquatic resources.

Alternative 2- Proposed Action
Direct and indirect effects
No sediment is expected to reach stream channels from the development of the pits, hauling of the gravel or stockpiling of the gravel. The beaver dam complex downstream of the Rough Creek Pit would not be impacted by sedimentation because of implementation of BMP's. Also, both existing pit locations lie on dry upland sites that are not connected to the stream system. The stockpile sites have already been disturbed by past management actions. Roads used to access the stockpile sites would be improved thus, reducing these erosion sources. Implementation of site specific Best Management Practices (BMP's) would ensure that water quality would not be affected. Fish habitat or fish populations would not be affected by this alternative.

Although gravel pit development is not considered a factor in the decline of amphibian species, crushing of juveniles and adults may occur. Negative impacts from the above activities would most likely occur in the spring when amphibians are migrating from over wintering habitat to breeding habitat and after the breeding season when they are dispersing. This period is usually from middle of May through the first part of September. The area around the Rough Creek Pit has the highest potential of affecting amphibian habitat and their populations.

Cumulative effects
There would be no additional adverse cumulative effects from past, present and reasonably foreseeable actions other what has been discussed above under this alternative. There would be no expected changes in the hydrologic regime. This alternative is consistent with Forest Plan direction for the aquatic resources.

3.3 Engineering

3.3.1 Affected Environment

Reopening of two existing gravel pits and using three temporary stockpile sites are being considered in this analysis. The first pit is located approximately two miles west of the Dunckley Pass summit, on the north side of the road also known as the Dunckley Pit #2. This pit is approximately five acres. The road into the pit is single lane for 380 feet and surfaced, with a portion of the road at 13% grade. The existing pit floor is approximately 300' by 160'. This area is graveled and has adequate drainage. An existing stockpile is on the north side of the access road, just as you approach the pit. Approximately 2,000 cubic yards of gravel is

leftover from the last entry, which was in 1990. At that time 7,000 cubic yards of gravel was processed for resurfacing of forests roads.

The other pit is located at the end of NFSR 969 (0.8 miles) just south of NFST 1112, where the road forks. This pit is known as the Rough Creek Pit, which is approximately four acres. The road into the pit is a maintenance level 2, which is assigned to roads managed 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 other specialized uses. Appropriate traffic management strategies are to (1) discourage passenger cars and (2) accept high clearance vehicles. This road is 0.80 miles long, single lane, native surface, which needs some minor drainage relief work.

The flat area of the pit is approximately 160' x 200'. This pit has been used for a pit run source in the past, which was used on NFSR 16. An approximate 80' x 50' wet area exists that is a result of snowmelt and runoff. This area seems to stay damp all summer. The drainage within the pit is not adequate.

Three temporary stockpile sites have been identified for gravel storage. These sites vary in size from one half acre to an acre and a half. Access roads NFSR 949.1A, (1.0 mile), 967(0.70 miles) are maintenance level 2 roads. And the last storage site is a 700' drive through that is halfway between NFSR 949 and 959 on the east side of NFSR 16, which is buffered by trees. All of the access roads are single lane and native surfaced. The access roads into these sites were used for oil exploration, trail access and timber harvest.

3.3.2 Environmental Consequences

The two gravel pits are in areas that have been used as gravel sources in the past and would encompass approximately six acres per pit. The pits may require some clearing of vegetation and grading to improve the drainage.

A gravel pit development and rehabilitation plan would be included in the development contracts for the pits. The pits will be reseeded.

Alternative 1 - No Action

Direct and indirect effects

If no action is taken, then the gravel pits would not be reopened and another gravel, pit run and boulder source would have to be identified for forest projects. Other options for gravel sources are; private, county or another location on the forest. This could increase the costs of future projects, because of various reasons such as; miles hauled, startup of a new pit, royalties, and availability.

If the three stockpile sites are not utilized, then the access roads and the parking area for NFST 1172 continue to be a source of sedimentation.

Alternative 2 – Proposed Action

Direct and indirect effects

This alternative would expand and reopen the existing Dunckley Pit #2 and Rough Creek Pit and utilize three temporary areas for gravel storage.

The Dunckley Pit #2 access road grade would be improved and the pit floor graded to improve drainage and facilitate crushing equipment. Reopening this gravel crushing operation would generate material for future road projects on the forest. Any oversized material left over from the crushing activities would be utilized in the pit development, rehabilitation plan and erosion projects.

The drainage on the road into the Rough Creek Pit would be improved, which would upgrade the access into NFST 1112. The material from the pit would be used as pit run, which is used to stabilize road sub-grade and various other uses.

The access roads into the three temporary stockpile sites would be graded or reconstructed with adequate drainage relief. The sites are free from vegetation and would need very little, if any, clearing to facilitate the stockpiles. After these sites are utilized the sites would have some residual gravel still in place, which would be adequate for parking or dispersed camping.

Cumulative effects

The proposed action would reopen and expand two existing gravel pits. The Dunckley Pit #2 would be expanded approximately one acre in size and the Rough Creek Pit would be expanded by approximately two acres.

Three stockpile sites would be used temporally to store gravel, so that the haul time is reduced to projects within the area.

Improved access into the gravel pit areas and temporary stockpile sites would result in a benefit to the public, for varies recreation activities. Improving the drainage on the stockpile access roads, gravel pits and stockpile sites would be a benefit to the local resources.

3.4 Heritage

In 2001 cultural survey crews completed an intensive pedestrian cultural resource survey that covered two proposed gravel pit enlargement and three sites for storage of gravel. No direct effects are expected since no cultural resources were identified and the discovery stipulation protects unidentified buried deposits. Indirect effects, such as collecting or vandalism, may be mitigated by the education stipulation. No cumulative effects are expected. According to the 2001 revised regulations (36 Code of Federal Regulations [CFR] 800.4(d)(1) for section 106 of the National Historic Preservation Act (16 Untied States Code [U.S.C.] 470f), the determination for the proposed action is no historic properties affected.

3.5 Hydrology/Soils

3.5.1 Affected Environment

The Dunckley Pit #2 analysis area includes portions of the Poose/Rough Creek, Bunker Creek, and Oak Creek sixth level watersheds. The Poose/Rough Creek, and Bunker Creek watersheds are all tributary to the Williams Fork River, which is a tributary to the Yampa River west of Craig Colorado. Oak Creek is a tributary to the Yampa River upstream of Steamboat Springs Colorado.

State water quality classified uses for surface water in the analysis area include aquatic life cold 1, recreation 1, water supply, and agriculture. These designations require that streams and water bodies be: (1) capable of sustaining a wide range of coldwater biota including sensitive species, (2) suitable for recreation on or about water bodies where ingestion of small quantities of water is probable, (3) suitable for drinking following standard treatment procedures, and (4) suitable for irrigation and livestock consumption.

Minimum state water quality standards have been established by the Colorado Department of Health in accordance with these designated beneficial uses. None of the streams in the analysis area are listed as impaired on the Colorado 303(d) List (CDH, 2002).

Geology in the analysis area consists of basaltic caps in the headwaters or ridgetops overlaying interlayered shales and sandstones with some siltstones and claystones. Soils that would be directly affected by the proposed project are derived from this bedrock geology and classified as very deep and well drained with permeability varying from slow to rapid depending on the primary soil component (Routt Soil Survey).

Past management activities have been minimal in the analysis area and consist primarily of livestock grazing (sheep), dispersed recreation including outfitter and guide permits, non-motorized trails, minor timber harvest, and gravel pit development. The Routt Roads Analysis indicated most of the affected watersheds have low road densities except for the Oak Creek watershed, which had a high road density. The Dunckley Pass road provides the primary access to the analysis area.

The following section identifies the site-specific characteristics of each gravel pit and stockpile site. This information provides the foundation for evaluating the effects of the proposed action on the soil and water resources.

Rough Creek pit (NFSR 969): This pit lies in the Poose/Rough Creek sixth level watershed. Bedrock lithology consists of interbedded shales and sandstones. Soils are classified as very deep and well-drained, forming from colluvium. Erosion hazard is rated moderate, with high potential for soil compaction. Revegetation potential is high. This pit is mapped as lying on a slope failure complex of landslide slope debris that can have varying degrees of stability and the potential for mass wasting if disturbed.

The Rough Creek Pit is an existing pit that would be expanded under the Proposed Action. Field reconnaissance found an older pit that has been rehabilitated uphill of the existing pit. Revegetation of the older pit has been successful in minimizing surface erosion, and there is no evidence of mass wasting resulting from either the rehabilitated pit or the existing pit. This indicates that although the pit area lies on an old slope failure complex, it is currently stable and additional mass wasting would not be expected.

Prior excavation of the existing pit caused development of a depressional area with an underlying impermeable layer that has resulted in a wet depressional area that retains surface water runoff. This results in wetter vegetation types including willow relative to the surrounding area. This area is small in extent and does not have the soil and vegetation characteristics of a wetland, and therefore would not meet the US Army Corp definition of a wetland.

There are no indications of a shallow water table uphill of the existing pit, so additional excavation at the same or higher elevation is not expected to intercept the groundwater table. However, if this were to occur, the result would likely be development of a riparian area or possibly wetland, depending on the characteristics of the groundwater table and final shaping of the pit during rehabilitation to possibly enhance the hydrology to support wetland soils and vegetation. There are no existing wetlands that would be affected by the proposed action.

A small intermittent drainage lies to the northwest of the existing pit. Any activity in this area should be focused away from this drainage with no ground disturbance northwest of the existing pit.

NFSR 967 stockpile site: This site lies in an open meadow dry upland site in the Rough/Poose Creek sixth level watershed. The geology consists of mancos shale that includes some interbedded sandstones from which the

soils are derived. Soils are very deep and well drained. Erosion hazard and revegetation potential are both rated moderate, with low soil compaction potential.

The stockpile site is located away from any water sources or riparian/wetland areas. The road accessing the stockpile site that then continues on to the Trailhead for NFST 1172 is native surface material with inadequate drainage. There are opportunities to reduce the surface erosion and improve the road surface that becomes severely rutted and almost impassable when wet.

Dunckley Pit #2: This pit lies in an upland forested site in the Bunker Creek sixth level watershed. The geology is mapped as the browns park formation that consists of siltstone, claystone, and conglomerate. Soils are formed in alluvium (deposits left by flowing water) and colluvium (deposit of rock fragments and soil material at the base of a slope) consisting primarily of basaltic materials. Erosion and soil compaction potential are both rated as high due to other inclusions in the soil map unit, but the basaltic inclusions that dominate the pit site would be rated low. Revegetation potential is rated high which is consistent with the aspen cover type and productive understory.

Similar to the Rough Creek pit, this pit lies on an old slope failure complex. However, past excavation of the pit did not result in additional mass wasting, probably due largely to the high percent of basaltic rock in the pit location.

There is a small ephemeral draw that lies to the east of the existing pit. In order to minimize effects to the ephemeral draw there should be no ground disturbing activities east of the existing pit. Other than this draw, there are no riparian areas, wetlands, or water sources that would potentially be affected by the proposed action.

Pull through stockpile site: This site lies on an existing pull through road adjacent to the Dunckley Pass road in the Oak Creek sixth level watershed. The geology consists of mancos shale, with soils formed in alluvium and colluvium derived from shales, sandstones, and basaltic materials. Erosion hazard, soil compaction potential, and revegetation potential are all rated high.

This site lies at the base of an old timber harvest unit. There is a small gully that originates from an old road uphill of the stockpile site and runs immediately adjacent to the stockpile site. There would be an opportunity to prevent further downcutting of this gully by placing check-dams within the gully to trap sediment and start the process of stabilizing and filling in the gully.

NFSR 949.1A stockpile site: This site lies on a dry upland site adjacent to NFSR 949.1A in the Oak Creek sixth level watershed. Geology is comprised of mancos shale. Soils are formed on colluvium and slope wash derived from shale and glacial materials. Erosion hazard and revegetation potential are rated moderate, while soil compaction potential is rated high.

The road accessing the site and immediately pass the stockpile site has surface erosion problems that could be addressed by installing additional drainage features to minimize the amount of water running on the road surface. While there are watercourses nearby, there would be no effect to any water sources, riparian areas, or wetlands from the proposed action.

3.5.2 Environmental Consequences

Key indicators of environmental consequences include acres disturbed, changes in connected disturbed areas[1], and measures identified to minimize the effects to the soil and water resources. The most pertinent

[1] Connected disturbed areas are defined as 'high runoff areas like roads and other disturbed soils that discharge surface runoff into a

Forest Plan Standards and Guidelines (Forest Plan, 1997) for this project are derived from the Watershed Conservation Practices Handbook (FSH 2509.25) and are listed in Appendix A.

Effects to soil productivity would be confined to the areas excavated during pit expansion. There would be no new road construction, and stockpile areas have already been disturbed by past management activities including dispersed camping. There would be no increase in the connected disturbed area as there would be no new road construction, and the excavation sites lie on dry upland sites that are not connected to the stream system.

None of the alternatives would affect the chemical integrity of the stream system. None of the proposed actions would affect dissolved oxygen concentrations, stream temperatures, or alter the concentration of chemical constituents in the water column.

Past and present cumulative effects associated with the proposed action are minimal. There are no known proposals for future timber harvest or other additional management activities in the affected watersheds. Neither of the alternatives would result in irreversible or irretrievable effects to the soil and water resources.

Alternative 1- No Action

Direct and indirect effects

Under this alternative there would be no change from the existing condition. There would be no additional soil disturbance. The existing problems that have been identified would not be addressed, and downcutting of the gully adjacent to the pull-through stockpile site would continue.

Cumulative effects

There would be no known additional adverse cumulative effects under this alternative. This alternative is consistent with Forest Plan direction for the soil and water resources, although known problems would not be corrected.

Alternative 2- Proposed Action

Direct and indirect effects

Under this alternative there would be a short-term loss of soil productivity due to excavation of the gravel pits. However, when considering the amount of disturbance and lost productivity relative to the entire watershed, this would be an effect. Rehabilitation of the pits following excavation would restore soil productivity to these areas. There would be an increased potential for mass movement in the area of both gravel pits. However, as described in the Affected Environment section, this risk is considered low given the slope stability following excavation of both the historic and existing pits in the Rough Creek Pit and Dunckley Pit #2 locations. Large boulders excavated during the gravel extraction would be available to stabilize the toe of slopes following excavation to further reduce this risk. Implementation of specified mitigations including a well-developed pit rehabilitation plan would help restore soil productivity, promote revegetation, and minimize any potential surface erosion that may result from excavation activities.

There would be no increase in connected disturbed area, and no effects to water bodies, riparian areas, or wetlands from the proposed action. Specified best management practices would ensure to include no additional ground disturbance northwest of the Rough Creek Pit, and no new ground disturbance east of the Dunckley Pit #2.

There would be no changes to stream health expected in any of the watersheds with implementation of Design Criteria from the Watershed Conservation Practices Handbook (2509.25) and best management practices.

stream or lake… connected disturbed areas are the main source of damage in all regions' (FSH 2509.25-99-2).

However, there would still be a need to acquire a stormwater discharge permit per section 402 of the Clean Water Act as the pit expansions are considered construction activities, and are expected to exceed one acre in size.

The stockpile sites frequently serve as dispersed campsites. Stockpiling the gravel at these locations would harden these sites through gravel left behind once the stockpile is moved. This would reduce surface erosion and the potential for rutting from vehicle use during wet periods. Gravelling the access road to the NFSR 967 stockpile site and improvement in drainage would decrease surface erosion and preserve the integrity of the road; this would be a benefit to the soil and water resources.

Hardening the dispersed pull-through stockpile site and reducing the gully erosion adjacent to this site would be a benefit to the soil and water resources. Reducing the gully erosion would work toward restoring the hydrologic function in this area and minimizing erosion. Improving drainage on NFSR 949.1A would reduce surface erosion to help protect the soil and water resources, as would hardening of the stockpile site.

Indirect effects include a reduction in surface erosion and airborne dust particles along the Dunckley Pass road if the gravel was used for resurfacing; this would reduce sedimentation to the stream system. Additional excavation of the pits would result in a stockpile of large boulders that would be available for watershed improvement projects. Both of these indirect effects would be a benefit to the soil and water resources.

Cumulative effects
Cumulative effects from the proposed action would be minimal. There would be a slight loss in soil productivity from disturbance in the gravel pit areas. However, soil productivity would be restored with rehabilitation of the pit upon completion of the project. There would be no changes to the hydrologic regime expected. The potential for wetland establishment would be possible through rehabilitation of the pit that would be a benefit to wetlands.

This alternative is consistent with Forest Plan direction for the soil and water resources.

3.6 Range

3.6.1 Affected Environment
Within the vicinity of Dunckley Pit #2 and Rough Creek Pit there are five allotments that are permitted to graze one thousand sheep each. Sheep are grazed on the allotments at various times between July 1 and September 15. The existing pits do not effect the livestock operation. The permittee is the same on all of the allotments, Cross Mountain Ranch LP.

3.6.2 Environmental Consequences
Effects Analysis of Alternative 1 - No Action and Alternative 2 - Proposed Action
Neither of these alternatives would effect the livestock operation. Alternative 2 would remove approximately 3 acres of forage. This loss in forage would not affect the capacity of any of the allotments.

Cumulative effects
There would be no cumulative effects of this alternative on the livestock operation.

The proposed action, Alternative 2, would have no irreversible or irretrievable commitments of resources.

3.7 Recreation

3.7.1 Affected Environment

There are only two management area prescriptions within the geographic areas that are affected by this project. The Management Area Prescriptions include:

1.32 Backcountry Recreation - Dispersed camping would occur throughout the area. Interpretation and education in these areas would provide a link to historic uses and resource management objectives.

The Rough Creek Pit (also serves as the Cyclone Trailhead) and Transfer stockpile site (and Transfer Trailhead) are located within this prescription.

4.2 Scenery The desired condition for 4.2 scenery management with respect to recreation and Scenic Byway designation within the Dunckley, Pyramid and Pagoda Management Area states:

Flat Tops Scenic and Historic Byway

The Flat Top Scenic and Historic Byway (byway) are located on both the Yampa (Routt NF) and Blanco (White River NF) Ranger Districts in both Routt and Rio Blanco counties. The byway was designated for both its scenic values and its unique opportunity to show and interpret a theme of a working byway. The interpretive messages along the corridor portray an historical use story from Native American occupancy, early ranching, to latter day logging activities and ecological processes.

The byway receives a moderately consistent flow of vehicular recreation traffic the entire time the road is snow free. Private landowners at Pyramid, ranchers, grazing and outfitter/guide permittees all use portions of the byway for both access and business. Portions of the road are very rough on 2-wheel drive traffic due to washboards. Both public and private complaints are received about the poor condition of many segments of the byway.

Dispersed Recreation

Dispersed Camping: There are a number of dispersed campsites adjacent to the Scenic Byway within the project boundaries. Summer use is low, and fall is extremely busy. We have from 50 to 100 percent occupancy at our dispersed campsites during the various hunting seasons. First through third hunting seasons receive the most use.

Three of the proposed stockpile sites are located in historically used dispersed campsites. Dispersed campers have also camped in both gravel pits during hunting seasons.

Commercial Recreation

6 outfitter guide operations are permitted within the project area. Operations include summer and fall day and overnight trips into 1.32 Backcountry non-motorized using horses, and llamas. Horse rentals operations occur during hunting season and are based out of private land at Pyramid. The operators primarily use the trailheads adjacent to the Byway and do occasionally travel for short distances on the Byway with equestrian traffic.

Commercial operators use all four trailheads within the project zone, with primary use in the fall. They are described in the next section.

There is a low level of outfitter guide activities taking place in the summer, with majority of the activity in the fall. Commercial winter activities include one snowmobile touring operation. Their day tours originate and terminate at the Yampa Byway portal at the Forest boundary.

Trails/Trailheads
Two trailheads originate within the project area. All trailheads are heavily used during the fall hunting seasons:

Transfer Trailhead – NFSR 969 is the access off the byway and is approximately ½ mile long and terminates at the trailhead. One stockpile site would be located directly adjacent to the access road between the byway and the trailhead.
Cyclone Trailhead – NFSR 967 is the access road off the byway and is approximately ½ mile long and terminates at both the trailhead and the Rough Creek Pit. The pit is located approximately 100 feet in elevation above the Trailhead and Trailhead parking lot.

3.7.2 Environmental Consequences

Alternative 1, No action
Direct and indirect effects
Under Alternative 1, there would be no action. There would be no stockpiling of suitable road base for county or federal use to maintain the roads.

Dispersed Recreation/Dev Rec/Commercial Recreation: Dispersed recreation users would not be displaced from popular sites under this alternative. There would be no impact of noise from gravel crushing operations at adjacent dispersed sites. Developed recreation would remain the same as it currently is. Commercial operations would not be affected by increased traffic on the road.

Trails/Trailheads: Roads to trailheads would not be improved.

Cumulative effects
The no action alternative would preclude the development and stockpiling of suitable road base material for the roads. The road would remain in its current condition. The road would remain very rough in portions and be hard on 2-wheel drive traffic. Long-term road maintenance objectives would not be met.

Public and private users would continue to complain about the travel surface of the roads. Recreation use would continue as described in existing conditions.

Alternative 2, Proposed Action
Direct and indirect effects:
Under Alternative 2 there would be gravel pit development, including crushing and gravel hauling to stockpile sites.

Dispersed Recreation: Users would be displaced from some of the campsites currently in use. All of the stockpile sites are located in popular dispersed campsites. These sites would remain unavailable for the life of the stockpile sites (estimated 3 to 5 years). The sites adjacent to the pits would not be desirable during the length of the crushing operations due to noise. The impacts to dispersed users would occur primarily in the fall during the hunting seasons.

The public and commercial operators may feel a perception of a decrease in hunting success if blasting, crushing and hauling operations are in full tilt during hunting seasons. Look at the feasibility of limiting season of operation if noise would have a serious impact to successful hunts.

A large volume of dust from truck traffic may negatively impact the dispersed recreationists experience at sites that are adjacent to the byway.

Commercial Operations: Two outfitters and the public use the Cyclone Trailhead with pack and saddle stock. The primary season of use is in the fall. If the Rough Creek Pit were used there would be negative recreation impacts in access and use of the Cyclone Trailhead (see discussion under trailhead).

Trails/Trailheads:
The Transfer Trailhead is located at the end of NFSR 967. Access to this trailhead should be assured during and after the stockpile operations are complete at this site.

The Cyclone Trailhead is in close proximity to the Rough Creek Pit. The existing pit sits upslope from the trailhead. It may be impractical and a safety hazard to keep the trailhead open during crushing operations especially if blasting is to occur. There would most likely be a problem with the noise from the crushing operations and the ability for safe unloading/loading or passage through with pack and saddle stock. This trailhead is very important during hunting season to access the Pagoda compartment for hunting. There are few access points into this compartment. This could create the need to look for a temporary reroute of the trail. There is limited, if any opportunity, to temporarily relocate the trailhead.

The current condition of NFSR 969 would most likely create a safety hazard for access to the trailhead if it is open to the public and haul trucks. The access road currently is just barely one lane wide with few pullouts. There is little to no room for two vehicles to pass.

The access roads to the stockpile sites would most likely be improved and graveled. There could be an opportunity to blade, widen and regravel NFSR 969 and one half of NFSR 967. There would most likely be an opportunity to convert the stockpile sites back to dispersed campsites with a gravel-hardened surface. This would better serve recreationists.

Cumulative effects:
Dispersed recreation users would be displaced from the pit and stockpile site for a number of years until the entire project was complete. They may try to relocate in unapproved areas. An emphasis with compliance patrols may need to occur during the hunting seasons for the first couple years.

Dispersed sites in the stockpile areas could be left with a gravel surface. This would eliminate a number of mud holes and rutted areas that currently exist. Access roads would be improved to Trailheads including upgrading roadways with correct drainage and slope, reducing any runoff.

The reopening of the pits could provide surplus gravel available for recreation projects in the vicinity.

3.8 Social/Economics

3.8.1 Affected Environment

The main criteria used in assessing economic efficiency is Present Net Value (PNV), which is defined as the value of discounted benefits minus discounted costs. An economic analysis includes all outputs and costs, including timber, grazing and recreation for which monetary values are available. The monetary values include both market and non-market values. A financial efficiency analysis was also completed to determine the financial returns of each alternative. A financial efficiency analysis is the PNV of agency revenues and costs.

To calculate PNV, a software program named Quick Silver was used. This is a PC Window based program and serves as a tool to evaluate management investments. Analyses are based on project alternatives that describe costs, revenues and scheduling of management activities.

For the Dunckley Pass Gravel Pit Project the output level of nonmarket goods (e.g. recreation, hunting, etc.) is not expected to change under any alternatives. There is not a non Forest Service cost associated with this project. For all alternatives the economic efficiency analysis is the same as the financial efficiency analysis.

The Economic and financial efficiency analysis table below displays the PNV and benefits/costs ratio for each alternative. All monetary values are expressed in constant dollars with no allowance for inflation. A 4% discount rate was used.

Table 3. Economic and financial efficiency analysis

	Alternative 1	Alternative 2
Present Net Value	-1,166,100	-386,816
Benefit Cost Ratio	0	0

Table 3 indicants that the action alternative is more efficient. The cost under alternative 1 is bringing in material from the nearest pit, measured in tons of material. Alternative 2 is the cost of using the Dunckley #2 pit and Rough Creek pit in tons of material.

When evaluating trade-offs, the use of economic efficiency measures is one tool used by the decision maker in making the decision. Many things cannot be quantified, like effects on wildlife, water quality, forest health, etc. The deciding official takes these and many other factors into account in making the decision.

3.8.2 Environmental Consequences

Direct and indirect effects

The effects are very small on the local economy. Alternative 1 would have an increased cost to bring in material for maintenance and erosion projects if they happened. Alternative 2 would reduce the material cost.

Cumulative effects

There are many factors that influence and affect the local economies. Population growth, economic growth, economic diversity and dependency of individual counties and communities all affect local economics. This project is not expected to add to any existing cumulative effect. There are no irreversible or irretrievable commitments of resources.

3.9 Transportation

3.9.1 Affected Environment

Within the vicinity of Dunckley Pit #2 and Rough Creek Pit there are numerous National Forest System and county roads. The area serviced by these pits is mostly in Rio Blanco County. There are seventeen roads in this area. These roads are made up of approximately eight miles of Level 4, fifty-one miles of Level 3, and seven miles of Level 2 roads. Maintenance Level 4 roads provide a moderate degree of user comfort and convenience at moderate speeds. Most are double lane and gravel surfaced. Maintenance Level 3 roads are open for travel by a prudent driver in a standard passenger car. Roads are typically low speed, single lane with turnouts and gravel surfacing. Maintenance Level 2 roads are open for use by high clearance vehicles. Passenger car traffic is discouraged. NFSR 16 is approximately thirty-one miles long and is a portion of the Flat Tops Trail Scenic and Historic Byway.

Dunckley Pit #2 and Rough Creek Pit have provided a gravel and pit run source for road surfacing and maintenance of Forest Service and County roads within this area for many years. The gravel stockpiled in Dunckley Pit #2 would be depleted within a short time. More gravel would be required for road maintenance in the near future.

The public mostly uses the roads in this area from late June to end of November. During the spring and fall this area receives significant amounts of moisture. Without sufficient surfacing these roads would become rutted which would over time change the maintenance level from 3 and 4 to level 2.

3.9.2 Environmental Consequences

Alternative 1, No action
Direct and indirect effects
If no action is taken, and once the current gravel stockpile is depleted, another gravel source would have to be located for forest projects.

Cumulative effects
This alternative would reduce available funds for road maintenance. There could be less miles of road maintained annually under this alternative.

Alternative 2, Proposed Action
Direct and indirect effects
This alternative would provide sufficient quantities and a cost effective source for gravel material for road maintenance for many years. Alternative 2 would allow more funds to be available for road maintenance by reducing the overall cost and would provide for a greater degree of user comfort. This alternative would allow for the current maintenance levels to remain the same. It would improve the stockpile sites, access to the Trail Head for Trail 1112, and access to the Trail Head for Trail 1172. The gravel, pit run and boulder source would also be available for other projects.

Cumulative effects
Traffic patterns could increase to some degree due to the improved comfort and drivability of the roads in the area. Although this traffic increase is believed to be small due to the remoteness of the area, it is increasing and is expected to continue to increase.

The proposed action, Alternative 2, would have no irreversible or irretrievable commitment of resources. This project would allow for better management of resources.

3.10 Visuals

3.10.1 Affected Environment

The analysis area is part of the Dunckley Geographic Area. The characteristic landscape includes spruce/fir, aspen, lodgepole pine, shrubs, grasses and forbs. The analysis area can be viewed from NFSR 16 – Flat Tops Scenic and Historic Byway, which is the primary Forest travel route. Management Area Prescriptions are MA 1.32 – Backcountry Recreation Nonmotorized with Winter Limited Motorized, MA 4.2, - Scenery, and MA 5.11 - General Forest and Rangelands – Forest Vegetation Emphasis.

The analysis area's characteristic landscapes have been modified by human activities such as logging and associated road construction, mineral development, livestock grazing and recreational activities for several decades. Natural events of wildfires, winds, insects and disease also have played a role in the natural changes of the landscape. The existing Dunckley Pit #2 can be viewed from several viewpoints when traveling on NFSR 16. Some travelers may think that it is a natural rock wall or outcropping due to the color of rock matching existing natural rock outcropping found within the scenic byway corridor. Rough Creek Pit is not visible from NFSR 16.

Scenic changes by ground disturbing activities would vary throughout the analysis area. The visual resources specialist report would analyze and disclose the visual effects resulting from no action and action alternatives developed for the Dunckley Gravel Pit Analysis Area.

Visual Quality Objectives

The Routt National Forest Inventoried Visual Quality Objectives (VQOs) map and the Routt Forest Plan adopted Visual Quality Objectives provide visual goals for management activities. Each visual quality objective prescribes a different degree of acceptable alteration of the landscape based on the importance of aesthetics.

Management Area Prescriptions	Adopted Visual Quality Objective(s)
MA 1.32	Retention
MA 4.2	Partial Retention
MA 5.11	Partial Retention/Modification

Retention VQO requires management activities to be not visually evident. Activities may only repeat form, line, color, and texture that are frequently found in the characteristic landscape. Changes in their qualities of size, amount, intensity, direction, pattern, etc., should not be evident.

Partial retention VQO requires management activities remain visually subordinate to the characteristic landscape. Activities may repeat form, line, color, and texture common to the characteristic landscape but changes in their qualities of size, amount, intensity, direction, pattern, etc. remain visually subordinate to the characteristic landscape.

Modification VQO allows management activities to visually dominate the original characteristic landscape, however, activities of vegetative and landform alteration must borrow from naturally established form, line, color, or texture so completely and at such scale that its visual characteristics are those of natural occurrences within the surrounding area.

All adopted visual quality objectives are placed under guidelines in the Forest Plan. Guidelines are advisable courses of action, which should be followed to achieve forest goals, but are optional. Deviation from guidelines must be analyzed during project level analysis and documented in a project decision document but do not require a forest plan amendment.

3.10.2 Environmental Consequences

Alternative 1 – No Action
Direct and indirect effects
There would be no direct and indirect effects, as there would be no gravel pit expansion and stockpiling. Trails and sites that would not be hardened or rehabilitated to reduce resource damages would worsen over time and cause additional visible resource damage of the landscape.

Alternative 2 – Proposed Action
Direct and indirect effects
Direct effect could occur when forest visitors enter into active pit sites and several temporary gravel stockpile sites and find these sites contrast with the natural surrounding landscape due to disturbed ground, dust and stockpiling. The temporary stockpile sites would exist for several years until gravel piles are used up and visual impacts would be lessened. Gravel stockpiles would be located on sites that would be not noticed or partially noticed from NFSR 16 due to the vegetative and landform screening. Once the gravel excavation is completed in the Dunckley Pit #2 and Rough Creek Pit sites, these sites would be rehabilitated to blend with the surrounding landscape. Indirect effect could occur if visitors enter the area on the improved access road and drive off the road and cause visible resource damage of the landscape.

Cumulative effects
Past, present and future management activities were reviewed for cumulative effects on visual resources. Cumulative effects would be negligible for all alternatives. No Action and Proposed Action alternatives would meet the visual quality objectives of partial retention and modification when best management practices are followed and gravel pit sites are covered with new vegetation.

All future management activities, including future fuels treatments, within and adjacent to the analysis area are required to have visual resources evaluated as part of the project level planning to ensure that management activities would comply with the Forest Plan adopted visual quality objectives. No irreversible or irretrievable commitments of resources.

3.11 Wildlife

3.11.1 Affected Environment

Introduction
The purpose of the wildlife specialist report is to describe the effects of the Proposed Action and Alternatives on wildlife resources located in the Dunckley Gravel Pit Analysis Area. This report would focus on the direct, indirect, and cumulative effects that gravel extraction has on wildlife. This wildlife specialist report would discuss management indicator species, threatened, endangered, sensitive (TES), and proposed species, and the associated habitats within the analysis area. This portion of the Wildlife Specialist Report is an abridged summary taken from the original Wildlife Specialist Report. A more detailed report can be found in the Wildlife Specialist Report within the Administrative Record of Dunckley Gravel Pit Project.

The National Forest Management Act directs the Forest Service to select certain plants, communities, and vertebrate or invertebrate species to manage for maintenance and improvement of habitat. Requirements to identify and utilize Management Indicator Species (MIS) in Forest and project level planning were identified under NFMA planning regulations in 1982-219.19(a) (1). Management Indicator Species (MIS) are species that respond to habitat changes, are scarce or unique, are of high economic interest, or are listed as Federal or State threatened or endangered. Trends or changes in management indicators may reflect the effects of management activities.

Threatened, endangered and sensitive species known or suspected to exist or with potential habitat, are analyzed further in the Dunckley Gravel Pit Expansion and Haul Site Biological Evaluation & Biological Assessment. The Biological Evaluation & Biological Assessment provides additional information on how decisions implemented in the proposed action would affect threatened, endangered, candidate, proposed or Region 2 Sensitive (TES) species occurring on, or with suitable habitat within the analysis area.

Management Indicator Species: Elk (Cervus elaphus) and Snowshoe hare (Lepus americanus)
Monitoring
The Code of Federal Regulations - 36 CFR 219.19(a) (6) states that, population trends of the management indicator species would be monitored and relationships to habitat changes determined. The snowshoe hare would be monitored through the Forest-wide MIS monitoring program. MIS are monitored in collaboration with implementation of the Forest Plan. Currently, the list of management indicator species in the Forest Plan is being revised. The species on the current list as well as other MIS are being considered for an amended list. The amended list is in draft form and would be going out to the public for comments in the fall of 2004 (Table 4). After public scoping is completed and the list is finalized, the MIS list would be an amendment to the Routt National Forest Land and Resource Management Plan 1997 Revision (USDA Forest Service 1998). The species under the 1997 Forest Plan Revision are listed in Table 5. The Northern goshawk, vesper sparrow, Wilson's warbler, and Colorado River cutthroat trout have been carried over to the Routt N.F. Proposed MIS list. In drafting the Routt Proposed MIS list, biologists were directed to choose MIS to reflect major management issues and challenges. The existing list of MIS species was selected to represent certain habitat types and any population changes would be attributed to changes in habitat across the planning unit and the associated management issue.

Table 4: Routt National Forest Proposed MIS List, Management Issue Species of Interest Addresses, and the Rationale for Selecting or Not Selecting Species of Interest in the Dunckley Gravel Pit Project

Proposed MIS List	Management Issue Species of Interest Addresses:	Selected (S)/Not Selected (NS) for Project Analysis	Rationale for Selecting or Not Selecting Species of Interest
Snowshoe hare	Influence of mgt. actions on prey species and/or timber mgt. in lodgepole pine and spruce-fir cover types	S=Selected	Management in lodgepole pine and spruce-fir cover types
Northern goshawk	Mgt. in late seral lodgepole pine cover types	NS	No mgt. occurring in late seral lodgepole pine
Northern three-toed woodpecker	Snag retention in timber mgt or fire salvage areas	NS	No timber mgt or fire salvage occurring in project
Golden-crowned kinglet	Spruce-fir timber mgt. and maintaining canopy cover	NS	No timber mgt occurring in project

Wilson's warbler	Riparian vegetation mgt and grazing effects	NS	No grazing and project not occurring in riparian habitats
Vesper sparrow	Retention of residual forage on rangelands (i.e., sagebrush and grasslands)	NS	No grazing occurring in project
Trout (Colorado River cutthroat trout and brook trout)	Sedimentation of riparian areas and aquatic habitat mgt	NS	Some sedimentation may occur and would be covered in the aquatics specialist report.

Table 5: Routt National Forest Existing MIS List *(Species highlighted in bold have been carried over to the Proposed Routt N.F. MIS List.)*

Existing MIS Species List	Habitat MIS Represents	Selected (S) / Not Selected (NS)	Rationale for Selecting or Not Selecting
Common Flicker	LPP, AS, SF	NS	Habitat exists in project area, but does not address management issue or issues identified during scoping.
Hairy Woodpecker	LPP, SF	NS	Habitat exists in project area, but does not address management issue or issues identified during scoping.
Red-backed Vole	SF	NS	Habitat exists in project area, but does not address management issue or issues identified during scoping.
Pine Grosbeak	SF	NS	Habitat exists in project area, but does not address management issue or issues identified during scoping.
Warbling Vireo	AS	NS	Habitat exists in project area, but does not address management issue or issues identified during scoping.
Blue Grouse	LPP, AS, SF	NS	Habitat exists in project area, but does not address management issue or issues identified during scoping.
Beaver	RIP, WET	NS	Habitat does not exist in project area.
Ptarmigan	AL	NS	Habitat does not exist in project area.
Vesper Sparrow	FM, MS	NS	Habitat does not exist in project area.
Sagebrush Vole	MS	NS	Habitat does not exist in project area.
Brown C. Rosy Finch	AL	NS	Habitat does not exist in project area.
Wilson's Warbler	RIP, WET	NS	Habitat does not exist in project area.
Elk	SF, AS, LPP, MS, FM	S=SELECTED	Habitat exists and addresses management issue.
Mule Deer	SF, AS, LPP, MS, FM	NS	Habitat exists in project area, but does not address management issue or issues identified during scoping.
Blue-gray Gnatcatcher	MS	NS	Habitat does not exist in project area.
Green-tailed Towhee	MS	NS	Habitat does not exist in project area.
Northern Goshawk	LPP	NS	Habitat exists in project area, but does not address management issue or issues identified during scoping.
Pine Marten	SF, LPP	NS	Habitat exists in project area, but does not

			address management issue or issues identified during scoping.
Osprey	RIP	NS	Habitat does not exist in project area.
Bald Eagle	RIP	NS	Habitat does not exist in project area.
Greater Sandhill Crane	RIP	NS	Habitat exists in project area, but does not address management issue or issues identified during scoping.
Wood Frog	RIP, WET, AQ	NS	Habitat does not exist in project area.
CO River cutthroat trout	RIP, WET, AQ	NS	Habitat does not exist in project area.
Sharp-tailed Grouse	MS	NS	Habitat does not exist in project area.

Key: SF=Spruce/Fir; AS=Aspen; LPP=Lodgepole Pine; MS= Mountain Shrub; FM=Forest Meadows; AL=Alpine; RIP=Riparian; WET=Wetland; AQ=Aquatic; RO=Rock/Cliff/Cave/ Canyon/Mines; PP=Ponderosa Pine

Until the proposed MIS list has been accepted as an amendment to the Forest Plan by the public and through the National Environmental Policy Act review by the Forest Service, the existing Forest Plan MIS list would be used in specialist reports. For this analysis, both lists would be used to assess the direct, indirect, and cumulative effects on the proposed and existing list of management indicator species. Table 5 includes the existing MIS list, habitat of MIS species, and the rationale for selecting or not selecting a MIS based on habitat and whether the species addresses the management issue. Elk were identified during the project scoping as a concern. The Colorado Division of Wildlife requested that extracting and grinding avoid hunting season so that elk are not pushed off of the Forest and hunts are not interrupted by extracting and grinding operations.

The species on the Proposed MIS list would be referred to as Species of Interest (SI). Table 4 includes the Routt National Forest Proposed MIS list, the management issues each Species of Interest addresses, and the rationale for selecting or not selecting a species for this project analysis. The snowshoe hare was selected as the Species of Interest for this analysis. The snowshoe hare, the primary prey for lynx, was selected because changes in the population or community health may indicate the effects of management activities on prey populations for predators as well as some management is occurring in spruce-fir and lodgepole pine. The snowshoe hare is an important prey source for lynx, marten, and goshawk, and, if implemented, the Dunckley Gravel Pit project has the potential to alter a small amount of lynx "Other" and "Non-lynx" habitat acreages. The "Other Lynx Habitat" is primarily the aspen or lodgepole pine cover types, which is used by snowshoe hares during the summer months. The "Non-lynx Habitat" is primarily the grass, forb, and shrub cover types used by hares during the summer months.

Rocky Mountain Elk

The Forest Plan classifies elk (*Cervus elaphus*) as a management indicator species (MIS) due to its importance in Colorado as a hunted big game species and the habitat this species needs for foraging, calving, hiding cover, and for winter habitat. Elk was selected as an MIS species for this analysis, because disturbance during elk calving in early summer and disturbance during mid-summer to foraging elk cow and calves may occur. In addition, the activities associated with extracting and grinding may increase elk movement during hunting season.

Elk use of the Forest within the analysis area occurs primarily in the spring, summer, and fall, with some use of south facing slopes at lower elevations as winter range during milder winters. Two primary components of effectiveness of elk habitat are hiding cover and road density. Hiding and escape cover provide security and a

means of escape from the threat of predators or harassment (Skovlin 1982). The Forest Plan defines hiding cover as structural stages of vegetation (boles and foliage) capable of hiding 90% of a standing adult elk from human view at a distance equal to or less than 200 feet. Road density is simply the total miles of road per square mile.

Because road density effects how elk would utilize potential habitat, it is used along with hiding cover as indices to measure elk habitat effectiveness. Habitat effectiveness is defined as the percent of usable habitat during the non-hunting season (USDA Forest Service 1998a). As road densities approach one mile per square mile in optimal elk habitat, potential elk habitat effectiveness would drop from 100% to 60%. Several research studies have qualitatively demonstrated the negative effects of closed roads upon elk habitat effectiveness (Leege 1984; Bumstead 1975; Ward et.al. 1973). Closed roads are used by many recreational hikers, bicyclists, hunters, and for occasional administrative use.

Elk Monitoring Methods and Population Trends: The Colorado Division of Wildlife (CDOW) monitors elk populations annually by monitoring hunter success and by summer aerial surveys. Elk are at high population levels across the analysis area and above herd objective in some of the Data Analysis Units (DAU) in the analysis area. Some impacts to vegetation are beginning to occur in sensitive areas due to the high population levels. The Forest currently has the highest population of elk in the history of the Forest. The elk in the Dunckley area are part of the White River elk herd. The White River herd is the largest herd in the state and the DOW reported in the winter of 2003-04 that the White River herd is approximately 53,000 animals. Jim Hicks of the Division of Wildlife (DOW) estimates that the animals that occupy the Dunckley Pass area have population numbers up to 1,000 animals (Hicks, 2004). Some preliminary DOW data suggests that elk are displaying a slight decrease in population numbers over the last two to three years.

Snowshoe Hare

Snowshoe hare occur in many montane and sub-boreal forests of the continental United States, as well as throughout the boreal forests of Alaska and Canada. In the Rocky Mountains, snowshoe hare mainly inhabit coniferous forests containing a well-developed understory, which provides yearlong protective cover and food sources. Dense, horizontal understory cover, approximately one to three meters in height characterizes preferred hare habitat (Wolff 1980, Litvaitis et al. 1985). Stand age alone is not critical, due to the importance of stand structure. Mature lodgepole pine typically does not have the stand structure necessary to provide hare habitat due to crown lift and the even age of most lodgepole stands after about 60 years. Population densities and over winter survival are related to understory density, particularly conifers that provide winter forage, thermal and escape cover (Ruediger et al. 2000). Habitat interspersion (complex mosaic of age-classes across a landscape) may be valuable to snowshoe hares by providing them access to habitats with varied availabilities of protective covers and food sources (Wolff 1980). Newly clear-cut areas are essentially not used.

In the southern Rocky Mountains, suitable hare habitats are typically naturally fragmented due to topography; climate, aspect, slope, and precipitation with many open areas and less understory compared to the vast and continuous boreal forests in the core range in Canada (Bartmann and Byrne 2001). Juvenile hare are often forced to occupy the less suitable habitats and are more likely to be in more open areas exposed to increased predation. In the southern Rocky Mountains, juvenile dispersal into less suitable habitats (and thus increased predation) is believed to regulate population density (Dolbeer and Clark 1975). Lower hare densities in the southern Rocky Mountains are believed to be the result of fragmented habitats, competition with other lagamorphs, and increased numbers and species of predators (Dolbeer and Clark 1975). At the stand level, demography is likely to vary with food and cover availability.

Snowshoe Hare Monitoring Methods and Population Trends: A snowshoe hare monitoring plan has been developed to evaluate changes in hare populations due to management actions on the Routt National Forest. Snowshoe hare pellets are used as an index for monitoring the population trends. The pellet plots were established for monitoring in the summer of 2001 and are surveyed annually during the summer months. The plots are selected through a stratified random sample of attributes identified by GIS criteria of stand cover type, successional stage (tree size/age class), and canopy cover density. The plots are spaced 300 meters apart, which allows for sampling in a variety of cover type polygons.

Because this monitoring study is in the initial phases, population trends can not be determined to any great detail. However, it appears that the pellet averages per cover type are within 1 to 2 pellets/plot when compared to one year to the next. The mid-seral stages of spruce-fir (tree size medium, 5-9" DBH) had the most dramatic decrease from approximately 10.1 pellets/plot in the 2001 to approximately 6 pellets/plot in 2002 and 2003. At this time, a change in such a small number of pellets/plot could be contributed to many factors, but may purely be noise in the data. Dolbeer and Clark (1975) found snowshoe hares do not cycle in the southern Rocky Mountains as compared to more northern latitudes. The three years of data on the Routt National Forest are suggesting that snowshoe hare populations may have regulated densities.

Overall, the spruce-fir cover type had the highest pellet count averages for tree sizes medium, large, and very large, and the aspen cover type had the lowest pellet averages. In reference to utilization of the various successional stages, the snowshoe hare pellet averages on the Routt National Forest suggest that hares are found to be most abundant in mid-seral stages (tree size medium, 5-9" DBH) within the aspen, lodgepole pine and spruce-fir cover types. This result was unexpected due to the literature suggests that snowshoe hares prefer stands that are ≤ 25 year-old successional stages (Hodges 2000a and 2000b, Koehler 1990). Several authors have established that young stands with high understory densities, whether it is a conifer or deciduous cover type, support high abundances of snowshoe hares, which provide the dense vegetation for forage, thermal cover, and escape from predators (Hodges 2000a and 2000b, Koehler 1990, Sullivan and Sullivan 1988, and Wolff 1980). The inconsistency of the data found on the Routt compared to northern regions may be due to the dry climate and higher elevations found in Colorado where young seral stages grow slower and less dense and therefore, the mid-seral stands may provide higher understory densities than the younger seral stages.

Wildlife Concerns

Wildlife concerns brought up during scoping include disturbances to elk, Sandhill cranes and lynx that may occur through the extraction, grinding, and hauling of gravel. The Division of Wildlife requested that extracting and grinding to end before the third rifle season, which begins in the third week in October to avoid disturbances to big game species. This concern is addressed further in the recreation specialist report.

Habitat exists for sandhill cranes in the Poose Creek riparian area below the Rough Creek Pit. However, the area was surveyed during the summer of 2002 and 2003, and no nesting or individual cranes were found in the area.

Habitat exists for the lynx adjacent to the stockpile sites and gravel pits. The proposed stockpile sites are disturbed areas from other activities such as dispersed camping. The approximate area of disturbance is one acre and would be considered as "Other Lynx Habitat" and "Non-lynx Habitat". The Rough Creek Pit was found to have "Winter Foraging" and "Other" lynx habitat around the pit such as lodgepole pine, spruce-fir, aspen, and meadow (grass-forb) habitat components, which would be disturbed during the excavation process. The direct, indirect, and cumulative effects under the alternatives for lynx would be addressed in the text of this document (refer to Environmental Consequences section). The Biological Assessment would evaluate the proposed action and would subsequently be submitted to the USFWS.

3.11.2 Environmental Consequences

Alternative 1-No Action

Direct ,and indirect effects to TES

Under this alternative, no change would occur in current management of the gravel pits or stockpile sites. The gravel pits and stockpile sites would be maintained in their current condition. The no action alternative would have no direct effects to TES such as disturbance to individuals through the extraction, grinding, or hauling of gravel, but current activities such as dispersed camping would continue to occur. Similarly, the no action alternative would have no indirect effects to TES by removal of vegetation or habitat during extraction of gravel or stockpiling gravel, but current activities would continue to occur. The no action alternative does not authorize gravel extraction, grinding, and hauling operations in the analysis area and thus, would represent a probable beneficial effect to wildlife and TES species for the short, mid, and long-term. Beneficial effects would likely result in less noise disturbance, fewer dust particles or pollution released into the environment, less sedimentation and erosion in adjacent creeks from extracting gravel, and overall no impacts to TES habitat from the removal of vegetation at gravel pits or stockpile sites. Prolonged negative effects to the Cockerell's striate disc snail may occur without proper gravel pit reclamation and revegetation of existing pits.

If Alternative 1 is chosen, the Forest Service's ability to effectively manage TES habitat would continue and direct, indirect, and cumulative effects would not occur. The existing TES populations and their habitat would remain in the current condition.

Direct, and indirect effects to MIS

Under the no action alternative, the direct effects such as displacement of elk and snowshoe hare individuals through the disturbance created by extraction, grinding, and hauling of gravel would not occur. The no action alernative would be beneficial to elk and snowshoe hare individuals in the short, mid, and long-term by minimizing disturbance to individuals in adjacent habitats as well as minimizing disturbance to modeled lynx "Winter Forage" (primary winter snowshoe hare or spruce-fir habitat) or "Other" habitat (secondary summer snowshoe hare or lodgepole and aspen habitats).

The indirect effects to elk and snowshoe hare through altering habitat would not occur. Elk use a variety of habitats for elk calving, cover, and foraging. These habitats consist of spruce-fir, aspen, lodgepole pine, and forest meadow, which are all adjacent to the gravel pits and stockpile sites. Disturbances to elk habitat types would not occur under the 'No Action' alternative. Snowshoe hare use habitats that are modeled as lynx "Other" and "Winter Forage" habitat. The indirect disturbance to the modeled habitats would not occur. This would minimize effects to lynx habitat in the Pagoda and Dunckley Lynx Analysis Units (LAU). Consequently, the "Other" or "Winter Forage" lynx habitat would not be altered to an "Unsuitable" condition. The No Action would maintain elk and snowshoe hare and lynx habitat in it's current condition, although as noted, these areas do receive disturbance from recreational use and were previously disturbed from timber or gravel extraction activities. The no action would not authorize disturbance related to removing vegetation associated with the Dunckley Gravel Pit Project, and thus would be beneficial to elk and snowshoe hare as well as lynx in the short, mid, and long-term.

If Alternative 1 is chosen, the Forest Service's ability to effectively manage elk and snowshoe hare habitat would continue. The existing habitat would remain in it's current condition. The selection of this alternative would not decrease the value of elk habitat or the third rifle season for hunters nor the value of winter or summer snowshoe hare habitat, which is important lynx "Winter Forage" or "Other Lynx" habitats. No direct, indirect, or cumulative effects would occur.

Cumulative effects on TES and MIS
The cumulative effects considered for this project include past, present, and future actions. As mentioned in the TES effects, the past, present, and future actions in the analysis area include recreational use of dispersed recreation camps, use of the Cyclone Trailhead, and outfitter and guide special use permits; sheep grazing; noxious weed spraying; recreational and administrative use of the Scenic Byway (NFSR16) and NFSR 967; and presence of the existing Rough Creek Pit and Dunckley Pit #2. The past actions also include the activities associated with the Transfer/Cyclone Timber Sale. This timber sale was completed in 2000. All other activities listed in the past, present, and future actions would continue to occur in this area. Under the No Action alternative, no increase in cumulative effects is expected to occur to elk and snowshoe hares over the short, mid, or long-term.

Alternative 2-Proposed Action
Direct and indirect effects to TES
Direct impacts to the TES species associated with the proposed action include direct disturbance to individuals during extracting operations, noise disturbance, dust particles or pollution released into the environment, and sedimentation and erosion in adjacent creeks from extracting gravel. In the short and mid-term or during the 10-15 years of extraction, the aforementioned direct effects may hinder TES individuals from breeding, nesting or denning, and rearing of young in areas directly adjacent to the pits and stockpile sites. The majority of extraction would most likely occur from late June and through the fall. These dates are dependent on when the snow melts off and when it begins to snow in the fall. The bird species in the area may be disturbed when setting up territories in June, during breeding, and throughout the nesting and brooding period. Most large mammal species would have established their territories by June and breeding has been completed. The direct disturbance to the mammals may occur during the denning (or nesting for small mammals) and rearing period.

Due to the capability of the TES bird and mammal species to move to adjacent habitats, the direct impacts are less compared to direct effects to the TES plant and invertebrate species. The two sensitive plant species (purple lady slipper and Rabbit Ears gilia) may be directly impacted by the extracting process, however these plants have been surveyed for and were not recorded in the project area. The Cockerell's striate disc snail is an aquatic species and direct impacts to the snail include sedimentation and erosion into adjacent creeks from the existing unclaimed pits. To minimize impacts to any wildlife or TES species, any nesting or denning TES species or Sandhill crane would be avoided if found in the project analysis area. To avoid impacts to Sandhill cranes, which is not currently a Forest sensitive species, a mitigation has been established in this Wildlife Specialist Report to avoid and delay operations if nesting cranes are found in the project area.

In the long-term, the direct effects from disturbance to the TES species breeding, nesting or denning, and rearing of young would no longer occur, because extraction would be completed in the 10-15 year time frame. Prolonged negative effects to the Cockerell's striate disc snail may occur without proper gravel pit reclamation and revegetation of existing pits. With the proper reclamantion and revegetation, sedimentation and erosion into the adjacent creeks would be reduced. In the project description, reclamation and revegetation is part of the project design and would reduce the long-term negative effects to the Cockerell's striate disc snail in adjacent creeks of the gravel pits. The stockpile sites would be hardened before the project is completed which would be a beneficial effect to the Cockerell's striate disc snail, because the current use of these sites is causing some resource damage and erosion by recreationists.

Indirect effects to TES species associated with the proposed action is the removal of vegetation or habitat.

Vegetation would be removed to extract the gravel from the pits as well as at the stockpile locations. The vegetation that would be removed may include aspen, Engelmann spruce, subalpine fir, lodgepole pine, grass, shrubs, and forbs. The total area of impact is approximately 14 acres which includes the areas that are previously disturbed from previous gravel extraction. The actual area of vegetation that would be removed is approximately 5-7 acres which is dependent on the level of gravel extracted. The indirect effects in the short and mid-term would be loss of some habitat in these areas for TES and wildlife species. In the long-term the gravel pits would be reclaimed and re-vegetated to allow for proper restoration of the sites and would be beneficial to wildife and TES species.

If Alternative 2 is chosen, some direct effects to Region 2 Sensitive species may occur through disturbances during breeding, nesting, and rearing of young. Indirect effects would occur in the short and mid-term due to vegetation removal, but in the long-term the gravel pits would be re-vegetated and in turn would be a beneficial effect. Negative cumulative effects to TES populations and their habitat is not expected and the proposed action would not cause population declines in the analysis area.

Direct and indirect effects to MIS

The habitat adjacent to the gravel pits are primarily aspen with some lodgepole pine, Engelmann spruce, and subalpine fir mixed throughout the stands. Although the aspen cover type has not been identified as essential habitat for snowshoe hares, snowshoe hare would occasionally use mature aspen as summer habitat and is referred to as "Other" lynx habitat. Under the Proposed Action alternative, the direct effects such as displacing individuals through the disturbance created by extraction, grinding, and hauling of gravel may occur in the short and mid-term. In the long-term and after extraction activities have been completed, there would be no direct effects to snowshoe hare in terms of displacing individuals. The proposed action would not have impacts on lowering population densities. Currently, the populations appear to be stable and are displaying regulated densities. An action such as a gravel extraction would not decrease populations in the short, mid, or long-term. These actions may displace individuals, but would not cause declines in population densities.

Elk behavioral responses are influenced by characteristics of the disturbance itself (type of activity, frequency, and magnitude) and location (in the open versus screened). Disturbance caused by human activities may elicit behavioral responses and/or physiological responses in wildlife. The learned wildlife response to humans has been attributed to the number and outcome of interactions between individuals and human stimuli during an individual's lifetime and may therefore, vary among individuals or populations. An individual's behavioral response may also vary according to season, age, sex, group size, behavioral responses of cohorts, and habitat security (Youmans 1999). The direct effects under the proposed action to elk may include disturbances to individuals during calving in the spring and early summer, and in mid-summer disturbance may cause physiological stress to cows raising young in proximity to the gravel pits. The actions may displace individuals, but would not cause population declines.

The indirect effects to elk and snowshoe hare through altering habitat would occur by removing vegetation at the gravel pit and stockpile sites. These indirect effects would occur in the short and mid-term at a small scale in already disturbed areas. In the long-term, the indirect effects would be less, and in 20-30 years the effects would be beneficial, due to the planned reclamation and revegetation of these sites. Under the current management of these gravel pits, there is no reclamation or revegetation plan for the Rough Creek Pit or Dunckley Pit #2.

If Alternative 2 is chosen, a small amount of elk and snowshoe hare habitat would be removed during the short and mid-term. However in the long term, the gravel pits would be re-vegetated which would be a benenficial effect in providing early seral habitats for elk and snowshoe hare and increase the Forest Service's ability to

manage winter and summer habitat for lynx. No declines in elk or snowshoe hare population trends is expected to occur under the Proposed Action. The cumulative effects associated with the gravel pit and other on-going activities are short-term, and in the long-term cumulative effects would be beneficial upon re-vegetating these sites.

Cumulative effects to TES and MIS
The cumulative effects considered for this project include past, present, and future actions. As mentioned in the TES effects, the past, present, and future actions in the analysis area include recreational use of dispersed recreation camps, use of the Cyclone Trailhead, and outfitter and guide special use permits; sheep grazing; noxious weed spraying; recreational and administrative use of the Scenic Byway (NFSR16) and NFSR 967; and presence of the existing Rough Creek Pit and Dunckley Pit #2. The past actions also include the activities associated with the Transfer/Cyclone Timber Sale. This sale was completed in 2000. All other activities listed in the past, present, and future actions would continue to occur in this area.

The gravel pits and stockpile sites are previously disturbed areas and often have continued recreational use such as dispersed camping during the summer and fall months. In comparison to other geograhpic areas on the Routt National Forest, the Pagoda, Pyramid, and Dunckley have a minimal amount of effects posed on these geographic areas. The majority of impacts that are occur on a continual basis are activities associated with sheep grazing and fall hunting. Because of the nature of the past, current, and future acivities, minimal cumulative effects related to disturbance to elk and snowshoe hares would occur. In the long-term the cumulative effects would be lessened due to the plan for re-vegetating the gravel pits, which is not under the current management plan of these pits. The Dunckley, Pyramid, and Pagoda Geographic Areas make up one of the largest un-roaded areas in the state. Thus in reviewing cumulative effects, these geographic areas provide for a large refugia for elk and snowshoe hare. A project such as Dunckley Gravel Pit Expansion may add some cumulative efffects in the short and mid-term, but in the long term the effects are negligible and would be beneficial after revegetation has occurred.

CHAPTER 4 CONSULTATION AND COORDINATION

The Forest Service consulted the following individuals, Federal, state and local agencies, tribes and non-Forest Service persons during the development of this environmental assessment:

4.1 ID Team Members

Interdisciplinary Team Leader-David Tubb, BS Natural Resource Management, 25 years
Aquatics-Kathy Foster, BS Watershed Sciences, 18 years
Economics- Marilee Houtler, BS Recreation Resource Management, 15 years
Engineering-Gary Gray, AA Forestry, 20 years
Hydrology- Liz Schnackenburg, BS Geology, MS Watershed, 11 years
Range, Transportation- David Tubb, BS Natural Resource Management, 25 years
Recreation-Robin Inhelder, BS Environmental Resources, 25 years
Soils-Liz Schnackenburg, BS Geology, MS Watershed, 11 years
Visuals-Jeff Tupala, BS Forestry, MLA Landscape Architecture, 16 years
Wildlife-Melissa Miller, BS Wildlife Biology, MS Ecology, 5 years

4.2 Agencies consulted with

US Fish and Wildlife Service
State of Colorado: Colorado Division of Wildlife
State of Colorado: Colorado Natural Heritage Program
Rio Blanco County

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APPENDIX A: SPECIFIED STANDARDS AND DESIGN CRITERIA FROM THE WATERSHED CONSERVATION PRACTICES HANDBOOK (FSH 2509.25)

Specified mitigations are those requirements that are in addition to the Standards and Design Criteria from the Watershed Conservation Practices Handbook (FSH 2509.25). Standards are desired outcomes to protect soil, aquatic, and riparian systems. Design criteria are specific ways to meet the standards using current knowledge and technology and are outlined in the bulleted statements following each standard.

A 1985 agreement between the Forest Service and the Environmental Protection Agency mandated the Water Resource Evaluation of Nonpoint Silvicultural Sources (WRENSS) as official guidance to control nonpoint sources of water pollution. Its controls were used to construct many standards and design criteria. Others are adapted from Federal and State BMP's and work of other Regions and agencies.

Standard: Manage land treatments to conserve site moisture and to protect long-term stream health from damage by increased runoff.

In each 3rd-order and larger watershed, limit connected disturbed areas so the total stream network is not expanded by more than 10%. Progress toward zero connected disturbed area as much as feasible.

Standard: 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.

Allow no action that would cause long-term change to a lower stream health class in any stream reach. In degraded systems, progress toward robust stream health within the next plan period.

Allow no action that would cause long-term change away from desired condition in any riparian or wetland vegetation community. In degraded systems, progress toward desired condition within the next plan period.

Keep heavy equipment out of streams, swales, and lakes, except to cross at designated points, build crossings, or do restoration work, or if protected by at least 1 foot of packed snow or 2 inches of frozen soil.

Locate new concentrated-use sites outside the water influence zone (WIZ) if feasible and outside riparian areas and wetlands always. Harden or reclaim existing sites in the WIZ to prevent detrimental soil and bank erosion.

Standard: Maintain long-term ground cover, soil structure, water budgets, and flow patterns of wetlands to sustain their ecological function, per 404 regulations.

Standard: 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.

Avoid soil-disturbing actions during periods of heavy rain or wet soils. Apply travel restrictions to protect soil and water.

Install cross drains to disperse runoff into filter strips and minimize connected disturbed areas. Make cuts, fills, and road surfaces strongly resistant to erosion between each stream crossing and at least the nearest cross drain. Revegetate using certified local native plants as feasible; avoid persistent or invasive exotic plants.

Retain stabilizing vegetation on unstable soils. Avoid new roads or heavy equipment use on unstable or highly erodible soils.

Use existing roads unless other options would produce less long-term sediment. Reconstruct for long-term soil and drainage stability.

Designate, construct, and maintain recreational travelways for proper drainage and harden their stream crossings as needed to control sediment.

Standard: Construct roads and other disturbed sites to minimize sediment discharge into streams, lakes, and wetlands.

Use filter strips, and sediment traps if needed, to keep all sand-sized sediment on the land and disconnect disturbed soil from streams, lakes, and wetlands. Disperse runoff into filter strips.

Design road ditches and cross drains to limit flow to ditch capacity and prevent ditch erosion and failure.

Standard: Stabilize and maintain roads and other disturbed sites during and after construction to control erosion.

Build erosion resistance into project design to reduce costly maintenance and restoration (Clean Water Act Sections 402(p) and 404). Mitigate concurrently with construction. Disturbance of more than 5 contiguous acres per project requires a State storm-water discharge permit[2].

Do not encroach fills or introduce soil into streams, swales, lakes, or wetlands.

Space cross drains, from no more than 120 feet in highly erodible soils on steep grades, to no more than 1,000 feet in resistant soils on flat grades (ex. 01). Do not divert water from one stream to another.

Empty cross drains onto stable slopes that disperse runoff into filter strips. On soils that may gully, armor outlets to disperse runoff. Tighten cross-drain spacing so gullies are not created.

Harden rolling dips as needed to prevent rutting damage to the function of the rolling dips. Ensure that road maintenance provides stable surfaces and drainage.

Table 7: Maximum Cross-Drain Spacing in Feet Based on Soil Types*****

Unified Soil Classification - ASTM D 2487

[2] This was recently changed from 5 acres to one acre.

Road Grade (%)	ML, SM Extr. Erodible Silts-sands with little or no binder (d.g.)	MH, SC, CL Highly Erodible Silts-sands with moderate binder	SW,SP,GM,GC Mod. Erodible Gravels + pit run & sands with little or no pit run	GW,GP Low Erodible Gravels with little or no pit run
1-3	600	1000	1000	1000
4-6	300	540	680	1000
7-9	200	360	450	670
10-12	150	270	340	510
13-15	120	220	270	410

These are maximum spacings. They should be reduced if warranted by onsite factors such as expected road use, downslope stability and erosion hazards, and filter strip capability to trap runoff and sediment and conserve ground cover integrity given the extra water. Combine these spacings with common sense to place cross drains where damage to ditches, slopes, and streams would be minimized. For example, shorten or extend the spacing where needed to move a cross-drain outlet from a stream headwall to a convex slope.

Standard: Reclaim roads and other disturbed sites when use ends, as needed, to prevent resource damage.

Site-prepare, drain, revegetate, and close temporary and intermittent use roads and other disturbed sites within one year after use ends. Provide stable drainage that disperses runoff into filter strips and maintains stable fills. Do this work concurrently. Use certified local native plants as feasible; avoid persistent or invasive exotic plants.

Standard: Manage land treatments to limit the sum of severely burned and detrimentally compacted, eroded, and displaced land to no more than 15% of any land unit.

The 15% limit applies to all natural and human disturbances that may impact soil structure, organic matter, and nutrients (R2 FSH 2509.18). The permanent transportation system does not count toward the 15% limit.

Restrict roads, landings, skid trails, concentrated-use sites, and similar soil disturbances to designated sites.

Operate heavy equipment for land treatments only when soil moisture is below the plastic limit, or protected by at least 1 foot of packed snow or 2 inches of frozen soil.

Standard: Maintain or improve long-term levels of organic matter and nutrients on all lands.

Standard: Place new sources of chemical and pathogenic pollutants where such pollutants would not reach surface or ground water.

Put pack and riding stock sites, sanitary sites, and well drill-pads outside the water influence zone (WIZ).

Put vehicle service and fuel areas, chemical storage and use areas, and waste dumps and areas on gentle upland sites. Mixing, load, and clean on gentle upland sites. Dispose of chemicals and containers in State-certified disposal areas.

Standard: Apply runoff controls to disconnect new pollutant sources from surface and ground water.

Install contour berms and trenches around vehicle service and refueling areas, chemical storage and use areas, and waste dumps to fully contain spills. Use liners as needed to prevent seepage to ground water.

Clean wastewater from concrete batching and gravel operations before returning the water to streams, lakes, or wetlands.

APPENDIX B: PUBLIC SCOPING RESPONSES

We received the following comments:
1. Wendell Funk, 3-10-03
2. Colorado Division of Wildlife, 3-25-03

The following are public comments:
1a. "Purpose and need - How is visual quality improved by: Enlarging gravel pits, improving travel speed and commercial use on scenic byway?"
Response: For enlarging gravel pits see the Visual specialists report.
Improving travel speed: The speed limit on the roads would not change with increased maintenance of the roads. Increase maintenance would reduce the dust concentrations, and therefore increasing the scenic quality of the byway.
Commercial use: Commercial use as well as recreational use is a contributing factor to the wear on the road surface. These public roads are open to commercial, recreational and private use.

1b. "Roads - Washboards and dust would not long be suppressed by a coat of gravel."
Response: see Transportation report in Chapter3.

1c. "Why should the national public's resources (i.e. gravel and visual quality) be used to enhance commercial use without compensation?"
Response: see 1a.

1d. "Reduce road mileage would save funds for improving naturalness, scenic, wildlife habitat and backcountry recreation."
Response: Reducing road mileage has already been decided in the "Travel Management for the Parks and Yampa Ranger Districts".

1e. "Proposed Action - The map (poor): where are the gravel pits and Dunckley Pass road?"
Response: We apologize for the quality of the map. The small scale was due to the large area covered by the project. The gravel pits are located on the map and the legal is listed in the letter. Dunckley Pass road goes by all the listed stockpile sites and the northern most pit.

1f. "How much (acres) would the pits be enlarged and how many miles of roads are to be graveled?"
Response: See the propose action, Chapter 1, for gravel pit sizes and the transportation report for miles of roads.

1g. "Are these improved (?) roads of key value to the national public?"
Response: These roads are much more enjoyable if you can see the vistas (no dust). Safer road surfaces decrease vehicle damage and increase the enjoyment of scenic driving.

1h. "What is envisioned a rehabilitation for the pits?"
Response: The pits will be reseeded. This might be completed by hydro mulching (spraying of seed and fertilizer). The road into the Rough Creek Pit will be recontoured.

1i. "What are the alternatives under consideration?"

Response: See Chapter 2, Alternatives.

1j. "Land and Resource Mgt. Plan – How does the proposed project truly enhance 1.32, 4.2 and 5.11 management areas?"
Response: See the purpose and need for compliance with the forest plan and objectives.

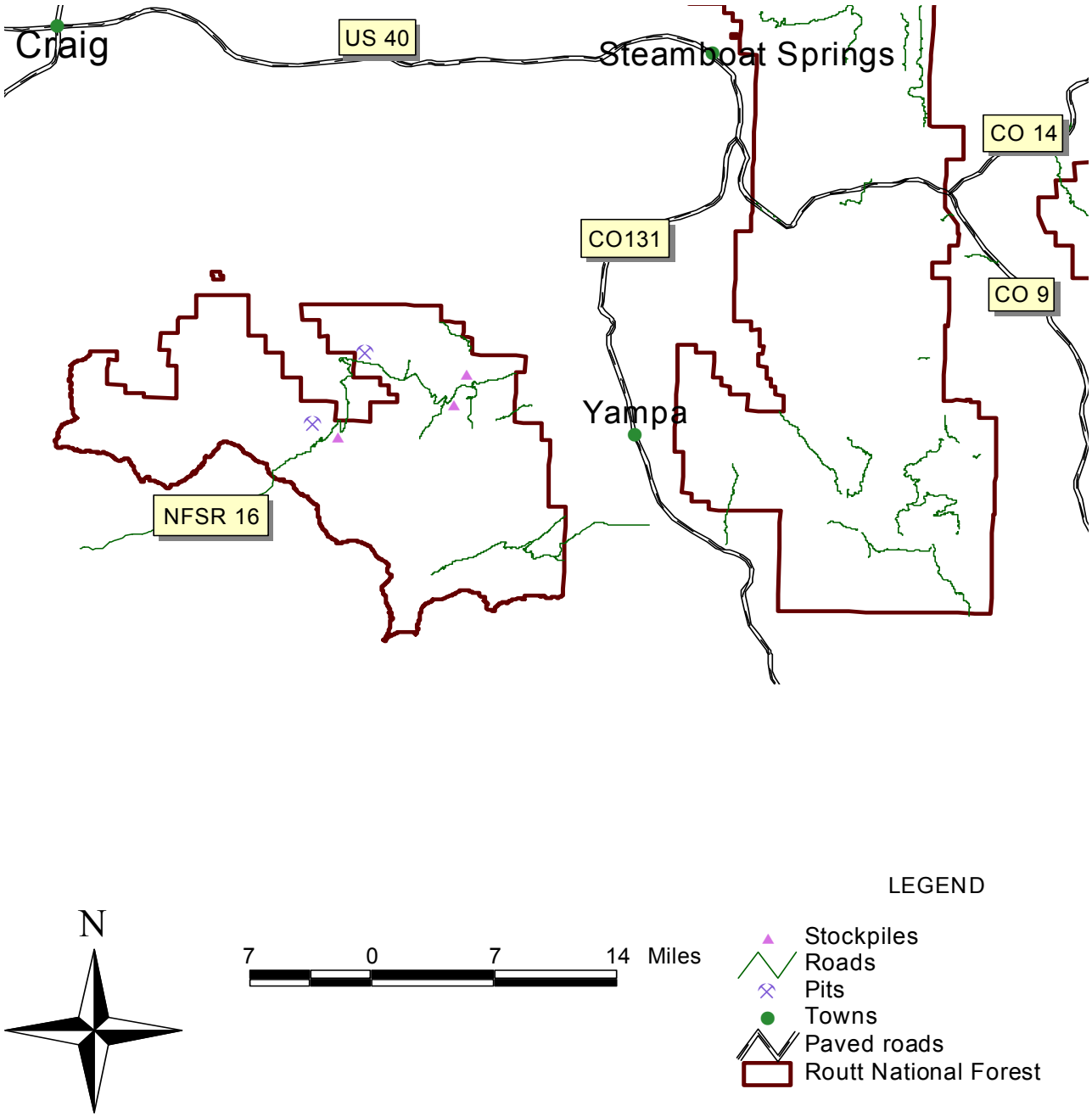
1k. "Must we destroy the landscape (enlarge gravel pits & improved (?) roads) in order to save it (cira-vietNam villages!)?"
Response: The pit enlargements would be rehabilitated. If these pits are not reentered we would not have the funds to rehabilitate them. The effects are temporary and they are minimized with mitigations.

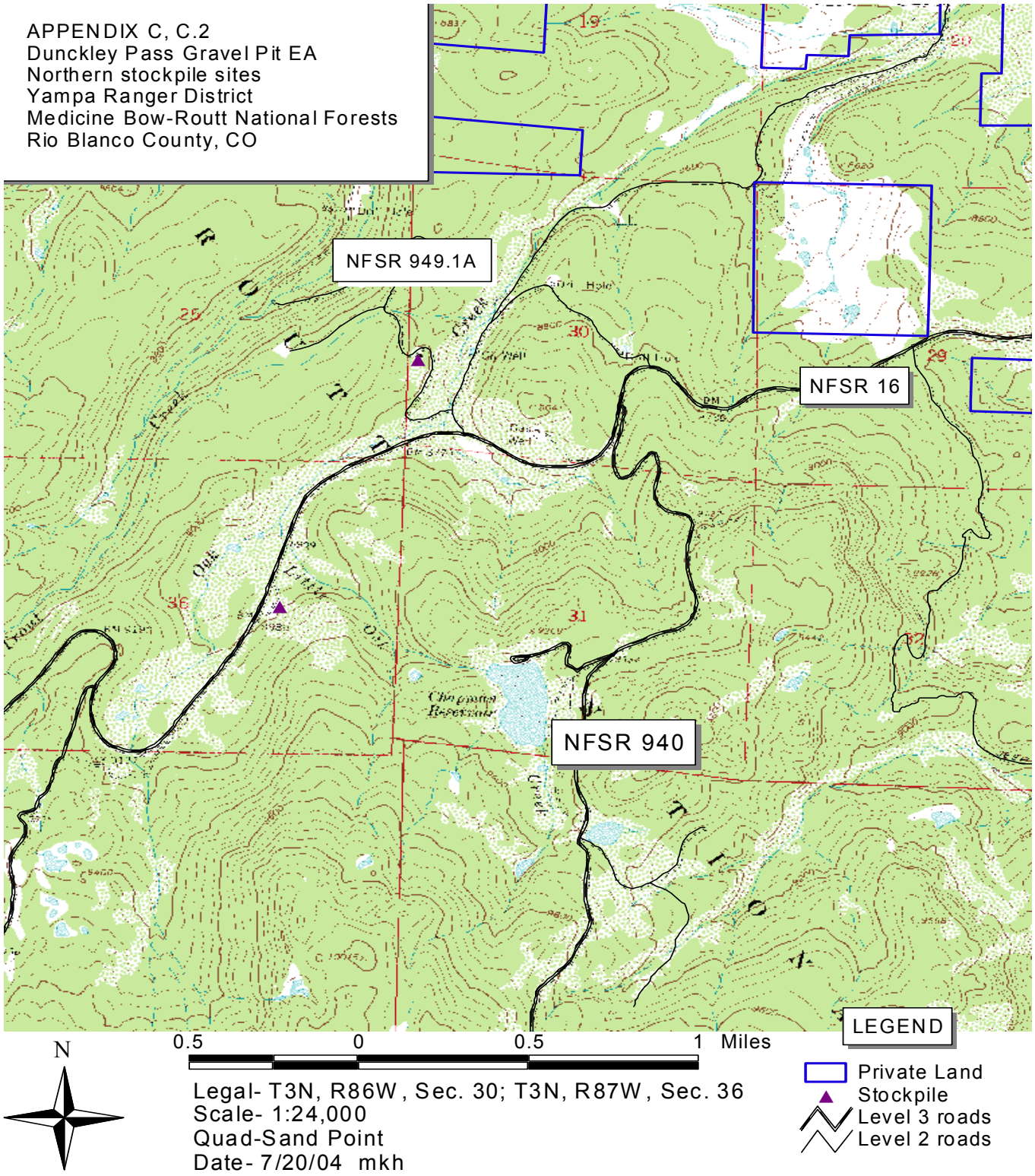
1l. "Preliminary issues - Even with good intentions, the naturalness of the nation's forests is being lost. This loss must be slowed to a stop."
Response: This concern is outside the scope of this document. This document is for a project, the nation's forests are congressional. Thank you for your comment.

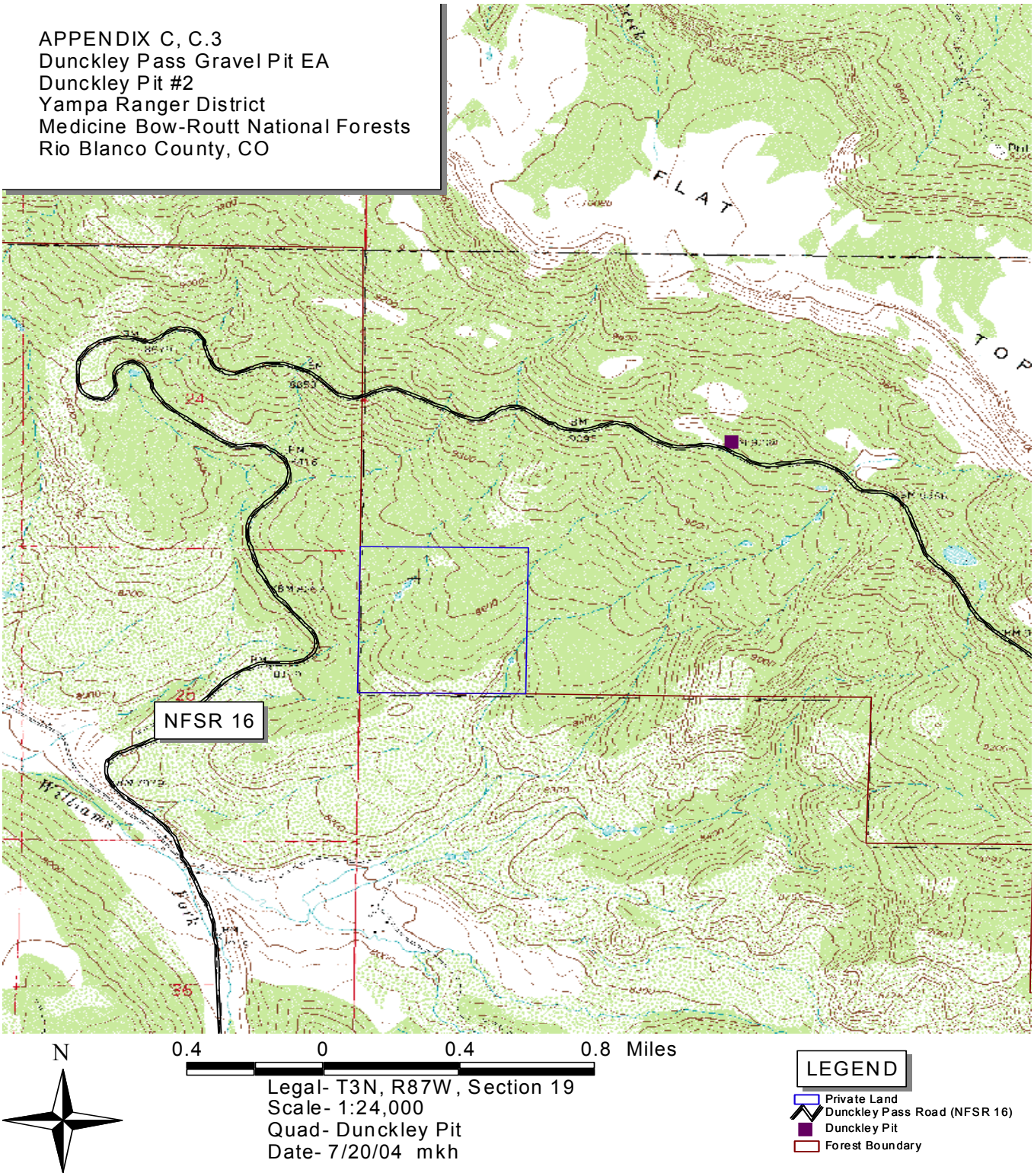
2a. "There should be no key impacts to wildlife. However there may be impacts on some hunters from the projects operation of the pits, the crusher and road maintenance. To mitigate this impact, we encourage you, if at all possible, to avoid operation during the hunting seasons, which run from the third weekend in October through the middle of November."
Response: See best management practices. It is unlikely that any operations would be performed at that time of year due to weather. The crushing operation is planned for the early field season.

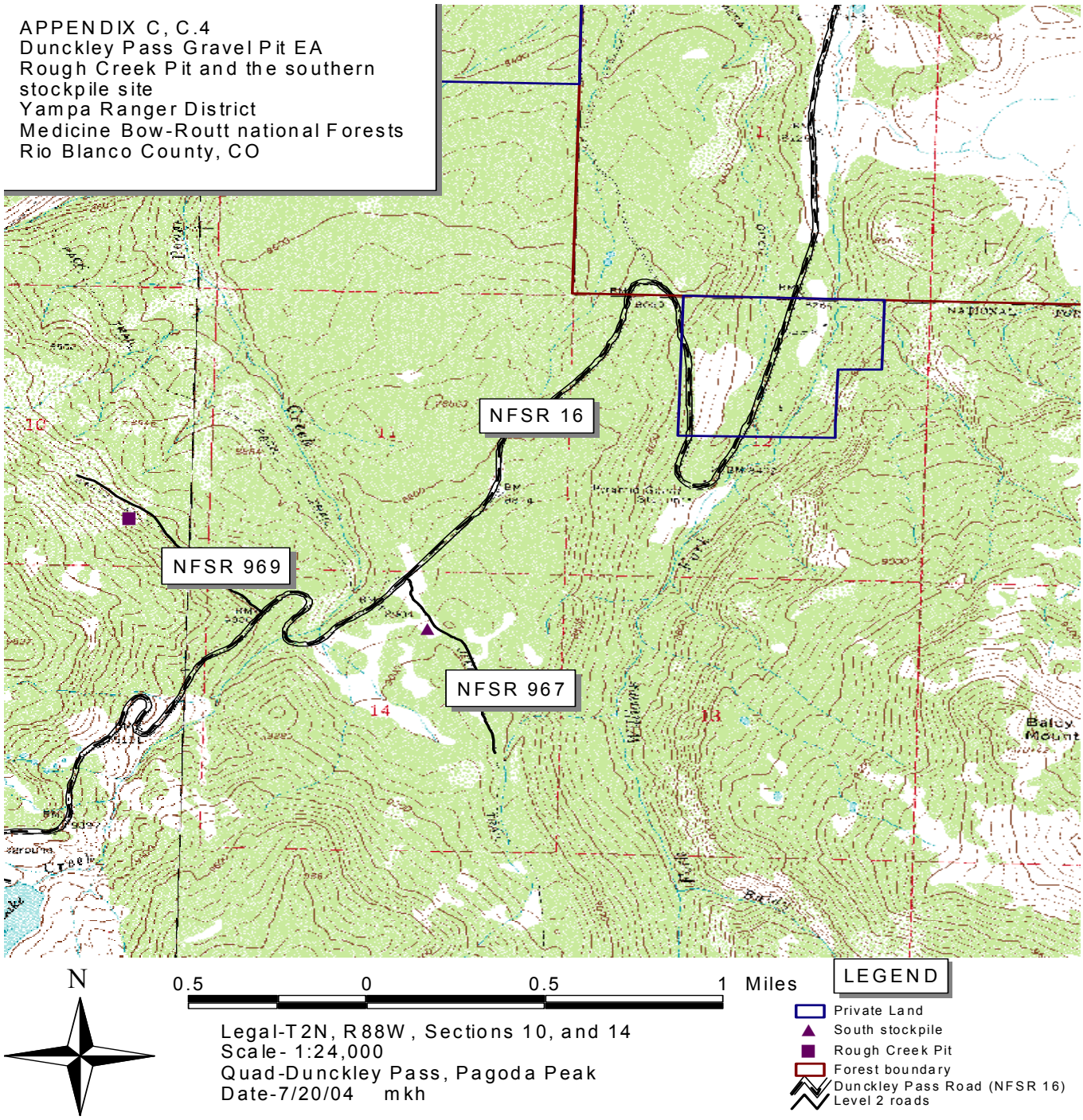
APPENDIX C: MAPS

APPENDIX C, C.1
Vicinity Map for Dunckley Gravel Plt EA
Yampa Ranger District
Medicine Bow-Routt National Forest, CO




APPENDIX C, C.2
Dunckley Pass Gravel Pit EA
Northern stockpile sites
Yampa Ranger District
Medicine Bow-Routt National Forests
Rio Blanco County, CO
NFSR 949.1A
NFSR 16
NFSR 940
N
0.5 0 0.5 1 Miles
Legal- T3N, R86W, Sec. 30; T3N, R87W, Sec. 36
Scale- 1:24,000
Quad-Sand Point
Date- 7/20/04 mkh
LEGEND
Private Land
Stockpile
Level 3 roads
Level 2 roads


APPENDIX C, C.3
Dunckley Pass Gravel Pit EA
Dunckley Pit #2
Yampa Ranger District
Medicine Bow-Routt National Forests
Rio Blanco County, CO
FLAT
NFSR 16
N
0.4 0 0.4 0.8 Miles
Legal- T3N, R87W, Section 19
Scale- 1:24,000
Quad- Dunckley Pit
Date- 7/20/04 mkh
LEGEND
Private Land
Dunckley Pass Road (NFSR 16)
Dunckley Pit
Forest Boundary


APPENDIX C, C.4
Dunckley Pass Gravel Pit EA
Rough Creek Pit and the southern stockpile site
Yampa Ranger District
Medicine Bow-Routt national Forests
Rio Blanco County, CO
NFSR 16
NFSR 969
NFSR 967
N
0.5 0 0.5 1 Miles
Legal-T2N, R88W, Sections 10, and 14
Scale- 1:24,000
Quad-Dunckley Pass, Pagoda Peak
Date-7/20/04 mkh
LEGEND
Private Land
South stockpile
Rough Creek Pit
Forest boundary
Dunckley Pass Road (NFSR 16)
Level 2 roads