

MINING PLAN DECISION DOCUMENT

Genwal Resources, Inc.
Crandall Canyon Mine
Federal Lease UTU-78953
Emery County, Utah



U.S. Department of the Interior
Office of Surface Mining Reclamation and Enforcement

Prepared June 2005

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United States Department of the Interior

OFFICE OF THE SOLICITOR

Rocky Mountain Region
755 Parfet Street, Suite 151
Lakewood, CO. 80215
TELE. (303) 231-5353
FAX (303) 231-5363

May 9, 2005

MEMORANDUM

To: Carl R. Johnston, Utah Federal Lands Coordinator,
QSM-
From: *John R. Kunz* John R. Kunz, Assistant Regional Solicitor
Subject: Mining Plan Modification Decision Document for
Genwall Resources, Inc.'s Crandall Canyon Mine
(Federal Lease UTU-78953)

We have reviewed the draft mining plan decision document for the subject mine. Subject to you satisfactorily addressing the comments noted in the attachment, we find that this document is legally sufficient for the purposes for which it is intended.

We did not attempt to verify land or legal descriptions, or map depictions.

Attachment (draft mining plan decision document)

The issue the Solicitor refers to is BLM's recommendation to prohibit full extraction mining in Little Bear Canyon. The recommendation was satisfactorily addressed by a Special Condition to the Utah DOGM permit. See Condition 3 of Attachment A of the permit included in this Mining Plan Decision Document.

J

RECEIVED

JUN 10 2005

ENVIRONMENTAL TRAINING

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Crandall Canyon
Federal Lease UTU-78953
Mining Plan Decision Document

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State Decision Document, Genwal Resources, Inc., South Crandall Lease, Crandall Canyon Mine, C/015/032.
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United States Department of the Interior

OFFICE OF SURFACE MINING RECLAMATION AND ENFORCEMENT

Washington, D.C. 20240

JUN - 6 2005

MEMORANDUM

To: Rebecca W. Watson
Assistant Secretary - Land and Minerals Management

From: Jeffery D. Jarrett 
Director, Office of Surface Mining

Subject: Recommendation for Approval, Without Special Conditions, of the Mining Plan Modification for Federal Lease UTU-78953 at Genwal Resources, Inc.'s Crandall Canyon Mine located in Emery County, Utah

I recommend approval, without special conditions, of this mining plan modification. My recommendation is based on:

- (1) Genwal Resources, Inc.'s complete permit application package (PAP),
- (2) compliance with the National Environmental Policy Act of 1969,
- (3) documentation assuring compliance with applicable requirements of other Federal laws, regulations, and executive orders,
- (4) comments and recommendations or concurrence of other Federal agencies, and the public,
- (5) the findings and recommendations of the Bureau of Land Management regarding the resource recovery and protection plan, the Federal lease requirements, and the Mineral Leasing Act, and
- (6) the State Decision Document, Genwal Resources, Inc., South Crandall Lease, Crandall Canyon Mine, C/015/032.

The Secretary may approve a Mining Plan for Federal leases under 30 U.S.C. §§ 207(c) and 1273(c). In accordance with 30 CFR Chapter VII, Subchapter D, I find that the proposed new mining plan will be in compliance with all applicable laws and regulations.

Attachment



IN REPLY REFER TO:

United States Department of the Interior

OFFICE OF SURFACE MINING
Reclamation and Enforcement
P.O. Box 46667
Denver, Colorado 80201-6667

UT-0067

May 13, 2005

Memorandum

To: Jeffery D. Jarrett
Director, Office of Surface Mining

From: Allen D. Klein 
Regional Director, Western Region

Subject: Recommendation for Approval, Without Special Conditions, of the Mining Plan Modification for Federal Lease UTU-78953 at Genwal Resources, Inc.'s Crandall Canyon Mine located in Emery County, Utah

I. Recommendation

I recommend approval, without special conditions, of a mining plan modification for Federal lease UTU-78953 at the Crandall Canyon Mine. This is a mining plan modification for an underground coal mine being permitted under the Federal lands program, the approved Utah State program, and the cooperative agreement.

My recommendation to approve the new mining plan is based on:

- (1) Genwal Resources, Inc.'s complete permit application package (PAP),
- (2) compliance with the National Environmental Policy Act of 1969,
- (3) documentation assuring compliance with applicable requirements of other Federal laws, regulations, and executive orders,
- (4) comments and recommendations or concurrence of other Federal agencies, and the public,
- (5) the findings and recommendations of the Bureau of Land Management regarding the resource recovery and protection plan, the Federal lease requirements, and the Mineral Leasing Act, and

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IN AMERICA 

- (6) the Utah Department of Natural Resources, Division of Oil, Gas and Mining (UT-DOGM) State Decision Document, Genwal Resources, Inc., South Crandall Lease, Crandall Canyon Mine, C/015/032, and the Utah State program.

If you concur with this recommendation, please sign the attached memorandum to the Assistant Secretary, Land and Minerals Management.

II. Background

The Crandall Canyon underground coal mine is located in Emery County, Utah, approximately 15 miles west of the town of Huntington, Utah and on lands within the Manti - LaSal National Forest. The mine has been in operation since 1985 and employs 130 people during full production. The life of the currently approved mining operations within the approved permit area is estimated to be approximately three (3) years. The mining operations use a combination of room and pillar and longwall mining methods. The average annual production rate is approximately 1.4 million tons per year from the Blind and Hiawatha seams.

The original mining plan for Federal lease SL-062648 at the Crandall Canyon Mine was approved on November 22, 1982. Since that approval, there have been four mining plan modifications for the Crandall Canyon Mine. Federal lease SL-062648 was approved on February 11, 1987, Federal lease U-54762 was approved on July 19, 1989, Federal lease UTU-68082 was approved on May 16, 1994, and Federal lease UTU-68062 was again modified and approved on November 3, 1994.

Since the last mining plan modification, fifty (50) acres have been incorporated into the approved mining plan area. These acres did not require Secretarial approval since they met the requirements of 30 CFR 746.18(d)(3)(ii). Specifically, this incidental boundary revision was in Federal Right-of-way UTU-77975 located in the E $\frac{1}{2}$ E $\frac{1}{2}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$, E $\frac{1}{2}$ E $\frac{1}{2}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$, E $\frac{1}{2}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$, Section 3, and NE $\frac{1}{4}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$, Section 10 Township 16 South, Range 6 East of the SL Meridian Utah, and was included within the approved mining plan area depicted on the mining plan area map of this mining plan decision document and Attachment 1 of the mining plan approval document.

Since the last mining plan modification, another 120 acres have been incorporated into the approved mining plan area. These acres did not require Secretarial approval since they met the requirements of 30 CFR 746.18(d)(3)(ii). Specifically, this incidental boundary revision was in Federal lease U-68062 located in the W $\frac{1}{2}$ NW $\frac{1}{4}$, and NW $\frac{1}{4}$ SW $\frac{1}{4}$, Section 32 Township 15 South, Range 7 East of the SL Meridian Utah, and was included within the approved mining plan area depicted on the mining plan map of this mining plan decision document and Attachment 1 of the mining plan approval document.

The State's current permit area covers 5,247 acres.

Approximately 15 surface acres are disturbed within the State's permit area.

A total of 3,447 acres of Federal coal exist within the State's current permit area.

A total of 3.4 million tons of Federal coal remain within the current permit area.

A total of 3,570 acres of Federal surface land exist within the State's current permit area.

The post mining land use within the currently approved mining plan area is grazing and wildlife habitat.

III. The Proposed Action

This mining plan action consists of a mining plan modification for Federal lease UTU-78953. Specifically, the mining plan action proposed by Genwal Resources, Inc. consists of:

extending coal recovery operations in the Blind and Hiawatha seams, in the South Crandall Lease Tract, Federal coal lease UTU-78953, within the area covered by Utah State permit C/015/032, in;

Township 16 South, Range 7 East SL Meridian Utah

Section 4, W $\frac{1}{2}$ SW $\frac{1}{4}$, S $\frac{1}{2}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$;
Section 5, SE $\frac{1}{2}$, S $\frac{1}{2}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$;
Section 8, E $\frac{1}{2}$, NE $\frac{1}{4}$ NW $\frac{1}{4}$;
Section 9 NW $\frac{1}{4}$.

The life of the mining operations is expected to continue for 5 years under Utah Permit C/015/032 and this proposed mining plan modification.

The average annual production rate and the maximum production rate would not change.

The approved State permit area would increase by 880 acres from its present 5,247 acres to a new total of 6,127 acres.

Surface disturbance within the approved State permit area will not increase from its present 15 acres.

This mining plan modification will add 880 acres for mining of Federal coal to the approved mining plan area shown on the map included with this decision document.

Approval of this mining plan modification will authorize mining of an additional 7.6 million tons of recoverable Federal coal.

Approximately 4,450 acres of Federal surface lands will be included in the mining plan area as a result of this action.

The post mining land use within the permit and mining plan area will not change.

The UT-DOGM has placed three (3) Special Conditions to this permitting action. An explanation of each stipulation and the requirements for its resolution can be found in the State Decision Document made a part of this Mining Plan Decision Document.

Genwal Resources, Inc.'s proposal does not require any additional special conditions to comply with Federal laws.

IV. Review Process

The UT-DOGM reviewed the PAP under the Utah State program, the Federal lands program (30 CFR Chapter VII, Subchapter D), and the Utah cooperative agreement (30 CFR § 944.30). Pursuant to the Utah State program and the cooperative agreement, UT-DOGM approved the permit revision on May 10, 2005.

The Office of Surface Mining Reclamation and Enforcement (OSM) has consulted with other Federal agencies for compliance with the requirements of applicable Federal laws. Their comments and/or concurrences are included in this decision document.

The Bureau of Land Management (BLM) reviewed the Resource Recovery and Protection Plan for compliance with the Mineral Leasing Act of 1920, as amended, and 43 CFR Part 3480. The BLM recommended conditional approval of this mining plan modification in a memorandum dated November 12, 2004.

In accordance with the September 24, 1996, Biological Opinion and Conference Report from the U.S. Fish and Wildlife Service (USFWS) to OSM, the UT-DOGM has sought comments from the U.S. Fish and Wildlife Service (USFWS) on threatened and endangered species and has incorporated the necessary reporting requirements into the UT-DOGM State Decision Document, Genwal Resources, Inc., South Crandall Lease, Crandall Canyon Mine, C/015/032. The USFWS and the UT-DOGM did not develop or recommend any species-specific protective measures, as indicated in the USFWS letter dated September 10, 2004.

The State Historic Preservation Officer concurred with the proposed mining plan in a letter dated October 23, 2003.

The proposed area of mining plan approval is not unsuitable for mining according to section 522(b) of SMCRA.

The mining plan modification area is located on Federal lands west of the 100th meridian within the boundaries of the Manti - La Sal National Forest. However, the Secretary of Agriculture finds that these lands do not have significant forest cover and that this surface coal mining operation complies with the Multiple-Use Sustained Yield Act of 1960 (16 U.S.C. §§ 528-531), the Federal Coal Leasing Amendments Act of 1976 (Pub. L. 94-377, 30 U.S.C. 201 et seq.), the National Forest Management Act of 1976 (90 Stat. 2949), and the provisions of SMCRA. Based on OSM's analysis and on the concurrence of the U.S. Forest Service in its letter dated March 18, 2005 the Crandall Canyon Mine will not be incompatible with significant recreational, timber, economic, or other values of the Manti - La Sal National Forest.

I have determined that approval of this mining plan modification will not have a significant impact on the quality of the human environment. The environmental analysis prepared by U. S. Forest Service and Bureau of Land Management entitled *Mill Fork Federal Coal Lease Tract UTU-71307 Environmental Assessment Lease-By-Application No. 11*, and *Joint Decision Notice/Finding of No Significant Impact Coal Lease Application UTU-78953 South Crandall Canyon Tract Emery County, Utah*, and other environmental documents noted in the Finding of No Significant Impact (FONSI), describe the impacts that may result from approval of this mining plan modification and its alternatives. The FONSI and supporting environmental analyses are included in this decision document.

OSM's review of the proposed action did not identify any issues that required resolution via the addition of special conditions to the mining plan approval.

Publication of a notice in the *Sun Advocate* and *Emery County Progress* newspapers notified the public of the availability of the administratively complete PAP for review. The last publication date was January 6, 2004. No public comments were received. The UT-DOGM determined that a bond for \$1,598,000 is adequate for the Utah Permit C/015/032 associated with this new mining plan. The bond is payable to the State and the United States.

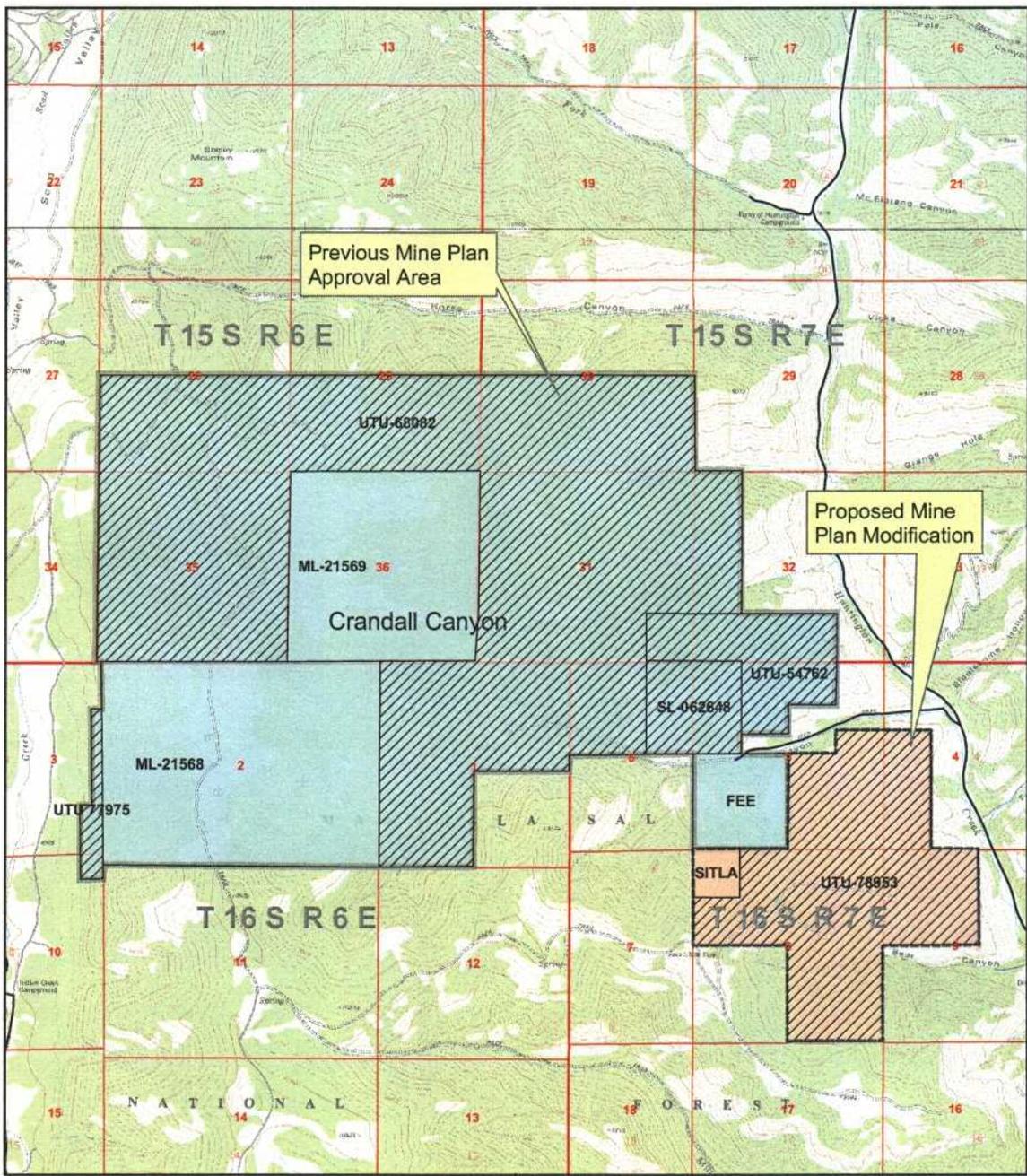
A chronology of events related to the processing of the PAP and this mining plan decision is included with the decision document. The information in the PAP, and other information identified in the decision document, has been reviewed by UT-DOGM staff in coordination with the OSM Federal Lands State Coordinator.

OSM's administrative record of this new mining plan consists of the following:

- the PAP submitted by Genwal Resources, Inc., LLC and updated through February 11, 2005,
- UT-DOGM's State Decision Document, Genwal Resources, Inc., South Crandall Lease, Crandall Canyon Mine, C/015/032, provided to OSM under the cooperative agreement,

- the Environmental Assessment entitled *Mill Fork Federal Coal Lease Tract UTU-71307 Environmental Assessment Lease-By-Application No. 11*, and *Joint Decision Notice/Finding of No Significant Impact Coal Lease Application UTU-78953 South Crandall Canyon Tract Emery County, Utah*,
- the FONSI of the proposed action and alternatives prepared by OSM,
- other documents prepared by UT-DOGM, and
- correspondence developed during the review of the PAP.

Attachment



Crandall Canyon Mining Plan Approval Area

ACT0150032

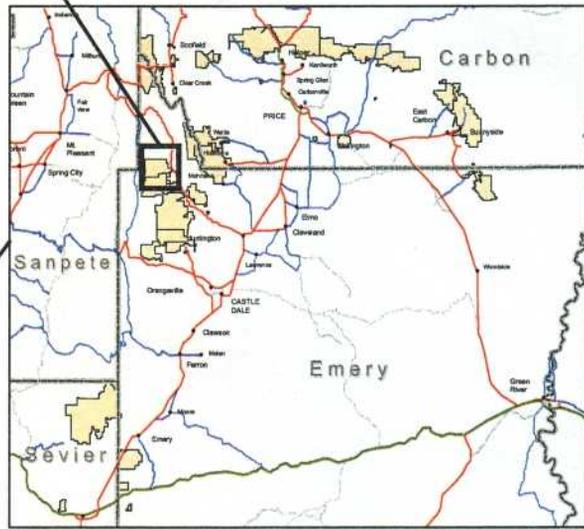
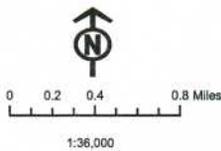
Emery County, Utah

March 2005

Township 15 South Range 6 & 7 East

Township 16 South Range 6 & 7 East

File: N:\gis\coal\coalireamaps\C0150032Fed.pdf



Locator Map

CHRONOLOGY

Crandall Canyon Mine
Federal Lease UTU-78953
Mining Plan Decision Document

DATE	EVENT
September 16, 2003	Genwal Resources, Inc. submitted the permit application package (PAP) under the approved Utah State Program to the Utah Division of Oil, Gas, and Minerals (UT-DOGGM) for a permit revision for the Skyline Mine.
October 7, 2003	UT-DOGGM determined that the PAP was administratively complete for public review and comment.
October 15, 2003	The Office of Surface Mining Reclamation and Enforcement (OSM) received the PAP.
October 23, 2003	The State Historic Preservation Office provided its comments on the mining plan.
January 6, 2004	Genwal Resources, Inc. published in the <i>Sun Advocate</i> and the <i>Emery County Advocate</i> the last consecutive notice of intent to add the South Crandall Canyon Lease to the Crandall Canyon mine.
September 10, 2004	The U.S. Fish and Wildlife Service provided its final consultation comments on the mining plan.
November 12, 2004	The Bureau of Land Management provided its findings and recommendations on the approval of the mining plan, with respect to the Resource Recovery and Protection Plan.
March 18, 2005	The Federal land management agency, U.S. Forest Service, provided its concurrence with the approval of the mining plan with respect to the management of Federally owned surface lands under their control.
May 10, 2005	UT-DOGGM approved the PAP.
May 13, 2005	OSM's Western Regional Coordinating Center recommended to the Director, OSM, that the mining plan action be approved.

U.S. DEPARTMENT OF THE INTERIOR
OFFICE OF SURFACE MINING RECLAMATION AND ENFORCEMENT
FINDING OF NO SIGNIFICANT IMPACT
FOR
Crandall Canyon Mine
Federal Coal Lease UTU-78953
Mining Plan Decision Document

1. Introduction

Genwal Resources, Inc. submitted a permit application package (PAP) for a permit revision for the Crandall Canyon Mine to the Utah Department of Natural Resources, Division of Oil, Gas, and Mining (UT-DOGM). The PAP proposed extending underground mining operations into approximately 880 acres of Federal lease UTU-78953. Under the Mineral Leasing Act of 1920, the Assistant Secretary, Land and Minerals Management, must approve, approve with conditions, or disapprove the mining plan for Federal lease UTU-78953. Pursuant to 30 CFR Part 746, the Office of Surface Mining (OSM) is recommending approval of the mining plan action without special conditions.

2. Statement of Environmental Significance of the Proposed Action

The undersigned person has determined that the above-named proposed action would not have a significant impact on the quality of the human environment under section 102(2)(C) of the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. 4332(2)(C), and therefore, an Environmental Impact Statement is not required.

3. Reasons

This finding of no significant impact is based on the attached U. S. Forest Service and Bureau of Land Management prepared Environmental Assessment, *Mill Fork Federal Coal Lease Tract UTU-71307 Environmental Assessment Lease-By-Application No. 11*, and *Joint Decision Notice/Finding of No Significant Impact Coal Lease Application UTU-78953 South Crandall Canyon Tract Emery County, Utah*, which have been independently evaluated by OSM and determined to assess the environmental impacts of the proposed action adequately and accurately and to provide sufficient evidence and analysis for this finding of no significant impact. OSM takes full responsibility for the accuracy, scope, and content of the attached environmental assessment.


Chief, Northwest Branch

APRIL 13 2005
Date

UT

**MILL FORK FEDERAL COAL LEASE TRACT UTU-71307
ENVIRONMENTAL ASSESSMENT
LEASE-BY-APPLICATION NO. 11**

June 1997

**USDA, Forest Service, Region 4
Manti-La Sal National Forest
Ferron/Price Ranger District
Emery County, Utah**

**USDI, Bureau of Land Management
Utah State Office**

Responsible Officials:

**Janette S. Kaiser - Forest Supervisor
Manti-La Sal National Forest
599 W. Price River Drive
Price, Utah 84501**

**Bill Lamb - Utah State Director
Bureau of Land Management
Utah State Office
324 South State St. (Suite 301)
Salt Lake City, Utah 84111-2303**

For Further Information Contact:

**J. Wade DeFreest- Team Leader
Manti-La Sal National Forest
Ferron-Price Ranger District
599 W. Price River Drive
Price, Utah 84501
(801) 637-2817**

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CHAPTER I - PURPOSE AND NEED

A. *Proposed Action*

The proposed action is to lease the Mill Fork Coal Lease Tract on federal lands in Emery County, Utah for underground coal mining.

On February 4, 1993, Genwal Resources, Inc. submitted Coal Lease Application UTU-71307 to the Bureau of Land Management (BLM), Utah State Office, to lease Federal Coal Lands in the vicinity of Mill Fork Canyon. This application is for leasing federal coal reserves adjacent to Genwal's active Crandall Canyon Mine, located approximately 15 miles northwest of Huntington, Utah, on the Price/Ferron Ranger District of the Manti-La Sal National Forest (Figure 1).

The proposed tract lies within the Huntington Canyon-Gentry Mountain and the Ferron Canyon, Cottonwood-Trail Mountain Multiple-Use Evaluation Areas as described in the Manti-La Sal National Forest Land and Resource Management Plan (Forest Plan). The Forest Plan Environmental Impact Statement (EIS) and record of Decision (ROD) makes these areas available for further consideration for coal leasing. The application will be processed according to the Lease-On-Application (LBA) process contained in the BLM Coal Leasing Regulations (43 CFR 3425).

The first step in the lease evaluation process was to delineate a tract. Tract delineation was completed by the BLM on October 2, 1996. The tract delineation report is available in the project file kept at the Manti-La Sal National Forest Supervisors Office. Figure 2 shows the lease tract boundaries as set by the tract delineation team. Named the Mill Fork Lease Tract, the area encompasses approximately 6,440 acres entirely within the proclamation boundaries of the Manti-La Sal National Forest. After tract delineation, the LBA process calls for a Data Adequacy Review, application of Unsuitability Criteria, and conducting an environmental analysis of the proposed action.

Data Adequacy Standards, as established by the Uinta-Southwestern Utah Coal Region, were met in December 1996, after the company submitted supplemental information requested by the reviewing specialists. Application of the Unsuitability Criteria for Coal Mining found in 43 CFR 3461, determined that the proposed tract is suitable for leasing. The Forest Plan shows that seven of the 20 unsuitability criteria are not applicable because these lands/resources do not exist on the forest. Four more criteria were found not to be applicable after exceptions and exemptions were applied. The remaining nine criteria were evaluated on the site-specific basis, and were either found to be not applicable or are excepted pending completion of consultations with the U.S. Fish and Wildlife Service (FWS) and Utah State Historic Preservation Office (USHPO). A detailed discussion regarding the application of the Unsuitability Criteria is contained in the project file.

This document has been prepared to further evaluate the tract for leasing and fulfill analysis requirements of the National Environmental Policy Act of 1969 (NEPA).

B. *Purpose and Need*

Genwal indicated a need for the additional coal reserves to maintain current production levels, provide a long-term supply of coal and to recover Federally-owned coal deposits that may otherwise be bypassed, and rendered inaccessible. At present production levels and with existing reserves, the mine life is estimated at 5 to 7 years. Addition of coal reserves contained in the Mill Fork Lease Tract

would extend the mine life by about 19 years, and allow the company to be competitive in the current coal market. The BLM, charged with the administration of the mineral estate on these federal lands, is required by law to lease minerals for economic recovery.

C. Decision to be Made by Responsible Officials/Authority

The Utah State Director of the BLM is responsible to decide whether or not to offer the tract for leasing under the Mineral Leasing Act of 1920, as amended, and the Federal Regulations 43 CFR 3400. The State Director may also decide to deny the application or conditionally approve one of the alternatives described in Chapter 2. The Forest Supervisor, Manti-La Sal National Forest, must consent to leasing National Forest System Lands before BLM can offer the tract for leasing, according to the Federal Coal Leasing Amendments Act of 1976. The Forest Supervisor must also prescribe terms and/or conditions (through lease stipulations) with respect to use and protection of non-mineral interests. Once a lease is issued, BLM is responsible for lease administration and enforcement of lease terms and conditions.

The proposed action will conform to the overall guidance of the Manti-La Sal National Forest Final EIS and Forest Plan (1986) and the Final EIS for the BLM's San Rafael Proposed Resource Management Plan (1992). This Environmental Assessment (EA) tiers to the decisions of both EISs, which are available for review at the Price Ranger District and the Manti-La Sal National Forest offices and the BLM San Rafael/Price Resource Area and the Moab District offices, respectively. The EA references the Environmental Assessment for Coal Lease Application UTU-68082, LBA No. 9, Crandall Canyon tract (1993).



MILL FORK LEASE TRACT LOCATION MAP

IDAHO

UTAH

WYOMING

Salt Lake City

Provo

APPROXIMATE LOCATION
GENWAL RESOURCES, INC.

Helper

Price

Orangeville

Richfield

NEVADA

COLORADO

Cedar City

St. George

Kanab

Page

Colorado River

San Juan River

Lake Powell

ARIZONA



FIGURE 1

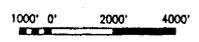
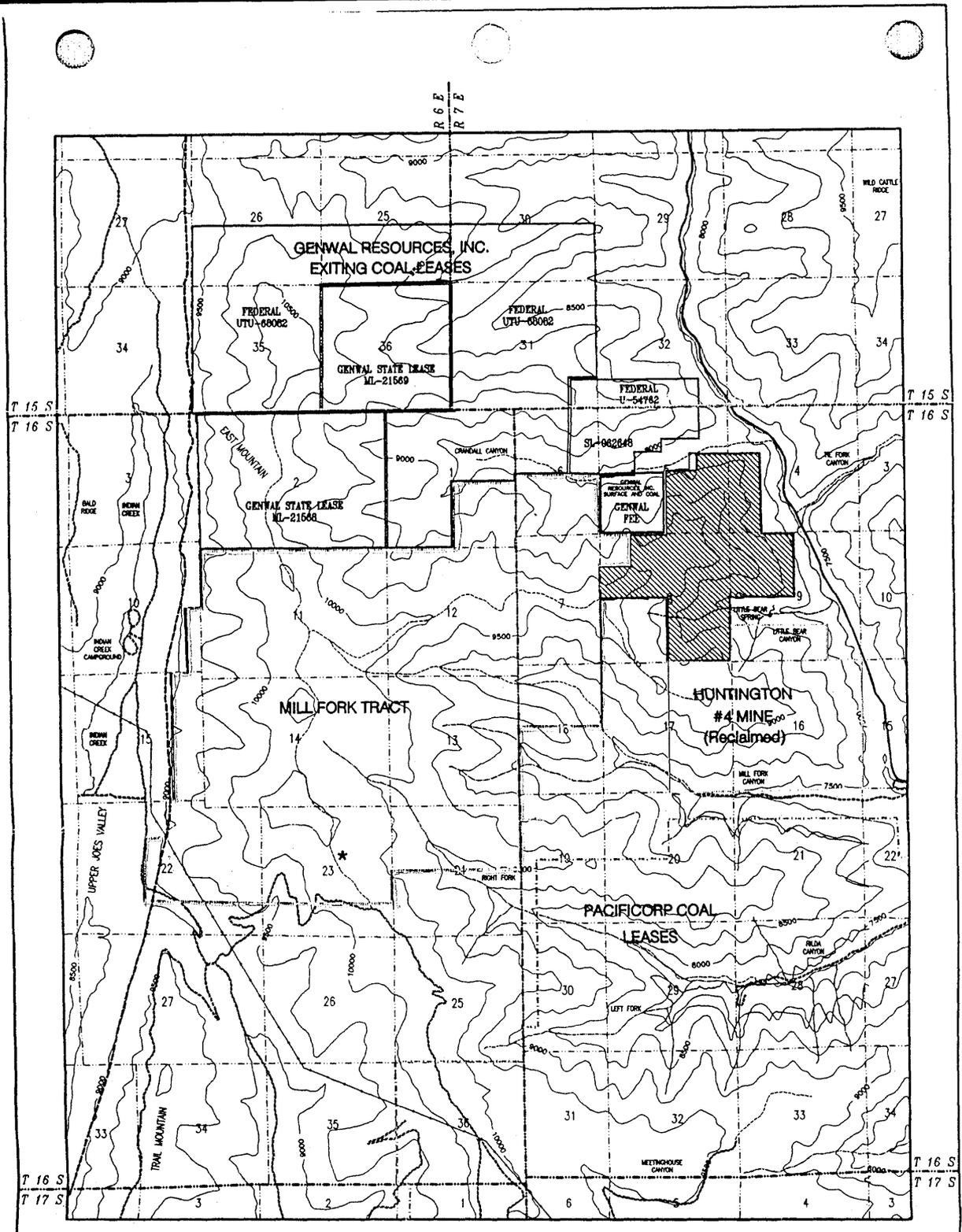


FIGURE 2

ALTERNATIVES 2 AND 3 
 ALTERNATIVE 4 (excludes hatched area)  (850 acres)

**MILL FORK LEASE TRACT
 PROPOSED ACTION**

- LEGEND:
- MILL FORK LEASE TRACT 
 - BURLINGTON RESOURCES GAS WELL 
 - LITTLE BEAR SPRING 
 - JOES VALLEY FAULT 

**MANTI-LA SAL
 NATIONAL FOREST**

D. Other Authorizing Actions/Authority

This coal lease application will be processed under the authority of the Mineral Leasing Act of 1920, as amended, and the procedures set forth under Federal Regulations at 43 CFR 3425, Leasing-on-Application. If the tract is leased, granting the lease would give the lessee an exclusive right to mine the coal, but does not authorize mining or surface disturbing activities.

Before any lease development can occur, the lessee or operator must obtain approval of a comprehensive Mining and Reclamation Plan and a mine permit in accordance with the state and Federal Regulations. Surface management agency (in this case the Forest Service) consent and provisions for protection of non-mineral resources are required prior to issuing a permit. Approval of a Resource Recovery and Protection Plan under 43 CFR 3482 and consent from the BLM are also required.

The Surface Mining, Reclamation and Control Act of 1977 (SMCRA) gives the Department of the Interior, Office of Surface Mining (OSM) primary responsibility to administer programs that regulate surface coal mining operations and the surface effects of underground coal mining operations. In January 1981, pursuant to Section 503 of SMCRA, the Utah Division of Oil, Gas and Mining (DOGGM) developed, and the Secretary of the Interior approved, a permanent program authorizing Utah DOGM to regulate surface coal mining operations and surface effects of underground mining on non-Federal lands within the state of Utah. In March 1987, under Section 523(c) of SMCRA, Utah DOGM entered into a cooperative agreement with the Secretary of the Interior authorizing Utah DOGM to regulate surface coal mining operations and surface effects of underground mining on Federal lands within the State.

Under the cooperative agreement, Federal coal lease holders in Utah must submit permit application packages (PAP's) to OSM and Utah DOGM for proposed mining and reclamation operations on Federal lands in the State. Utah DOGM reviews the PAP to ensure that the permit application complies with the permitting requirements and that the coal mining operation will meet the performance standards of the approved permanent program. If it does comply, Utah DOGM issues the applicant a permit to conduct coal mining operations. OSM, the BLM, the Forest Service, and other Federal agencies, review the PAP to ensure that it complies with the terms of the coal lease, the Mineral Leasing Act of 1920, NEPA, and other Federal laws and their attendant regulations. OSM recommends approval, approval with conditions, or disapproval of the mining plan to the Assistant Secretary, Land and Minerals Management.

Utah DOGM enforces the performance standards and permit requirements during the mine's operation and has primary authority in environmental emergencies. OSM retains oversight responsibility for this enforcement. BLM and the Forest Service have authority in those emergency situations where Utah DOGM or OSM inspectors can not act before environmental harm or damage occurs.

E. History, Background, and Potential Mining Scenarios

Genwal Resources, Inc., jointly owned by Intermountain Power Agency (IPA) and Andalex Resources, Inc, has been operating the Crandall Canyon Mine since 1984. Genwal holds 5,600 acres of coal leases on federal, state, and fee lands as shown on Figure 2. The company has a permit and approved mine plan for their existing lease holdings. On February 4, 1993, they applied to lease 4,053 acres of unleased Federal coal lands adjacent to the Crandall Canyon Mine. In order to maximize the coal resource recovery, the tract delineation team expanded the boundaries to encompass 6,440 acres.

Current production from the Crandall Canyon Mine is approximately 2.5 million tons per year, using one longwall system and two continuous miner sections. They believe the demand for their coal will increase in the future, and plan to increase production to an average of 3.5 million tons per year.

The only reasonably foreseeable development scenario is for Genwal to acquire the lease, and mine the tract from their Crandall Canyon Mine facilities. According to the BLM, another successful bidder would need to access the tract from a facility constructed in the approximate location of the old Huntington #4 Mine in Mill Fork Canyon, or through Rilda or Little Bear Canyons. Access through Mill Fork or Rilda Canyons is improbable due to thin coal. Access through Little Bear Canyon is also improbable because the canyon contains a culinary water source. Therefore, this analysis will be based on assuming that the tract will be mined from Genwal's existing facilities in Crandall Canyon.

F. Other Activities Affecting Cumulative Impacts

The following describe connected and cumulative actions that may affect leasing the Mill Fork Tract. If the Mill Fork tract is leased, some surface impacts are expected to be associated with underground mining. The following list details activities that might be associated with mining the tract, and also include other activities that may occur on lands within or adjacent to the tract. A tabulation of past, present and future actions in the vicinity of the lease tract are supplied in Tables IV-A, B, and C.

Connected Actions:

1. Ten coal exploration holes may be needed to evaluate coal quality and quantity. It is assumed that 5 holes would be accessed by road and require drill pads of approximately 1/2 acre each and approximately 1/4 mile of access road. The other five holes would be accessed from helicopter, requiring drill pads of 1/2 acres each. Effects of drilling will be evaluated on a site-specific basis, and will generate their own NEPA-based decisions.

Cumulative Actions:

1. In order to expand their surface facilities on private land adjacent to the lease tract, Genwal has proposed expanding across Crandall Creek to the south. This involves placing up to 1,500 feet of Crandall Creek in a culvert to facilitate crossing the drainage. This action is completely on private (fee land) inholdings within the Forest boundary.
2. A 135-acre timber sale (Blaze-o-Glory) on the top of East Mountain may be offered in 1997, which would involve cutting approximately 900 thousand board feet of aspen, spruce and fir. The spruce and fir would be harvested by selective cutting, but the aspen might be harvested by patch cutting (clear cuts of less than 10 acres).
3. An active gas field (Flat Canyon/Indian Creek Field or east Mountain Unit) lies within the southwest portion of the Mill Fork coal lease tract. One producing well has already been drilled (East Mountain Unit No. 32-23). Burlington Resources, present operator of the field, intended to expand the field by drilling additional holes within the Mill Fork tract, but plans are currently on hold. The oil and gas industry has expressed interest in leasing more area on and adjacent to the Mill Fork tract. Refer to Chapter III, section A, Geology, Soils and Mineral Resources, for further details on oil and gas activities.

3. Utah Department of Transportation (UDOT) may require upgrading SR 31 (Fairview-Huntington Highway) at the Crandall Canyon (FR 248) intersection as coal haul traffic increases as a result of increased production. Increased traffic on the road could exceed the current design standards, and may prompt the need to upgrade to road to accommodate the expanded use.

In addition, the following activities are planned in the foreseeable future for the vicinity of the Mill Fork Lease tract (see Table IV-C):

1. Energy West Mining operates the Deer Creek mine, located approximately 7 miles south of Genwal's Crandall Canyon facilities. Energy West has plans to extend the underground workings into the North Rilda Canyon area, and will be within 1/2 mile of the southeastern edge of the Mill Fork lease tract. Impacts to water resources are of concern.
2. Azalea Oil Company has proposed to drill an exploratory gas well in either North Hughes or Engineer Canyon. The company's preferred location is in Engineer Canyon, approximately 7 miles north of the lease tract up Huntington Canyon. Drilling is scheduled to begin Fall 1997, and last for about 5 months. Amounts of traffic in Huntington Canyon are of concern.
3. The Forest Service will be undertaking a project to improve or close dispersed recreation sites in Huntington Canyon. The Little Bear campground will be improved as a group use site, and a scenic byway site is planned in the area. The first phase of this project will be implemented in late summer 1997. Most of the work will be completed in 1998 and 1999. This project may increase the recreational use in side canyons including Mill Fork, Rilda and Crandall canyons.
4. A large-scale coalbed methane development project has been proposed by River Gas Corporation that would encompass about 188,000 acres primarily on BLM lands. The boundaries of the project area lie about 7 miles to the east and southeast of the lease tract. Impacts relating to the coalbed methane project should not affect the coal lease tract.
5. Livestock grazing is expected to continue on suitable range although the authorized numbers may fluctuate from year to year.

G. Negative Declaration

There are no prime farmlands, rangelands, or alluvial valley floors within the proposed lease area. Leasing of the tract should not result in significant impacts to paleontological resources; threatened or endangered plant or animal species. Protection of these resources is provided under the lease stipulations and Federal and State laws and regulations.

H. Project Scoping

Project scoping is an integral part of the environmental analysis process which involves the solicitation of comments from federal, state, and local agencies and interested organizations and individuals. The goal is to assure that the most accurate and current environmental information and public issues are incorporated into planning and decision-making.

Project scoping was initiated on November 19, 1996, and concluded on December 13, 1996, and included notices in local newspapers and letters to individuals who earlier had expressed interest in such proposals. Letters and records of verbal comments are contained in the project file. A total of 31 responses were received concerning the project as of February 1, 1997. The following summarizes the 31 responses received:

Castle Valley Special Services District (CVSSD, via Jeff Appel, counsel for the district), Huntington City and Councilman Ross Gordon, the Mayor of Cleveland, and Emery Water Conservancy District all expressed concerns over the potential impact of mining activity on the Little Bear Spring, a culinary water source for the towns of Huntington, Cleveland and Elmo. Comments also emphasized the need to design a replacement agreement identifying the replacement source in advance of additional mining activity. The attorney for CVSSD urged the Forest Service and BLM to undertake an EIS rather than an EA based on potential cumulative impacts of mining in the area.

North Emery Water Users Association (NEWUA) and Energy West Mining pointed out that the headwaters of Rilda Canyon, in the southern portion of the lease tract, are the recharge area for culinary springs located in lower Rilda Canyon. Energy West has conducted extensive hydrologic investigations relative to their own mining activity in the vicinity.

The Huntington-Cleveland Irrigation Company responded with concerns that mining activity is causing transbasinal diversion of water intercepted underground. Craig Smith, counsel for Huntington-Cleveland Irrigation Company expressed concern for water in the Huntington basin in general.

Other comments received pertaining to the protection of water resources were submitted by the Trail Mountain Livestock Operators, the Utah Wildlife Federation, and the Utah Division of Wildlife Resources (UDWR).

The UDOT identified concerns regarding the potential for rockfall hazards, safety at the intersection of the mine road and SR 31, the condition of SR 31, and its deterioration due to heavy truck traffic. Mr. Arthur Polani also expressed concern over the potential for increased truck traffic on the Huntington Canyon road.

Emery County Economic Development favors leasing based on economic benefits for Emery County. Mr. Dick Neilson, a private landowner with land adjacent to the tract, expressed concern that all existing coal reserves be recovered, including those on private lands.

Burlington Resources, formerly Meridian Oil Company, has existing oil and gas leases within the Mill Fork lease tract. They identified the need to protect their existing facilities and expressed concern over inhibiting future development of oil and gas reserves.

The U.S. FWS and the UDWR responded with concern for the impacts of coal mining on wildlife habitat, including that for threatened and endangered species, critical elk winter range, and the need for raptor surveys in the area.

I. Issues

The issues identified by the interested parties, along with other issues identified by the Interdisciplinary Team (IDT), which will be evaluated in this analysis, are:

HYDROLOGY:

Ground Water: (GW)

GW1 Mining activities and associated subsidence-induced ground movements could interrupt or degrade springs within or adjacent to the lease tract.

1. Little Bear Spring is used as a culinary water source for the cities of Huntington, Cleveland and Elmo. Development is administered by the CVSSD. Recharge to the Little Bear Spring could be interrupted or degraded as a result of underground mining. The concern is for diminishing quality and quantity of the ground-water and surface-water resources that feed the spring. Although the mining operations are at a higher elevation than the spring, overburden alteration and subsidence could interrupt the flow patterns.
2. North Emery Water Users Association has springs developed in the lower portions of Rilda Canyon. Ground water occurring in the Right Fork of Rilda Canyon may be intercepted or rerouted as a result of subsidence-induced ground movements and fracturing of the strata. Studies performed by PacifiCorp have indicated that approximately 80% of the recharge to these springs originates in the Right Fork of Rilda Canyon.
3. Other springs occurring within the lease tract, especially those which are important sources of water for stock and wildlife watering, and support riparian/wetlands habitat may be interrupted by subsidence-induced ground movements.

Evaluation Criteria:

- 1) Increases or decreases in flow from springs based on baseline information provided in the Data Adequacy package.
- 2) Changes in water quality from the springs based on parameters measured for Data Adequacy.

Surface Hydrology: (SW)

SW1 Riparian areas and wetlands could be diminished or lost if mining operations intercept water from streams, seeps or springs now supporting wetlands.

Wetlands occur in the Indian Creek drainage and additional smaller wetlands and riparian areas occur throughout the lease tract. The wetlands in Indian Creek are supported in part from flow in ephemeral drainages on East Mountain. Subsidence or other operations could divert water supplying these areas. The wetlands often support diverse communities of amphibians, macroinvertebrates (Forest Management Indicator Species) and other flora and fauna.

Evaluation Criteria:

- 1) Increases or decreases in spring flows feeding wetlands.
- 2) Wetlands/riparian areas (acres or individual) that reduce in size or become dry due to subsidence-related changes in subsurface flows.

SW2 Increased discharge could alter flow and water quality in Crandall Creek.

Additional discharge to Crandall Creek from the new mine workings could occur. Ground water could be encountered by underground workings if the mine workings extend into the Joes Valley Fault.

A discharge permit is currently in place, and the planned development would use this same discharge point.

- Evaluation Criteria:**
- 1) Amount of discharge, in gallons per minute (gpm).
 - 2) Comply with requirements of National Pollution Discharge Elimination System (NPDES) permit to ensure that beneficial use standards are met.
 - 3) Changes in stream channel processes, such as changes in sediment loading.

SW3 Surface water could be intercepted along the Joes Valley Fault if mining were to alter that structure in local areas.

Water from ephemeral drainages or springs could be intercepted if subsidence focuses along the Joes Valley Fault, or if ground movements produce fractures at the surface.

- Evaluation Criteria:**
- 1) Decreases in flow of drainages crossing the fault trace on the surface.
 - 2) Visual observation of surface cracking and interception of ephemeral waters.

TERRESTRIAL WILDLIFE: (WL)

WL1 Spotted bat roosting and hibernaculum habitat may be altered due to subsidence.

Spotted bats (*Euderma maculatum*), a USDA-Forest Service sensitive species, may occur within the lease area. Spotted bats roost and hibernate in cracks on cliffs that could be altered by subsidence caused by mining activity.

- Evaluation Criteria:**
- 1) Escarpment and/or cliff failure due to subsidence, in linear feet of failure face.
 - 2) Changes in the density of surface cracking at rock outcrops.

WL2 Subsidence-induced ground movements (cliff spalling) could alter raptor habitat.

Raptors (red-tailed hawks and golden eagles) are known to nest in or near the proposed lease area. It is possible that subsidence could cause the loss of nests, both in tree and cliff nesting species.

Evaluation Criterion: 1) Number of raptor nests lost to subsidence.

AQUATIC WILDLIFE: (FI)

FI1 Aquatic habitat could be altered if the character or quantity of streams and stream-flows change as a result of subsidence.

This concern relates to both perennial and intermittent drainages that could be affected directly, indirectly, or cumulatively by coal mining actions. Intermittent channels that run only in the spring are important because they provide spawning habitats for trout populations in Huntington Creek; an important sport fishery. Spawning habitat (low-gradient riffles) may become inaccessible due to step-like fragmentation of the longitudinal profile of the stream. Studies in Burnout Canyon, although inconclusive, suggest that subsidence may cause fragmentation of riffles into cascades. Drops of twelve inches or more are considered barriers for inland trout species. It is conceivable that subsidence could shift the stream substrate enough to present barriers to the movement of spawning fish.

Evaluation Criteria:

- 1) Changes in discharge (runoff and baseflow).
- 2) Changes in fish populations.

FI2 Water withdrawals within the Colorado River Basin impact the habitats of the four endangered fish species in the Colorado River and its tributaries: the Colorado squawfish, razorback suckers, bonytail chubs, and humpback chubs.

Water withdrawals, for example water used for coal exploration drilling, could trigger consultation requirements with the US Fish & Wildlife Service, if the usage exceeds 75 acre feet, forest wide, annually.

Evaluation Criterion: 1) Volume (acre-feet) of water withdrawn from the Colorado River Basin.

TRANSPORTATION AND ENGINEERING: (EN)

EN1 Increased coal production and subsequent haulage needs could cause road damage and conflict with design traffic levels on SR 31.

The UDOT will continue to recommend improvements to the section of the Fairveiw-Huntington Highway between the eastern Forest Boundary and the Crandall Canyon turn-off if the existing mine traffic continues for an additional extended period or if there is an increase in the daily or hourly traffic volumes. Loss of or disturbance to dispersed picnicking or camping or parking areas, the valley floor, flood plains, riparian areas or flow channels could result if it becomes necessary to increase the roadway width to allow upgrading of the travelway, shoulders, or structural section of the Highway 31.

- Evaluation Criteria:**
- 1) Number of vehicles per day.
 - 2) Changes in "Level of Service" (travel time).

EN2 Increased production and mine related traffic may affect traffic safety at the Crandall Canyon (FR 248) and SR 31 Intersection.

Traffic conflicts at the Crandall Canyon Road and SR 31 intersection could increase and the potential for accidents and traffic delays could increase.

- Evaluation Criteria:**
- 1) Number of accidents.
 - 2) Number of complaints and near misses.

ECONOMIC ISSUES (EC)

EC1 Coal leasing could conflict with oil and gas production.

An oil and gas company (Burlington Resources) has indicated the need to consider their existing oil and gas interests in the area of the coal tract. These include facilities, well sites, flow lines, access roads along with oil and gas leased acreage. Full recovery mining will likely result in surface subsidence impact on any surface installations. BLM has a multiple mineral development policy that provides for multiple mineral leasing with protection of valid existing rights.

- Evaluation Criteria:**
- 1) Tons of coal lost to avoid gas well.
 - 2) Delay in gas production.

EC2 Coal mining provides economic benefits such as employment, royalties, income, and tax base to local communities.

- Evaluation Criteria:**
- 1) Number and duration of jobs.
 - 2) Royalties generated, in dollars.
 - 3) Taxes generated, in dollars.

EC3 Recoverability of Federal coal reserves.

The different alternatives for leasing evaluated in the environmental document will have varying potential coal recovery amounts.

Evaluation Criterion: 1) Recoverable tons of coal, by alternative.

CULTURAL RESOURCES: (CR)

CR1 Mining related activities permitted under this coal lease could affect significant historical properties.

Key areas potentially containing significant historic properties potentially at risk from subsidence-induced impacts (ie: escarpment failures and severe surface cracking) in the lease tract have been identified.

Evaluation Criterion: 1) Number of significant sites found to be located in areas of subsidence-induced impacts.

SUBSIDENCE: (SU)

SU1 Mining-induced subsidence could cause escarpment failure, which may lead to concerns for public safety, visual quality, aquatic habitat and fisheries.

Potential for escarpment failure exists in Huntington, Mill Fork, Little Bear, and Crandall Canyons. This poses a concern for public safety if subsidence were to trigger rockfalls on roads, trails or into creeks used for recreation (especially fishing). Visual quality may also be degraded in places if escarpment faces are failed. There is also potential for rockfalls to encounter creeks in canyons which may alter the natural flow regime, changing the aquatic habitat.

Evaluation Criteria: 1) Potential for escarpment failure to cause rocks to reach roads, trails or creeks.
2) Size of potential failure.

RECREATION: (RE)

RE1 Coal mining activities could degrade the recreational experience in Huntington and Crandall Canyons for a longer time.

Leasing additional lands for coal mining in this area will extend the life of the mine and increase the amount of associated activities. Truck traffic, noise, dust, and existing portal facilities reduce the quality of the users' experience at the Crandall Canyon trailhead, and at dispersed recreation sites along lower Huntington Canyon and Little Bear Campground. Additional leasing will prolong the duration of the current impacts.

Evaluation Criteria:

- 1) Years of mine life.
- 2) Increase in traffic (including haul traffic) in hours/day.

J. Issues Recommended for Alternative Development

The following significant issues (40 CFR 1500.4 (g), FSH 1909.15 12.3) are recommended to be used to focus the environmental analysis, develop alternatives to the proposed action, and develop measures to mitigate and monitor anticipated environmental effects. An issue is significant if there is a dispute or unresolved conflict associated with potential environmental effects of the proposed action.

Issue GW1

Mining activities and associated subsidence-induced ground movements may interrupt or degrade springs within or adjacent to the lease tract.

K. Issues Carried Forward in the Analysis

Some issues were identified which will not necessarily drive the alternatives development, but which will be carried forth in the analysis and addressed in mitigation or additional stipulations on the proposed lease.

Issue SW1

Wetlands could be diminished or lost if mining operations intercept water from streams, seeps or springs now supporting wetlands.

Issue SW2

Increased discharge could alter flow and water quality in Crandall Creek.

Issue SW3

Surface water could be intercepted along the Joes Valley Fault if mining were to alter that structure in local areas.

Issue WL1

Spotted bat roosting and hibernaculum habitat may be altered due to subsidence.

Issue WL2

Subsidence-induced ground movements could alter raptor habitat.

Issue FI1

Aquatic habitat could be lost or degraded if the character or quantity of streams and streamflows change as a result of subsidence.

Issue FI2

Water withdrawals with the Colorado River Basin impact the habitats of the four endangered fish species in the Colorado River and its tributaries: the Colorado squawfish, razorback suckers, bonytail chubs, and humpback chubs.

Issue EN1

Increased coal production and subsequent haulage needs could require improvements on State Highway 31.

Issue EN2	Coal mining operations may affect traffic safety at the Crandall Canyon (FR 248) and State Highway 31 intersection.
Issue EC1	Coal leasing could conflict with oil and gas production.
Issue EC2	Coal mining provides economic benefits such as employment, royalties, income, and tax base to local communities.
Issue EC3	Recoverability of Federal coal reserves.
Issue CR1	Mining related activities permitted under this coal lease could affect significant historical properties.
Issue SU1	Mining-induced subsidence could cause escarpment failure, which may lead to concerns for public safety, visual quality, aquatic habitat and fisheries.
Issue RE1	Coal mining activities could degrade the recreational experience in Huntington and Crandall Canyons.

L. Issues Not Analyzed in Detail

Some issues were determined to be outside the scope of the proposed action, already decided (by law or Forest Plan, etc.), irrelevant to the decision, or not affected by the proposed action.

Underground mining may cause transbasinal diversions of intercepted (and then discharged) ground water within watersheds and subwatersheds.

Ground water intercepted is either used in the mine underground, or discharged from the workings. There was concern that water intercepted underground may be discharged into a watershed other than the one where the ground water was originally destined.

Ground water encountered in the Crandall Canyon mine was determined to have a mean residence time of over 14,000 years and does not contribute to surface flows in the area. There are no developed wells in the lease tract that use ground water from the area.

Mining related activities, such as drilling, and/or mining-induced subsidence could damage or alter the position of survey monuments and rectangular survey monuments (section corners or 1/4 corners).

Federal and state law requires the repair or replacement of damaged survey monuments. The Forest Surveyor has provided a list of known section corners, and the application of Special Coal Leasing Stipulation 16 (Appendix A) addresses replacement of these monuments.

Mining-induced subsidence may cause surface cracking and loss of vegetation important to support livestock grazing.

Surface cracking due to subsidence has proved to have little if any effect on vegetation and livestock grazing. Small cracks heal quickly, and the mining company is required to repair any larger cracks due to subsidence.

Mining may have impact on Threatened, Endangered and Sensitive (TE&S) plant species listed by the FWS.

None of the following listed T&E plants for Emery County occur on or near the proposed Mill Fork lease area. None are found within 50 miles of the area according to Bob Thompson, Forest Botanist.

FWS Listed T&E Plant Species

Barneby Reed-Mustard
Jones Cycladenia
Last Chance Townsendia
Maquire Daisy
San Rafael Cactus
Wright Fishhook Cactus

Schoenocrambe barneby
Cycladenia humillis var Jonesii
Townsendia aprico
Erigeron maquirei
Pediocactus despainii
Selerocactus Wrightiae

Additional surface disturbance could change the runoff and flood patterns.

No additional surface disturbance is anticipated according to the reasonably foreseeable development scenario prepared by the BLM (Appendix B). Therefore this issue was dropped from further analysis.

Additional surface disturbance could cause the pollution of surface streams.

No additional surface disturbance is anticipated according to the reasonably foreseeable development scenario prepared by the BLM (Appendix B). Therefore this issue was dropped from further analysis.

Coal leasing activities could leave private coal inaccessible.

A private land owner that has fee holdings adjoining the proposed tract has indicated a concern about making sure the coal is mined on adjoining Federal land as well as his fee coal. Assuming the legal description to be correct, the only parcel that adjoins the proposed tract is the SW 1/4 of section 8 (T 16 S, R 7 E, SLM). A preliminary review of the coal resources indicates marginal coal resources in the area. The Government cannot require a private company to mine private coal but would encourage the mining of adjacent mineable reserve if it does exist.

This issue has been determined to be outside of the scope of this analysis. The land owner has been in contact with the mining company to discuss terms.

CHAPTER II. DESCRIPTION OF ALTERNATIVES

A no action alternative and three action alternatives were developed to provide a full range of reasonable alternatives that sharply define the significant issues. Some of the alternatives attempt to examine methods which are less environmentally harmful and still achieve at least part of the purpose and need. Alternatives will include mitigation and monitoring to address the issues and anticipated environmental effects. Figure 2 shows the land surface area considered under each alternative.

A. Alternative 1 - No Action

Alternative 1 addresses the need to provide a "No Action" alternative (40 CFR 1502.14). The Forest Service would not consent to, and the BLM would not approve leasing the Mill Fork Tract as submitted. Subsequently, Alternative 1 would not allow for the mining of the tract, and therefore not provide coal reserves for the mine. No mitigation measures or monitoring would be required as part of this alternative other than meeting Forest Plan direction, standards, and guidelines.

B. Alternative 2 - Offer for lease with standard BLM Lease Terms, Conditions and Stipulations (stated on Form 3400-12)

The purpose and need of the proposed action is to lease the Mill Fork Tract, as delineated by the Tract Delineation Team, to provide coal reserves for the Crandall Canyon Mine so that current production levels are maintained, and to recover Federally owned coal deposits that may otherwise be bypassed. The Forest Service would consent to, and the BLM would approve, offering the tract of 6,440 acres, as delineated for competitive leasing. It could be leased to Genwal Resources for mining through their Crandall Canyon Mine. Because it is a competitive bid process, another company may also be able to bid on the lease, but this has been deemed unlikely by the BLM mining and economics specialists on the team. The lease would only have the standard BLM terms, conditions and stipulations that are included on the BLM coal lease Form 3400-12 (April 1986) attached. This alternative would not include Special Coal Lease Stipulations for the protection of non-coal resources.

This is not a viable alternative, it is included for analysis purposes only. It is intended to provide the basis for developing Special Coal Lease Stipulations for protection of non-coal resources to be added to alternatives 3 and 4 to mitigate impacts. The reasonably foreseeable development scenario for this alternative assumes that all mineable coal would be recovered to the fullest extent using accepted industry practices. This alternative is not selectable because it is inconsistent with the Forest Plan, and would require a Forest Plan amendment. Environmental impacts resulting from this alternative could cause material damage (functional impairment) of resources. This could be in violation of SMCRA.

C. **Alternative 3 - Offer for lease with application of Special Coal Lease Stipulations for Protection of Non-Coal Resources**

Alternative 3 addresses the issues identified through the application of the 18 Special Coal Lease Stipulations from Appendix B of the Forest Plan (attached as Appendix A). Two additional tract-specific stipulations were included, and are also in Appendix A. Alternative 3 emphasizes application of additional mitigation measures designed to lessen anticipated environmental effects. This alternative may require a Forest Plan amendment, because leasing the portion of land containing the Little Bear Canyon watershed would not be consistent with management unit direction. On Municipal Water Supply (MWS) management units, maximizing herbaceous ground cover and minimizing surface disturbing activities is the overall direction. Specific to leasable minerals management in MWS units, the forest plan states "allow mineral leasing where it has been determined that stipulated methods of mining will not affect the watershed values to any significant degree".

D. **Alternative 4 - Offer a modified tract for lease with application of Special Coal Lease Stipulations for Protection of Non-Coal Resources**

In addition to those activities addressed in Alternative 3, Alternative 4 specifically focuses on concerns identified as water issues. The portion of the lease tract east of the northeast quarter of section 7 is removed from the lease offering, to protect the water quality and quantity of Little Bear watershed and spring, reducing the overall tract by 880 acres. This alternative would not require a Forest Plan amendment, and would be wholly consistent with Forest Plan management direction.

E. **Design Features Common to Alternatives 3 and 4**

These two action alternatives evaluated include direction provided by the Forest Plan. All applicable forest-wide and management area goals, direction, and standards and guidelines described in the Forest Plan are incorporated into Alternatives 3 and 4, with the possible exception of fully meeting the MWS management unit objectives in alternative 3. Both these alternatives will have special coal lease stipulations applied to lessen environmental impacts. Effects analyzed under both alternatives are based on a conceptual mine scenario that could change by the time the actual mine plan is submitted. The mine plan could be amended at any time through modifications but could not be inconsistent with with the Special Coal Lease Stipulations.

F. **Comparison of Alternatives**

The following chart has been generated to display a comparison of alternatives relative to the identified issues. The issues are listed as resource elements. Refer to Section IV for a discussion of impacts for each alternative.

TABLE II - 1
Comparison of Alternatives

RESOURCE ELEMENT	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Geology, Soils and Mineral Resources	No coal mined	75 million tons could be mined	68 million tons could be mined	63 million tons could be mined
Hydrology				
Surface Water				
Riparian areas, wetlands, streams, seeps and spring	No effect	Potential for change in water quality and quantity	Same as alternative 2 however water replacement would be required	Reduced potential for change in water quality and quantity
Crandall Creek				
Beneficial Use Standards Flow	No effect	Potential for change in quality and quantity from mine discharge	Same as alternative 2 however water replacement would be required	Same as alternative 3
Interception of water at Joes Valley Fault	No effect	Potential to divert water into fractures or fault zone if subsided	Stipulation would prevent subsidence focusing on the fault	Same as alternative 3
Ground Water				
Interrupt springs	No effect	Potential to effect culinary water resources and other springs but would require replacement of water under state law.	Same as alternative 2 but water replacement required at present spring location	Reduced potential due to protecting the Little Bear watershed
Wildlife				
Terrestrial - Spotted Bats & Raptors	No Effect	Potential change to spotted bat and/or raptor habitat	Reduced potential due to involving less escarpment and special stipulation 20 requires mitigation, if bats are found	Same as alternative 3 but with further reduced potential for impact by excluding the northeast portion of the lease tract
Aquatic	No effect	Potential to alter trout habitat and/or Colorado River fish species	Same as alternative 2	Same as alternative 2

RESOURCE ELEMENT	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Transportation				
Traffic on SR 31	Planned increase in production from 2.5 to 3.5 million tons/year (mt/y) would increase traffic from 72 vehicles per hour (vph) to about 90 vph.	Same as alternative 1	Same as alternative 1	Same as alternative 1
Traffic safety on SR31 and FDR 248	No effect	Increase in traffic conflicts at the intersection	Same as alternative 2	Same as alternative 2
Socioeconomics				
Coal reserves for the Crandall Canyon Mine	5-7 year mine life. Production increase from 2.5 to 3.5 mt/y.	Add 21 years to mine life	Add 19 years to mine life	Add 17 years to mine life
Oil & Gas Production	No oil and gas development delays	1.7 million tons of coal left in place to protect gas well and related facilities. Oil and Gas development delayed indefinitely.	Same as alternative 2	Same as alternative 2
Employment	Continue employment until 2002	Continue employment until 2023	Continue employment until 2021	Continue employment until 2019
Royalties	No royalty generated from the proposed lease	\$141 million in royalties to federal, state and local governments	\$130 million in royalties to federal, state and local governments	\$120 million in royalties to federal, state and local governments
Cultural Resources				
Subsidence impacts to historical resources	No effect	Potential to disturb historical sites	Same as alternative 2	Reduced potential for disturbance relative to alternatives 2 and 3

RESOURCE ELEMENT	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Subsidence Escarpment failure	No effect	Potential for small failures along about 12,800 ft of Castlegate Ss. outcrop	Potential for small failures along about 10,000 ft of Castlegate Ss. outcrop	Potential for small failures along 5,700 ft of Castlegate Ss. outcrop
Recreation Recreational experience	Current mining activity would affect recreation quality until mining ceases in 5-7 years and reclamation would begin	Mine life and activity would be extended by 21 years	Mine life and activity would be extended by 19 years	Mine life extended by 17 years

CHAPTER III.

DESCRIPTION OF AFFECTED ENVIRONMENT

The lease application area is located in central Utah in the Wasatch Plateau coalfield. The tract is south and adjacent to Genwal Resources Inc.'s Crandall Canyon mine. The Wasatch Plateau is a north-south trending high plateau bounded by the Castle Valley to the east and the Sanpete Valley to the west. The tract is approximately 15 miles northwest of Huntington, Utah. The area is accessed by SR 31 which connects to State Highway 10 that runs between Price and Emery. U.S. Highway 6 accesses Spanish Fork, Price and Green River.

Forest Plan Direction

The following is a description of the affected environment, which will be presented by individual resource elements for clarity. The management prescriptions for the areas designated in the Forest Plan, are for Forage Production (RNG), Wood-Fiber Production and Harvest (TBR), Riparian Area Management (RPN), and Little Bear Canyon is designated as a Municipal Water Supply (MWS). Management requirements for these areas are found on pages III-64 to III-76 of the Forest Plan.

Under the RNG designation, the Forest Plan management emphasis is on production of forage and cover for domestic livestock and wildlife. When coupled with mineral development, the management prescription calls to "provide appropriate mitigation measures to assure continued livestock access and use", and for "those authorized to conduct developments will be required to replace losses through appropriate mitigations, where site-specific development adversely affects long-term production or management."

Under the TBR management unit, the emphasis is for production and use of wood-fiber for a variety of wood products.

The RPN unit is not delineated in the Forest Plan but management direction requires analysis of RPN units on site-specific project basis. The RPN unit emphasizes management of riparian areas and component ecosystems, including aquatic and riparian communities that occur within 100 feet of perennial streams, springs, seeps, bogs and wet meadows. The goals of management are to "1) maintain water flows to provide free and unbound water within the soil needed to create the distinct vegetative community, 2) provide healthy self-perpetuating plant communities, 3) meet water quality standards, 4) provide habitats for for viable populations of wildlife and fish, 5) provide stable stream channels and still water body shorelines, and 6) restore riparian habitats that have been lost through the downcutting of stream channels and wet meadows. With specific regard to mineral management activities in an RPN area, the Forest Plan calls to "avoid and mitigate detrimental disturbance to the riparian area, and initiate timely and effective rehabilitation of disturbed sites, and where possible, to locate mineral activities outside the riparian unit, and to design and locate settling ponds to prevent washout in high water."

Little Bear Canyon to the topographic divide is designated as a MWS (Municipal Water Supply) Management Unit. The General Direction for MWS units is to, "Allow mineral leasing where it has been determined that the stipulated methods of mining will not affect the watershed values to any significant degree." The General direction for geologic resources management is to, "Design activities to minimize negative or emphasize positive effects on

geologic features concerning recharge areas, depth and extent of the waters resource, and surface use in the management of municipal water supplies.*

The Forest Plan also designates a select group of species which can indicate habitat changes resulting from activities on the forest. Called Management Indicator Species (MIS), the list for the Manti-La Sal National Forest includes elk, mule deer, macroinvertebrates, blue grouse, golden eagles, and Abert squirrels. Species that exist in the lease tract will be discussed in the wildlife section.

A. *Geology, Soils and Mineral Resources*

The Mill Fork Lease tract encompasses an area within the Wasatch Plateau coal field on the northern portion of East Mountain. The tract is bounded by Crandall Creek to the north, the Right Fork of Rilda Canyon to the southeast, Huntington Canyon on the east, and the Joes Valley fault to the west.

The northern portion of East Mountain is a north-south trending elongated ridge. The ridgeline lies along the western portion of the lease tract and reaches an elevation of 10,730 feet. The west flank of East Mountain rises over 1,600 feet above Upper Joes Valley and Indian Creek. On the eastern flank of the mountain, the topography is typified by stream-incised canyons with elevations ranging from 9,800 feet along the ridgelines to 7,600 feet in the canyon bottoms.

Geology

The exposed stratigraphy consists of a Tertiary to Cretaceous-aged sedimentary sequence. From youngest to oldest, the stratigraphic units exposed within the lease tract consist of the Flagstaff Limestone, the North Horn Formation (shales, sandstones, conglomerates and limestone), the Price River Formation (sandstone interbedded with shales and conglomerate), the Castlegate Sandstone, the Blackhawk Formation (siltstone and sandstone interbedded with shale, also the coal-bearing formation), and the Star Point Sandstone. The Flagstaff Limestone caps higher points on East Mountain. The North Horn Formation forms the upper slopes of the mountain, and the bedrock surface in Upper Joes Valley. The Price River formation forms the intermediate slopes of East Mountain. The Castlegate sandstone creates prominent cliffs and escarpments on the western flank of the mountain, and in the major drainages on the eastern side. The Blackhawk formation outcrops and forms the slopes within the major drainages to the east. In lower sections of the major drainages, the Star Point sandstone forms a series of near-vertical cliffs that intertongue and overlie the slope-forming Mancos shale. The Star Point consists of three separate layers, named the Spring Canyon, Storrs and the Panther tongues (in descending order).

Economic coal beds occur at the base of the Blackhawk Formation. Drilling in this area of the Wasatch Plateau coalfield has shown that both the Blind Canyon (the upper seam) and the Hiawatha (the lower seam) are mineable within the lease tract. Separation between the coal beds is estimated to be 80 to 120 feet. Only the Hiawatha bed is being mined in the Crandall Canyon mine. Overburden on the Hiawatha bed is zero where it outcrops on canyon walls in the eastern portion of the tract, and reaches to 2,400 feet under East Mountain. On the western tract boundary, overburden ranges from 800 to 1,500 feet along the trace of the Joes Valley fault.

Local geologic structure in the lease tract shows that the strata dip to the east in the eastern portion of the lease tract, to the west in the extreme western portion, and to the northeast in the southeastermost corner. The Flat Canyon anticline, in the western portion of the tract, trends to the north with the axis underlying sections 11, 14, and 23. A small syncline has been mapped in Little Bear Canyon (in the northeast portion of the tract), that has the axis roughly parallel to Little Bear Creek. Both are gentle folds that have low dips on the flanks.

The western edge of the tract is bounded by the Joes Valley fault, a major north-south trending normal fault that marks the eastern side of the Joes Valley graben. A graben is a block of rock that is displaced downward between two normal faults. Displacement along the Joes Valley Fault ranges from 2,000 to 3,000 feet. Numerous other sympathetic faults have been mapped within the graben. Upper Joes Valley is in the northern end of the graben and contains thick colluvial and alluvial deposits that overlie the North Horn Formation in the valley bottom. According to the Utah Geological Survey, along the east, upthrown side of the Joes Valley fault, the Hiawatha coalbed lies approximately 800 feet below the surface (Kitzmilller 1982).

A series of northeast-southwest trending faults were mapped in the Huntington #4 mine adjacent to the southeast corner of the tract. These faults may indicate an extension of the Mill Canyon graben which was encountered in the Deer Creek mine to the south. A geophysical study performed by PacifiCorp in the Rilda Canyon area also indicates presence of faults along the same trend (Fry and Lloyd, 1991). These faults appear to have 20 to 30 feet of displacement, and dip steeply to the west. Evidence of faulting has also been documented in Little Bear Canyon, and occurs along the same trend of the faults forming the Mill Canyon graben (Nielson, 1996).

The midslope of East Mountain displays extensive land instability characterized by failure of the colluvium. More severely disrupted terrain suggests that deeper slumps may also have occurred. Springs on the western face of East Mountain may be contributing to the instability.

Soils

The soils on the lease tract have developed primarily from sandstone and shale parent materials of the North Horn, Price River, Castlegate, and Blackhawk formations. Along the ridge top of East Mountain a few spots have soils developed in Flagstaff limestone. The regolith consists of both residual and colluvial materials, yielding soils that range from shallow to very deep. Most soils are well drained with potentially rapid runoff owing to the steepness of the slopes.

The elevational range of about 7,600 to 10,700 feet and the steep slopes with contrasting aspects account for large soil temperature and moisture differences. The soils on the lower elevation south facing slopes are hot and dry, and those at the higher elevations and north facing slopes are cool and moist. Soil temperature regimes include cryic (cold) and frigid, and the soil moisture regimes are udic (moist) and ustic (semiarid). The aspen and spruce-fir vegetation types are characteristic of the cryic/udic environment and the lower elevation mountain brush with some pinyon-juniper is characteristic of the frigid/ustic situation.

Soils on sandstone are typically cobbly or stony with textures of loamy sand, sandy loam, or loam. Rock outcrops are common, especially with the Castlegate formation. These soils are most common along the east side of the lease tract.

Most of the area at the higher elevation have clayey soils derived from North Horn formation materials. Textures of clay loam, silty clay loam, and clay are common. The subsoils often have a higher clay content than the surface. They have high water holding capacities and are prone to slope failures. These clayey soils typically have high self-healing capabilities, and tend to buffer the effects of tension cracks in the soil zone that sometimes form due to subsidence.

Topsoil development is most pronounced under aspen vegetation types. It is commonly 10 to 20 inches thick and has a relatively high organic matter and nutrient content. On the steep, north facing slopes that support a spruce-fir type the topsoil thickness may vary from about three to ten inches.

Major soil limitations in the lease area include high soil erosion potentials, slope instability, cold temperatures (short growing season), stoniness, and some droughty soils (lower elevations, south slopes).

The lease area has been mapped as part of the Soil Survey of the Manti Division, Manti-La Sal National Forest (D.Larsen, in progress). Nine soil map units have been identified. Map unit descriptions are available.

Mineral Resources

The northern portion of the Wasatch Plateau (Manti North Oil and Gas Potential Area), including the Mill Fork Tract, has high potential for the occurrence and development of oil and gas, especially for expansion of the Flat Canyon/Indian Creek Gas Field (USDA-FS, Intermountain Region, 1992). The area is available for oil and gas leasing and development (Forest Plan as amended), with specified stipulations for the protection of non-mineral resources. Any future proposals for drilling and production would require an environmental analysis and specific approvals by the BLM and Forest Service. BLM is the responsible agency for the administration of leases and wells on Federal lands (including National Forest System lands) under the Mineral Leasing Act of 1920, as amended.

The southwestern portion of the Mill Fork Tract (E 1/2, E 1/2, SE 1/4, Section 10; N 1/2, Section 13; Lots 1-12, N 1/2, SE 1/4, NE 1/4, Section 14; E 1/2, Section 15; N 1/2, N 1/2, N 1/2, Section 23, T 16 S, R 6 E, SLM) is currently leased for oil and gas. The leases date back to the 1970's and are included within the Flat Canyon/Indian Creek Gas Field (East Mountain Unit) operated by Burlington Resources. They will remain in effect for as long as the gas field is producing gas in economic quantities. The field currently contains 6 producing gas wells and several old plugged and abandoned wells. Only the northernmost production well (East Mountain No. 32-23, SW 1/4 NE 1/4 Section 23, T 16 S, R 6 E, SLM) lies within the Mill Fork Tract. A 4-inch diameter aluminum gas pipeline runs from the well south along FR 245 and down Flat Canyon. Sections of the pipeline are buried.

Burlington Resources does not have immediate plans for expanding the existing field, but has not abandoned future options. Other companies have expressed interest in the area. The potential for occurrence of oil and gas reserves and development within and adjacent

to the proposed lease tract is rated as "high" based on existing production, geologic conditions, and industry interest in leasing available areas. BLM has postponed offering additional oil and gas leases in the tract pending completion of the Mill Fork Tract EA, and/or completion of mine activities within a resultant lease.

B. *Hydrology*

Surface Water

Surface drainages within or adjacent to the lease tract include portions of Crandall Creek, Little Bear Creek, Mill Fork Creek, Right Fork of Rilda Creek, and tributaries of Indian Creek. Crandall, Little Bear, Mill Fork and Rilda Creeks drain the east slope of East Mountain and generally flow west to east into Huntington Creek. Huntington Creek flows south and is tributary to the San Rafael River. Several small tributaries of Indian Creek drain the west slope of East Mountain within the lease tract, along with a fragment of Cottonwood Creek in the extreme southwest corner of the tract. Indian Creek flows south to Lowry Water and then to Joes Valley Reservoir. Joes Valley Reservoir drains into Cottonwood Creek (Straight Canyon), also a tributary of the San Rafael River. The San Rafael River is part of the Colorado River Basin. The State of Utah designated standards for water in the Huntington Canyon drainage and Indian Creeks are 1C, 2B, 3A and 4, corresponding to domestic, recreation, cold water fisheries and irrigation beneficial uses. Drainages in the lease tract have been compared to the State of Utah 303(d) list and none of the waters within the lease tract appear on the list.

The portions of Crandall Creek within the lease tract are perennial, and one intermittent tributary is present in section 6, T 16 S, R 7 E. For this environmental analysis, the following criterion defines the perennial nature of streams: flowing 2 of 3 years on or near October 1. The portions of Little Bear, Mill Fork, and the Right Fork of Rilda Creeks are intermittent, and the tributaries of Indian Creek are ephemeral within the tract. The intermittent drainages flow during runoff and when they receive flow from springs, but are usually dry by late summer or early fall. The ephemeral drainages carry water only immediately after storms.

Crandall Canyon

According to the USGS, discharge from Crandall Creek ranged from a minimum of 0.24 cubic feet per second (cfs) to 97 cfs from 1979 to 1984. Spencer and Kelly (1984) estimated the 2-year recurrence interval flow at about 48 cfs at the confluence with Huntington Creek using a unit hydrograph model. Flow in Crandall Creek immediately above at the mine portal using the proportionate area of the watershed above the mine would be about 41 cfs. About 80 percent of streamflow in Crandall Creek occurs between April and July as a result of snowmelt. Suspended sediment loads in Crandall Creek were measured in 1978 and 1979 and were found to range between 0.08 to 0.41 tons/day based on flow variations (Danielson 1981). Crandall Creek immediately below the mine was designated as a class A1 channel type (steeper than 4% with boulder or bedrock channel) by Raleigh Consultants in a 1992 survey of drainages in the Huntington watershed.

Little Bear Canyon

Little Bear Canyon is a small watershed on the eastern edge of the lease tract. A large spring occurring in lower portions of the canyon is developed by Castle Valley Special Services District (CVSSD) and provides culinary water to nearly 2,500 residents in the towns of Huntington, Cleveland and Elmo. Flow in Little Bear creek was measured at 0.24 cfs in October 1978 and 1979 (Danielson 1981).

In 1964 there was a fire that burned 830 acres of Little Bear Canyon, and was followed by a flood in 1965. In September 1966, a hydrologic analysis found that the burn area was healing poorly, but by 1969 all areas were healing.

Mill Fork Canyon

Upper portions of Mill Fork Canyon are within the lease tract, the drainage is intermittent in these reaches. In the seep and spring inventory, 49 springs in the head of Mill Fork Canyon were identified. Flows range from seeps to 50 gpm, with typical flows ranging from 1 to 5 gpm. The occurrences are classed as follows:

Flow	# of Springs
>25 gpm	4
20-25 gpm	0
15-19 gpm	4
10-14 gpm	5
5- 9 gpm	7
0- 4 gpm	29

Field observations by Forest Service personnel in August 1996 (Dufour and Mattson) showed that Mill Fork Creek was dry at the lower forks in section 17, T 16 S, R 7 E. Flow was observed emanating from a spring in the creek bottom approximately 0.5 mile downstream from the forks.

Rilda Canyon

Rilda Canyon is on the southeast boundary of the lease tract, and the upper portions of the Right Fork of Rilda Canyon lie within the tract boundaries. The Right Fork of Rilda Canyon is intermittent and drains about 2,114 acres. It is a third order canyon, according to Strahler's classification. Genwal's spring and seep inventory finds 41 springs and seeps within the Right Fork of Rilda drainage and reports that 25 of them reach the stream. The flow is classed as follows:

Flow	# of Springs
>25 gpm	4
20-25 gpm	3
15-19 gpm	4
10-14 gpm	7
5- 9 gpm	4
0- 4 gpm	19

A fire occurred in the upper portions of Rilda Canyon in 1992. Observations by Forest Service personnel in July 1996 (Mattson and Reed) showed that a large amount of sediment entered the Right Fork from the burn area during intense precipitation events.

North Emery Water Users Association (NEWUA) has a developed water system in the lower portions of Rilda Canyon on the main stem just below the confluence of the right and left forks. Referred to as springs, the system consists of a series of collection lines and galleries extending westward up Rilda Canyon and southward up a small side drainage. This system serves over 400 connections in the communities of Cleveland, Lawrence and Elmo.

Flows in the Right Fork of Rilda Creek have ranged from approximately 0.5 to 10 cfs during peakflows, and from approximately 0 to 0.5 cfs during baseflow in the years from 1989-1995 (PacifiCorp, 1996).

Tributaries to Indian Creek

The tributaries to Indian Creek on the west slope of East Mountain are ephemeral. Indian Creek itself is outside the lease tract boundaries. Indian Creek becomes perennial in the SE 1/4, Sec 34, T 15 S, R 6 E, approximately one mile north of the lease tract. Most of the flow likely originates in canyons on East Mountain as either surface flow, or from springs at the base of the colluvial/alluvial toe in the valley floor. Indian Creek progressively gains flow as it picks up water from various springs and stream sources. The Indian Creek valley also supports a large wetland area. Flow records collected by the Forest Service from 1972 to 1975 showed a range of flows for the period of record between 1 cfs and 30 cfs. The seven ephemeral drainages flow from the proposed lease into Upper Joes Valley. From the *Utah Hydrologic Atlas*, the mean annual runoff from the proposed lease is 7 to 8 inches per year on the Joes Valley side of the divide, representing about 1,200 acre-feet (Jeppson et al, 1968). The mean annual runoff from the Upper Joes Valley area is about 9 inches, computing to 4,150 acre-feet. Therefore, the proposed lease area provides about 29% of the water to Indian Creek at the lower lease boundary.

Cottonwood Creek

A small fragment of Cottonwood Creek watershed lies within the lease tract in section 22, T 16 S, R 6 E. Several springs were identified in the spring and seep inventory, but are outside the lease tract. Draft mine plans do not show that mining will occur within any portion of the Cottonwood drainage, therefore there will be no further discussion regarding the creek in this document.

Wetland Areas

Additional small wetland and riparian areas associated with local springs are also common within the lease tract. For analysis purposes, an average size of 0.25 acres of wetlands occur per spring is assumed based on local experience. 135 springs were identified in the spring and seep inventory, which would compute to nearly 34 acres of wetlands scattered throughout the lease tract. From aerial photo interpretation, in the Upper Joes Valley area and immediately below the proposed lease, about 270 acres of wetlands are privately owned and 100 acres of wetlands are on National Forest System Lands.

Surface Water Quality

Water quality is good in the drainages. Dissolved solids concentrations are generally less than 500 mg/l. Total dissolved solids increase near Huntington Canyon where the saline Mancos Shale is exposed along the stream reach. Predominant dissolved chemical constituents in surface waters are calcium, magnesium and bicarbonate. Sediment yields in the Upper Huntington Creek drainage were estimated at 0.1 acre-feet per square mile by Wadell, et al, 1981.

Mine Water Discharge

Water currently encountered in the Crandall Canyon mine workings is either used underground or discharged through an approved National Pollution Discharge Elimination System (NPDES) location into Crandall Creek. Water quality standards that must be met are described in the NPDES permit, a copy of which is in the project file. An estimated 350,000 gallons/day (0.5 cfs) is presently being discharged. Because Crandall Creek has a boulder/bedrock channel, changes to the channel morphology have not been observed. Quality of the water discharged must meet beneficial use standards as described by the State of Utah. Water encountered in workings within the Mill Fork lease tract will also be discharged from this approved location.

Ground Water

Ground water in the lease tract has several modes of occurrence; the first consists of laterally discontinuous perched water-bearing zones that issue water to springs locally where permeable layers of sandstone overlie less permeable layers of shale, mudstone or clay. Another system present is a more continuous saturated zone in the Star Point Sandstone. Alluvial materials present in stream canyons, and faults and fractures in the local strata may also contain ground water. Ground water occurs in all of the exposed strata, but the units are not saturated uniformly.

Perched Water-Bearing Zones

The perched water-bearing zones are typically associated with the North Horn and Price River Formations. The majority of the springs identified within the lease tract occur in the southern half (sections 8, 13 and 23), at the heads of Mill Fork and the Right Fork of Rilda Canyons. Most of these springs issue from the North Horn Formation, and some occur at the contact between the North Horn and the Price River, or at the base of the Castlegate sandstone where it overlies the Blackhawk formation. Flows measured in these springs range from 0.5 to 50 gpm, with most springs flowing approximately 1 to 2 gpm. Typically these springs flow during the spring and summer, but cease by late summer or fall (Genwal, 1996). Another cluster of springs occurs in the head of Little Bear Canyon (in the north east portion of the lease tract). These springs issue from the base of the Castlegate sandstone, or are associated with landslides, and flow from 0.25 to 2 gpm. Numerous other springs were identified on the west flank of East Mountain, and drain towards Indian Creek. Most of these springs issue from the Price River formation or the Castlegate Sandstone, and range from seeps to 10 gpm, with typical flows ranging from 1-2 gpm. A linear alignment of springs in the Indian Creek drainage (in sections 15 and 22, outside the lease tract boundaries) have also been identified and are likely associated with colluvial/alluvial deposits from East Mountain. These occur in the North Horn formation and contribute flow to Indian Creek.

Springs associated with perched water-bearing units are recharged annually by precipitation. Generally, the springs exhibit high flows after snowmelt that recede rapidly to a baseflow condition, or cease flowing by late summer or fall. Most of the precipitation occurs as snow, and because of the high clay contents of the local strata, most water runs off. Only an estimated 5-12% goes to ground-water recharge and most of this resurfaces as springs in the perched water-bearing zones. The rapid response indicates that the springs in the area occur close to their recharge sources. Snowmelt percolates into permeable rocks, and flows vertically until it hits an impermeable layer, then flows laterally. Impermeable layers present in the local strata tend to impede downward migration of flow, except locally through fractures or faults (Danielson, 1981).

In the upper Right Fork of Rilda Canyon, springs high in the drainage basin contribute flow to the creek and likely support shallow ground-water flow in alluvial deposits. The alluvial materials are one source of water that support a culinary water source in the lower portions of Rilda Canyon. North Emery Water Users Association has developed springs and collection galleries in the alluvial materials.

Ground water in the Star Point Sandstone

According to the USGS, an extensive ground-water system in the Wasatch Plateau is present in the Blackhawk formation and the Star Point Sandstone. In the area of the lease tract, it does not appear that the Blackhawk contains large quantities of water, based on few springs, lack of inflows in the active Crandall Canyon mine workings (except for inflows from intercepted sand channels), and the fact that faults in the Huntington #4 mine south of the lease tract were dry at the mine level (Vaughn Hansen, 1977). It is also unlikely that large amounts of recharge infiltrates from the surface through the Blackhawk and overlying units due to low permeability materials that impede downward migration of water.

Data from drill holes suggests that the base of the Hiawatha coal seam and the top of the Spring Canyon member of the Star Point sandstone are separated by a variable amount of shale and sandstone layers ranging from 5-13 feet within the lease tract. Water levels in monitoring wells in the active mine workings, and new wells completed in the southernmost portion of the active mine (adjacent to the northern border of the lease tract) supported an east-southeast flow direction in the Spring Canyon member. In the area of the lease tract, local geologic structure, such as the Little Bear Canyon syncline or the Flat Canyon anticline likely influence flow directions in the Star Point, assuming flow generally follows the dip of the strata. In the active mine workings, there is evidence that the strata dip to the west in the extreme western part of the workings, likely related to the Flat Canyon anticline and/or drag folding along the Joes Valley Fault. Reports from Genwal personnel indicate that water is seeping from the floor, and flowing to the west in this area. A monitoring well completed in the Spring Canyon member in the western portions of the mine flowed on the surface, showing that the formation is under some confining pressure in places. This may indicate presence of a ground-water high along the Joes Valley fault. These conditions could also be present in the proposed lease tract.

Lines (1985) reported that the Star Point Sandstone has very low permeabilities in the vicinity of Trail Mountain, two miles southwest of the lease tract. Age dating of ground water in the Crandall Canyon mine has indicated that water from wells completed in the Star Point Sandstone has a mean residence time of about 18,000 years (Mayo and Associates, 1997). This supports that flow rates through the sandstone are very slow. In general the Star Point is not a good aquifer, and exhibits aquifer characteristics only locally where fracturing causes secondary permeability which typically occurs at out-crop faces. The exact recharge mechanism for the Star Point sandstone is not known but it has been suggested that recharge reached the sandstone through faults and fractures, and that recharge is coming from the west and northwest (Christenson, 1984, and Nielson, 1996).

Faults

Hydraulic function of faults in the area is not well defined. The series of faults encountered in the Huntington #4 mine were reported to be dry at the mine level, whereas a fault associated with the Joes Valley fault zone intercepted in the active Crandall Canyon mine workings yielded water at a rate of 30 gpm, that subsequently reduced to approximately 10 gpm. Water samples collected from this fault were age dated, and the water was found to have a mean residence time of 2,000 years. Faults in this area, as elsewhere on the Wasatch Plateau, are generally thought to act as barriers to horizontal ground-water flow (Mayo and Associates, 1997). In the area of the lease tract along the Joes Valley fault, the strata dip to the west along the downthrown side of the fault. This being the case, the Joes Valley fault could be contributing to the spring system supporting flow in Indian Creek (Hansen, Allen and Luce, 1997).

Little Bear Spring

An anomalously large spring for the area emits from the Star Point sandstone near the mouth of Little Bear Canyon (outside the lease tract in section 9). Little Bear spring is developed and maintained by the CVSSD, and provides 65% of the culinary water for the cities of Huntington, Cleveland and Elmo. According to Danielson (1981), Little Bear spring is associated with fracturing and folding in the Star Point sandstone. The spring

emerges from a fracture in the lower portions of the Star Point sandstone, where it is in contact with the low permeability Mancos shale. In the Little Bear Tract Delineation Report (Alvord, 1979), the elevation of the spring is reported to be 7,650 feet, approximately 100 to 150 feet below the Hiawatha coal bed.

Little Bear spring flows continuously, with average monthly discharge ranging from 200 to 440 gpm (CVSSD, 1997). Flow varies seasonally, with a typical increase of 20-40 % in response to spring runoff. The lowest average monthly baseflow recently measured was 198 gpm in April 1995. Isotopic analyses performed to evaluate the age of water indicate that the spring discharges modern water, and has very similar composition to water in both Crandall and Huntington Creeks (Mayo and Associates, 1997). Further chemical analyses show that water from Little Bear spring is very similar to surface water in both Little Bear and Huntington Creeks. Water quality in the spring is good, requiring only chlorine treatment before it is suitable for consumptive use.

The mechanism controlling flow to Little Bear spring is not fully understood. Several studies have focused on the occurrence of the spring, and varying theories have been developed. It is known that the spring issues from a fracture in the lower portions of the Star Point sandstone, and the chemical composition is similar to surface water in the area. The theories are as follows:

1. Water flowing through the Star Point Sandstone emerges at the spring location. Recharge for the spring is coming from the north and west, possibly supported by the Joes Valley Fault (Nielson, 1996).
2. Recharge to the spring comes from flow through the Star Point sandstone from the north and northwest, and surfaces through fractures in the formation (Vaughn Hansen and Associates, 1977).
3. The trend of Huntington Creek follows a series of straight segments that are evident on topographic maps. The portion of Huntington Creek approximately 2 miles north of the lease tract follows a north-south lineation. It has been suggested the trend of the creek in this area is controlled by a north-south anomaly (possibly an unmapped fault) that runs south, through the northeast portion of the lease area in Little Bear Canyon. Water from Huntington, Crandall Creeks and maybe Little Bear creeks enters this anomaly, and travels through it until it is intercepted by the Mill Canyon graben, where it is redirected to the northeast and emerges where the Mill Canyon Graben fault zone intersects Little Bear Canyon. Comparison of the flow hydrographs for the spring and Huntington Creek show a strong correlation, suggesting that water from the spring is derived from surface water sources (Hansen, Allen and Luce, 1997). Spring flow has an apparent time lag of 2 to 4 years against flow in Huntington Creek. Additional flow may reach the spring by surface water seeping into the exposed outcrop of the Star Point sandstone at nearby upgradient locations, or through direct infiltration of precipitation close to the spring source.

Given the most recent studies that indicate water from Little Bear spring is modern, chemically similar to surface water in the area, and given the high discharge rates, it appears that the spring is supported by a system of faults and/or fractures that transmit surface waters from the north. The hydraulic conductivity of the Star Point sandstone is low, and give rise to slow ground-water movement. As demonstrated by Hansen,

Allen and Luce, assuming a 5,000 foot capture zone along the Mill Canyon graben, a velocity of 0.013 ft/day through the Star Point, and an aquifer height of 45 feet, the potential discharge amount through the Star Point for the spring would only be 15.2 gpm. This demonstrates that flow through the Star Point sandstone itself cannot support the flow emanating from Little Bear spring.

North Emery Water Users Association Springs

The springs developed by NEWUA are believed to be supported by subsurface flow through the shallow alluvial ground-water system. Flow through the alluvium is forced to the surface either when it contacts low-permeability units of the Blackhawk Formation, or at the location of a presumed north-south anomaly creating the springs. Hansen, Allen and Luce estimate that the ground-water yield from the Rilda Canyon basin would be on the order of 700 gpm. Based on investigations done by PacifiCorp, approximately 80% of the recharge to the springs originates in the alluvium in the Right Fork. Discharge from the system averaged 167 gpm from 1990-95, and ranged from average lows of 74 gpm to average highs of 264 gpm (PacifiCorp, 1996). Water quality from the spring system is good, with major constituents being calcium, bicarbonate and magnesium. Water in the spring system is of recent age.

Ground Water Intercepted by Mining

Water intercepted in mines on the Wasatch Plateau typically comes from stored water contained in sandstone channel scours in the top of the coal seam. As mining progresses, the channel scours drain for a few weeks and cease, indicating very limited, not laterally extensive sources. Water may also be encountered in saturated fractures or faults intercepted at the mine level. Available information supports that most of the water intercepted at the mine level is not in direct communication with surface or near-surface ground water. Isotopic analyses taken from water coming from the Crandall Canyon mine roof showed the water has a mean residence time of over 14,000 years. The Crandall Canyon mine has only started discharging water from the workings in the past year. Inflows in the current workings originate from a channel scour in the coal seam, or from faults.

C: Wildlife

Terrestrial Species

The area surrounding the proposed coal lease contains habitat for a variety of wildlife including a potential of 84 mammals, 140 birds, and 25 reptiles and amphibians. Species of interest that may potentially occur on the area include: spotted bats, mule deer, elk, golden eagles, and goshawks.

Mammals

Three bat species of special interest to Utah are the Red bat (*Lasiurus borealis*, UT DWR Sensitive Species), which roost in wooded areas, the Western Big-eared Bat (*Plecotus townsendii*), which roosts in caves, rock overhangs, tunnels, or abandoned buildings, and the Spotted Bat (*Euderma maculatum*, UT DWR and USDA - Forest Service, Region

4 Sensitive Species)* which depends on cliffs for roost/hibernation areas. The spotted bat was a candidate mammal for federal listing. The bat is crepuscular/nocturnal and insectivorous. It does not migrate and uses a hibernaculum that maintains a constant above freezing temperature from September to May.

Mule deer (*Odocoileus hemionus*) and elk (*Cervus elaphus*) are common in the region and are Forest Management Indicator species. Summer ranges generally are occupied by deer and elk from middle May through late October, although the exact timing may vary from year to year depending on temperature, snowfall, and range condition. While not a limiting factor to ungulate populations, summer range is important in providing energy reserves to meet deficiencies in winter energy supplies.

Winter range for deer and elk include a variety of slope and vegetation types. Lower slopes throughout much of the study area are mapped by UDWR as critical elk winter range, based on vegetation types, the Forest Plan maps big game winter range at the mouths of Mill Fork and Crandall Canyons. Elk winter range in the region occurs primarily in snow-free open areas, such as meadows and wind-swept ridge tops, interspersed with conifers and aspen for cover.

For deer, south and east facing slopes along portions of Mill Fork, Little Bear Creek, and Crandall Canyons provide relatively warm and snow-free sites, which are especially important during severe winters.

Habitats in the vicinity of the Crandall Canyon Mine are mapped by the UT DWR as including high priority summer range and critical winter range for both deer and elk. Summer range for these species is the mosaic of conifers, aspen, and meadows atop the plateau. Although some summer range does occur at higher elevations within the permit area, it is more prevalent on East Mountain to the west and southwest, and Gentry Mountain to east of Huntington Canyon. The summer range was determined by the UDWR to be in generally fair to good condition.

* Sensitive species are defined as those species which have been identified by the Regional Forester as "those... for which population viability is a concern as evidenced by... significant current or predicted downward trends in population numbers or density..." or "significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution" (FSM 2670.5). The 1976 National Forest Management Act (NFMA) directs the Forest Service to provide for the maintenance of viable populations of native and desired non-native vertebrate species and the recovery of listed species.

Birds

Approximately 140 species of birds are potentially present in the study area. This number included a number of raptors. Resident raptors in the area include the Golden Eagle (*Aquila chrysaetos*), Goshawk (*Accipiter gentilis*), Red-tailed Hawk (*Buteo jamaicensis*), Sharp-shinned Hawk (*A. striatus*), American Kestrel (*Falco sparverius*), and Great Horned Owl (*Bubo virginiana*). Golden Eagles have been seen above the mine in spring and summer. Golden Eagles prefer nest sites on cliffs, such as the sites available along Huntington Canyon. Goshawks have been observed only in higher

elevation conifer-meadow mosaics west of the permit area. They generally nest in large aspen or conifers.

Adult sharp-shinned hawks are routinely encountered in the riparian zone and adjacent north-facing conifers in the lower canyons. Adult kestrels were generally seen in the same area, except across the stream in more open south-facing habitats. Typical nesting habitat for the sharp-shinned hawks consists of deciduous or coniferous trees and brush, while kestrels more often prefer cliff sites. Both of these habitats occur along Crandall Canyon, and it therefore seems likely that these two species breed in the proposed lease area.

Great Horned Owls are fairly common, and its presence in appropriate habitats (riparian forest) in the breeding season (late April) suggests that the Great Horned Owl is a breeding resident.

Threatened and Endangered Species

No threatened or endangered wildlife species are known to inhabit the proposed lease area. A Bald Eagle (*Haliaeetus leucocephalus*) nest near the Hunter Power Plan is approximately 26 miles southeast of the coal lease. The coal lease area is outside of the foraging area for the Bald Eagles. Two peregrine falcons (*Falco peregrinus*) were observed approximately 13 miles north in 1996. The falcons were observed during nesting season but no nest site was ever confirmed. It is generally accepted that peregrine falcons will forage up to 15 miles from their eyrie, however given the prey base available it is doubtful that the falcons would forage over the coal lease area. No roost sites have been found in the lease area. The Biological Evaluation and Assessment (BE/BA) will address the Federally listed and State Sensitive Species that potentially occur in the area in greater detail, and upon completion will be in the project file.

Aquatic Species

The proposed project area contains portions of Crandall Creek, Little Bear Creek, Mill Fork, and the Right Fork of Rilda Creek; all of which are tributaries to Huntington Creek. Tributaries of Indian Creek and a small portion of Cottonwood Creek are also within the lease tract. Only Crandall and Indian Creek itself are considered perennial. The intermittent channels run water in the spring and early summer, and occasionally during the fall "monsoons" that are typical in the region.

All of these stream channels support naturally-reproducing trout fisheries and aquatic communities typical of coldwater, mountain environments. These communities include trout, aquatic plants, insect populations, periphyton, and zooplankton. Intermittent channels provide aquatic habitat when water is present; including spring spawning habitats for cutthroat trout and sculpins.

The following table summarizes the streams within or immediately adjacent to the proposed lease tract and the game species that are present (if known):

TABLE III-A. Summary of streams within the proposed project area and game fish species (Species abbreviations are explained below).

<i>STREAM</i>	<i>SPECIES PRESENT *</i>	<i>DATA SOURCE</i>
Crandall Creek	CCT (1), RBT, YCT	UT DWR/USU Genetic Analysis
Little Bear Creek	YCT, RBT	Inferred from maps and UT DWR Surveys
Mill Fork Creek	YCT, RBT	Inferred from maps and UT DWR Surveys
Right Fork Rilda Ck.	YCT, RBT	Inferred from maps and UT DWR Surveys
Indian Creek	BKT	Dufour, field observations

* Species abbreviations in the above table correspond to the following:

YCT = Yellowstone cutthroat (*Oncorhynchus clarki*)

RBT = rainbow trout (*Salmo gairdneri*)

BRT = brown trout (*Salmo trutta*)

BCT = Bonneville cutthroat trout (*Oncorhynchus clarki utah*)

BKT = brook trout

CCT = Colorado River cutthroat (*Oncorhynchus clarki pleuriticus*)

(1) There is a suspected, but yet unconfirmed population of Colorado cutthroats in Crandall Creek.

In addition to the salmonid species listed above, these drainages likely support populations of the following non-game species: speckled dace (*Rhinichthys osculus*), mottled sculpin (*Cottus bairdi*), bluehead suckers (*Pantosteus delphinus*), and mountain suckers (*Catostomus platyrhynchus*) (Christopherson, UT DWR, personal communication).

Reservoir and Lake Fisheries

There are no reservoirs or lakes fisheries that could be directly or indirectly affected by land management activities within the proposal area.

Sensitive Species

Colorado River cutthroat trout, currently classified as a Sensitive Species in the Intermountain Region (USFS), may be present in the Crandall Creek drainage. Genetic testing is on-going to confirm if these fish are pure-strain Colorado cutthroats, no definitive data is currently available.

Aquatic Amphibians

Species distribution maps for aquatic amphibians (Stebbins, 1985) and the UT DWR (Christopherson, personal communication) indicate that tiger salamanders and western toads probably inhabit the project area. The Manti-La Sal National Forest Fisheries Biologist (Dufour) has collected several Great Basin spadefoot toad egg clusters in small pothole habitats at similar elevations in other areas of the Forest (Jordan and Seely drainages) during the 1995 field season; indicating that the toads may be present in wetland habitats within the project area.

The Forest Plan directs that aquatic macroinvertebrates be used as management indicator species to assess impacts of projects and management activities on aquatic communities and water quality. There are no Forest macroinvertebrate monitoring stations located within the proposed project area nor are there any downstream stations that are close enough to be indicative of "baseline" water quality for the landscape.

The proposal area lies within the headwaters of the drainages listed in Table III-A. The perennial portions of these basins are small and largely runoff-fed. Since the flows in these small streams tend to decrease in the late summer and early fall, they are used primarily as spawning and rearing streams by trout species (Dufour, 1996). The Crandall, Mill Fork, Little Bear, and Right Fork channels are high-gradient streams characterized by rock and wood-created step pools, deeply incised channels, occasional beaver ponds, and riparian zones composed of spruce-fir/aspen communities and thick willows. Spawning gravels are patchy and distributed in lower-gradient reaches.

Adult fish are likely present in headwater areas only during the spring reproductive period. In Crandall Creek, the UT DWR has identified a suspected year-round population of adult Colorado River cutthroat only in the beaver ponds immediately adjacent to the mine portal (Boyer, 1997). There have been no basin-wide inventories of Little Bear, Crandall Creek, Mill Fork, or the Right Fork of Rilda Creek that would describe the distribution of spawning adults in these drainages; therefore these conclusions are inferred from general knowledge of cutthroat behavior (Dufour, 1996, Meehan, 1991, Sigler and Miller, 1963). Successful spawning requires the presence of clean, well-oxygenated spawning gravels. It is therefore a high priority to protect these channels from excessive erosion and sedimentation.

Stream channels throughout the proposal area are recovering from historic livestock grazing impacts and the high runoff events that occurred in 1983-84. During the floods, erosion was prevalent and there is evidence of this erosion throughout the project area. Vegetation and vegetated bank undercuts are slowly recovering along channels. Since undercuts provide important hiding and resting cover to aquatic organisms of all life history stages; protection of bank stability in all of these drainages is a priority.

Small seep or pothole-type wetlands within the project area act as water reserves and provide base flows that can support aquatic communities during low water periods. Potholes, small ponds and marshy areas provide subsurface flow that supplements direct water sources like springs and run-off. These wet areas also provide important habitat for invertebrate and amphibian populations. Wet areas need to be protected from soil compaction, disturbance, and the removal of woody material to maintain existing habitat quality and quantity for aquatic organisms.

Genwal Resources Inc. currently owns and operates mining facilities on a 160-acre private parcel of land within the Crandall Creek drainage adjacent to the project area. These facilities include a mine portal and load-out facility, warehouse, storage building, sediment settling pond, and parking area. Development within these private lands has removed the riparian vegetation along 1000 feet of the north bank of Crandall Creek. The paved road that leads to the mine contributes sediment and coal dust to the stream channel when runoff occurs from sidecast snow (Dufour, personal observation 1997).

D. *Vegetation*

Lands within the lease tract area contain very steep and narrow east-west trending canyons with rounded narrow ridge tops. Vegetative cover and species composition is very diversified. It is mostly regulated by the various habitat created by the broken steep terrain, the variety of slope aspects and exposure. The project area landscapes support a mosaic of sagebrush grasslands, conifer timber, aspen, mountain brush, and riparian vegetation complexes.

Sagebrush Grasslands - This vegetative type is found on most of the steep south slopes and high elevation ridge tops. Less than 10% of the lease area occur in the type. Salina wild rye grass is the dominant grass at the lower elevations and Letterman needle grass dominates the high elevation ridge top sites. Few forbs are present in this type. The sagebrush species common in this vegetative type are black sagebrush and big mountain sagebrush. Deer and elk use some of this type during the winter months and sheep graze the ridge tops during the summer.

Conifer Timber - It is estimated that about half the lease area is covered with conifer timber vegetative type. These types are mostly found on the northerly exposed slopes of the canyon. Douglas fir make up about 85% of the conifer cover with alpine fir and spruce trees present only at the higher elevation ridge and in the upper basin. The dense forest growth on the steep canyon slopes provide a good scenic view, a good watershed cover and wildlife habitat. Few wood products are accessible in this type within the lease area.

Aspen - Aspen type occur on an estimated 20-25% of the lease areas. They occur mostly on mid and higher elevation sites and on the lower canyon slopes. Most of the aspen types within the lease area are in either early or mid-Seral condition. Only a few stands at high elevation and some isolated sites are in late seral condition. Stands of aspen mostly at higher elevations are being invaded by alpine fir trees, and some sites on the north slopes and canyon bottoms are being invaded by Douglas fir trees. The Aspen ecosystem provide a very important habitat component for many wildlife species, both animal and birds. It also has a high value for livestock grazing and watershed values. It provides some scenic beauty, especially in the fall.

Riparian - Riparian areas within the lease are very limited occurring in the canyon bottoms and lower drainages. Less than 1% of the lease area has riparian vegetation on it. Although they represent a very small proportion of the total vegetative cover within the project area, and they provide a very important habitat for wildlife. The potential for any livestock grazing in the riparian areas in the lease area, is low because of the limited access and very small sites available.

Mountain Brush - Mountain brush vegetative types occur mostly on the mid-elevation south slopes, high elevation ridges and in the upper basins within the lease areas. This type is present on about 15% of the lease area. The lower elevation sites are heavily used by wintering elk and deer and the higher elevation ridges & basins are used by sheep during the summer. Most of the vegetative type is classed as unsuitable for use by livestock, because of steep inaccessible slopes.

Noxious Weeds - Populations of Musk thistle and Canada thistle are known to occur within the proposed lease area.

Sensitive Species - There may be habitat for three sensitive plant species within the proposed lease area. These species are as follows:

Maguire Campion (*Silene petersonii*) - This plant grows at high elevations about 10,500 feet, on rocky sites. No plants have been documented within the project area. The Flagstaff Rock outcroppings on top of East Mountain have not been surveyed.

Carrington Daisy (*Erigeron carringtoniae*) - Plant occurs within Emery and Sanpete Counties on the top of the Wasatch Plateau. Plants occur at all aspects, but are generally found on the west facing slopes on Flagstaff escarpments. The Flagstaff Rock outcroppings on top of East Mountain within the lease tract have not been surveyed. The nearest known population is located about 2 miles south of the project area.

Canyon sweetvetch (*Hedysarium occidentale*) - To date this plant has only been collected in Carbon & Emery Counties at elevations between 5,000 to 8,000 feet. Tends to grow in alluvium derived from the North Horn and Blackhawk formations; usually on south and west exposures. Usually occurring on sites that have an underground water source at 2 to 6 feet below the surface. Often grows on toe slopes below ledges and cliffs in Huntington Canyon and Lower Mill Fork.

The canyon sweetvetch grows at elevations between 6,500 to 7,500 feet, and in sites not anticipated to be affected by mining activities. There should be no effects to this species and no further discussion regarding *H. occidentale* in this document.

The Maguire campion and Carringtonae daisy occur on Flagstaff outcrops. Since failure is not expected to be occurring on the Flagstaff formation, there would be no effects on these species and there will be no further discussion regarding *E. carringtonae* or *S. petersonii* in this document.

E. Transportation

The transportation analysis area is bounded by the Fairview-Huntington Highway on the east, the Crandall/Blind Canyon Divide on the north, the Cottonwood Road on the west, and the Rilda/Meetinghouse Divide on the South. The area within the transportation analysis area contains 32.45 square miles and has a road density of 0.55 miles per square mile.

The Fairview-Huntington Highway (SR 31) is the only arterial road and the Cottonwood Road is the only collector road with the area. The remaining roads are all classified as local and make up 71% of the mileage. Over 60% of the roads are surfaced, with asphalt on 22% and gravel on 40%. Between 50% to 60% of the mileage is operated at a traffic service level

'b' or 'c' * and maintenance level 3 or 4 to encourage passenger car traffic, the remaining 40% to 50% is operated at traffic service level 'd' and maintenance level 2 where public traffic (generally high clearance vehicles) are accepted.

- * Level-of-service A describes primarily free-flow operations at average travel speeds, usually about 90 % of the free-flow speed for the arterial classification. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream.

Level-of-service B characterizes the region of traffic flow wherein speeds of 55 mph are expected on level terrain. Passing demands approximately equals the passing capacity at the lower boundary of level-of-service B which is where flow rate are presently on this section of road. Drivers are delayed up to 45% of the time and the number of platoons forming increases dramatically.

Level-of-service C characterizes the region of traffic flow wherein speeds are between 50 and 55 mph on level terrain. Passing is frequently impeded, there are noticeable platoons of vehicles and platoon size increases. Drivers are delayed up to 60% of the time. While flow is stable, it is susceptible to congestion due to turning traffic and slow moving vehicles.

Level-of-service D characterizes a region of traffic flow where speeds are about 40 % of of the free-flow speed. Small increases in flow may cause substantial increases in delays.

SR 31 is the major west-east route across the Wasatch Plateau, and provides access for the recreation uses within Huntington Canyon and on the mountain tops. The highway is located in Huntington Canyon bottom that is to be managed with emphasis on "Undeveloped Motorized Recreation". Range, timber, and mineral resources activities and use should not permanently exceed threshold levels for noise and air quality, or seriously impair recreation uses. SR 31 provides access for removal of Forest products, including timber, minerals, and livestock. Access for recreational uses includes fishing, hiking, picnicking, camping, big game hunting, wood gathering, snowmobile riding and cross-country skiing. SR 31 intersects roads in the adjacent side canyons of Riida, Mill Fork, and Crandall. All these routes have hardened surfaces.

SR 31 is 48.1 miles long with 33.4 miles within the Forest Boundaries. Three and six tenths miles of the highway are within the transportation analysis area. The road has two 12-foot lanes and 3-foot shoulders, with an asphalt pavement structure. The pavement structure is showing signs of fatigue from the coal-haulage traffic. The annual average daily traffic was 1,400 vehicles per day below the east forest boundary, 1,255 vehicles per day between the boundary and Crandall Canyon, and 715 vehicles per day above Crandall Canyon in 1995. Coal-haulage made up 6.2% of the traffic.

The volume of traffic on the SR 31 with the high number of coal-hauling vehicles in the mix is an important consideration. UDOT has upgraded SR 31 from Huntington to the Forest Boundary because of the traffic volume and mix on the road. They have expressed interest in upgrading the segment within the Forest to the Crandall Canyon intersection to accommodate the coal-haul traffic on this segment. A review of traffic capacity indicates the traffic service levels are acceptable at this time, however, the high volume of traffic and mix of vehicles affects the safety of travel on the road and the traffic entering onto the road. The

noise of the coal-hauling vehicle also affects the recreational uses directly adjacent to the Highway.

Access to the mine portal in Crandall Canyon is a major traffic producer on the SR 31. Traffic consists of personnel (miners and overhead) using private vehicles and buses, mine service and supply trucks, and coal-haulage trucks. Coal exploration and developmental drilling have been staged out of the canyon bottoms producing minor amounts of traffic for short periods. Coal is presently removed from the mine 6 days a week and 10 hours a day except for the annual miner vacation. Coal haulage requires 396 trips per each of the 300 hauling days per year. This adds 40 vehicles per hour to the design hourly volume and 326 vehicles per day to the annual average daily traffic.

Present annual average daily traffic (AADT) is estimated at 437 vehicles per day and 72 vehicles per hour (VPH). With a current reserve of mineable coal of 20,000,000 tons and a desired production rate of 2.5 to 3.5 million tons per year, these are the minimum volumes of Genwal Mine relate traffic expected for the next 5 to 7 years.

The 'T' intersection onto the Crandall Canyon Road (FR 248) has the potential for 63 conflicts during peak flow periods that normally occur at shift changes. Average delays to forest traffic is approximately 4 seconds per vehicle. This level of delay provides a level of service at the intersection of 'A'. The average total delay as a result of coal production traffic on this segment of road approaches 24 seconds per vehicle.

Oil and gas exploration and development drilling has occurred adjacent to the SR 31 resulting in peak traffic of 50 vehicles per day and average traffic of 16 vehicles per day during the length of the operations. Oil and gas operation can run for as little as 90 days to over 2 years. A drilling project slated for 1997 in the Huntington Canyon area is planned to last 5 months. Service traffic to operation wells generally is under two vehicles per day.

Other forest traffic on this segment of SR 31 is expected to increase from 715 vehicle per day in 1995 at a rate between 3.5% and 6.25% to between 1,400 to 2,400 vehicles per day by 2115. The hourly rate would exceed 200 vehicle per hour for over 30 hours per year during this 20 year planning period. Highway design standards used by UDOT indicates that a travelway of 40 feet should be provided for design hourly volumes exceeding 200 vehicle per hour. A change in design standards would be desirable based on future forest traffic alone without consideration of Genwal Coal Mining activities.

Crandall Canyon Road

This is a high use local route that provides access to the Crandall Canyon Mine and the Crandall Canyon trailhead. The primary traffic is personnel (miners and support), service traffic, and coal-haulage vehicles. Some recreation use and range access is supported by the trail-head parking area at the end of the road. Approximately 2.6 MM ton of coal was removed from the portal in 1996. Traffic is estimated to be between 600 and 800 trips per day. Car and light truck traffic would range between 65 to 155 trips per day, supply trucks between 20 to 25 trips per day and coal-hauling between 500 to 580 trips per day. The road has 2-11 foot lanes and 2 foot shoulders. The support structure is asphalt. Drainage is inslope with culverts and outslope with curbs and downspouts. The grade is a sustained 8% with pitches to 11%.

Mill Fork Canyon Road

This is a local route that served the Huntington #4 Mine. The road has been reclaimed from a two lane gravel surfaces road to a single lane gravel surfaces road to provide additional buffer between the travelway and the stream course. Traffic is estimated under 5 vehicles per day seasonally adjusted daily traffic. Dispersed recreation and range management are the primary generators of traffic in the canyon.

Rilda Canyon Road

This is a local route that has recently been upgraded to provide access to a fan portal serving the Deer Creek Mine. Access to spring developments between Sections 28 and 29 is another important user of the road. There is a stock-trail head near the Right Fork that also generate range traffic. The road is a double lane gravel surfaced with inslope and culverts to the spring development. The road is a single lane gravel surfaced with inslope and culverts to the turnaround near the Forks. The road is a single use gated single lane with inslope and outslope section between the forks and fan portal. The public can use the last segment of this road for trail travel. Traffic should remain at less than 10 vehicles seasonally adjusted daily traffic.

Flat Canyon Road

This is a local route that provides access to the East Mountain Top. The road was recently improved to provide access for drilling a exploration gas well in Section 23. The road has provided access for coal exploration and developmental drilling in the past. Additional access for staging and drilling operation is likely until all coal is leased and removed. The road was upgraded to a single lane gravel surface road with drainage for the gas drill operations. The traffic should remain between 5 and 10 vehicles seasonally adjusted daily traffic. Use should be about 40% dispersed recreation during big game fall seasons, 40% firewood gathering on the timber sale areas, 10% range access and 10% mineral access.

Cottonwood Road

This is the only collector road within the transportation analysis area. The road provides access to the facilities at Trail Mountain Portal below the analysis area, and access to the existing gas wells in Cottonwood Canyon and on the East Mountain Top. The primary use on the segment within the transportation analysis area is recreation access to the developed Indian Creek Campground and dispersed camping and hunting areas in the surrounding area. This road is an important access for the movement and management of livestock on the Forest during the grazing season. Traffic approaches 20 vehicles per day seasonally adjusted on the segment under study.

The East Mountain top has traffic primarily related to range management, dispersed big game hunting, some fire-wood gathering, and mineral exploration or production operations. Some timber related traffic can be expected over short periods to manage the timber emphasis area on or near the East Mountain top. Most of the coal exploration drilling has been completed in the area. Additional coal developmental drilling may be desired as coal mining proceeds.

Stock is transported by truck through the canyons to the top. Range rides use the trails out of the bottoms in Crandall, Mill Fork and Rilda to access the allotments and push stock away from the Huntington Canyon bottom. In the fall some stock is gathered in the bottom and removed by truck. Stragglers are also picked up and removed in the fall from these trailheads and the bottom in general.

F. *Socioeconomics*

The Crandall Canyon Mine has produced coal since 1984 and has grown from a relatively small coal mine producing 300,000 tons in 1990 to 2.5 million tons in 1996. The mine is undergoing extensive improvement of production facilities to reach 3.5 million tons average production rate in the 1998-1999 time frame. Figure 3 illustrates Genwal Mine's production history.

The mine and related facilities employ about 120 people from Emery (75%) and Carbon (25%) Counties. The coal is hauled by double coal haulers in 41-43 ton loads to marketing points at Wildcat Siding northwest of Price or to one of two loadouts near Wellington (CV Spur or RAILCO) depending on the customer. The company has another loadout at Mohrland which is not modern and is currently not being used. Direct shipments are being made to the Carbon Plant and to a cement plant in Juab County.

Trucking employs an estimated 60 drivers from Emery and Carbon Counties. The trucking company maintenance facilities (Cox Trucking) are located near Huntington, Utah.

The market value of the 2.5 million tons of coal produced annually at the Crandall Canyon mine is \$46,000,000. Royalty generation to the government is estimated at \$3,125,000. Payroll at the mine and trucking jobs is estimated at \$8,000,000.

The coal mining and related industries in Utah have a large contribution to the socioeconomic structure of Emery, Carbon, and Sevier Counties, and to a lesser extent in Sanpete County. Coal production has increased steadily, reaching an estimated 27.6 million tons on 1996. Figure 4 illustrates Utah coal production history. An estimated 95% of Utah's coal production is from Federal lands. Seven companies operate 13 active mines directly employing 2013 workers. At an average price of \$18.75 per ton for Utah coal in 1996, the coal from Utah is valued at \$517,500,000. Federal revenues from this coal are estimated at \$39,000,000, which is equally shared between State and Federal government. Utah mines on average, are the most productive (tons per man-hour) underground coal mines in the United States. Direct employment provides an estimated \$130,000,000 in earnings. Other industries that benefit directly from Utah's coal industry include trucking, rail transportation, and electric power generation. Genwal's Crandall Canyon Mine currently produces about 9% of Utah's production.

The primary area of influence from the Mill Fork Coal Lease Tract and the Genwal Mine is Emery County, although Carbon County also receives some socioeconomic impact. For analysis purposes, Emery County will be utilized. The county population in 1995 was estimated at 10,700. The population peaked in 1983 at 12,700 due to the construction phase of the power plants, then declined steadily to 10,200 in 1991, and has begun slow growth in the 1990's. The 20 percent population decline from 1984 to 1991 returned Emery County's population to levels experienced in the 1970's, and was a time of considerable out-migration. The last 5 years has seen an increase of about 5 percent or 500 people.

Nonagricultural employment in the county in 1995 was 3,800 and had been growing modestly. Employment peaked in 1982 at 5,890 and has declined 2,090 jobs or about 36 percent. The major industry payroll categories in Emery County were:

Mining	\$38,500,000	(36%)
Transportation/Public Utilities	\$35,400,000	(33%)
Services	\$15,400,000	(14%)
Public Administration	\$ 7,000,000	(6.5%)
Construction	\$ 6,100,000	(5.5%)
Other	\$ 5,000,000	(5 %)
Total 1995 Payroll for Emery County	\$107,400,000	

Mining, primarily for coal in Emery County, along with related industries, like shipping of the coal and producing electricity in two coal fired generating stations likely contributes over 60% of the earnings of the county. Indications are that much of the growth of coal production in Utah will be in Emery County in the foreseeable future.

G. Land Uses

A power transmission line is located in the W 1/2, section 22, T 16 S, R 6 E, in the extreme southwestern portion of the lease tract. Based on draft mine plans submitted, mining will not occur under the powerline and the line is outside the estimated area of surface influence of the closest longwall panel. There will not be further discussion on the powerline in the document.

Two grazing allotments are present on the lands within the lease tract. Presently, 961 sheep graze for three months of the year on the northern end of the tract, and 912 cattle graze at the southern end for about one month per year. Several springs have been developed to enhance livestock distribution.

Land survey monuments and section corners may also be present within the lease tract.

H. Cultural Resources

Approximately 650 acres or 10% of the area has been examined for cultural resources. Two archaeological sites are known within the lease area. Another three sites have been located outside of the lease area. Sites located within the lease area consist of lithic scatter sites 42Em856 and 42Em2430. The Forest and the USHPO has concurred that neither of these sites meet the criteria for listing in the National Register of Historic Places.

Other sites known on the periphery, but outside of the lease area include 42Em2310 and 42Em722; both are rockshelter sites containing rock art. Both are believed to be eligible for the National Register. While these sites lie outside of the lease area, they do provide useful information on site types in the general area.

Both of these sites occur within the Star Point sandstone, which appears to provide the most likely areas for rockshelter and rock art sites in this general area. In contrast, the Castlegate

Sandstone formation which outcrops in the area appears to have low potential for containing significant cultural resources, based on available data.

I. *Recreation and Visual Quality*

Recreation

Dispersed recreation sites are present along the eastern boundary of the lease tract in Huntington Canyon. Sites near the lease tract are located in Tie Fork Canyon, and Little Bear Canyon. Indian Creek Campground lies to the west of the western edge of the lease tract in Upper Joes Valley.

There are eight trails totaling 14 miles within the area. Most of the trails are on the East Mountain top and act as extension of the road system for access. Trails include the Mill Fork Trail # 171, Mill Fork Ridge Trail #086, and the East Mountain Trail # 085. The trails were created to access timber, mines or for firefighting. Today they are used for recreation by hikers, horseback riders, bicyclists and by hunters. The Crandall Canyon trailhead is located adjacent to the mine facilities. It is an unmaintained, low-use trail.

Visual Quality

Forest plan management direction for visual resource management located on page III-17 of the Forest Plan states that "Forest resource uses should meet the adopted VQO as displayed on the Planned Visual Quality Objective Map."

The Forest Plan has assigned a Visual Quality Objective (VQO) to each area of the Forest reflecting the desired management emphasis of the specific area. Some of those objectives allow a noticeable degree of change from the existing condition as determined during the visual assessment conducted in 1986 in order to facilitate subsequent use in reaching comprehensive Forest management goals.

The characteristic landform of the area of primary visual concern is steep narrow canyons more or less rimmed by sandstone escarpments or outcrops. Huntington Creek, which has entrenched the main canyon, flows parallel to a major portion of SR 31 that has been designated a Scenic Byway. (Utah's Scenic Byways are major paved highways that are regularly traveled, but may contain sharp curves and steep grades which require generally less than the standard 55-mile-per-hour speed limit. The byways are well marked, easily accessible roads that allow viewing of some of the State's most spectacular, but lesser known scenic beauty.) Huntington Creek is relatively large perennial stream is bordered by a narrow riparian corridor interspersed with cottonwoods and bounded by mature conifers which become more dense as one travels up the canyon.

Scenery is an important natural resource and recreational element in this part of the forest. In addition to a portion of Scenic Byway which serves as a gateway to the forest for many recreationists, there are trails which travel through the proposed lease area. Although the escarpments which could fail are located in less stringent areas of modification, hikers/riders could notice these human-caused changes. It is primarily through their visual sense that most visitors perceive the Forest and its interrelated components. The potential lease area, although mostly designated in the Forest Plan as Modification, still has high scenic

value. Part of the public appeal of the landscape found in this area stems from the viewing opportunities associated with the Castlegate Sandstone escarpments.

COAL PRODUCTION GENWAL COAL MINE

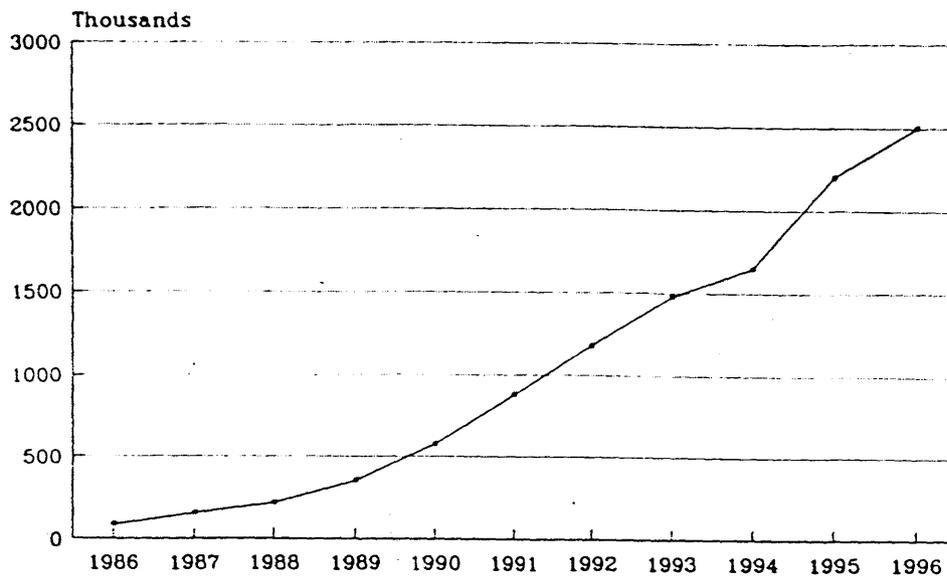


FIGURE 3

UTAH COAL PRODUCTION NET PRODUCTION

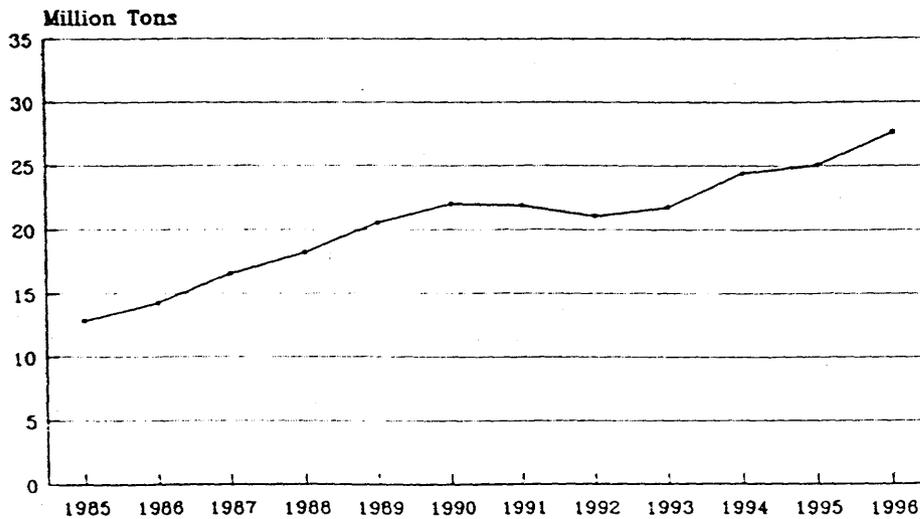


FIGURE 4

CHAPTER IV. DIRECT AND INDIRECT EFFECTS OF IMPLEMENTATION

1. Alternative 1 - No Action

Under this alternative the tract would not be offered for lease, therefore the tract would not be mined.

There would be no additional mining-related environmental consequences to the tract area and surrounding vicinity. There would be no additional economic benefits for federal, state, and local governments from coal lease fees and coal royalties. Neither would there be input to local economies from employees salaries or from payments to local businesses for support of the mine. The existing Crandall Canyon mine would close after coal in the existing leases is mined-out unless other reserves in areas adjoining the permit area are identified and leased. Without additional reserves, the mine would probably close around the year 2005, resulting in the loss of 122 jobs. The current reserve base is about 20 million tons of coal, representing \$ 3.1 million in royalties to the federal government.

With the planned increase in average production to 3.5 million tons, traffic will increase from 437 vehicles per day to 609 vehicles per day with hourly volumes going from 72 to 90 vehicles per hour, with 75% being coal haulage vehicles. This traffic would continue until the year 2005 when the coal reserves will be depleted. Potential for conflicts resulting in accidents will increase. Potential conflicts resulting in time delay will result in level of service decrease from 'B' to 'C'. Maintenance cost will increase as a result of the increased truck traffic requiring replacement or capping of the travelway surface at least once during the use period.

2. Alternative 2 - Offer for Lease with Standard BLM Lease Terms, Conditions and Stipulations

Under this alternative the tract would be offered for competitive leasing as recommended by the Coal Tract Delineation Team (see figure 2). The standard BLM lease terms, conditions and stipulations would be included.

A. *Geology, Soils and Mineral Resources*

If Gerwal Resources, Inc. acquires the lease, underground coal extraction from the tract would likely involve extending workings of the Crandall Canyon mine to the south using standard industry mining practices. More specific details of the mining are discussed in the Reasonably Foreseeable Development Scenario contained in Appendix B. Approximately 75 million tons of coal could be mined under this alternative. This alternative would extend mine life by an additional 21 years.

Both room-and-pillar development mining and longwall mining would take place. Subsidence is expected only over the longwall panels and room-and-pillar areas where secondary recovery occurs. The area of ground surface subsided would include full-extraction mine area and the additional area on the ground surface calculated by projecting a line from the mined area to the ground surface at the expected angle-of-draw (22 degrees). For example, considering overburden thickness of 100 feet and a 22 degree angle-of-draw, the additional subsidence area beyond the vertical projection of the full-extraction area to the surface would be approximately 400 feet. Subsidence could extend 400 feet beyond the lease

boundary into adjacent unleased lands where full extraction mining extends to the lease boundaries.

Subsidence due to mining in the Blind Canyon seam is expected to be similar to that which has been experienced at other mines in the East Mountain area. Within the active permit area, subsidence from mining in the Hiawatha seam, has been less than expected due to the presence of an overlying competent 30 foot thick sandstone layer and the limited extent of longwall mining that has taken place to date (have not reached supercritical width which causes maximum subsidence). The sandstone layer has acted as a structural beam that bridges the voids left by underground mining, thus limiting the amount of subsidence and subsidence. Subsidence in the lease tract due to mining the Hiawatha seam is anticipated to be like other mines on East Mountain since the planned mining scenario will allow for panel to be taken adjacent to one another, and should reach critical width.

Subsidence of the ground surface on East Mountain (PacifiCorp, 1996) can reach as much as 70% of the extracted height of the coal. Assuming that the worst-case subsidence would be the same as in other areas for both seams, using a subsidence factor of 70% and an average of 9 feet of extraction for each seam, the maximum subsidence could be as much as 12.6 feet. Actual subsidence expected in the tract would be less because of the influence of the sandstone layer above the Hiawatha seam.

To date, no mining-induced surface cracks have been discovered within the permit area for the Crandall Canyon Mine. However, surface cracks are common above other mines on East Mountain, especially along faults and in shallow overburden areas. The greatest potential for cracks in the proposed tract would be along the Joes Valley Fault trace, if full-extraction mining occurs within the 22 degree angle-of-draw. In this scenario, it is expected that the fault would tend to focus subsidence at the surface expression of the fault, causing surface cracks. Due to the presence of the existing fractures associated with the fault, the cracks could connect with cracks in the rock layers immediately above the mine workings. Only limited and isolated surface cracks are reasonably foreseeable in other areas; most likely where the rigid Castlegate Sandstone crops out and along the edges of full-extraction areas (extensional forces zones) under shallow overburden on canyon slopes. With the exception of cracks in the Castlegate Sandstone, cracks are expected to heal naturally over a period of 2 to 5 years.

Subsidence of Crandall Creek or other perennial drainages is not planned under the Reasonably Foreseeable Development Scenario (Appendix B). Longwall or room-and-pillar second mining within a 22 degree angle-of-draw protection or buffer zone would not occur. However, understanding that mine plans can change, a possibility exists that panel orientation could change and shift subsidence zones closer to the creek. Specific impacts are discussed in the surface water section.

Small failures of the scattered Castlegate Sandstone escarpments could be caused by subsidence. The outcrop areas are similar in extent, slope, fracture systems, and dip to the south slope of Rilda Canyon which lies approximately 5 miles to the south. In the Rilda Canyon area, extensive longwall panels and subsidence caused only one minor failure of a small expanse of the outcrop (less than 100 feet). Several large rock boulders in an extensively fractured area became dislodged and tumbled down the canyon slope destroying several trees. Additional vegetation damage occurred along a 20-foot wide runout zone down to the Starpoint Sandstone outcrop (approximately 1,000 feet).

The worst-case scenario for the Mill Fork Tract could involve similar failures along portions of the exposed outcrops. Potential failure zones include outcrop areas along the north slope of the South Fork of Mill Fork Canyon (approx. 3,000 ft), the north slope of the North Fork of Mill Fork Canyon (approx. 4,000 feet); the north slope of Little Bear Canyon (approx. 3,500 ft.); and 3 small non-connected outcrops totalling approximately 2,000 feet in length along the south slope of Crandall Canyon, south of the Crandall Canyon Mine surface facilities.

Other escarpments exist where longwall mining is not proposed, due to marginal coal thicknesses and irregular coal configuration. It is hoped that some room-and-pillar mining would occur, but limited data makes mining projections difficult. A few additional cliff areas could be affected if room-and-pillar mining (with pillar extraction) occurs. The ridge point between Crandall and Little Bear canyons (sections 5 and 8, T 16 S, R 7 E) could fail and create a debris fan of about 30 acres. Another location that might be room-and-pillar mined is under a point in section 18, T 16 S, R 7 E. Cliff failure here could create a debris fan of about 10 acres. These acreages are estimations only, and err on the high side as historically, mines in the area have shown little subsidence effects from room-and-pillar mining in comparison to longwall mining. It is not likely that dislodged rock would reach perennial drainages, roads, or mine surface facilities because of the heavy timber on the slopes and presence of small tributary drainages that would channel and retard the downward movement of rock material.

Shallow and isolated mining-induced seismic events, generally less than 3.5 in magnitude (Richter Scale), are common (University of Utah Seismic Monitoring Program). Similar mining-induced seismic events are reasonably foreseeable in the Mill Fork Lease tract. These events are thought to be induced by the subsidence-induced cracking of overburden materials (especially rigid rock layers such as sandstone) above the mine workings. No damage to resources or overlying structures has been attributed to these events. There are no dams or buildings in the immediate vicinity of the tract that could be damaged, with the possible exception of the mine surface facilities. It is not likely that these low energy events would cause damage to the gas pipeline. Damage to the producing bore hole for the existing gas well (East Mountain #32-23) could occur but is not likely due to steel well casing and 800-foot radius coal buffer zone.

Mineral Resources

No new oil and gas leases would be offered within the proposed coal lease tract for the life of the lease (at least 20 years), however development on existing leases could occur. BLM might not approve any additional wells on existing leases until the coal lease tract is mined-out and subsidence is determined to be substantially complete. Additional oil and gas drilling would be located in areas where the coal would not be mined. There would be a loss of associated oil and gas lease competitive bids, annual lease payments, and potential gas production royalties (not possible to estimate due to extreme variability). This would be more than offset by the coal lease bonus bid, annual lease fees, and coal royalties associated with a potential coal lease.

If BLM approves additional wells on existing leases, it is reasonably foreseeable that 2 additional production wells could be drilled and several thousand feet of new gas transmission pipeline could be constructed. This would result in increased gas production and associated royalties. This would result in decreased coal recovery to protect the gas wells and pipelines from subsidence.

If additional leasing and/or drilling occurs after the coal reserves are mined-out, it is likely that drilling and development costs for oil and gas would be increased by the need to seal the subsided/rubbelized mine workings to maintain circulation of drilling fluids and seal the well bore for possible production. It is not possible to estimate these costs because the methods needed to assure sealing are not known at this time.

The existing gas well (East Mountain #32-23) and related gas pipeline will be protected from subsidence by limiting coal recovery as needed. If additional wells are approved prior to mining, they would also be protected. Assuming full extraction mining would occur up to an 800-foot radius of the well and pipeline, this would cause 1.7 million tons of coal to be left in place. Mining in closer proximity to the gas well and the pipeline might occur if the gas company and the mining company came to an agreement for replacement of any damages.

Coal exploration drilling associated with developing the lease would disturb about 6.25 acres of surface lands. Reclamation and revegetation of access roads and drill pads would be required under the drilling permit. Containment of drilling fluids would also be required.

B. Hydrology

Surface Water

Subsidence could affect the character of drainages within the lease tract by altering the natural slope of the channel. Large-scale impacts are unlikely because of the thick overburden lying between the mine level and the drainages, which typically ranges from 600 to over 2,400 feet. Portions of the Right Fork of Mill Fork Canyon in section 12 have overburden ranging from 600 to 1,300 feet where multiple-seam longwall extraction is projected. Longwall panels in both seams are planned under the Right Fork of Rilda Canyon where the overburden ranges from 1,300 to 2,400 feet. Possible room-and-pillar extraction could occur in section 13 under the Right Fork of Rilda Creek. Based on previous experience in the Wasatch Plateau, single-seam longwall mining under drainages where 600 or more feet of overburden is present has not manifested noticeable effects on the surface (Sidle, 1995). Another study in the Wasatch Plateau coalfield showed that a creek was diverted underground where longwall mining occurred in two seams and the overburden was less than 500 feet (Slaughter, et al, 1995). Surface cracks are possible above the extension zones in the subsidence profile, but because the thickness of overburden present, conductivity between surface cracks and the rubbelized zone is not likely. It is assumed that full-extraction room-and-pillar subsidence will have similar surface expression as longwall subsidence. In addition, the presence of clays and shales in the North Horn formation will probably buffer impacts to the drainage and the springs feeding the alluvial system downstream. More detailed explanation on anticipated subsidence can be found in Appendix B.

One longwall panel on the northern edge of the tract in section 6 could be extracted under a perennial portion of Crandall Creek. The overburden between the mine level and the creek in this area is estimated to range between 200 and 700 feet. Given the overburden thickness, and results from previous studies (Slaughter, et al, 1995), impacts could include diverting water underground through surface cracks if Crandall Creek were subsided. Water loss from the creek could damage fish and macroinvertebrate habitat, deplete riparian vegetation and decrease the amount of water available for downstream uses.

The tributaries of Indian Creek on the west side of the tract may be influenced by surface subsidence. Under the planned mining scenario, active workings would extend within approximately 500 feet of the Joes Valley Fault at the mine level. If longwall panels are extracted in this area, the angle-of-draw for subsidence may include the fault, and could focus subsidence along the fault to the surface. Cracks that could appear on the surface along the fault trace might divert water from the drainages. Loss of water from these drainages could reduce the water flow that supports the wetlands in the Indian Creek drainage.

Under this alternative, full extraction room-and-pillar mining in both seams could occur in the northeast portion of the lease tract, including the Little Bear Canyon drainage. Subsidence in this area could cause localized cracking of the surface that could cause water diversions within the watershed, from both springs and Little Bear creek. Overburden in the area ranges from 200 to 1,700 feet. Subsidence could also alter the fracture and/or fault systems present in the drainage that are thought to transmit water to the Little Bear Spring lower in the canyon. Because the management unit direction stated in the Forest Plan for Little Bear Canyon calls for preserving the watershed value, surface disturbance, including water diversions, that could result from mining-related subsidence would not be consistent with the management unit direction. Loss of water could deplete riparian vegetation and/or habitat.

Room-and-pillar extraction is also planned under small portions of the upper southern forks of Mill Fork Canyon. Overburden in this area ranges from 1,100 to 1,500 feet. Because of the thick overburden present, impacts to the intermittent drainage are not anticipated.

Mine water would be discharged at the approved NPDES point already in existence on Crandall Creek. Water discharged would have to meet quality standards described in the current NPDES permit before reaching Crandall Creek. The mine first discharged water at the NPDES point in 1996, the first time since operations began in 1984. Although mine water will be discharged at an approved location, mining would extend the need for mine discharge for 21 years. Effects on the channel character would not be anticipated unless total discharge from the mine increased the creek flows by 10 percent of maximum discharge (Rosgen, no date). Using a maximum instantaneous flow and the proportionate area of the watershed above the mine, a 10 % increase would be 4 cfs (Spencer and Kelly, 1984). Current discharge is 0.5 cfs. Because Crandall Creek has been identified as a steep bedrock channel immediately below the mine, impacts related to increased flow are not anticipated.

Riparian areas and small wetlands associated with seeps and springs within the lease tract could be affected by subsidence. However, most of the springs and seeps occur at locations over 800 feet above the mine level. As has been previously discussed, subsidence effects are not anticipated at locations where the overburden exceeds 600 feet.

A new Utah state law was passed regarding water affected by underground coal mining. The law states that the permittee (mine operator) "shall promptly replace any state-appropriated water in existence prior to the application for a surface coal mining and reclamation permit which has been affected by contamination, diminution, or interruption resulting from underground coal mining operations."

Ground Water

It is anticipated that ground water encountered during mining will be associated with interception of isolated channel sandstones scoured into the tops of the coal seams, from sandstone lenses, or from interception of fractures or faults that contain water. Available information indicates that water levels in the Star Point sandstone are below the level of the coal seams throughout most of the tract, but are higher within the Star Point on western edge of the tract due to a ground-water high associated with the Flat Canyon anticline and the Joes Valley Fault. Therefore, there may be some seepage from the mine floor during mining of the Hiawatha (the lower) seam on the extreme western edge of the lease tract. Based on available information, it is not likely that water intercepted at the mine level is associated with surface and near-surface ground water, and should not have extended impacts to those resources. Water encountered at the mine level will either be used underground, or discharged at the NPDES permit point in Crandall Canyon.

Subsidence-induced ground movements could affect the flow of overlying springs in the tract, but this is unlikely given the thickness of overburden and the presence of rock units with high clay contents. The overburden separating springs that overlie areas to be mined from the mine level generally exceeds 800 feet. High clay contents in the North Horn and Price River formations tend to buffer the effects of fracturing associated with subsidence. Springs occurring at the heads of Mill Fork Canyon, the Right Fork of Rilda Canyon, on the top and the western flank of East Mountain are typically separated from the mining horizon by 1,400 to 2,400 feet of overburden strata. An analysis of 13 springs not related to faults on East Mountain with similar mining and geologic conditions indicates that little or no impacts are discernible after undermining by either longwall or room-and-pillar methods (Kadnuck, 1994).

Springs occurring in the head of Little Bear Canyon are associated with landslides or issue from the base of the Castlegate Sandstone. The springs are separated from the coal seams by 400 to 1,200 feet of overburden strata. The springs associated with landslide deposits may change location as a result of subsidence, if the landslides are activated because of surface movements. Subsidence-induced movements could intercept spring flow and divert it, although this is not considered likely.

The occurrence of Little Bear Spring is associated with fracturing and faulting. Distinct flow pathways and exact recharge mechanisms are not specifically understood, but as discussed in Chapter III, it is thought that the spring is fed through a fault system from the north. This system transports water through the northeast portion of the lease tract in the subsurface of the Little Bear Canyon watershed. Mining-induced subsidence in the watershed up-canyon from the spring could disrupt this fault system, or alter fracture pathways by which surface infiltration reaches the subsurface. Mining could also introduce a pathway by which contaminants derived from underground mining could reach the spring recharge system. Disruption to this system could result in changes in the water quantity and/or quality. Currently available information does not allow for assessing the magnitude of changes. Interruption of the recharge source could cause reduced flows at the spring, and thus reduced water available for culinary uses. Variations in water quality, especially degradation, could cause a need for additional water treatment before consumptive use.

Springs occurring in the Right Fork of Rilda Canyon may contribute flow to the alluvial system that partially supports the NEWUA springs in lower portions of the canyon. Subsidence-induced loss of water from these springs is not anticipated. The thick overbur-

den present (over 2,000 feet), and layers of impermeable shales and clays in the North Horn and Price River Formations will buffer the effects of mining.

If monitoring during mining shows adverse effects to water flow or quality of a state-appropriated water source (such as Little Bear spring or the Rilda Canyon springs), the mining company would be required to replace the water source under state law. No provisions for requiring replacement water at the original source for non-culinary purposes such as stock watering, wildlife habitat, or ecosystem support are included in this alternative.

C. Wildlife

Terrestrial Species

The alternative has limited potential to impact terrestrial wildlife species. Two bat species of special interest to Utah are the Western Big-eared Bat (*Plecotus townsendii*), which roosts in caves, rock overhangs, tunnels, or abandoned buildings, and the Spotted Bat (*Euderma maculatum*) depends on cliffs for roost/hibernation areas. Surveys have indicated that the spotted bat may be present. This alternative may affect the Western Big-eared Bat and Spotted Bat through the loss of roosting habitat in the cliffs. The spotted bat's roosting habitat is located on mountain side slopes in cracks and crevices in rock outcrops and escarpments. The area has not been inventoried for bats and it has some limited rock outcrops and escarpments. The potential of subsidence from mining the coal could remove some roosting habitat, and potentially result in the loss of a few bats. Subsidence-induced cracks could potentially enhance or degrade bat habitat.

The Townsend's big-eared bat uses juniper/pine forests, shrub/steppe grasslands, deciduous forests and mixed coniferous forests from sea level to 10,000 foot elevation. The project area includes mixed coniferous forest from 7,200 to 10,200 feet in elevation. Although two previous surveys did not locate any of these bats in the area there is potential that the bats could occur in Mill Fork Canyon. The bats roost in caves, mines shafts, or rocky outcrops.

Big game including mule deer and elk utilize the area. The proposed coal lease contains some winter and summer range for both species. These species would not be impacted as long as no surface disturbance was allowed. Ten coal exploration holes (drilling) may be anticipated, with temporary access roads, which can be timed to offset potential impacts. No permanent roads or other surface disturbances are proposed and there would not be any longterm affect to the big game species.

A number of bird species utilize the area. Potential impacts to the birds would result from the subsidence that could result in a change in the cracks on the rock cliffs and possibility some loss of cliff face. This would impact those birds that would nest on the cliffs such as golden eagles, red-tailed hawks, and American kestrel. Only the red-tailed hawk and the American kestrel are believed to nest within the propose coal lease. Both species will utilize trees for nesting and the loss of the cliff would have little impact on them with the exception of possible loss of young if the failure should occur during nesting season.

Subsidence could potentially result in the of loss surface water in Crandall Creek, Little Bear Canyon drainage, and tributaries supporting Indian Creek. This would result in the loss of riparian vegetation which is important habitat used by a number of species including goshawks, great horned owls, and Sharp-shinned Hawks. The loss of this riparian vegeta-

tion would result in the reduction of suitable habitat for these species and fewer numbers present.

There are no known Federally Listed species present in the proposed coal lease area. The BE/BA to be included in the project file will address the Federally listed and State Sensitive Species that potentially occur in the area in greater detail.

Aquatic Species

This alternative has potential to effect aquatic habitat and species in portions of Crandall Canyon, the Little Bear drainage, and the ephemeral tributaries to Indian Creek.

If Crandall Creek were undermined and/or subsided and water is lost, it could cause damage to, or loss of fisheries habitat. This would threaten the fish and other species that reside there.

Longwall panels proposed on the west side of the lease tract may cause subsidence that could intercept the Joes Valley fault; thereby causing surface cracks that divert water from ephemeral drainages within the Indian Creek sub-basin. Although these streams typically dry up in the late summer, they feed wetlands that likely support populations of aquatic amphibians. These populations could die or become displaced if these habitats are lost.

If mining alters discharge within the Little Bear watershed, lethal water temperatures, loss of deeper holding areas, vulnerability to predation and loss or displacement of fish, macroinvertebrates, or amphibians that currently reside in the drainage could occur.

Mining actions and their effects within all other drainages in the lease tract would be subterranean and far-removed from aquatic habitats. The thickness of overburden is sufficient to prevent impacts to the stream channels or springs that feed the downstream alluvial system. There would be no subsidence of perennial stream channels or effects outside of Crandall Creek and therefore there would be no direct or indirect effects to aquatic species of any life history stage or their habitats.

D. Vegetation

Mining effects on surface springs could damage vegetation, especially in riparian areas if water is diverted. As discussed in the hydrology sections, effects to springs are not anticipated due to the thick overburden separating springs from the mine level.

E. Transportation

Traffic will increase as in alternative 1 but would continue beyond the present planning horizon to 2022. Potential for conflicts resulting in accidents will increase. Potential conflicts resulting in time delay will result in level of service decrease from 'B' to 'C' and the return to level B service will be postponed for 21 years. Maintenance cost will increase as a result of the increased truck traffic requiring replacement or capping of the travelway surface more frequently.

F. Socioeconomics

The proposed lease tract as delineated, assuming full extraction contains an estimated 75 million tons of recoverable coal. Because of limited access, it is assumed that the existing mine operator in the area will be the only interested lessee. The applicant currently has 20 million tons of remaining reserve in existing holdings. The mine is anticipated to achieve annual production of 2.75 to 3 million tons in 1997, 3.25 to 3.5 million tons in 1998 and 3.5 million tons thereafter until mineout. Without the tract, the reserves will last about 6 years or until 2002. With the tract, mining would continue for another 21 years until 2023. The additional reserves at current coal prices have a value of \$ 1.26 billion. Revenues to the Federal government from the lease tract (lease bonuses, royalties, rentals, etc.) will be from \$ 120 to \$ 141 million, which would be equally shared with State and County governments.

The likely lessee for the Mill Fork tract (Genwal Resources, Inc.) is in the process of permitting new facilities to increase the mine capacity by an estimated one million tons, bringing annual production to 3.5 million tons. Most of the new facilities will be built on fee land controlled by the mine. The leasing and subsequent development of the Mill Fork tract will essentially allow the mine to continue the planned coal production for 21 additional years. The prolonged mine life would contribute to continued employment and income primarily within Emery County. Using the planned production level of 3.5 million tons per year, employment is perceived to increase to 225 employees at the mine including trucking personnel. Direct revenues to the government per annum are estimated to be \$ 5.2 million, computing to \$ 141 million over the life of the mine.

In summary, the leasing and subsequent development of the Mill Fork tract would not be expected to have a significant increased socioeconomic impact on Emery or surrounding counties. Mine facilities are being permitted to achieve maximum production without the tract. The tract will enable the mine to maintain maximum production levels and employment and income for the next 25 year period. Emery County will be able to continue slow growth of 1% per year.

G. Land Uses

It is not likely that subsidence will affect range lands in the tract. The pre-mining land uses will not be changed. Subsidence may alter the position of land survey monuments, and lessen their viability as solid data points.

H. Cultural Resources

Potential impacts from underground coal mining can be isolated to limited surface cracking along plateau tops and isolated escarpment areas. In the southern 1/2 of the tract some portions of escarpments could witness large blocks of Castlegate Sandstone being dislodged and falling downslope. After further assessing the potential for significant sites to be located in these areas through review of existing data and an aerial reconnaissance of impact areas, we believe there should be no effect on significant cultural resources.

On September 11, 1995 the Forest consulted with the USHPO forwarded its finding that there should be no effects to significant cultural resources for the original lease tract. On September 20, 1995, the USHPO concurred with this determination. On March 14, 1997, the Forest forwarded its determination that there should also be no effects to significant cultural

resources within the modified lease tract area as redefined by the coal lease tract delineation team, and USHPO concurred with this finding on April 30, 1997.

I. Recreation and Visual Quality

Recreation

The effects to recreation would be that the mine facilities would be present in Crandall Canyon for an additional 21 years. Because the facilities are already there, and the fact that the Crandall Canyon trail is low-use, large-scale effects on the recreation user are not anticipated.

Subsidence that would trigger small-scale failures of escarpments may present a safety hazard if blocks of rock reach trails while users are on them.

Visual Quality

Potential escarpment failure in the southeast quarter of section 5 could affect views from a very limited portion of the Scenic Byway while traveling up Huntington Canyon near the entrance to Tie Fork Canyon.

Given the amount of truck traffic and curves to contend with on this road, travelers would normally not be looking so steeply up towards this specific area of outcrop; this is particularly the case when driving down the canyon, where one would additionally need to look back over their shoulder. In addition to the area being well out of site line or terminal view, the short duration of view (two tenths of a mile) would well preclude any opportunity for dominant effect.

It would be expected that even if more easily viewed, any potential visual effect would be negligible due to the limited scale of this potential escarpment failure and common similarity to other naturally occurring failures viewed throughout this and all other similarly formed canyons.

Due to natural consistency in form, line, color and texture; prevalent topographic and vegetative screening; and considering other aesthetic variables, i.e., distance from the viewer, angle and duration of view, and scale of the potential failure. It is also predicted with a high level of confidence that any potential escarpment failures or human-caused change would not be visually conspicuous or objectionable from other federal, state, private and municipal lands, and transportation corridors.

Potential escarpment failures within view of recreation trails are in areas of Modification and would be well within the context of the surrounding landscape character for reasons described above. In summary, existing VQO's would continue to be met.

3. Alternative 3 - Offer for Lease with Application of Special Coal Lease Stipulations for Protection of Non-Coal Resources

Under this alternative, the tract would be offered for leasing as delineated. In addition to the standard BLM lease terms and conditions, the Forest Service Special Coal Lease Stipulations included in Appendix A would be applied to the lease.

A. Geology, Soils and Mineral Resources

If Genwal Resources, Inc. acquires the lease, underground coal extraction from the tract would likely involve extending workings of the Crandall Canyon mine to the south using standard industry mining practices. More specific details of the mining are discussed in the Reasonably Foreseeable Development Scenario contained in Appendix B. With the Special Coal Lease Stipulations in place, approximately 68 million tons of coal could be mined under this alternative. This alternative would extend mine life by an additional 19 years.

Subsidence, escarpment failure, and mining-induced seismicity would likely be similar to that described for Alternative 2 with the following exceptions:

With the proposed mine plan submitted by Genwal, only the apparent escarpment on the north slope of the North Fork of Mill Fork canyon is to be undermined by longwall panels. Cliff failure could occur along the length of the escarpment, however, due to limited data on coal thickness, the conceptual mine plan shows longwall panels only under the western half of this escarpment. Much of the eastern portion of the cliff face will not be mined, or will be undermined by only the bleeder entries (no full extraction mining, coal pillars will be left for ventilation courses). It is likely that some cliff failure could occur, but the extent would be limited. If the entire face should fail, it is estimated that about 20-acres of debris fan would form. If only isolated portions of the face failed, then the estimated size of debris fan would be 5 to 10 acres. These acreages are crude estimations taken from aerial photos and topography maps. It is possible that some dislodged rocks could reach the intermittent drainage or the recreational trail in the North Fork of Mill Fork canyon.

Escarpments found with archaeological resources would be protected from subsidence by stipulation 9.

Mining-induced cracks along the surface expression of the Joes Valley Fault would be prevented by a lease stipulation that would prohibit full-extraction mining within the 22 degree angle-of-draw from the fault (Stipulation 19), application of this stipulation might result in the loss of about 120,000 tons of coal, based on the draft mining scenario.

Oil and gas effects will be the same as for Alternative 2.

B. Hydrology

Surface Water

The potential impacts from mining are the same as Alternative 2, except that Forest Service Stipulations 9 and 19 would be in effect.

Stipulation 9 precludes subsidence of perennial streams without prior approval. Assuming that approval would not be granted, the stipulation is designed to prevent surface fracturing that could divert surface flows underground. This would ensure that longwall mining would not occur under Crandall Creek, and there would not be water losses that could have adverse effects on riparian areas, wildlife habitat or downstream uses.

Stipulation 19 states that mining will not be allowed within a 22 degree angle of draw from the Joes Valley Fault in order to prevent subsidence focusing along the fault and potentially diverting surface drainage. As discussed in Chapter III, it is believed that the fault supports springs on the western edge of the tract, that in turn provide flow to the wetlands in the Indian Creek drainage. Under this alternative, the likelihood of surface fracturing in that area is reduced to protect the tributary drainages and springs.

Ground Water

Potential impacts of mining on ground water would be the same as for alternative 2, except that stipulation 17 would be in effect.

Stipulation 17 would require replacement of all water needed to maintain ecosystems and downstream uses if adverse impacts occurred. Ground water intercepted at the mine level is not thought to be in direct hydraulic communication with springs within the lease tract, or a major contributor to surface flows in the area. In the event that springs, seeps or flows in surface drainages are affected by mining or subsidence, the operator would be required to replace the water in quality and quantity at the source.

Although impacts to springs in the Right Fork of Rilda Canyon are not anticipated, monitoring of discharge from this portion of the basin will be necessary since flows are thought to contribute to the downstream culinary source. Stipulations 3 and 7 require baseline data and subsequent data collection to assess changes, if any. Flow monitoring on the Right Fork of Rilda Creek at the lease boundary must be planned prior to the Forest Service consenting to the mine plan. Under these stipulations, monitoring on Little Bear Creek will also be required.

Before the Forest Service would consent to the mine plan, the operator must make a commitment for water replacement should any water resources be disrupted due to mining, and prepare a water replacement plan subject to approval by the Forest Service and the regulatory authority.

C. Wildlife

Terrestrial Species

The potential impacts to terrestrial wildlife from mining the proposed coal lease are the same as alternative 2, except stipulation 10 (construction of surface breakouts from the inside to avoid surface disturbance), and 14 (seasonal closures of surface activities for wildlife) would be implemented. This would prevent any surface activities that may affect the mule deer and elk that utilize the area for summer and winter range.

Forest Service Stipulations 9 and 19 would be implemented. There would be no subsidence of stream channels nor would there be direct or indirect effects to riparian vegetation. The

riparian habitat sometimes used by species such as goshawks, great horned owls, and Sharp-shinned Hawks would be protected and there would be no direct or indirect effect to the species. Under Forest Service Stipulation 2, the lessee would be required to conduct an intensive field inventory of the area if T&E species or migratory bird species of high Federal interest are believed to occur in the area. Stipulation 20 would require the survey for Spotted Bat to determine if they are present, and further provide for their protection if animals are found.

Aquatic Species

Effects are generally the same as alternative 2, except that under this alternative, with stipulations 9 and 19 in effect, coal mining actions and their effects within all drainages in the lease tract would be subterranean and far-removed from aquatic habitats. The thickness of overburden is sufficient to prevent impacts to the stream channels or springs that feed the downstream alluvial system. Subsidence of stream channels would not occur, nor would there be direct or indirect effects to aquatic species of any life history stage or their habitats. Stipulation 17 would ensure that if water were diverted, it would be replaced to support the local ecosystem.

D. Vegetation

Effects under this alternative are the same as Alternative 2, except that stipulations 3 and 7 provide for baseline monitoring to detect changes in vegetation, and stipulations 9 and 17 provide protection for water resources. Therefore, under this alternative there should be no unmitigatable impacts to vegetation and range.

E. Transportation

Same as alternative 2, except that the return to level 'b' service would occur in 19 years.

F. Socioeconomics

Sixty eight million tons of coal could be mined, representing \$ 130 million in royalties. Employment would continue until 2021.

G. Land Uses

Same as alternative 2, except that stipulation 19 would require replacement of water sources, including those used to support livestock. Stipulation 16 would require replacement of land survey monuments and section corners disturbed by subsidence.

H. Cultural Resources

Effects to cultural resources would be the same as that identified in alternative 2. The stipulations provide additional protection for cultural resources discovered during operations under the lease. If significant cultural resources are discovered during operations, stipulation 1 provides for appropriate inventory, evaluation and mitigation.

I. Recreation and Visual Quality

Effects would be as in alternative 2, except with less potential for visually dominant change resulting from escarpment failure in the southeast quarter of section 5. This is because longwall mining under this area would be prohibited by stipulation 9, and another less surface-disturbing method would be employed.

4. Alternative 4 - Offer a Modified Tract for Lease with Application of Special Coal Lease Stipulations for protection of Non-Coal Resources

This alternative excludes the northeastern portion of the lease tract which encompasses the Little Bear Canyon watershed (see figure 2). The portions of the tract in sections 4, 5, 8 and 9, T 16 S, R 7 E would be excluded, except for the NW 1/4, NW 1/4 section 8 which would be kept in the lease tract. This portion of the lease tract would be excluded to address Forest Plan management direction which calls for maintaining the integrity of the watershed values in Little Bear Canyon. The standard BLM lease terms, conditions and stipulations, as well as Special Coal Lease Stipulations would be applied to the lease. Exclusion of these lands from the lease tract results in losing estimated 5 million tons of coal.

A. Geology, Soils and Mineral Resources

Subsidence, escarpment failure, and mining-induced seismicity would be the same as Alternative 3, except that there would be no subsidence or escarpment failure in the excluded area. The escarpment on the north slope of Little Bear Canyon and the easternmost escarpment on the north slope of Crandall Canyon (600 feet) would not be subsided and would probably not fail, unless mining-induced seismicity dislodges balanced rock segments.

Oil and gas impacts will be the same as for alternatives 2 and 3.

B. Hydrology

Surface Water

The same impacts and stipulations would apply as in alternative 3. The exclusion of the northeast portion containing Little Bear Canyon watershed reduces the risk of effecting the water resources in that drainage to a negligible level. Forest Plan direction indicates that having the watershed designated MWS requires protection of the watershed values. By not allowing mining in this area, subsidence will not alter the surface of the watershed, thereby preserving the value, and would be consistent with management unit direction. Flow in Little Bear creek that could contribute water to the spring downstream would not be affected.

Ground Water

Potential impacts to ground water would be the same as for alternative 3, with the following exceptions; ground-water resources in the vicinity of Little Bear Canyon would be removed from risk of disruption or degradation. Springs occurring high in the watershed would be protected from possible subsidence impacts including diversion of flow. Subsidence and associated subsurface disruption that would potentially alter the fracture/fault system be-

lieved to transmit flow to Little Bear spring would not occur. The suspected recharge mechanism for the spring would be undisturbed. No changes in water quantity or quality at the spring would be anticipated, and therefore the culinary water source would be protected.

As in alternative 3, monitoring would be implemented, requirements for water replacement would be in effect, and the Forest Service would not consent to the mine plan unless the operator has committed to a water replacement plan.

C. Wildlife

Terrestrial Species

Same as alternative 3, except that riparian habitat and escarpments supporting species in the Little Bear drainage would be protected.

Aquatic Species

Effects would be the same as for alternatives 2 and 3. By eliminating the northeast portion of the tract, there would be no effects on the aquatic habitats or populations that are supported by Little Bear Spring or Creek. There would be no affect to the spring or the riparian habitat that it supports.

D. Vegetation

Same as for Alternative 3, except that water sources support riparian vegetation in Little Bear watershed would be protected.

E. Transportation

With the exclusion of the coal in the northeast portion, mine life is reduced by 2 years, hence reducing the length of time coal haul traffic would be present. The decrease from level B to C service, and subsequent return to B service would be 17 years.

F. Socioeconomics

This alternative drops the eastern portion of the tract reducing the recoverable reserves to 63 million tons, a loss of 5 million tons. This is a 7.4 % reduction in recoverable tons that will not affect the annual production of the mine, but will reduce the number of years of production. Due to the small number of tons involved and access limitation to coal outcrop, it is likely that the coal will not be mined in the future as it would not justify an independent operation. The years of mine life would be reduced by about 1.85 years, and the total revenue to the government could be reduced by \$ 10 million, to \$ 120 million. Employment would continue to 2019.

G. Land Uses

Same as for alternative 3.

H. Cultural Resources

Effects to cultural resources would be essentially the same as that for alternatives 2 and 3. The potential for significant sites within the Little Bear drainage has been estimated as low.

I. Recreation and Visual Quality

Effects would be as in alternative 3 and with even less potential for visual effect because none of the area east of the northeast quarter of section 7 (which also contains the escarpment of concern in section 5) would be mined by any method.

5. Short Term Use of Human Environment vs. Long-Term Productivity

Alternative 1

There would be an unrealized economic gain of at least \$ 120 million in royalties and \$ 252.5 million in salaries for the 75 million tons of coal not produced. There would not be benefits from heat or electricity generation from the coal. However, the coal would be available for production in the future, but at a higher cost and lower marketability.

There would be no mining-related changes to short-term or long-term productivity of other resources.

Alternative 2

Mining of coal as proposed could extend the life of the Crandall Canyon mine a maximum of 21 years, and provide up to 75 million tons of coal. This would be a one-time short-term benefit since coal is a non-renewable resource.

Long-term productivity of resources could be affected, but not to a large degree. Vegetation, wildlife habitat, visual quality and water resources may be altered due to subsidence. If surface cracking from subsidence occurs, there could be some diversion of stream, spring or seep flow which could reduce productivity of fisheries, riparian vegetation and macroinvertebrate populations.

Alternative 3

Mining of coal as proposed could extend the life of the Crandall Canyon mine a maximum of 19 years, and provide up to 68 million tons of coal. This would be a one-time short-term benefit since coal is a non-renewable resource. Application of special coal lease stipulations would further protect the resources in the tract area.

Long-term productivity of the resources would remain essentially the same as in alternative 2.

Alternative 4

Water resources and watershed values are protected, lessening the risk for impacts on riparian and macroinvertebrate productivity in the Little Bear Canyon drainage.

There would be a reduced amount of revenues generated by not mining the coal in the northeast portion of the tract. Approximately \$ 10 million in royalties would be lost, along with a reduction of total salaries paid of \$ 18.7 million. Mining of the coal under this alternative would extend the life of the Crandall Canyon mine by about 17 years.

6. Cumulative Impacts

CEQ regulations (1508.7) define cumulative impact as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

Past, present, and reasonably foreseeable future actions in the Mill Fork Lease Tract area have been identified in support of this EA. The action, year of occurrence, and an estimate of residual, current, or anticipated effects, if any, are presented below. Actions are grouped by resource. The sum of the effects of these actions in addition to the anticipated direct and indirect effects of the proposed action will form the basis for the cumulative effects analysis. A summary of past, present and future actions are presented on Tables IV-A, B, and C, respectively.

Alternative 1

Under this alternative, there would be no changes to the current situation. No coal would be mined from the proposed lease tract, and no royalty payments would be received by the federal, state, and local governments. Coal mining would continue in the Crandall Canyon Mine adjacent to the proposed lease tract.

The area and ecosystem have been continuously altered by erosion, glacial activity, fires, insect infestations, and other natural processes prior to the appearance of man. The area has been used by man, probably on a seasonal basis, for about the last 9,000 years. European settlement in the 1870's resulted in hunting and trapping of game, timber harvest, livestock grazing, and eventually coal mining.

Livestock grazing on the Wasatch Plateau was extensive in the late 1800's, resulting in extensive watershed damage and erosion. Management of grazing by the Forest Service since 1906 has resulted in improved resource conditions. Today the range conditions are generally fair. The proposed lease tract includes parts of one cow and horse, and one sheep and goat grazing allotments. The present level of grazing will continue unchanged for the foreseeable future.

Coal has been mined in the Mill Fork area since the 1940's. Several mines have operated in the Rilda, Mill Fork and Crandall canyons from between the 1940's and the present. More detailed explanation of mining in the immediate area is given on Table IV-A.

Genwal Corporation has proposed to expand its facilities within a private portion of land adjacent to the Mill Fork Lease Tract. The expansion proposal includes placing up to 1,500 feet of Crandall Creek into a culvert to allow construction of additional coal storage area, office space, parking, and access to the Hiawatha coal seam. The potential effects of this culvert and proposed mitigations are being considered at this time by UT DWR biologists and the Manti-LaSal National Forest Fisheries Biologist. One conclusion that has been reached, however, is that the culvert and resultant mitigations all present a high risk of loss of viability for the suspected Colorado River Cutthroat population which currently resides where the culvert will be placed. The Genwal expansion (if implemented as proposed) has potential to cause the following reasonably foreseeable cumulative effects on Crandall Creek; 1) 0.25 miles of stream would experience habitat loss and be rendered inaccessible due to the culvert, and 2) there would be a possible loss of fish population.

The activities planned for the foreseeable future (a timber sale, and possibly oil and gas drilling) described in Section I.F and Table IV-C, would occur. The timber sale and oil and gas drilling could cause increased vehicle traffic, increased sedimentation in streams, increased dust and noise, and temporary loss or alteration of wildlife habitat. These activities are consistent with direction in the Forest Plan.

Alternative 2

The anticipated impacts to the existing environment were described, by resource category, in the preceding portion of Section IV. The cumulative impacts of this alternative would be that 75 million tons of coal would be mined, drilling may be required, continued water output to Crandall Creek would occur, and \$141 million in royalty payments to federal, state, and local governments would be made.

Other land use practices and natural events have affected aquatic habitats in both the Huntington Canyon and Price River drainages. Livestock grazing has decreased bank stability to some degree, mechanically altered streambank undercuts (important rearing habitat for cutthroat trout), and degraded water quality in the streams and reservoirs. Streams throughout the Manti Division still show the effects of the 1983-84 flood events. Raw banks, downcut channels and gullies are in evidence throughout drainages within and adjacent to the proposal area.

Water intercepted during mining could enter the mine workings and be discharged into Crandall Creek. Flow rates in the permeable units have proved to be very slow, and therefore, it is not deemed likely to change the flow in the Huntington Canyon watersheds or the Colorado River. The water quantity of the discharged water could increase as more mine area is opened.

Mining on the Mill Fork Lease Tract is not anticipated to have far-reaching effects on water resources in the surrounding area. As previously discussed, most of the ground-water resources within the lease tract are springs that issue from perched water-bearing zones in the North Horn and Price River formations. Most of the springs are located where permeable layers of sandstone are intercepted in canyon walls, and given the seasonal variability of flow, indicate that they discharge close to their recharge source. Typically where units have saturated zones, they are drained close to the recharge source. These are localized systems that are not laterally continuous, and are even isolated from one drainage to another within the lease tract. East Mountain is highly dissected by the numerous

drainages which truncate the continuity of the geologic strata. The drainage pattern forms narrow ridges that serve to limit the recharge areas within the lease tract.

More continuous water-bearing zones are contained in stratigraphic units that are exposed only in places at the very bottoms of canyons in the area, and typically these units are not saturated at the outcrop faces. The Star Point sandstone in the Wasatch Plateau has been known to exhibit variability in the degree of saturation, pressurization and depositional characteristics. In places, the unit is confined (meaning that water in the sandstone is under pressure), and other places it is not. The variability of the unit makes it difficult to evaluate continuous flow paths between areas. It is known that flow rates are low.

East Mountain is effectually isolated from other mountains in the vicinity by faults and major drainages. Recent studies have indicated that faults on the Wasatch Plateau tend to behave as barriers to horizontal ground-water flow (Mayo and Associates, 1997), this being the case, the western edge of East Mountain is isolated by the Joes Valley Fault. Faults maybe transporting water along their trends, as is thought the case for occurrence of Little Bear spring. Again Little Bear is an anomaly for the area, and no other springs of this magnitude occur in this area of the Wastatch Plateau. Similarly, major drainages tend to further isolate East Mountain. Huntington Canyon is a major feature in the Wasatch Plateau, and separates the East Mountain from Gentry Mountain to the east. Likewise, Cottonwood Creek drainage to the south separates East Mountain from Trail Mountain.

Some stratigraphic units below the elevation of local drainages may be in hydraulic communication within one another, however all these units are much deeper than the level of proposed mining, and would not be effected by mining in the area.

It is unlikely that the cumulative impacts would cause significant impacts to surface water resources (including associated riparian areas), terrestrial or aquatic wildlife (including threatened, endangered, or sensitive species), vegetation and range, or recreation, although some minor changes could occur. Because of the uncertainty of the hydrologic regime controlling Little Bear spring, although unlikely, there is a possibility that ground water resources could be affected.

Surface disturbance from coal exploration drilling, and possibly oil and gas drilling, are expected to result in removal of a small amount of vegetation, which could affect use by wildlife and livestock. The loss of vegetation would be minor and last only a few years. There would still be sufficient vegetation to maintain current populations and use. The River Gas Coalbed methane project is not anticipated to have effects in the tract area.

The expected traffic growth between Fairview and Huntington, Utah, along with the expected traffic growth onto the National Forest by other users of the National Forest when added to the extended (time period) and increased production (2.5 to 3.5 MM tons/year) will result in the UDOT having to increase maintenance expenditures on SR 31 and recommending that the highway template be upgraded to the current standard for the volume and composition of traffic expected during the planning period.

There could be changes to the transportation system, if the UDOT requires upgrading SR 31 to accomodate haul traffic. Effects on air quality would be limited by the terms of the Utah Air Quality Approval Order, and would be localized and insignificant.

Because significant cultural resources are not predicted to exist within areas which will be susceptible to subsidence or escarpment failure, there should be no cumulative impacts to cultural resources under any of the alternatives.

Changes in recreational use will be associated with the closure of dispersed sites in Huntington Canyon, that may cause increased use in the side canyons. The most noticeable impact will continue to be access to the Crandall Canyon trailhead. Users must pass through the surface facilities to the parking area at the trailhead. This will be the case for the life of the mine operation. However, with the proposed expansion of facilities (on private land), safer movement through the mine portal area will be available for forest visitors.

Regardless of the small potential for obtrusive effect due to escarpment failure, the public's aesthetic expectations concerning this and other project related activity need to be taken into account. Any fencing, barriers, berms, etc. (even if planned for use outside the Forest boundary) may be in conflicting juxtaposition to the strong visual elements which define this landscape. This is particularly true for the Scenic Byway. This important travel corridor is highly scenic and insensitively placed safety improvements can conspicuously advertise human-caused change. Although safety is of paramount concern, care should be taken to effectively screen and later remove these obtrusive structures to the best visual advantage. The visual effect of escarpment failure is anticipated to be negligible when compared to that associated with these structures if they are to be used.

Alternative 3

The impacts would be the same as those described under Alternative 2, except that mitigations are provided by application of the Forest Service Special Coal Lease stipulations. The stipulations will prevent risk of damaging water resources, vegetation, riparian areas, escarpments and wildlife habitat.

Alternative 4

Cumulative impacts would basically be the same as for alternatives 2 and 3 through much of the lease tract. Exclusion of the northeast portion reduces the potential for impacts to the ground-water system, the vegetation, riparian areas, visual quality from escarpment failures, and wildlife habitat alteration due to subsidence.

TABLE IV-A
Summary of Past Actions

PAST ACTIONS	IMPLEMENTATION DATES (Begin and Ending)	RESIDUAL EFFECTS
<p>MINERALS</p> <p>Tip Top Mine on the south slope of Crandall Canyon (SE 1/4 NE 1/4, Sec 5, T 16 S, R 7 E, SLM). No residual effects. The Crandall Canyon Road (FDR 50248), now on the Transportation System, was most likely originally constructed for the mine and coal exploration. The Road is now a Forest Development Road from the SR 31 intersection to just above the Crandall Canyon Mine. The old road that continued up the canyon from the mine (now Forest Development Trail 390) was most likely originally build as a coal exploration/drilling road.</p>	<p>1939 - 1958</p>	<p>Very small mine. Naturally revegetated. Disturbed area not evident.</p>
<p>Crandall Canyon Mine in Crandall Canyon (S 1/2 NW 1/4, Sec 5, T 16 S, R 7 E, SLM) - The mine was constructed in 1980 and is still an active mine. The mine has disturbed approximately 5.4 acres, not including the Crandall Canyon Road. The Crandall Canyon was widened to two lanes and asphalt paved to accommodate coal haul traffic.</p>	<p>1980 - Present</p>	<p>The mine operates 24 hours a day, every day at differing intensities depending on production shifts. 5.4 acres of vegetation/habitat has been removed for operations. The physical activity and operations/haul traffic on the Crandall Canyon and Huntington Canyon roads impacts other resources and uses. Approximately 3,900 acres of NFS, State, and private lands included in permit area. Subsidence of mined lands is likely. No subsidence of Crandall Creek is permitted. No significant amount of subsidence to date and no surface expressions of subsidence have been detected.</p>
<p>Old Leamaster Mine in Mill Fork Canyon (NE 1/4 SE 1/4 SW 1/4, Sec 16, T 16 S, R 7 E, SLM). The original Mill Fork Road, now a Forest Development Road (FDR 50245), was probably constructed prior to 1943 for access to the mine and for coal exploration. The Forest Development Trail that extends several miles up the canyon, beyond the Forest Development Road (171, 391); and Trails 086 and 394 on the north slope of the canyon, were most likely originally constructed prior to 1943 as coal exploration roads. The road and trails are maintained on the Forest Transportation System.</p>	<p>1943 - 1984</p>	<p>The old mine was reopened in 1976 as the Huntington Canyon #4 Mine (see below). Most of the original disturbed area was re-disturbed and expanded for the new surface facilities.</p>
<p>Huntington Canyon #4 Mine (SW 1/4SW 1/4, Sec 16, T 16 S, R 7 E, SLM). The mine was reconstructed at the Old Leamaster Mine in 1976 with a total surface disturbance of approximately 12.5 acres (almost all on pvt. inholdings). A 25KV powerline was constructed from the Huntington Canyon Power Plant in Huntington Canyon over the south Huntington Canyon slope to Mill Fork Canyon. Surface disturbance was minimized by helicopter installation and was designed to minimize impacts to raptors. The powerline remains today under a special-use permit and was extended in 1986 to provide service to the Crandall Canyon Mine. The mine was reclaimed in 1985 (recontoured to approximate original contour) and determined to be successful in 1985. Remnants of the highwalls are still visible. In 1985, the Mill Fork Road was reduced from two lanes to a single-lane (with turnouts). The second lane was recontoured and has been successfully revegetated. The permit area of 1,320 acres (pvt. and NFS lands) were only partially mined. No visible signs of subsidence.</p>	<p>1976 - 1985</p>	<p>Reclaimed area well vegetated and sediment production should be similar to pre-disturbance levels. No visible signs of subsidence and no detectable mining-induced changes in water flow and quality.</p>

PAST ACTIONS	IMPLEMENTATION DATES (Begin and Ending)	RESIDUAL EFFECTS
<p>Rilda Canyon Abandoned/Reclaimed Coal Mines Complex (Johnson, Comfort, Rominger, and Helco Mines, Sec. 28, 29, T 16 S, R 7 E, SLM). The mines were operated from approximately 1939 through 1969. The Rilda Canyon Road (Forest Development Road 50246) was probably constructed for the mines and coal exploration in the 1930s or earlier. The trails presently on the Forest Trail System (Right Fork - 395, and Left Fork - no number) were constructed for coal exploration. The mines were reclaimed in 1966 and 1967 under the Utah Abandoned Mine Land Reclamation Program. Even though adequately recontoured and revegetated, some erosion occurs in the reclaimed areas and sediment/coal dust washes into Rilda Creek (small amounts due to vegetation screening).</p>	1939 - 1966	Small sediment production from reclaimed areas and old coal piles. Generally not visible due to recontouring and revegetation. Low residual impact.
<p>Rilda Canyon Breakout/Deer Creek Mine Subsidence (Left Fork of Rilda Creek and South Slope or Rilda Canyon (Sec 28, 29, 30, T. 16 S., R. 7 E., SLM). The breakout pad and access road (from forka to breakout) have disturbed approximately 2 acres. Underground mining has subsided extensive areas on East Mountain and the south slope/escarpment of Rilda Canyon and the Left Fork of Rilda Canyon. One small rock fall (probably induced by subsidence) on the Castlegate Sandstone cliff along the south slope of Rilda Canyon has been observed in the NE corner of Sec. 33. The Rilda Canyon Road, from the intersection with Hwy. 31 to the forka, was widened to two lanes, improved, and gravelled by Emery County in 1995 and 1996 (See Transportation Section).</p>	1995 - Present	The breakout pad removed approx. 2 acres of overstorey riparian vegetation and non-riparian understorey vegetation. Approx. 200 feet of the Left Fork creek channel is culverted. Fan noise and limited activity at the pad would affect wildlife until they become accustomed to the disturbance. Subsidence has caused one small failure that damaged some trees and vegetation as described above. This is the only evidence of subsidence on the ground surface and no impacts have been discovered by monitoring.
<p>The Flat Canyon/Indian Creek Gas Field (East Mountain Unit) extends into the southwestern portion of the coal lease tract. Several wells produced gas but have been plugged. Meridian Oil drilled six wells since the early 1980's which are producing natural gas. Only one of the wells (East Mountain No. 32-23) lies within the lease tract (SW 1/4 NE 1/4, Sec 23, T 16 S, R 6 E, SLM).</p>	1950 - 1970	These older wells have been abandoned and have been revegetated. They are visible only from related slope changes.
	1962 - present	Approximately 6 acres (1 acre/well) remains disturbed for gas production. Negligible residual effects are due to drainage and sediment control. The wells are visible from Cottonwood Canyon Road.
<p>SOIL AND WATERSHED</p> <p>No watershed improvement projects have been conducted in the lease tract. In the 1981 Watershed Improvements Needs Inventory, there were no areas in the lease tract identified as potential watershed improvement projects.</p>		
<p>TIMBER</p> <p>Spoon Creek Timber Sale</p>	1995	1 mmbf were cut off approximately 75 acres. Good aspen regeneration is currently occurring.
<p>RANGELAND/WILDLIFE</p> <p>Water Troughs for the Trail Mountain Allotment at Cedar Post, Otteson Hole, and Grant's Hole: T 16 S, R 6 E, Secs 22 & 23.</p>	1924-1966	For distribution of livestock.

PAST ACTIONS	IMPLEMENTATION DATES (Begin and Ending)	RESIDUAL EFFECTS
Water Troughs & Ponds for Crandall Ridge Allotment at Edmonds Bear Hole, Edmonds Willow Spring, Tuttle Mill Ridge, Tuttle Ridge, and a pond T 16 S, R 6 E, Secs 11, 13, 14, 23, & 24.	1982	For distribution of livestock.
<p>TRANSPORTATION</p> <p>Dispersed recreation, rural recreation, cordwood activities, range activities, and timber activities have contributed to the seasonal traffic volumes in and around the project area.</p>		Road surface displacement/contamination of aggregate, user developed roads.
Placement of asphalt surfacing on Forest Development Road #50248 (Crandall Canyon Road) to provide structural support and travel surface for increase coal haulage.	1991	Less road surface displacement and decrease in road maintenance activities and cost.
Reclamation of Forest Development Road #50245 (Mill Fork Road) from two to one lane.	1985	The two-lane chemically stabilized travel-way was reduced to one-lane with turnouts to meet the resource and road management objectives for the area accessed. This provided a larger buffer between the road and stream, and left less road surface exposed for surface displacement in the future.
Reconstruction of Forest Development Road #50248 (Rilda Canyon Road) to North Emery Water Users spring source, forest trail head, and Rilda Canyon fan portal (Deer Creek Mine).	1994-95	Single-lane native surface road reconstructed to two-lane aggregate surface road with ditches and culverts to North Emery Water Users spring providing more dependable access. Single-lane native surface road reconstructed to single-lane with aggregate surface with ditches, culverts, and turnouts to forest trailhead and fan portal. Access gated at trailhead for emergency use only by motor vehicles. Reduced surface displacement of the aggregate stabilized travel surface and better dispersal of drainage water.
<p>RECREATION</p> <p>Construction of Indian Creek Campground and water development at western edge of the tract</p>	1980's	Twelve campsites including 5 group sites and 7 family sites. General seasonal use from June 1 to September 30.
Dispersed recreation sites along the eastern boundary of the tract in Huntington Canyon.	Since 1900's	Sedimentation/Human waste
Trails in the tract include; Mill Fork Trail (#171), Mill Fork Ridge Trail (#086), and East Mountain Trail (#085)		The trails, respectively, 4 miles, 2 miles, and 2 miles in length have seen use historically for timber, mining, and firefighting access. Additionally, they are used for recreational purposes by hikers, horsemen, bicyclists, and seasonally by hunters and trappers.

TABLE IV-B
Summary of Present Actions

PRESENT ACTIONS		CURRENT EFFECTS
MINERALS See Crandall Canyon Mine and Rilda Canyon Breakout/Deer Creek Mine in Past Actions.		
SOIL AND WATERSHED No soil and watershed improvement projects are being conducted in the project area.		
TIMBER Spoon Creek Timber Sale	1997	Approximately 76 acres of aspen harvest to stimulate regeneration
RANGELAND/WILDLIFE Current Grazing Allotments		961 sheep graze 3 months/year on north end of tract. 912 cattle graze 1 month/year on southern end of tract.
TRANSPORTATION Dispersed recreation, rural recreation, hunting recreation, cordwood activities, range activities, and timber activities continue to contribute to seasonal traffic volumes in and around the project area.		Continued road surface displacement and or contamination of aggregates, continued off-road vehicle damage.
Timber harvest could result in commercial haul easterly on State Route 29 and 31 because of the Cascade Resources Mill near Wellington, Utah	1995-1998	The Baldy Timber Sale could result in 6 MMBF of timber being hauled over Forest Highways, resulting in increased traffic volume and conflicts with existing uses.
RECREATION Closure of Dispersed Sites in Huntington Canyon		Decreased contribution of sediment and human waste along the Huntington Creek.

TABLE IV-C
Summary of Reasonably Foreseeable Future Actions
(within ten years; 1995-2005)

REASONABLY FORESEEABLE	TIMING OF ACTIONS	ANTICIPATED EFFECTS
<p>MINERALS</p> <p>Crandall Canyon Mine in Crandall Canyon (S 1/2 NW 1/4, Sec 5, T 16 S, R 7 E, SLM) - Genwal Coal Company has proposed to expand the existing surface facilities on their private inholdings (pvt. surface and coal). The expansion as proposed would culvert approximately 1,500 feet of Crandall Creek to build additional mine surface facilities consisting of a large open coal pile/truck loading facility, truck loading scales, new office, bathhouse, parking lot, etc. In addition, Genwal has proposed to construct new portals on the South slope of the canyon to access the Blind Canyon Seam (upper seam). New disturbance is all on their private lands and would disturb an additional 4 acres. Added to the existing 6 acres disturbed for surface facilities, the disturbed area would be increased to a total of 10 acres. Construction of a merge lane on Hwy. 31 at the Crandall Canyon Road Intersection has also been proposed for traffic safety purposes. This would disturb another 0.5 acres of riparian vegetation along Huntington Creek. The mine will progress into Sec. 2 (State Lease ML-21568, 990 acres). Production will increase from the present rate of 2.5 million tons per year to 3.5 tons per year.</p>	<p style="text-align: center;">1997 - 2012</p>	<p>Approximately 1,500 feet of Crandall Creek would be in a culvert, removing this stream segment from available habitat for aquatic wildlife. Approximately 4.5 acres of riparian vegetation and habitat will be removed from aquatic and terrestrial wildlife habitat. The present activity, resulting in impacts to wildlife, recreation, traffic conflicts would continue another 5 years (1997 - 2002) over the existing life of the mine. State Lease ML-21568 will be mined and subsided (990 acres). Reclamation of the site would take another 10 years to be completed and fully successful (2000 - 2010). Offsite mitigations have been negotiated between the UOWR, USFS and Genwal Resources, Inc.</p>
<p>Gas Exploration/Development - Burlington Resources (operator of the Flat Canyon/Indian Creek Gas Field) could propose 2 additional gas exploration/production wells on existing oil and gas leases on East Mountain in the Mill Fork Lease Tract. The most likely locations would be the ridge tops located in Sections 13 or 14 on East Mountain at the head of Mill Fork Canyon. It is not likely that new oil and gas leases would be issued within the tract until coal mining in the tract is completed. Approx. 0.5 miles of new road (1.5 acres of dist.) and 2 pads (4 acres) would be required. The wells would be converted to gas production wells.</p>	<p style="text-align: center;">1999 - 2020</p>	<p>Approximately 5.5 acres would be disturbed for drilling. Assuming that the two wells would be drilled in two successive years, activity disturbances would be for 80 days in two successive years. Production would last for 20 years and physical disturbance would be limited to compressor noise, and weekly visits by field maintenance personnel. After reclamation (last 5 years of 20 year production term), vegetation would be re-established.</p>
<p>Oil and Gas Exploration/Production - Azalea Oil has proposed to drill a 16,000 ft. wildcat well in either North Hughes or Engineer's Canyon. Approximately 3 acres would be disturbed for road and pad construction. Construction and drilling would take place in the same season. If this well produced economic amounts of oil or gas, a second well would be drilled in the other canyon (additional 2.5 acres). A third well could be drilled in Mill Fork or Rida Canyon if the other two are producers. This would require a pad (2 acres) and reconstruction of the Mill Fork Road (2.5 acres) if located in Mill Fork Canyon. Assume successive season for second and third wells. Drill time for each well would be 150 days. Traffic for 1 week move-in and 1 week move-out of drill rig would be 100 vehicles per day. Average daily traffic would be 16 vehicles per day.</p>	<p style="text-align: center;">1997 - 2020</p>	<p>10 acres of disturbance for 20 years if production at all 3 wells. If first well not a producer, only one well drilled in 1997 or 1998 and would be reclaimed in the fall after drilling. Would take 5 years to successfully revegetate disturbed area.</p>

REASONABLY FORESEEABLE	TIMING OF ACTIONS	ANTICIPATED EFFECTS
<p>SOIL AND WATERSHED</p> <p>No soil and watershed improvement projects are anticipated in the foreseeable future.</p>		<p>Improvements to soil conditions are expected as a result of range management actions.</p>
<p>TIMBER</p> <p>Spoon Creek Timber Sale; (on-going) planned to sell approximately 100 acres in each of 2 more years.</p>	<p>1996 & 2000</p>	<p>Aspen harvest to stimulate regeneration.</p>
<p>Blaze of Glory Timber Sale</p>	<p>1998</p>	<p>Approximately 135 acres salvage timber sale to improve forest health.</p>
<p>RANGELAND/WILDLIFE</p> <p>Planned and anticipated troughs, including one in T 16S, R 6E, Sec 10.</p>		<p>Improved livestock distribution</p>
<p>TRANSPORTATION</p> <p>Increase in traffic and changes traffic mix.</p>	<p>1997 - 2007</p>	<p>Increased traffic with higher percentage of heavy trucks on Forest Highways will require additional turning lanes, pavement structure improvements, additional surfacing replacements, and additional maintenance needed. Recreation users along the highway will experience longer duration of heavy truck noise. Travel time will increase.</p>
<p>Road improvement projects. Aggregate placement, road widening, sight distance improvement, additional turnouts, road stabilization, additional culvert placement/culvert replacement.</p>	<p>1997 - 2007</p>	<p>Continued user access, protection of resources and investments. Traffic use on non-highways will increase under 2% per year.</p>
<p>RECREATION</p> <p>Improvement & closure of dispersed sites in Huntington Canyon currently being considered in the Huntington Analysis. Improved group use site is planned for the Little Bear site.</p>	<p>1997-1998</p>	<p>Decreased contribution of sediment and human waste along the Huntington Creek.</p>
<p>Improvement and maintenance activities on the Mill Fork trail (#171)</p>		

V. PERSONNEL AND PUBLIC INVOLVEMENT

A. Interdisciplinary Team and Consultants

The following are the Interdisciplinary Team (IDT) members and consultants who participated in the environmental analysis:

<i>Specialty</i>	<i>Specialist</i>	<i>Role</i>
NEPA/Geology	Jeff DeFreest	ID Team Leader
Hydrogeology	Liane Mattson	Deputy Team Leader
Engineering	Brent Barney	Core Team
Fisheries/NEPA Consult	Jill Dufour	Core Team
Socioeconomics/NEPA	Max Nielson (BLM)	Core Team
Geology	Carter Reed	Extended IDT
Mining Engineering	Stephen Falk (BLM)	Extended IDT
OSM Representative	Floyd McMullen (OSM)	Extended IDT
Wildlife Biology	Wayne Ludington (BLM)	Extended IDT
Botany/Range	Bob Thompson	Extended IDT
Hydrology	Dennis Kelly	Extended IDT
Cultural Resources	Stan McDonald	Extended IDT
Landscape Arch	Kevin Draper	Extended IDT
Soils	Dan Larsen	Consultant

In addition to the IDT, the following agencies were contacted in regard to application of the Unsuitability Criteria and in compiling resource data:

U.S. Fish and Wildlife Service
Utah Division of Wildlife Resources
Utah State Historic Preservation Office
Genwal Resources, Inc

B. Public Contacts

News releases which notified the general public that the Forest Service and Bureau of Land Management would be evaluating the coal lease application and requesting public comment were published in the *Sun Advocate* and *Emery County Progress* newspapers.

Letters were sent to over a hundred identified interested individuals and organizations requesting comments. The initial mailing list is included in the project file.

Appendix C contains a copy of the letter and a list of individuals and organizations who responded. A summation of the responses is in section I.H. of this report.

A contact was also made with the local Native American Tribal counsel and a response received, requesting to be kept on the mailing list, but not identifying any issues at this time.

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APPENDIX A
SPECIAL COAL LEASE STIPULATIONS

Federal Regulations 43 CFR 3400 pertaining to Coal Management make provisions for the Surface Management Agency, the surface of which is under the jurisdiction of any Federal agency other than the Department of Interior, to consent to leasing and to prescribe conditions to insure the use and protection of the lands. All or part of this lease contain lands the surface of which are managed by the United States Department of Agriculture, Forest Service - Manti-La Sal National Forest.

The following stipulations pertain to the Lessee responsibility for mining operations on the lease area and on adjacent areas as may be specifically designated on National Forest System lands.

Forest Service Stipulation #1.

Before undertaking activities that may disturb the surface of previously undisturbed leased lands, the Lessee may be required to conduct a cultural resource inventory and a paleontological appraisal of the areas to be disturbed. These studies shall be conducted by qualified professional cultural resource specialists or qualified paleontologists, as appropriate, and a report prepared itemizing the findings. A plan will then be submitted making recommendations for the protection of, or measures to be taken to mitigate impacts for identified cultural or paleontological resources.

If cultural resources or paleontological remains (fossils) of significant scientific interest are discovered during operations under this lease, the Lessee prior to disturbance shall immediately bring them to the attention of the appropriate authority. Paleontological remains of significant scientific interest do not include leaves, ferns or dinosaur tracks commonly encountered during underground mining operations.

The cost of conducting the inventory, preparing reports, and carrying out mitigating measures shall be borne by the Lessee.

Forest Service Stipulation #2.

If there is reason to believe that Threatened or Endangered (T&E) species of plants or animals, or migratory bird species of high Federal interest occur in the area, the Lessee shall be required to conduct an intensive field inventory of the area to be disturbed and/or impacted. The inventory shall be conducted by a qualified specialist and a report of findings will be prepared. A plan will be prepared making recommendations for the protection of these species or action necessary to mitigate the disturbance.

The cost of conducting the inventory, preparing reports and carrying out mitigating measures shall be borne by the Lessee.

Forest Service Stipulation #3.

The Lessee shall be required to perform a study to secure adequate baseline data to quantify the existing surface resources on and adjacent to the lease area. Existing data may be used if such data are adequate for the intended purposes. The study shall be adequate to locate, quantify, and demonstrate the interrelationship of the geology, topography, surface hydrology, vegetation and wildlife. Baseline data will be established so that future programs of observation can be incorporated at regular intervals for comparison.

Forest Service Stipulation #4.

Powerlines used in conjunction with the mining of coal from this lease shall be constructed so as to provide adequate protection for raptors and other large birds. When feasible, powerlines will be located at least 100 yards from public roads.

Forest Service Stipulation #5.

The limited area available for mine facilities at the coal outcrop, steep topography, adverse winter weather, and physical limitations on the size and design of access roads, are factors which will determine the ultimate size of the surface area utilized for the mine. A site-specific environmental analysis will be prepared for each new mine site development and for major improvements to existing developments to examine alternatives and mitigate conflicts.

Forest Service Stipulation #6.

Consideration will be given to site selection to reduce adverse visual impacts. Where alternative sites are available, and each alternative is technically feasible, the alternative involving the least damage to the scenery and other resources shall be selected. Permanent structures and facilities will be designed, and screening techniques employed to reduce visual impacts and, where possible, achieve a final landscape compatible with the natural surroundings. The creation of unusual, objectionable, or unnatural landforms and vegetative landscape features will be avoided.

Forest Service Stipulation #7.

The Lessee shall be required to establish a monitoring system to locate, measure and quantify the progressive and final effects of underground mining activities on the topographic surface, underground and surface hydrology and vegetation. The monitoring system shall utilize techniques which will provide a continuing record of change over time and an analytical method for location and measurement of a number of points over the lease area. The monitoring shall incorporate and be an extension of the baseline data.

Forest Service Stipulation #8.

The Lessee shall provide for the suppression and control of fugitive dust on haul roads and at coal handling and storage facilities. On Forest Development Roads (FDR), Lessees may perform their share of road maintenance by a commensurate share agreement if a significant degree of traffic is generated that is not related to their activities.

Forest Service Stipulation #9.

Except at specifically approved locations, underground mining operations shall be conducted in such a manner so as to prevent surface subsidence that would: (1) cause the creation of hazardous conditions such as potential escarpment failure and landslides, (2) cause damage to existing surface structures, and (3) damage or alter the flow of perennial streams. The Lessee shall provide specific measures for the protection of escarpments, and determine corrective measures to assure that hazardous conditions are not created.

Forest Service Stipulation #10.

In order to avoid surface disturbance on steep canyon slopes and to preclude the need for surface access, all surface breakouts for ventilation tunnels shall be constructed from inside the mine, except at specific approved locations.

Forest Service Stipulation #11.

If removal of timber is required for clearing of construction sites, etc., such timber shall be removed in accordance with the regulations of the surface management agency.

Forest Service Stipulation #12.

The coal contained within, and authorized for mining under this lease shall be extracted only by underground mining methods.

Forest Service Stipulation #13.

Existing Forest Service owned or permitted surface improvements will need to be protected, restored, or replaced to provide for the continuance of current land uses.

Forest Service Stipulation #14.

In order to protect big-game wintering areas, elk calving and deer fawning areas, sagegrouse strutting areas, and other key wildlife habitat and/or activities, specific surface uses outside the mine development area may be curtailed during specified periods of the year.

Forest Service Stipulation #15.

Support facilities, structures, equipment, and similar developments will be removed from the lease area within two years after the final termination of use of such facilities. This provision shall apply unless the requirement of Section 10 of the lease form is applicable. Disturbed areas and those areas previously occupied by such facilities will be stabilized and rehabilitated, drainages re-established, and the areas returned to a premining land use.

Forest Service Stipulation #16.

The Lessee, at the conclusion of the mining operation, or at other times as surface disturbance related to mining may occur, will replace all damaged, disturbed or displaced corner monuments (section corners, 1/4 corners, etc.), their accessories and appendages (witness trees, bearing trees, etc.), or restore them to their original condition and location, or at other locations that meet the requirements of the rectangular surveying system. This work shall be conducted at the expense of the Lessee, by a professional land surveyor registered in the State of Utah, and to the standards and guidelines found in the Manual of Surveying Instructions, United States Department of the Interior.

Forest Service Stipulation #17.

The Lessees, at their expense, will be responsible to replace any surface water identified for protection, that may be lost or adversely affected by mining operations, with water from an alternate source in sufficient quantity and quality to maintain existing riparian habitat, fishery habitat, livestock and wildlife use, or other land uses.

Forest Service Stipulation #18.

STIPULATION FOR LANDS OF THE NATIONAL FOREST SYSTEM
UNDER JURISDICTION OF
THE DEPARTMENT OF AGRICULTURE

The licensee/permittee/lessee must comply with all the rules and regulations of the Secretary of Agriculture set forth at Title 36, Chapter II, of the Code of Federal Regulations governing the use and management of the National Forest System (NFS) when not inconsistent with the rights granted by the Secretary of the Interior in the license/permit/lease. The Secretary of Agriculture's rules and regulations must be complied with for (1) all use and occupancy of the NFS prior to approval of a permit/operation plan by the Secretary of Interior, (2) uses of all existing improvements, such as Forest Development Roads, within and outside the area licensed, permitted or leased by the Secretary of Interior, and (3) use and occupancy of the NFS not authorized by a permit/operating plan approved by the Secretary of the Interior.

All matters related to this stipulation are to be addressed to:

Forest Supervisor
Manti-La Sal National Forest
599 West Price River Drive
Price, Utah 84501

Telephone No.: 801-637-2817

who is the authorized representative of the Secretary of Agriculture.

Signature of Licensee/Permittee/Lessee

Forest Service Stipulation #19.

Except at specifically approved locations, mining that would cause subsidence will not be permitted within a zone along the Joes Valley Fault determined by projecting a 22 degree angle-of-draw (from vertical) eastward from the surface expression of the Joes Valley Fault, down to the top of the coal seam to be mined.

Forest Service Stipulation #20.

A survey for spotted bats (USDA-FS Sensitive Species) will be conducted within the lease tract prior to the lease sale. If bats are located, then evaluations will be made for mitigation needs. Mitigations could include avoidance during specific times and/or the prevention of bat occupancy during periods of subsidence, such as by netting or screening. Mitigations will be evaluated on a case-by-case basis.

Appendix B

REASONABLY FORSEEABLE DEVELOPMENT SCENARIO

The conceptual mine plan presented in this Reasonably Foreseeable Development Scenario was submitted by the mining company and validated by the BLM as being consistent with the standard lease terms, conditions and special stipulations included in Alternatives 3 and 4.

Longwall mining will be the primary method of coal extraction in the Mill Fork Lease Tract. Two coal seams, the Blind Canyon and the Hiawatha are considered mineable in the tract. The two seams are separated by 80 to 120 feet of sandstone and shale interburden. There will be areas where only the Blind Canyon will be mined, areas where only the Hiawatha will be mined, and areas where extraction will occur in both seams (multiple-seam mining). Thin coal precludes longwall mining in parts of the southeastern and northeastern portions of the tract. Room-and-pillar mining would then be used in these areas.

Single-seam longwall mining is projected in the Blind Canyon seam under section 7 and will extend under the NW 1/4, NW 1/4 section 8 (T 16 S, R 7 E). Longwall panels are planned for the Hiawatha seam only under the S 1/2, S 1/2 section 14 extending south and east under the N 1/2 section 13, and the NW 1/4 section 24 (T 16 S, R 6 E). Another single panel is projected to straddle the northern lease boundary in section 1, T 16 S, R 6 E, and section 6, T 16 S, R 7 E. The panel has been designed to provide a buffer zone off Crandall Creek by using a 22.5 degree angle-of-draw. This provides that extent of the panel and the associated subsidence would not interfere with the creek or associated riparian areas. However, knowing that mine plans can change due to coal thickness and conditions underground, it is possible that the panel location could shift to underlie Crandall Creek. In Alternatives 3 and 4, the Forest Service Service Special Coal Lease Stipulation 9, that prevents subsidence of perennial streams will be in effect.

Multiple-seam extraction will occur under sections 11, 14, 12, and the N 1/2, N 1/2 section 13 (T 16 S, R 6 E). Longwall panels are projected to run west to east, with a north-trending set of mains separating two blocks of panels. The panels in the two seams will be superimposed. The panels will be extracted in sequence from north to south on the west side of the mains, and from south to north on the east side. The Blind Canyon seam will be extracted first. There will be an estimated 18 panels of varying lengths in the Blind Canyon seam, and an estimated 17 in the Hiawatha seam.

Room-and-pillar mining will be used to develop gateroads and entries for longwall mining, and for extraction of coal in other areas where longwall is not feasible. Extraction by room-and-pillar method will be used in the northeast portion of the lease tract (east of section 7), and in section 13. In the northeast portion of the lease tract, the planned mining scenario is to use room-and-pillar extraction in both seams.

Subsidence is usually coincident with longwall mining and is transmitted rapidly from the workings to the surface. Once subsidence has begun it will progress with the direction of mining and continue until after the last longwall panel in the block is complete. The total subsided area will include the surface area above the extracted longwall blocks, the room-and-pillar areas where pillars are recovered, plus an additional area determined by the angle-of-draw. Final subsidence contours for a large block of longwall and room-and-pillar recovery panels extracted from a single coal seam would resemble a broad irregularly shaped trough with maximum subsidence occurring towards the center of the block. Maximum subsidence is usually less than the mining height, due to bulking of the overburden strata. The extent and magnitude of subsidence is dependent on the physical properties

of the overburden, coal bed depth, extracted coal bed height and width, seam dip, geologic discontinuities, mining rate, and number of seams mined.

In the current workings of the Crandall Canyon mine where the Hiawatha seam is being extracted, less than one foot of subsidence has been documented to date. However, only 5 longwall panels have been extracted, and they have been short and not adjacent to other panels. A prominent sandstone layer, 30 feet thick, occurs above the coal seam, (between the Blind Canyon and the Hiawatha seams) and is supporting the overburden, so maximum subsidence has not yet occurred. Current information on subsidence at the Crandall Canyon mine is not adequate to calculate and angle of draw for the area. Studies performed at PacifiCorp properties on East Mountain south of the lease tract found that mining in one seam caused surface subsidence equal to 68% of the extracted thickness, within an angle of draw of 30 degrees (Dyni, 1991). Actual measurements taken by the company after multiple-seam extraction in following years have shown the angle-of-draw to be between 20 and 30 degrees. Surface disruption and associated impacts due to subsidence at other underground coal mines in the region, usually decrease as the overburden thickness increases. The major effect of multiple seam longwall mining is to increase the maximum subsidence but the angle-of-draw is not changed appreciably where longwall blocks in each seam, or coal bed, are superimposed. Where multiple-seam extraction occurred under the southern portions of East Mountain, the maximum subsidence increased to 73 % of the total extracted thickness (Dyni, 1991). Final surface displacement was approximately 13 feet. Where a longwall block in an underlying seam extends beyond a longwall block in an overlying seam, the subsidence area will expand in accordance with the extended mining area. Maximum subsidence should occur toward the center of the largest amount of longwall block overlap. Cracks have been observed to form in the extension zone within the angle-of-draw on other portions of East Mountain.

A broad subsidence trough with a smooth profile minimizes disruption to the surface. It is produced by mining a large block of longwall panels at an even rate which results in uniform gradual subsidence. One potential impact to streams crossing the final subsidence trough is a change in the original surface slope. Depending on the original topography, an increase or decrease in the surface slope could have an affect on the flow of a stream.

Longwall mining on the tract, would cause four subsidence troughs; one over each set of longwall panels. Maximum subsidence should be approximately 13 feet over multiple seam areas, and approximately 6 feet over single seam areas.

Subsidence over room-and-pillar sections would be less predictable because of fenders and stumps left from the coal extraction sequence. Because bleeder systems and barrier pillars would be utilized between panels, subsidence would not be a broad trough. The subsidence in this scenario would be trough, barrier, trough, barrier, etc. A study at a room-and-pillar mine in Colorado with similar geologic conditions found that subsidence was approximately 40 % of the extraction height. Tension cracks were observed to form at the edges of extracted portions (Magers, 1993). Where pillars are not recovered (first mining only), chimney subsidence has been observed where the overburden is about 250 feet or less.

Forest Service Special Stipulation 9, which precludes subsidence of perennial streams without prior approval, would prevent surface fractures that could divert water underground. One case of this type of diversion has been documented on fee lands within the Wasatch Plateau, where the Right Fork of Miller Creek has been diverted into the Star Point Mine. The overburden between the creek and the mine ranged from 300 to 500 feet. Subsidence theory and observations indicate that surface tension cracks in overburden greater than 400-600 feet probably do not extend down into the caved zone directly above the underground workings.

Guidance from the SME Mining Engineering Handbook, 2nd Edition states that suggested vertical distance between mining and water bodies should exceed 60 times the mining height (SME, p. 962). Where the overburden is greater than 600 feet, it is therefore unlikely that there would be direct hydrologic connection between surface flow and underground workings. In another study of undermining a perennial stream on the Wasatch Plateau where 600 feet of overburden is present, stream flows did not appear to have been affected (Sidle 1995).

The potential for a surface crack to divert water underground prior to healing is further limited by the characteristics of the local formations which consists of interbedded claystone, siltstone, and sandstone. Although material may fracture at the surface, the fractures are prone to heal rapidly because of the expanding nature of the montmorillonite clays. The CHEMPET Research Corp. analyzed drill core material from the Blackhawk Formation through X-ray diffraction and found it to contain 58% montmorillonite clay (Hurst, 1989). Bentonite, which is essentially composed of montmorillonite, is able to absorb water and increase in volume several times (Hurlbut, 1971). The Blackhawk Formation does not readily receive an influx of surface water because the claystone and siltstone have a low permeability and the higher permeability sandstones are lenticular and pinch out in a short distance.

There is an existing natural gas well within the lease tract in section 23, T 16 S, R 6 E. The oil and gas targets in the area are all below the coal seams, requiring drilling and well completion through the coal. A block of coal will be left in place surrounding the well to preserve the integrity. If conflicts arise with this issue, they will be resolved by the BLM.

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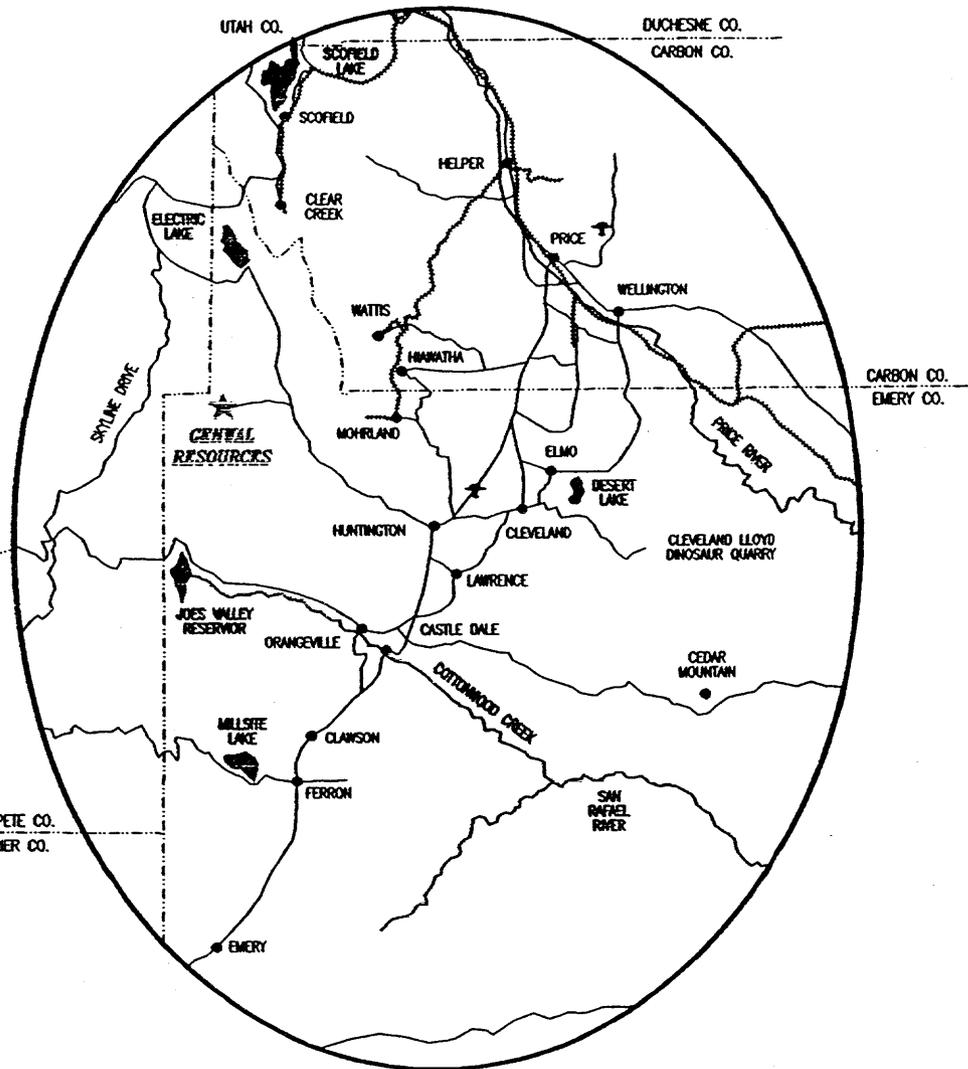
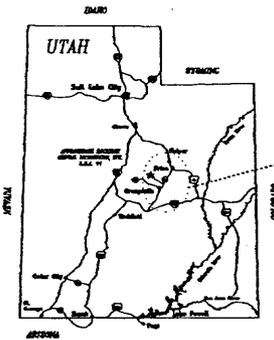
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GENWAL RESOURCES, INC.
CRANDALL CANYON MINE
LOCATION MAP

FIGURE 1



JOINT
DECISION NOTICE/FINDING OF NO SIGNIFICANT IMPACT

**COAL LEASE APPLICATION UTU-78953
SOUTH CRANDALL CANYON TRACT
EMERY COUNTY, UTAH**

**BUREAU OF LAND MANAGEMENT
UTAH STATE OFFICE**

**USDA FOREST SERVICE, INTERMOUNTAIN REGION
MANTI-LA SAL NATIONAL FOREST
FERRON-PRICE RANGER DISTRICT**

Responsible Officials:

Sally Wisely
Utah State Director
Bureau of Land Management
Utah State Office
324 South State Street
P.O. Box 45155
Salt Lake City, Utah 84145-0155

Elaine J. Zieroth
Forest Supervisor
Manti-La Sal National Forest
599 West Price River Drive
Price, Utah 84501
435-637-2817

Cooperating Agency:

Office of Surface Mining
1999 Broadway, suite 3320
Denver, Colorado 80202

I. Introduction

On June 6, 2000, Genwal Resources, Inc. (Genwal) applied to the Bureau of Land Management (BLM) to lease 880 acres, under the Lease-on-Application process contained in Federal Regulations 43 CFR 3425, to extend the life of their Crandall Canyon Mine. The BLM assigned serial number UTU-78953 to the proposed tract known as the South Crandall Canyon Tract. The tract encompasses approximately 880 acres, containing an estimated 6 million recoverable tons of Federal coal underlying lands administered by the Manti-La Sal National Forest (see Attachment 1). It is situated directly adjacent to the approved permit area for Genwal's Crandall Canyon Mine. It is expected that Genwal would obtain the tract through competitive bid and that it would be accessed through Genwal's underground mine workings. Mining would be done in two overlapping coal seams using either the room-and-pillar mining or longwall method.

An EA (Environmental Assessment) which discusses the effects of leasing the Mill Fork Tract, that included the 880 acre South Crandall Canyon Tract area, was jointly prepared by the Forest Service (FS) and the BLM for the Mill Fork Federal Coal Lease Tract in June 1997. The EA is herein referenced as the Mill Fork Tract EA. The Office of Surface Mining, Reclamation and Enforcement (OSM) participated as a cooperating agency. The leasing decisions for the Mill Fork Tract specifically excluded approximately 880 acres encompassing the Little Bear Canyon watershed because there was insufficient information about the potential impacts of mining that could alter the recharge area for Little Bear Spring. A Decision Notice with a Finding of No Significant Impact was issued in September 1997, and the finalized Mill Fork Tract was subsequently leased to PacifiCorp as Utah Coal Lease ML-48258.

The proposed action to lease the 880 acres is based on additional hydrologic investigation and analysis, and is subject to the following authorities: Mineral Leasing Act of 1920, as amended; Federal Coal Leasing Amendments Act of 1976 (FCLAA); Multiple-Use Sustained Yield Act of 1960; National Forest Management Act of 1976 (NFMA); National Environmental Policy Act of 1969 (NEPA); and Federal Regulations 43 CFR 3400. Development of the lease, which is a separate permitting action, would be subject to these actions and the following: Federal Land Policy and Management Act of 1976 (FLPMA); Surface Mining Control and Reclamation Act of 1977 (SMCRA); Federal Regulations 30 CFR 700 to End (SMCRA Regulations), and the State of Utah Coal Mining and Reclamation Regulatory Program.

The decisions recorded in this document are based on the supplemental hydrogeologic analysis, the environmental analyses contained in the Mill Fork Tract EA; the Land and Resource Management Plan and the Final Environmental Impact Statement, Manti-La Sal National Forest (Forest Plan FEIS), 1986; and Final Environmental Impact Statement for the San Rafael Proposed Resource Management Plan, 1989. The Environmental Assessment for Coal Lease Application UTU-71307, Mill Fork Tract, is available through the Forest Supervisor's Office of the Manti-La Sal National Forest in Price, Utah, and the Bureau of Land Management, Utah State Office in Salt Lake City, Utah.

A coal lease unsuitability analysis was completed in accordance with 43 CFR 3461 during preparation of the Mill Fork Tract EA, which included the proposed South Crandall Canyon Tract. No areas were determined to be unsuitable.

II. Decisions

After careful review of the proposal, public comments, the supplemental hydrogeologic analysis (Project File), and the analysis contained in the Mill Fork Tract Environmental Assessment and project file, the responsible officials of the BLM and Forest Service have decided to select Alternative 3.

Sally A. Wisely, Utah State Director, BLM, has decided to offer the tract for competitive bidding subject to standard terms and conditions of the lease and the Special Coal Lease Stipulations contained in Attachment 2.

Elaine Zieroth, Forest Supervisor, Manti-La Sal National Forest has decided to consent to leasing by BLM subject to the Special Coal Lease Stipulations contained in Attachment 2.

Under this alternative mining under Little Bear Creek, where overburden is less than 600 feet, will be limited to full-support room-and-pillar mining and is subject to the special coal lease stipulations contained in Attachment 2. The tract to be offered for leasing and subsequent mining under this alternative is described as follows:

T. 16 S., R. 7 E., SLM, Emery County, Utah.

Section 4: W1/2SW1/4, S1/2SW1/4NW1/4

Section 5: SE1/4, S1/2SE1/4NE1/4

Section 8: E1/2, NE1/4NW1/4, S1/2NW1/4

Section 9: NW1/4

We have concluded the potential for this action to alter flow from Little Bear Spring is low. However, due to the necessity to guarantee that culinary water is available to meet Castle Valley Special Services District's (CVSSD) supply and demand needs, a water replacement agreement between the lessee and CVSSD must be in place and implemented prior to mining within the tract (Attachment 2, Special Coal Lease Stipulations).

This alternative would make additional Federal coal reserves available for competitive leasing, provide an opportunity to extend the life of the Crandall Canyon Mine, and be consistent with Forest Service management goals and prescriptions for the area. Any lease issued would include the Forest Service Special Stipulations identified in the Mill Fork Tract EA as amended by the Mill Fork Tract DN/FONSI. All of the stipulations are consistent with the Forest Plan.

The OSM participated as a cooperating agency.

III. Decision Rationale

These decisions provide for recovery of a coal resource needed for energy production and economic benefit. If leasing of these lands for coal mining were not allowed it would shorten the life of the Crandall Canyon mine, likely causing it to close in about 2 years. This would impact

existing jobs, revenue, and tax base in Emery County. By consenting to, and offering these lands for lease, the mine life will extend about 8 years (personal communication with Dave Shaver of Andalex, September 2001), continue to provide jobs and continued economic benefits to the Federal Government, State of Utah, and Emery County. Recoverable coal reserves (estimated at 50% of the 12 million tons of mineable reserves) would be approximately 6 million tons. The economic value of this coal at a market price of \$18.00 per ton is estimated at \$108 million. Coal royalties are estimated to be \$8.6 million (8% of the market value). It is in the public interest to lease these lands for coal mining. The Multiple Use Sustained Yield Act of 1960 provides for mineral activity on National Forest System Lands.

Since the Mill Fork Tract EA was released to the public in 1997, a number of additional investigation and analyses of the hydrology within the lease tract and Little Bear Spring have been completed. These reports are summarized in the Hydrologic Interpretation (Project File). In addition, supplemental field observations have established that some areas in Little Bear Creek support riparian vegetation indicating that there are segments of perennial sub-alluvial flow, even though the creek is not classified as a perennial stream (Mill Fork EA, page III-5). With precautionary measures required in lease stipulations, the potential for effects to water at the spring or in Little Bear Canyon is low. In the unlikely event that effects were to occur, construction of the water treatment facility in Huntington Canyon by Genwal prior to mining within the tract would provide replacement water and net benefits to the Castle Valley Special Services District (CVSSD).

Alternative 1 (No Action) was not chosen because it would not have met the purpose and need, and would not have benefited the local economy by sterilizing (bypassing) usable reserves, causing a mine to close.

Alternative 2 was not a viable or selectable alternative in the Mill Fork Tract EA or in the current analysis. Differential subsidence and cracking of the Little Bear Stream channel could cause disruption of the channel and morphological changes where overburden is less than 600 feet. It was included for analysis and comparison purposes only.

Alternative 3 was chosen because it offers adequate environmental protection of National Forest System resources, including Little Bear Creek and the culinary water source in Little Bear Canyon, and provides for the maximum utilization of recoverable coal reserves, and economic benefits to the United States, State of Utah, Emery County, and surrounding communities during the continued life of the mine.

Alternative 4 was not chosen because it excluded Little Bear Canyon from recovery of coal reserves and reconfiguration of the tract boundaries has now been determined not to be necessary to be consistent with Forest Plan direction based on supplemental analyses.

IV. Alternatives Considered

Based on analyses of issues raised during public scoping and by the interdisciplinary team, three action alternatives were developed. Concerns for water resources drove development of specific

alternatives. As a result, the no action alternative and the three action alternatives represent a reasonable range of alternatives. The alternatives are discussed below. A discussion is also provided to explain how each of these alternatives are related to the alternatives addressed in the Mill Fork EA and the associated effects

Alternative 1 - No Action

The No Action Alternative is required by NEPA (40 CFR 1502.14).

The Forest Service would not consent to, and the BLM would not approve leasing the South Crandall Tract as submitted. Subsequently, Alternative 1 would not allow for mining of the tract, and therefore not provide coal reserves for the mine. No mitigation measures or monitoring would be required as part of this alternative other than meeting Forest Plan direction, standards, and guidelines. This alternative is the same as Alternative 4, the previously selected alternative for the Mill Fork Tract. There would be no change relative to the effects analysis presented in the EA under Alternative 4.

Alternative 2 - Offer for Lease with Standard BLM Lease Terms, Conditions and Stipulations (stated on Form 3400-12)

The Forest Service would consent to, and the BLM would offer the tract of 880 acres for competitive bid. The lease would only have the standard BLM terms, conditions and stipulations attached. Forest Service stipulations for protection of non-coal resources would not be included. Under this alternative two seams of full-extraction room-and-pillar mining could occur beneath the upper reaches of Little Bear Canyon. This type of mining as opposed to longwall mining could cause differential subsidence and associated cracking of the ground surface in the drainage channel. This alternative was included for analysis purposes only, as it is not consistent with the Forest Plan. This coincides with Alternative 2 as discussed in the Mill Fork Tract EA.

Alternative 3 - Offer for Lease with Application of Special Coal Lease Stipulations for Protection of Non-Coal Resources

The Forest Service would consent to, and the BLM would approve, offering the tract as submitted for competitive bid. The lease would have the 19 Special Coal Lease Stipulations consistent with Appendix B of the Forest Plan and additional stipulations needed (see Attachment 2) to protect non-coal resources. Subsidence of the stream channel in Little Bear Canyon with less than 600 feet of overburden would not be allowed and only full-support room-and-pillar mining would be allowed under Little Bear Creek as defined by the area with overburden less than 600 feet, unless specific approval is given. This alternative is the same as Alternative 3, as presented in the Mill Fork Tract EA, as modified/ supplemented with new information presented in this DN/FONSI and project file. According to Peng, 1992 (Subsidence Engineering Handbook) and as observed on the Wasatch Plateau (USGS Water Resources Investigation Report 95-4025 and Burnout Canyon Study, 1998) mining induced subsidence in areas with overburden less than 60 times the mine height (600 feet) can result in hydrologic connectivity between surface drainages and the underground mine workings. If hydrologic

connectivity occurs, there could be a loss of surface and subsurface alluvial flow and riparian vegetation in Little Bear Creek.

Alternative 4 - Offer a modified tract for lease with application of Special Coal Lease Stipulations for Protection of Non-Coal Resources

The Forest Service would consent to, and the BLM would offer, a modified tract for leasing including the special coal lease stipulations discussed in Alternative 3. In the Mill Fork Tract EA this alternative (the selected alternative) excluded the 880 acres of the South Crandall Canyon Tract from the lease to protect the integrity of the Little Bear Canyon watershed and spring. Relative to the South Crandall Canyon Tract, this alternative would be the same as Alternative 1, No Action, since it would exclude the 880 acre tract from leasing.

V. Public Participation

Project scoping was initiated on May 29, 2001 and concluded on June 19, 2001. Scoping included publishing notices in the Sun Advocate and Emery County Progress newspapers, and mailing letters to interested parties (in addition to the Public Participation Noted in the Mill Fork Tract EA and DN/FONSI).

Four letters were received in response to project scoping:

- The Sanpete County Commission responded by stating that they support the addition of the 880 acres in the proposed tract for mining.
- Energy West Mining Company responded. They stated that they have become aware that the Forest Service is considering inclusion of a stipulation in the lease, if issued, which would establish a "trigger point" prescribing when the lessee would be required to mitigate any significant loss of flow (if any). They commented that a requirement of this type cannot and should not be made prior to approval of leasing, but must be made during the permitting process under the rules of the Surface Mining Control and Reclamation Act (SMCRA). Energy West did not contest the right of the Forest Service to place this requirement in the form of a lease stipulation, but believes that the placement of a stipulation of this type ahead of the leasing process is premature.

Response: The Forest Service considered requiring a stipulation that would establish a flow loss volume that would trigger replacement by the lessee/operator. However, this type of requirement is no longer needed in the lease. An understanding has been reached among Castle Valley Special Services District, Energy West Mining Co., and Genwal, whereby the companies would provide water replacement capability prior to any mining that could potentially impact Little Bear Spring. The companies have agreed to construct a water treatment facility in Huntington Canyon at an old treatment facility location. This facility would increase water treatment capabilities such that water from Huntington Creek can be treated to provide for the existing and potential future culinary water needs. With this agreement in place, any water loss at the spring due to mining (even though not

expected to occur) would be replaced and would be immediately available upon discovery of any water loss. Currently available data indicate that Castle Valley Special Services captures all or most of the spring flow. However, the creek flow is not captured or diverted. The creek is supported by runoff and baseflow and since the creek will not be subsided, the flow should not be affected.

- The State of Utah, Division of Water Rights stated that Little Bear Spring is a source of municipal water that is used by the cities of the northern part of Emery County. Any excess water adds to the agricultural, industrial, culinary, and stockwatering needs of the residents and water users. Any diminution in flow or quality could have a significant impact to these water users.

Response: The Forest Service is aware of the concerns. Through the analysis it has been determined that there is only a low potential for water at the spring to be effected by mining. Even so, a water replacement plan has been agreed to by CVSSD (Castle Valley Special Services District) and the mining companies that would provide for replacement water in the unlikely event that flow or quality of the spring were affected. Additionally, nearly all water emerging from Little Bear Spring is captured by CVSSD and should the spring be affected by mining, no substantive loss to agriculture, industrial, culinary, or stockwatering needs would occur.

- The U.S. Fish and Wildlife Service (USFWS) stated that effects to raptors, the Utah Northern goshawk, and Colorado cutthroat trout be assessed. They also stated that effects to all listed threatened and endangered species must be assessed.

Response: A Biological Evaluation and a Biological Assessment were prepared for the project and it was determined that effects these species would be negligible. Consultation with the USFWS is therefore not necessary. Consultation regarding application of the coal lease unsuitability criteria was completed in conjunction with the Mill Fork Tract EA.

There are five Management Indicator Species (MIS) that could be found in the South Crandall Canyon Tract: Mule deer, elk, golden eagle, blue grouse, and macroinvertebrates. Of these, all but the blue grouse are discussed in the Mill Fork Tract EA. The FS has determined (Official Project Record, Memorandum re MIS Evaluation, 8/27/02) that leasing the South Crandall Canyon Tract would have no effect on blue grouse. This determination was made after considering that only underground mining and helicopter drilling would take place and no surface facilities would be required on the tract. Additionally, the chances were determined to be extremely small that grouse nests or habitat would be affected by subsidence caused surface cracking and hummocks. Therefore it was determined that there were no issues concerning blue grouse on the South Crandall Canyon Tract.

The EA for the Mill Fork Tract and the Proposed Finding of No Significant Impact (PFONSI) were released on June 5, 1997, with the 30-day comment period ending on July 7, 1997. All parties commenting during scoping received copies of the EA and

PFONSI. The PFONSI identified Alternative 4 as the Forest Service preferred alternative. Eight comments, six written and 2 verbal, were received. A list of commentors and responses to comments are included in Appendix C of the Mill Fork Tract EA.

VI. Finding of No Significant Impact

The need for an EIS is, in part, based on the potential for significant impacts as revealed by an analysis of impacts disclosed in an environmental assessment (EA). If significant impacts are not disclosed in the EA, then the EA is sufficient documentation upon which to base a finding of no significant impact and decision. Based on the following discussion and the direct, indirect, and cumulative effects disclosed in the EA, a finding regarding "significance" was made. Implementation of Alternative 3 was determined not to be a major Federal action that would significantly affect the quality of the human environment; therefore, an Environmental Impact Statement is not needed. This determination was made based on the following considerations:

Significance, as used in NEPA, defines and requires consideration of both context and intensity. Context means the significance of the action must be analyzed in several contexts such as the affected region, interests, and locality. Intensity refers to the severity of the impacts disclosed in the analysis.

Context:

Coal mining and related activities have been intensive and common on the Wasatch Plateau since the late 1800's; county and city governments, and local residents are accustomed to these activities and their environmental, social, and economic effects. The potential environmental effects to affected surface resources are local in scope, that is, the effects are limited to the Huntington drainage. Social and economic effects are also local in scope, primarily involving Carbon, Emery, and Sanpete counties. Some indirect economic effects may be distributed elsewhere as a function of sale and transport of the coal, or generated electrical power.

Individual coal leases have ranged in size from 40 to 9,905 acres. The South Crandall Canyon Tract, as delineated is 880 acres, making it a small lease tract. Additionally, this lease would not involve any new or unusual developments; it merely provides additional reserves for an existing mine, extending its life.

This decision is local in effect; all underground, no new surface disturbance, no subsidence under Little Bear Spring or Little Bear Creek, short-term compared to the 100 plus year history of contemporary human activities in the area, and will not negatively effect city and county governments. Therefore, in context, this decision is not significant.

Intensity:

Intensity is evaluated by comparing and contrasting the following ten criteria (**in bold**) from 40 CFR 1508.27 with the issues and effects disclosed in the EA and project file.

1. "Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial".

The action will create a beneficial impact by maintaining the production of coal from the Crandall Canyon Mine that provides jobs and economic health to local communities. Under the selected alternative, there will be no significant impacts to non-mineral resources. Neither the beneficial or negative impacts are extraordinary. The impacts and benefits are typical and reasonable for underground coal mining activity on the Wasatch Plateau. Under the selected alternative no effects to Little Bear Spring are expected. In the unlikely event that flow or quality of water at the spring is affected, there is an agreement in place between the CVSSD and operator to replace water. Before mining occurs, a water treatment plant will be constructed in Huntington Canyon to treat water in Huntington Canyon and make it available for culinary uses. Replacement water treatment capacity would be available prior to mining and any potential effect to the spring. If no effects occur, as anticipated, or if there is only a partial loss of water at the spring, there would be a net benefit to the water users. Since all water that issues from the spring is currently and will continue to be captured in the water system for culinary use, there would be no loss of water to the Little Bear Canyon ecosystem. The ecosystem is currently supported by flow in the stream that emerges to the canyon above the spring. Since no subsidence would be allowed in the stream channel, and no effects to up-canyon springs are anticipated, there are no anticipated adverse effects to the Little Bear Canyon riparian ecosystem.

2. "The degree to which the proposed action affects public health or safety".

Noted concerns for public health and safety included potential adverse impacts to the culinary water source at Little Bear spring, and safety of Forest users. Under the selected alternative, there would be negligible risk of effects to public health and safety. Some rocks along the small limited outcrops of the Castlegate Sandstone above Little Bear Canyon could be dislodged by subsidence, but safety risks would be negligible due to the slope and remoteness of the canyon. The analysis indicates only negligible hazard to Forest users would result from mining the tract.

3. "Unique characteristics of the geographic area such as proximity to historical or cultural resources, park lands, or prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas".

No significant historical or cultural resources will be affected (Mill Fork Tract EA page IV-9 and 10). The entire Forest, including the Mill Fork Coal Lease tract, does not contain prime farmland, rangeland and forestlands (Forest Plan page II-57). Nor does the site contain any areas eligible or designated wild or scenic rivers, or ecologically critical areas. Small pothole-type wetlands associated with springs (Mill Fork Tract EA, page III-8) occur throughout the lease tract. These springs occur predominately at the higher elevations in the Price River and North Horn Formations where greater than 600 feet of overburden exists above the coal. Surface disturbances from subsidence are buffered in the North Horn Formation because its typically clayey soils have high self-healing capabilities (Mill Fork Tract EA, page III-4).

4. "The degree to which the effects on the quality of the human environment are likely to be highly controversial".

Information received during scoping and the predecisional review period for the Mill Fork EA indicated concern for the impacts to water resources due to mining, most notably for the effects to the culinary water source at Little Bear Spring and the catchment area above Rilda Canyon springs. Several hydrologic studies have been performed since 1977 to investigate the recharge source for Little Bear Spring (Project File). These studies have agreed that the spring flow is supported by a fault/fracture system. Since Little Bear Spring lies more than 300 feet below the level of the mineable coal seams and past mining encountered the fault/fracture system without significant inflow of water, there is general consensus among the CVSSD, mine operators, scientific community, and the regulatory agencies that adverse effects to the spring are unlikely. There was no other controversy identified among resource professionals addressing the anticipated direct, indirect, or cumulative effects, or the effectiveness of the proposed mitigation measures designed to address the resource issues.

5. "The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks".

Coal mining has been a common and important element of the local economy and culture since the late 1800s. The impacts of underground coal mining on the Forest have been observed and monitored for many years, and the possible effects and risks are well understood. Enhanced understanding of the local ecosystems and selection of the alternative to maximize and protect the environment ensures that the human environment will not be effected by unique or unknown risks. While the flow mechanisms conveying water to Little Bear Spring are not completely understood, additional hydrologic studies performed since the Mill Fork EA was written have indicated that adverse impacts to the spring are not expected due to the vertical separation between the coal seams and flow.

6. "The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration".

The Forest Plan designated the area available for further consideration for coal leasing, and made findings relative to unsuitability criteria. Leasing of specific tracts is authorized on a case-by-case basis, and environmental analyses are completed based on site-specific information. Coal leasing has been conducted in this area since 1920; therefore leasing this tract is not precedent setting. This action will not influence future considerations of coal leasing.

7. "Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts".

This action, connected actions, and past, present and reasonably foreseeable future actions were determined not to be cumulatively significant (Mill Fork EA IV-17 to 26). The EA addressed the cumulative effects of the existing mining operation (Chapter I. E. History, Background, and

Potential Mining Scenarios, pg. I-5), other resource activities proposed in the vicinity of the project area (Chapter I. F. Other Activities Affecting Cumulative Impacts, pg. I-6; Tables IV-A, B, C, pg. IV-21 through IV-26), and mining of the new tract under each alternative (Chapter I. E. History, Background, and Potential Mining Scenarios, pg. I-5; Appendix B, Reasonably Foreseeable Development Scenario). Effects of mining the new tract for each alternative were based on a Reasonably Foreseeable Development Scenario presented as Appendix B (conceptual mine plan) that included underground mining and reasonably foreseeable surface disturbance. A surface coal development drill plan was also forecast (Chapter I. F. Other Activities Affecting Cumulative Impacts, pg. I-6). The discussions of impacts in Chapter 4 consider all activities. The expected effects are consistent within the limits analyzed in the Forest Plan FEIS. Under the selected alternative, there will be minimal impacts on resources that will not lead to cumulatively significant impacts.

8. "The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historic resources".

No known objects on or adjacent to the lease tract are listed or are eligible for the National Register of Historic Places (Mill Fork Tract EA, page III-23). No significant heritage resources will be affected by the action (Mill Fork Tract EA page III-23; Project File). A Forest Service coal lease stipulation provides a measure to protect heritage resources in case they are unexpectedly encountered.

9. "The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973".

The Biological Evaluation/Biological Assessment completed for this project and it was determined that there would be negligible effects. The US Fish and Wildlife Service was consulted on application of unsuitability criteria, to which they concurred with the Forest Service finding (EA page IV-8; Project File). Additionally, they concurred with the Forest Service determination in their July 16th response.

A survey was performed for the spotted bat (USDA-FS Sensitive Species) and Townsend's big eared bat. Townsend's big eared bat was not found in the proposed lease area. Spotted bats were reported throughout the eastern (lower elevation) portions of the proposed lease area but not in any of the higher elevation sites sampled. Spotted bats were observed to be common enough throughout the proposed lease area that current mining practices are not believed to pose a serious threat to the sustainability of viable populations of the spotted bat.

10. "Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment".

The analysis did not identify any adverse effects that threaten a violation of Federal or State laws designed to protect the environment.

VII. Irreversible and Irrecoverable Commitments of Resources

Coal is not a renewable resource. Mining will be an irreversible commitment of the coal itself and other energy resources used in the mining process. Approximately 6,000,000 tons of coal reserves would be left in the ground if the lease were not approved. Under the current economic environment and mining technologies, benefits from these reserves would be irretrievably lost by excluding the Little Bear Canyon watershed from the lease offering and subsequent mining. Once the mine is shut down and reclaimed, it would not be economically feasible to re-open the mine at some future date for 880 acres of relatively thin coal.

Changes in elevation due to subsidence would be irreversible.

VIII. Findings Required by other Laws and Regulations

This analysis tiers to the Forest-wide direction and management area goals and standards of the Forest Plan and incorporates by reference the analysis disclosed in the FEIS and Record of Decision (1986), as amended.

The South Crandall Canyon Tract area encompasses MWS (Municipal Water Supply), RPN (Riparian), and RNG (Range) Forest Plan Management Units.

MWS Management Unit Direction (Forest Plan Page III-74)

Management emphasis is on producing water for municipal uses. Some limited land uses or activities that do not degrade the water quality or disrupt the watershed or source areas may occur.

Mineral leasing is allowed where it has been determined that stipulated methods of mining will not affect the watershed values to any significant degree (Forest Plan, page III-76). It has been determined through the analysis documented in this DN/FONSI that there would be no significant effects to Little Bear Spring that is designated as a municipal water supply.

RPN Management Unit Direction (Forest Plan, Page III-69)

RPN Management Units are not mapped in the Forest Plan, however the Little Bear Canyon drainage contains riparian vegetation and is considered to be an RPN Management Unit. Management emphasis is on management of riparian areas, and all component ecosystems. Components include the aquatic (including fish) ecosystem, the riparian (characterized by

distinct vegetation), and adjacent ecosystems that remain within approximately 100 feet measured horizontally from the edge of all perennial streams and springs, and from the shores of lakes and other still water bodies, i.e., from seeps, bogs, and wet meadows.

Management direction for minerals is to avoid and mitigate detrimental disturbance to the riparian area by mineral activities. Initiate timely and effective rehabilitation of disturbed sites (Forest Plan, Page III-72). The decision would not result in detrimental disturbance to this riparian area.

RNG Management Unit Direction

Management emphasis for RNG Management Units is on production of forage and cover for domestic livestock and wildlife. For mineral activities mitigations must be provided to ensure continued livestock access and use. Those authorized to conduct developments will be required to replace losses through appropriate mitigations, where a site-specific development adversely affects long-term production of management (Forest Plan, page III-66). The decision provides for mitigations consistent with this direction.

Findings Required by Other Laws and Regulations

Environmental Justice: Based on experience with similar projects on the Ferron-Price Ranger District, it is believed that this project would not have any disparate impacts on individual groups of peoples or communities. Implementation of this project will produce no adverse effects on minorities, low-income individuals, Native Americans or women. No civil liberties will be affected.

The majority of the proposed coal lease tract is within the East Mountain Inventoried Roadless Area. However, no roads, surface facilities or portals would be constructed.

The unsuitability criteria for coal mining contained in Federal Regulations 43 CFR 3461 were addressed in the Forest Plan, Forest Plan FEIS, and the Mill Fork Tract EA. No areas within the proposed tract were determined to be unsuitable for mining based on the criteria.

The potential adverse effects of the proposal are effectively mitigated by the included special lease stipulations and implementation of the SMCRA Regulations (30 CFR 700 to End) and State of Utah Federal Coal Mining and Reclamation Regulatory Program.

The leasing action and anticipated lease development will have no affect to known paleontological resources, floodplains, prime or unique rangelands, farmlands, or timberlands, or alluvial valley floors.

Compliance with the terms and conditions of the lease and other administrative actions associated with the lease, in accordance with Federal Regulations 43 CFR 3400, are the responsibility of the Bureau of Land Management. The review, approval, and enforcement of mining operations within the lease are the responsibility of the Department of Interior, Office of Surface Mining Reclamation and Enforcement under Federal Regulations 30 CFR 700 to End.

As required under the Federal Coal Leasing Amendments Act of 1975 and the above regulations, future actions related to the lease that could affect surface resources require consultation and consent of the Forest Service.

The decision is consistent with the National Forest Management Act requirements as expressed in 36 CFR 219.27. The decision complies with the Endangered Species Act of 1973 (Mill Fork Tract EA, page IV-8; Project File) and Section 106 of the National Historic Preservation Act of 1966 (Mill Fork Tract EA, page IV-9, Project File).

Issues of consumers, civil rights, minority groups and women are not within the scope of the decision.

IX. Implementation Date

If no appeals of this decision are filed, implementation of the decision may occur on, but not before, 5 business days from the close of the appeal filing period.

X. Administrative Review or Appeal Opportunities

The following paragraphs describe opportunities to appeal the BLM decisions: The BLM decision is subject to appeal in part or full, to the Board of Land Appeals, Office of the Secretary, in accordance with the regulation at 43 CFR Part 4 and the enclosed Form 1842-1. If an appeal is taken, your notice of appeal must be filed in this office (at the above address) within 30 calendar days following the expiration of the compliance period. The appellant has the burden of showing that the decision appealed from is in error.

If you wish to file a petition (request) pursuant to regulation 43 CFR 4.21 (59 FR 4939, January 19, 1993) for a stay (suspension) of the effectiveness of this decision during the time that your appeal is being reviewed by the Board, the petition for a stay must accompany your notice of appeal. A petition for a stay is required to show sufficient justification based on the standards listed below. Copies of the notice of appeal and the petition for a stay must also be submitted to the Office of the Solicitor (see 43 CFR 4.413) at the same time the original documents are filed with this office. If you request a stay, you have the burden of proof to demonstrate that a stay should be granted.

Standards for Obtaining a Stay

Except as otherwise provided by law or other pertinent regulation, a petition for a stay of a Decision pending appeal shall show sufficient justification based on the following standards;

- (1) The relative harm to the parties if a stay is granted or denied;
- (2) The likelihood of the appellant's success on the merit;

- (3) The likelihood of the immediate and irreparable harm if the stay is not granted, and;
- (4) Whether the public interest favors granting the stay.

The following paragraphs describe appeal rights under each regulation for decisions by Forest Supervisors or District Rangers published in legal notices or included in decision documents:

36 CFR 215:

Legal Notice published for a Forest Supervisor or District Ranger decision:

This decision is subject to appeal pursuant to Forest Service regulations at 36 CFR 215.7. Any written appeal must be postmarked or received by the Appeal Deciding Officer within 45 days of the publication of this notice in The Sun Advocate, Price Utah. The Appeal Deciding Officer is: Regional Forester, Intermountain Region 324 25th Street, Ogden, UT 84401. Appeals must meet the content requirements of 36 CFR 215.14.

36 CFR 251:

Decision signed by a Forest Supervisor:

This decision is subject to appeal pursuant to 36 CFR 251.82. Notice of appeal must be postmarked or received by the Appeal Reviewing Officer within 45 days of the date of this decision. A notice of appeal, including the reasons for appeal, must be filed with the Regional Forester, Intermountain Region, Federal Building, 324 25th Street, Ogden, UT 84401. A copy of the notice of appeal must be filed simultaneously with Elaine Zieroth, Forest Supervisor, Manti-La Sal National Forest, 599 West Price River Drive, Price, Utah 84501. Appeals must meet the content requirements of 36 CFR 251.90.

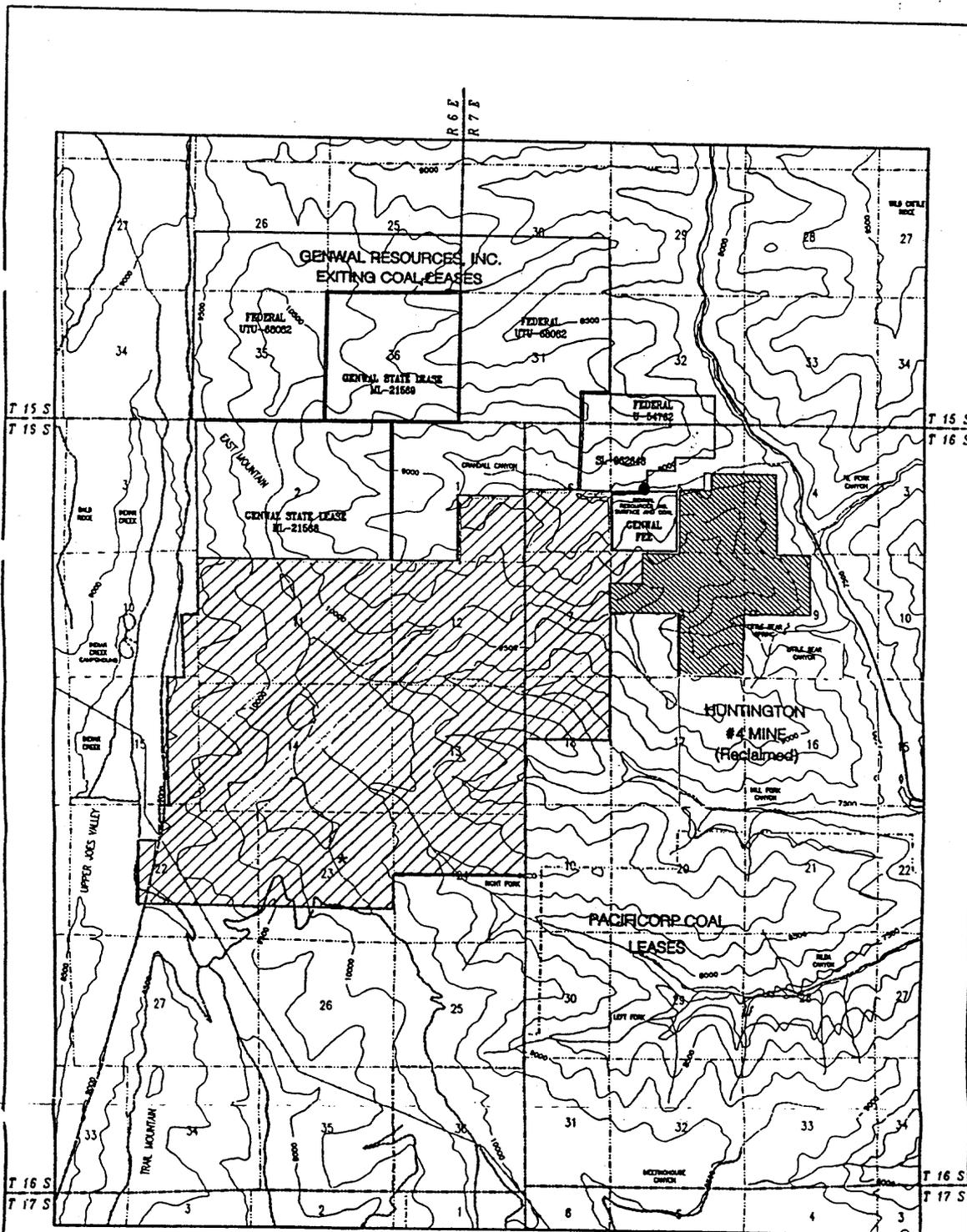
XI. Contact Person

This decision notice, FONSI, and EA are available for review at the Forest Service office in Price and the BLM, Utah State Office, in Salt Lake City, Utah. Any persons with questions related to this decision or project may contact Karl Boyer or Carter Reed at the Manti-La Sal National Forest, 599 W. Price River Drive, Price, UT 84501, 435-637-2817 or James Kohler at the Bureau of Land Management, State Office, 324 South State Street, Salt Lake City, Utah, 801-539-4037.

Approved by: Sally Wisely Date: 2/13/03
SALLY WISELY, Utah State Director
Bureau of Land Management

Approved by: Elaine J. Zieroth Date: 02/12/03
ELAINE ZIEROTH, Forest Supervisor
USDA Forest Service, Manti-La Sal National Forest

**ATTACHMENT 1
PROJECT MAP**



General Location Map
Attachment 1



1000' 0' 2000' 4000'
SCALE

SOUTH CRANDALL TRACT
UTU-76953



Crandall Canyon Mine Portals

SOUTH CRANDALL CANYON
COAL LEASE TRACT
PROPOSED ACTION

STATE COAL LEASE TRACT ML 48258
BURLINGTON RESOURCES GAS WELL
LITTLE BEAR SPRING
JOES VALLEY FAULT



*



MANTLA SAL
NATIONAL FOREST

**ATTACHMENT 2
SPECIAL COAL LEASE STIPULATIONS**

Federal Regulations 43 CFR 3400 pertaining to Coal Management make provisions for the Surface Management Agency, the surface of which is under the jurisdiction of any Federal agency other than the Department of Interior, to consent to leasing and to prescribe conditions to insure the use and protection of the lands. All or part of this lease contain lands the surface of which are managed by the United States Department of Agriculture, Forest Service, Manti-La Sal National Forest.

The following stipulations pertain to the Lessee responsibility for mining operations on the lease area and on adjacent areas as may be specifically designated on National Forest System lands.

Stipulation #1

Before undertaking activities that may disturb the surface of previously undisturbed leased lands, the Lessee may be required to conduct a cultural resource inventory and a paleontological appraisal of the areas to be disturbed. These studies shall be conducted by qualified professional cultural resource specialists or qualified paleontologists, as appropriate, and a report prepared itemizing the findings. A plan will then be submitted making recommendations for the protection of, or measures to be taken to mitigate impacts for identified cultural or paleontological resources.

If cultural resources or paleontological remains (fossils) of significant scientific interest are discovered during operations under this lease, the Lessee prior to disturbance shall immediately bring them to the attention of the appropriate authority. Paleontological remains of significant scientific interest do not include leaves, ferns or dinosaur tracks commonly encountered during underground mining operations.

The cost of conducting the inventory, preparing reports, and carrying out mitigating measures shall be borne by the Lessee.

Stipulation #2

If there is reason to believe that Threatened or Endangered (T&E) species of plants or animals, or migratory bird species of high Federal interest occur in the area, the Lessee shall be required to conduct an intensive field inventory of the area to be disturbed and/or impacted. The inventory shall be conducted by a qualified specialist and a report of findings will be prepared. A plan will be prepared making recommendations for the protection of these species or action necessary to mitigate the disturbance.

The cost of conducting the inventory, preparing reports and carrying out mitigating measures shall be borne by the Lessee.

Stipulation #3

The Lessee shall be required to perform a study to secure adequate baseline data to

quantify the existing surface resources on and adjacent to the lease area. Existing data may be used if such data are adequate for the intended purposes. The study shall be adequate to locate, quantify, and demonstrate the interrelationship of the geology, topography, surface and ground water hydrology, vegetation and wildlife. Baseline data will be established so that future programs of observation can be incorporated at regular intervals for comparison.

Stipulation #4

Powerlines used in conjunction with the mining of coal from this lease shall be constructed so as to provide adequate protection for raptors and other large birds. When feasible, powerlines will be located at least 100 yards from public roads.

Stipulation #5

The limited area available for mine facilities at the coal outcrop, steep topography, adverse winter weather, and physical limitations on the size and design of access roads, are factors which will determine the ultimate size of the surface area utilized for the mine. A site-specific environmental analysis will be prepared for each new mine site development and for major improvements to existing developments to examine alternatives and mitigate conflicts.

Stipulation #6

Consideration will be given to site selection to reduce adverse visual impacts. Where alternative sites are available, and each alternative is technically feasible, the alternative involving the least damage to the scenery and other resources shall be selected. Permanent structures and facilities will be designed, and screening techniques employed to reduce visual impacts and, where possible, achieve a final landscape compatible with the natural surroundings. The creation of unusual, objectionable, or unnatural landforms and vegetative landscape features will be avoided.

Stipulation #7

The Lessee shall be required to establish a monitoring system to locate, measure and quantify the progressive and final effects of underground mining activities on the topographic surface, underground and surface hydrology and vegetation. The monitoring system shall utilize techniques which will provide a continuing record of change over time and an analytical method for location and measurement of a number of points over the lease area. The monitoring shall incorporate and be an extension of the baseline data.

Stipulation #8

The Lessee shall provide for the suppression and control of fugitive dust on haul roads and at coal handling and storage facilities. On Forest Service Roads (FSR), Lessees may perform their share of road maintenance by a commensurate share agreement if a significant degree of traffic is generated that is not related to their activities.

Stipulation #9

Except at locations specifically approved by the Authorized Officer, with concurrence of the surface management agency, underground mining operations shall be conducted in

such a manner so as to prevent surface subsidence that would: (1) cause the creation of hazardous conditions such as potential escarpment failure and landslides, (2) cause damage to existing surface structures, and (3) damage or alter the flow of perennial streams. The Lessee shall provide specific measures for the protection of escarpments, and determine corrective measures to assure that hazardous conditions are not created, and perennial streams are not damaged.

Mining must be conducted in a manner necessary to prevent subsidence in the Little Bear Canyon area of the lease with overburden less than 600 feet, unless it can be demonstrated to the satisfaction of the Authorized Officer, with concurrence of the surface management agency, that the effects of subsidence to Little Bear Creek and the associated ecosystem would be negligible. This requirement shall apply to each seam mined.

Stipulation #10

In order to avoid surface disturbance on steep canyon slopes and to preclude the need for surface access, all surface breakouts for ventilation tunnels shall be constructed from inside the mine, except at specific approved locations.

Stipulation #11

If removal of timber is required for clearing of construction sites, etc., such timber shall be removed in accordance with the regulations of the surface management agency.

Stipulation #12

The coal contained within, and authorized for mining under this lease shall be extracted only by underground mining methods.

Stipulation #13

Existing Forest Service owned or permitted surface improvements will need to be protected, restored, or replaced to provide for the continuance of current land uses.

Stipulation #14

In order to protect big-game wintering areas, elk calving and deer fawning areas, sagegrouse strutting areas, and other key wildlife habitat and/or activities, specific surface uses outside the mine development area may be curtailed during specified periods of the year.

Stipulation #15

Support facilities, structures, equipment, and similar developments will be removed from the lease area within two years after the final termination of use of such facilities. This provision shall apply unless the requirement of Section 10 of the lease form is applicable. Disturbed areas and those areas previously occupied by such facilities will be stabilized and rehabilitated, drainages re-established, and the areas returned to a premining land use.

Stipulation #16

The Lessee, at the conclusion of the mining operation, or at other times as surface disturbance related to mining may occur, will replace all damaged, disturbed or displaced corner monuments (section corners, 1/4 corners, etc.), their accessories and appendages (witness trees, bearing trees, etc.), or restore them to their original condition and location, or at other locations that meet the requirements of the rectangular surveying system. This work shall be conducted at the expense of the Lessee, by a professional land surveyor registered in the State of Utah, and to the standards and guidelines found in the Manual of Surveying Instructions, United States Department of the Interior.

Stipulation #17

The Lessee, at their expense, will be responsible to replace surface and/or developed groundwater sources identified for protection that may be lost or adversely affected by mining operations, with water from an alternative source in sufficient quantity, flow rate, and quality to maintain existing riparian habitat, fishery habitat, livestock and wildlife use, and other land uses (authorized by 36 CFR 251).

In order to adequately protect flow from Little Bear Spring, the Lessee must enter into a written agreement with the Castle Valley Special Services District (CVSSD) to assure an uninterrupted supply of culinary water equivalent to historical flows from the spring. The agreement must be in place prior to mining.

If the provisions of the agreement are not implemented and/or a replacement water source immediately available, before the Lessee begins mining in the areas described below, they must submit a plan to the Authorized Officer to identify measures to be taken by the Lessee to ensure that potential water sources for Little Bear Spring are not impacted by mining. If necessary, this additional plan will be required for mining in areas described as:

- Mill Fork Graben - Area within 1,000 feet of the southeast corner of the lease in Section 8 (corner of Sections 8, 9, 17, and 16 in T, 16 S., R. 7 E., SLM).
- North of Little Bear Spring (possible water-bearing fracture system) - Area within 1,000 feet of the southern boundary of the lease in Section 9, T. 16 S., R. 7 E., SLM).

Stipulation #18

STIPULATION FOR LANDS OF THE NATIONAL FOREST SYSTEM
UNDER JURISDICTION OF
THE DEPARTMENT OF AGRICULTURE

The licensee/permittee/lessee must comply with all the rules and regulations of the Secretary of Agriculture set forth at Title 36, Chapter II, of the Code of Federal Regulations governing the use and management of the National Forest System (NFS) when not inconsistent with the rights granted by the Secretary of the Interior in the license/permit/lease. The Secretary of Agriculture's rules and regulations must be complied with for (1) all use and occupancy of the NFS prior to approval of a permit/operation plan by the Secretary of Interior, (2) uses of all existing improvements, such as Forest Development Roads, within and outside the area licensed, permitted or leased by the Secretary of Interior, and (3) use and occupancy of the NFS not authorized by a permit/operating plan approved by the Secretary of the Interior.

All matters related to this stipulation are to be addressed to:

Forest Supervisor
Manti-La Sal National Forest
599 West Price River Drive
Price, Utah 84501

Telephone Number: 801-637-2817

who is the authorized representative of the Secretary of Agriculture

Signature
Licensee/Permittee/Lessee

Stipulation #19

ABANDONMENT OF EQUIPMENT:

The lessee/operator is responsible for compliance and reporting regarding toxic and hazardous material and substances under Federal Law and all associated amendments and regulations for the handling of such materials on the land surface and in underground mine workings.

The lessee/operator must remove mine equipment and materials not needed for continued operations, roof support and mine safety from underground workings prior to abandonment of mine sections. Exceptions can be approved by the Authorized Officer (BLM) in consultation with the surface management agency. Any on-site disposal of non-coal waste must comply with 30CFR § 817.89 and must be approved by the regulatory authority responsible for the enforcement of the Surface Mining Control and Reclamation Act (30 U.S.C. 1201, et seq.). Creation of a situation that would prevent removal of such material and equipment by retreat or abandonment of mine sections, without prior authorization would be considered noncompliance with lease terms and

conditions and subject to appropriate penalties under the lease.

All safe and accessible areas shall be inspected prior to being sealed. The lessee shall notify the Authorized Officer in writing 30 days prior to the sealing of any areas in the mine and state the reason for closure. Prior to seals being put into place, the lessee shall inspect the area and certify through documentation any equipment/machinery, hazardous substances, and used oil that is intended to be left underground. The Authorized Officer may participate in this inspection. The purpose of this inspection will be: (1) to provide documentation for compliance with 42 U.S.C. 9620 section 120 (h) and State Management Rule R-315-15, and to assure that certification will be meaningful at the time of lease relinquishment, (2) to document the inspection with a mine map showing location of equipment/machinery (model, type of fluid, amount remaining, batteries, etc.) that is proposed to be left underground. In addition, these items will be photographed at the lessee's expense and shall be submitted to the Authorized Officer as part of the certification.

WASTE CERTIFICATION:

The lessee shall provide on a yearly basis and prior to lease relinquishment, certification to the lessor that, based upon a complete search of all the operator's records for the mine and upon their knowledge of past operations, there has been no hazardous substances defined as per (40 CFR 302.4) or used oil as per Utah State Management Rule R-315-15, deposited within the lease, either on the surface or underground, or that all remedial action necessary has been taken to protect human health and the environment with respect to any such substances remaining on the property. The back-up documentation to be provided shall be described by the lessor prior to the first certification and shall include all documentation applicable to the Emergency Planning and Community Right-to-know Act (EPCRA, Public Law 99-499), Title III of the Superfund Amendments and Reauthorization Act of 1986 or equivalent.



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Utah State Office

P.O. Box 45155

Salt Lake City, UT 84145-0155

<http://www.blm.gov>



IN REPLY PLEASE REFER TO:

UTU-78953

(UT-924)

NOV 12 2004

04-11-30-03

Pamela Grubaugh-Littig
Permit Supervisor
State of Utah
Division of Oil Gas and Mining
1594 West North Temple Street, Suite 1210
Salt Lake City, Utah 84114-5801

Re: Resource Recovery and Protection Plan (R2P2), Federal Coal Lease Addition, UTU-78953, South Crandall Mine, GENWAL Resources, Inc., C/015/0032

Dear Ms. Grubaugh-Littig:

The Bureau of Land Management (BLM) has received and reviewed the subject R2P2 as part of the permit application package for adding Federal coal lease UTU-78953 to the approved Crandall Canyon Mine Permit. This letter documents the BLM's finding for the R2P2. The surface lands associated with the coal lease are National Forest lands.

GENWAL Resources, Inc. has submitted the Permit Application Package (the R2P2 being part of the submission) to add the new South Crandall coal lease (UTU-78953) to the existing Crandall Canyon Mine. New portals to access this lease have been driven into the coal seam on private land on the south side of the canyon. Coal processing and handling will use existing facilities. The addition of the Federal lease constitutes the bulk of the minable coal reserves on the south side of Crandall Canyon and will extend the life of this mine for about 8 years. All mining on this new lease will be by underground mining methods and by access gained from adjacent underground mine workings on private land. The R2P2 mining plans will extend potential longwall and room and pillar panels into the new lease. The R2P2 has been reviewed by this office and has been determined to be complete and a logical plan to mine the Federal coal.

The BLM finds the submitted R2P2 (as conditioned below) is in compliance with the Mineral Leasing Act of 1920, as amended, the lease terms and conditions, the regulations at 43 CFR 3480, and will achieve Maximum Economic Recovery of the Federal coal.

Concern has been raised by the Forest Service about loss of surface waters in areas where two seam full-extraction mining is proposed within Little Bear Canyon with less than 600 feet of overburden. They have expressed their concern that mining in Little Bear Canyon where the

overburden is less than 600 feet could divert surface waters into the mine workings. This concern has been raised because Little Bear Canyon is designated as a municipal watershed in the Forest Plan.

The BLM recommends the Assistant Secretary approve the R2P2 as proposed by the company, except that full extraction mining in the both seams not be authorized in Little Bear Canyon with less than 600 feet of overburden (in the second panel from the south) until it is determined that both seams can be mined without adverse impacts to the Little Bear Canyon municipal watershed. We will continue to work with the Forest Service to address their concerns. Final approval of which coal seams will be mined in the area in question will be addressed as a modification to the approved R2P2.

If you have any questions, please contact Jeff McKenzie of my staff at (801) 539-4038 or Stephen Falk at the Price Field Office (435) 636-3605.

Sincerely,

JAMES F. KOHLER

James F. Kohler
Chief, Solid Minerals Branch

cc: Office of Surface Mining
1999 Broadway, Suite 3320
Denver, Colorado 80202-5733

Price Field Office/UT-070

UT 67



United States Department of the Interior
FISH AND WILDLIFE SERVICE

UTAH FIELD OFFICE
2369 WEST ORTON CIRCLE, SUITE 50
WEST VALLEY CITY, UTAH 84119

In Reply Refer To

FWS/R6
ES/UT
04-1301

September 10, 2004

04-09-28-14

Pamela Grubaugh-Littig
1594 West North Temple, Suite 1210
P.O. Box 145801
Salt Lake City, Utah 84114-5801

RE: Informal Section 7 Endangered Species Consultation, South Crandall Lease Tract,
Genwal Resources Inc., Crandall Canyon Mine C/015/0032, Emery County

Dear Ms. Grubaugh-Littig:

The U.S. Fish and Wildlife Service (Service) has reviewed your letter e-mailed to our office on August 16, 2004. Potential impacts to proposed or listed species from mining activities have been previously addressed in the Service's September 24, 1996 Biological Opinion and Conference Report on Surface Coal Mining and Reclamation Operations under the Surface Coal Mining and Reclamation Act of 1977. As part of the terms and conditions of this BO, the regulatory authority must implement and require compliance with any species-specific protective measures developed by the Service field office and the regulatory authority.

Bald eagles are common in the area during the winter and could occasionally fly or roost in the proposed addition to the permit area. However, underground mining would have un-discernible or negligible effects upon wintering bald eagle. Based upon the information presented in your letter, we concur with your "not likely to adversely affect" determination for the bald eagle.

Calculations of water consumption by mining operations and gain show that the net total is estimated to be a net gain of 729.6 acre-feet. Your information confirms this project will not result in depletion to the Colorado River system. Also, our review of the Water quality data for the Crandall Canyon Coal Mine (Genwal) Water Discharge confirms the water release will not affect water quality in downstream habitats for the listed species. Therefore, we concur with your "not likely to adversely affect" determination for the Colorado pikeminnow, humpback chub, bonytail, and razorback sucker. Therefore, no endangered species-specific protective measures for these fish are considered necessary for the subject project.

However, Crandall Creek contains populations of Colorado cutthroat trout, a Conservation Agreement species. Although recent information indicates the fish in Crandall Creek may not be pure strains (Leroy Mead, UDWR, personal communication, September 7, 2004), existing

conditions are demonstrated sufficient to support a fishery. We recommend you coordinate closely with UDWR to ensure that the timing and volumes of released mining water do not impair the fishery capability of Crandall Creek.

Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered.

Only a Federal agency can enter into formal Endangered Species Act section 7 consultation with the Service. A Federal agency may designate a non-Federal representative to conduct informal consultation or prepare a biological assessment by giving written notice to the Service of such a designation. The ultimate responsibility for compliance with ESA section 7, however, remains with the Federal agency.

We appreciate your interest in conserving endangered species. If further assistance is needed or you have any questions, please contact Diana Whittington, at (801) 975-3330 extension 128.

Sincerely,



Henry R. Maddux
Utah Field Supervisor

cc: ~~OSM - Denver (Attn: Ranvir Singh)~~
BLM - Price Field Office
FS - Manti LaSal, Price
Genwal Resources (Attn: Gary Gray), P.O. Box 1077, Price, Utah, 84501

0032



State of Utah

MICHAEL D. LEAVITT
Governor

OLIVER S. WALKER
Lieutenant Governor

Department of Community and Economic Development

DAVID HARMER
Executive Director

Division of State History / Utah State Historical Society

PHILIP F. NOTARIANNI
Division Director

October 23, 2003

Coal Regulatory Program
Division of Oil, Gas and Mining
1594 West North Temple, Suite 1210
Box 145801
Salt Lake City UT 84114-5801

Handwritten signature and date: C/015/0032

RE: Determination of Administrative Completeness for South Crandall Lease Revision, Genwal Resources, Inc., Crandall Canyon Mine, C/015/0032, Task ID #1698, Outgoing File

In Reply Please Refer to Case No. 03-2189

The Utah State Historic Preservation Office received the referenced information on October 21, 2003. After consideration of the consultation request in behalf of the Division of Oil, Gas and Mining, the Utah Preservation Office provides the following comments per §36CFR800.

No further comment is offered at this time.

This information is provided to assist with Section 106 responsibilities as per §36CFR800. My email address is: jdykman@utah.gov

As ever,
Handwritten signature of James L. Dykmann

James L. Dykmann
Deputy State Historic
Preservation Officer - Archaeology

JLD:03-2189 OSM/NPA

RECEIVED

OCT 28 2003

OF OIL, GAS & MINING

0015



United States
Department of
Agriculture

Forest
Service

Manti-La Sal
National Forest

Supervisor's Office
599 West Price River Drive
Price, UT 84501
Phone # (435) 637-2817
Fax # (435) 637-4940

File Code: 2820-4

Date: March 18, 2005

D. Wayne Hedberg
Permit Supervisor
Utah Division of Oil, Gas and Mining
1594 West North Temple, Suite 1210
P.Bo. Box 145801
Salt Lake City, UT 84114-5801

RECEIVED
MAR 21 2005
DIV. OF OIL, GAS & MINING

Incoming
2/015/0032

Re: South Crandall Lease Revision, Genwal Resources, Inc., Crandall Canyon Mine,
C/015/0032, Task ID #2084

Dear Mr. Hedberg:

My staff has reviewed the latest revision made to the South Crandall Lease Revision for Genwal's Crandall Canyon Mine that was brought to our office by Joe Helfrich (UDOGM) and Dave Shaver (Genwal) on March 10, 2005. All Forest Service comments contained in the Technical Analysis, dated February 9, 2005, have been satisfactorily addressed. The project as proposed is consistent with the lease stipulations and Forest Plan direction. Post-mining land use will be the same as pre-mining land use.

Please contact Dale Harber at (435) 636-3548 if you have any questions.

Sincerely,

Alice B. Carlton

ALICE B. CARLTON
Forest Supervisor

cc: D-2/3



UNITED STATES

DEPARTMENT OF THE INTERIOR

This mining plan approval document is issued by the United States of America to:

Genwal Resources, Inc.
P.O. Box 1077
Price, Utah 84501

for a mining plan modification for Federal lease UTU-78953 at the Crandall Canyon Mine. The approval is subject to the following conditions. Genwal Resources, Inc. is hereinafter referred to as the operator.

1. Statutes and Regulations.--This mining plan approval is issued pursuant to Federal lease UTU-78953; the Mineral Leasing Act of 1920, as amended (30 U.S.C. 181 et seq.); and in the case of acquired lands, the Mineral Leasing Act for Acquired Lands of 1947, as amended (30 U.S.C. 351 et seq.). This mining plan approval is subject to all applicable regulations of the Secretary of the Interior which are now or hereafter in force; and all such regulations are made a part hereof. The operator shall comply with the provisions of the Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.), the Clean Air Act (42 U.S.C. 7401 et seq.), and other applicable Federal laws.
2. This document approves the mining plan modification for Federal lease UTU-78953 at the Crandall Canyon Mine and authorizes coal recovery operations only on the Federal lease within the area of mining plan approval. This mining plan modification authorization will not be valid beyond the following Federal coal lands:

Township 16 South, Range 7 East SL Meridian Utah

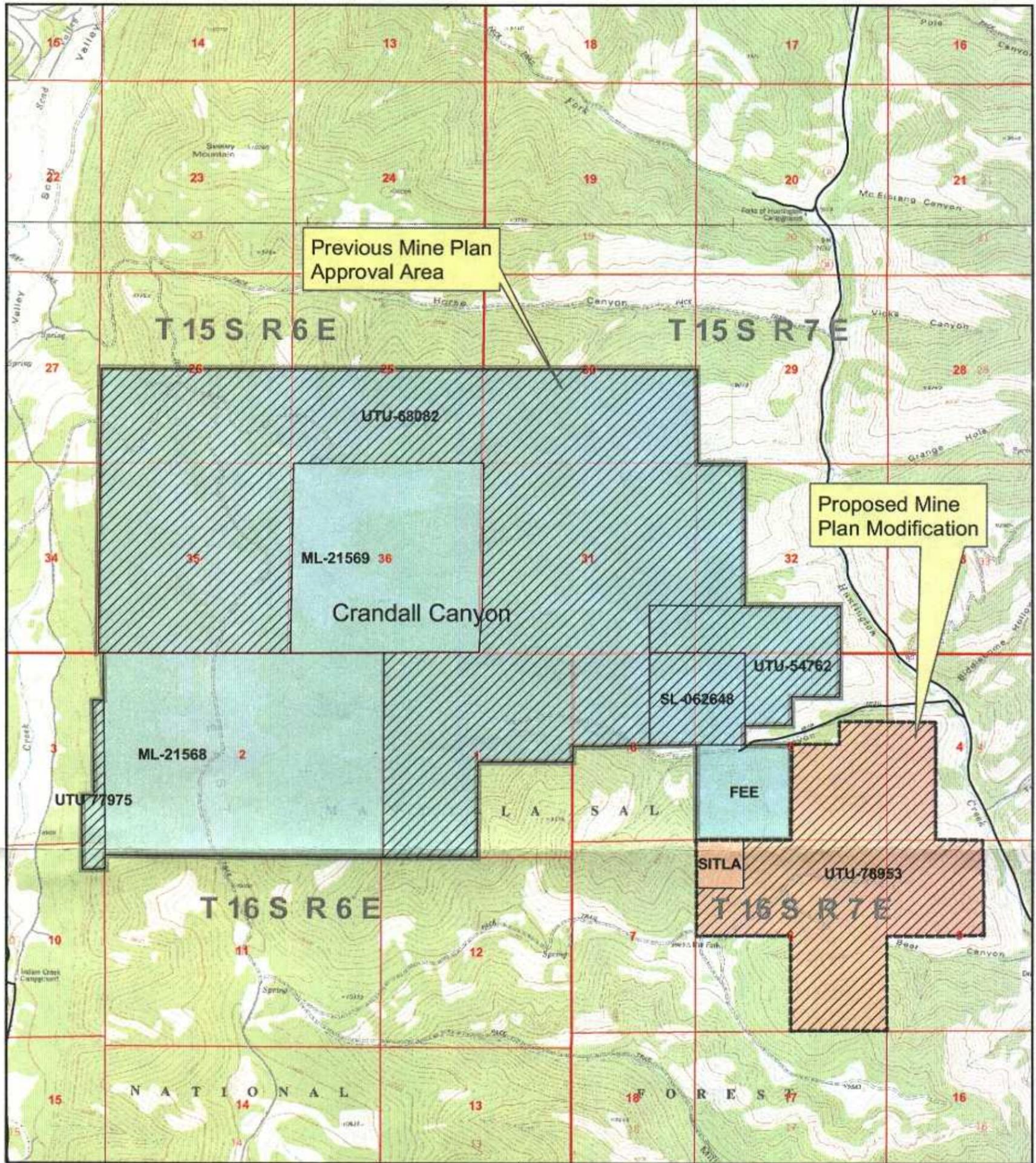
Section 4, W $\frac{1}{2}$ SW $\frac{1}{4}$, S $\frac{1}{2}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$;
Section 5, SE $\frac{1}{2}$, S $\frac{1}{2}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$;
Section 8, E $\frac{1}{2}$, NE $\frac{1}{4}$ NW $\frac{1}{4}$;
Section 9, NW $\frac{1}{4}$.

These lands encompass approximately 880 acres and are found on the USGS 7.5 minute Quadrangle map of Rilda Canyon, Utah, and as shown on the map appended hereto as Attachment A.

3. The operator shall conduct coal development and mining operations only as described in the complete permit application package, and approved by the Utah Division of Oil, Gas and Mining, except as otherwise directed in the conditions of this mining plan approval.
4. The operator shall comply with the terms and conditions of the lease, this mining plan approval, and the requirements of the Utah State Permit No. C/015/032 issued under the Utah State program, approved pursuant to the Surface Mining Control and Reclamation Act of 1977 (30 U.S.C. 1201 *et seq.*).
5. This mining plan approval shall be binding on any person conducting coal development or mining operations under the approved mining plan and shall remain in effect until superseded, canceled, or withdrawn.
6. If during mining operations unidentified prehistoric or historic resources are discovered, the operator shall ensure that the resources are not disturbed and shall notify Utah Division of Oil, Gas and Minerals and the Office of Surface Mining Reclamation and Enforcement (OSM). The operator shall take such actions as are required by Utah Division of Oil, Gas, and Minerals in coordination with OSM.
7. The Secretary retains jurisdiction to modify or cancel this approval, as required, on the basis of further consultation with the U.S. Fish and Wildlife Service pursuant to section 7 of the Endangered Species Act, as amended, 16 U.S.C. 1531 *et seq.*


Assistant Secretary,
Land and Minerals Management

6/7/05
Date



Crandall Canyon Mining Plan Approval Area

ACT0150032

Emery County, Utah

March 2005

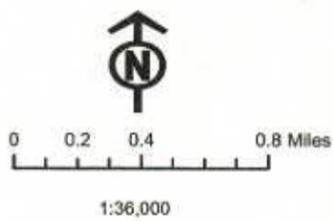
Township 15 South Range 6 & 7 East
Township 16 South Range 6 & 7 East

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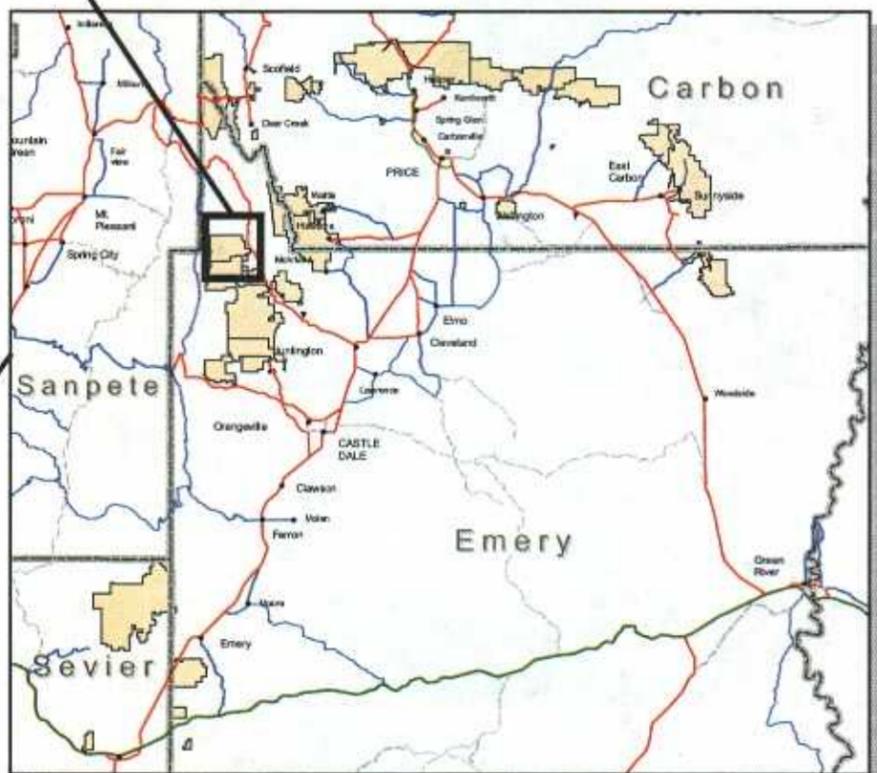
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JUN 10 2005

DIV. OF OIL, GAS & MINING



State of Utah
Department of Natural Resources
Division of Oil, Gas and Mining



Locator Map

FEDERAL

PERMIT
C/015/0032

May 10, 2005

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING
1594 West North Temple, Suite 1210
Salt Lake City, Utah 84114-5801
(801) 538-5340

This permit, C/015/0032, is issued for the state of Utah by the Utah Division of Oil, Gas and Mining ('DOGM') to:

Genwal Resources, Inc
Centennial Plaza
45 West 10000 East, Suite 401
Sandy, Utah 84070

for the Crandall Canyon Mine. Genwal Resources, Inc. is the lessee of federal coal leases SL-062648, U-54762 and UTU-68082, State Coal Leases ML-21568 and ML-21569, BLM Right of Way UTU-77975, and a fee-owned parcel affected by surface operations. Special use permits have also been granted by the Forest Service which allow Genwal Resources, Inc. to conduct mining operations on other federal lands. A performance bond is filed with the DOGM in the amount of \$1,654,000.00, payable to the state of Utah, Division of Oil, Gas and Mining and the Office of Surface Mining Reclamation and Enforcement ('OSMRE'). DOGM must receive a copy of this permit signed and dated by the permittee.

Sec. 1 STATUTES AND REGULATIONS - This permit is issued pursuant to the Utah Coal Mining and Reclamation Act of 1979, Utah Code Annotated (UCA) 40-10-1 et seq, hereafter referred to as the Act.

Sec. 2 PERMIT AREA - The permittee is authorized to conduct coal mining and reclamation operations on the following described lands within the permit area at the Crandall Canyon Mine situated in the state of Utah, Emery County, and located:

Township 15 South, Range 6 East, SLBM

Section 25: S 1/2,
Section 26: S 1/2,
Section 35: All, and
Section 36: All.

Township 15 South, Range 7 East, SLBM

- Section 30: Lots 7-12, SE 1/4,
Section 31: All, and
Section 32: S1/2SW1/4, SW1/4SE1/4, W1/2NW1/4, NW1/4SW1/4.

Township 16 South, Range 6 East, SLBM

- Section 1: Lots 1-12, SW 1/4,
Section 2: All,
Section 3: E1/2E1/2SE1/4NE1/4, E1/2E1/2NE1/4SE1/4, E1/2SE1/4SE1/4,
and,
Section 10: NE1/4NE1/4NE1/4.

Township 16 South, Range 7 East, SLBM

- Section 4: W1/2SW1/4, S1/2SW1/4NW1/4 and
Topsoil Stockpile #3 - Approximately 0.5 acres located within
NW1/4NW1/4SE1/4NW1/4, (corresponding to boundary of
Forest Service Special Use Permit issued 8/17/87);
Topsoil Stockpile #4 - Approximately 0.5 acres located within
SW1/4SW1/4NE1/4NW1/4 situated approximately 150' north of
Topsoil Stockpile #3;
- Section 5: Lots 2, 3, 5, 6 and 8, S1/2, S1/2SE1/4NE1/4 and
Forest Service Special Use Area - Sediment Pond: an area
approximately 150' x 400' (1.5 acres) located within
SW1/4SW1/4SE1/4NW1/4, (corresponding to boundary of
Forest Service Special Use Permit issued 7/28/83);
Topsoil Stockpile #1 - Approximately 0.2 acres located within
SE1/4SE1/4SE1/4NW1/4, (corresponding to boundary of Forest
Service Special Use Permit issued 8/17/87);
Topsoil Stockpile #2 - Approximately 0.2 acres located within
SW1/4NW1/4SE1/4NE1/4, (corresponding to boundary of Forest
Service Special Use Permit issued 8/17/87); and
- Section 6: Lot 1 S1/4NE1/4, Lots 2- 4 (SW1/4NE1/4), and
Section 8: E1/2, NE1/4NW1/4, S1/2NW1/4, NW1/4NW1/4, and
Section 9: NW1/4.

This legal description is for the permit area of the Crandall Canyon Mine. The permittee is authorized to conduct coal mining and reclamation operations on the foregoing described property subject to the conditions of the leases, the approved mining plan, including all conditions and all other applicable conditions, laws and regulations.

- Sec. 3 COMPLIANCE** - The permittee will comply with the terms and conditions of the permit, all applicable performance standards and requirements of the State Program.
- Sec. 4 PERMIT TERM** - This permit expires on May 13, 2008.
- Sec. 5 ASSIGNMENT OF PERMIT RIGHTS** - The permit rights may not be transferred, assigned or sold without the approval of the Director, DOGM. Transfer, assignment or sale of permit rights must be done in accordance with applicable regulations, including but not limited to 30 CFR 740.13(e) and R645-303.
- Sec. 6 RIGHT OF ENTRY** - The permittee shall allow the authorized representative of the DOGM, including but not limited to inspectors, and representatives of OSMRE, without advance notice or a search warrant, upon presentation of appropriate credentials, and without delay to:
- (a) Have the rights of entry provided for in 30 CFR 840.12, R645-400-110, 30 CFR 842.13 and R645-400-220; and,
 - (b) Be accompanied by private persons for the purpose of conducting an inspection in accordance with R645-400-100, R645-400-200 and 30 CFR 842, when the inspection is in response to an alleged violation reported by the private person.
- Sec. 7 SCOPE OF OPERATIONS** - The permittee shall conduct coal mining and reclamation operations only on those lands specifically designated as within the permit area on the maps submitted in the mining and reclamation plan and permit application and approved for the term of the permit and which are subject to the performance bond.
- Sec. 8 ENVIRONMENTAL IMPACTS** - The permittee shall minimize any adverse impact to the environment or public health and safety through but not limited to:
- (a) Accelerated monitoring to determine the nature and extent of noncompliance and the results of the noncompliance;
 - (b) Immediate implementation of measures necessary to comply; and
 - (c) Warning, as soon as possible after learning of such noncompliance, any person whose health and safety is in imminent danger due to the noncompliance.
- Sec. 9 DISPOSAL OF POLLUTANTS** - The permittee shall dispose of solids, sludge, filter backwash or pollutants in the course of treatment or control of waters or emissions to the air in the manner required by the approved Utah State Program and the Federal Lands Program which prevents violation of any applicable state or federal law.

- Sec. 10 CONDUCT OF OPERATIONS** - The permittee shall conduct its operations:
- (a) In accordance with the terms of the permit to prevent significant, imminent environmental harm to the health and safety of the public; and
 - (b) Utilizing methods specified as conditions of the permit by DOGM in approving alternative methods of compliance with the performance standards of the Act, the approved Utah State Program and the Federal Lands Program.
- Sec. 11 EXISTING STRUCTURES** - As applicable, the permittee will comply with R645-301 and R645-302 for compliance, modification, or abandonment of existing structures.
- Sec. 12 RECLAMATION FEE PAYMENTS** - The operator shall pay all reclamation fees required by 30 CFR Part 870 for coal produced under the permit, for sale, transfer or use.
- Sec. 13 AUTHORIZED AGENT** - The permittee shall provide the names, addresses and telephone numbers of persons responsible for operations under the permit to whom notices and orders are to be delivered.
- Sec. 14 COMPLIANCE WITH OTHER LAWS** - The permittee shall comply with the provisions of the Water Pollution Control Act (33 USC 1151 et seq.) and the Clean Air Act (42 USC 7401 et seq), UCA 26-11-1 et seq, and UCA 26-13-1 et seq.
- Sec. 15 PERMIT RENEWAL** - Upon expiration, this permit may be renewed for areas within the boundaries of the existing permit in accordance with the Act, the approved Utah State Program and the Federal Lands Program.
- Sec. 16 CULTURAL RESOURCES** - If during the course of mining operations, previously unidentified cultural resources are discovered, the permittee shall ensure that the site(s) is not disturbed and shall notify DOGM. DOGM, after coordination with OSMRE, shall inform the permittee of necessary actions required. The permittee shall implement the mitigation measures required by DOGM within the time frame specified by DOGM.
- Sec. 17 APPEALS** - The permittee shall have the right to appeal as provided for under R645-300.
- Sec. 18 SPECIAL CONDITIONS** - There are special conditions associated with this permitting action as described in Attachment A.

The above conditions (Secs. 1-18) are also imposed upon the permittee's agents and employees. The failure or refusal of any of these persons to comply with these conditions shall be deemed a failure of the permittee to comply with the terms of this permit and the lease. The permittee shall require his agents, contractors and subcontractors involved in activities concerning this permit to include these conditions in the contracts between and among them.

These conditions may be revised or amended, in writing, by the mutual consent of DOGM and the permittee at any time to adjust to changed conditions or to correct an oversight. DOGM may amend these conditions at any time without the consent of the permittee in order to make them consistent with any new federal or state statutes and any new regulations.

THE STATE OF UTAH

By: _____

Date: _____

I certify that I have read, understand and accept the requirements of this permit and any special conditions attached.

**Authorized Representative of
the Permittee**

Date: _____

Attachment A

SPECIAL CONDITIONS

1. Genwal Resources, Inc. will submit water quality data for the Crandall Canyon Mine in an electronic format through the Electronic Data Input web site, <http://hlunix.hl.state.ut.us/cgi-bin/appx-ogm.cgi>.
2. Genwal Resources, Inc. may not commence coal mining and reclamation operations in federal coal lease U-78953 (South Crandall lease) until approval of the mining plan is authorized by the Secretary of the Interior.
3. Genwal Resources, Inc. is not authorized to conduct full extraction mining in both seams in Little Bear Canyon with less than 600 feet of overburden (in the second panel from the south) until it is determined that both seams can be mined without adverse impacts to the Little Bear Canyon municipal watershed. Approval to extract both seams in this area will require a modification to the approved R2P2 and an approved permit change by the Division of Oil, Gas, and Mining.

FINDINGS

Genwal Resources, Inc.
Crandall Canyon Mine
Federal Lease U-78953
C/015/0032
Emery County, Utah

March 28, 2005

1. The revised plan and the permit application are complete and accurate and all requirements of the Surface Mining Control and Reclamation Act and the approved Utah State Program (the "Act") have been complied with. (See TA March 25, 2005) (R645-300-133.100).
2. No additional surface disturbance. The new surface facilities associated with this permitting action have already been approved and built (Dellenbach portals on fee surface/fee coal). (R645-300-133.710).
3. The assessment of the probable cumulative impacts of all anticipated coal mining and reclamation activities in the general area on the hydrologic balance has been conducted by the regulatory authority and no significant impacts were identified. The Mining and Reclamation Plan ("MRP") proposed under the application has been designed to prevent damage to the hydrologic balance in the permit area and in associated off-site areas (R645-300-133.400 and UCA 40-10-11 {2}{c}) (See Cumulative Hydrologic Impact Analysis for Crandall Canyon Mine ["CHIA"] dated March 28, 2005).
4. The proposed lands to be included within the permit area are:
 - a. not included within an area designated unsuitable for underground coal mining operations (R645-300-133.220);
 - b. not within an area under study for designated lands unsuitable for underground coal mining operations (R645-300-133.210) ;
 - c. not on any lands subject to the prohibitions or limitations of 30 CFR 761.11 {a} (national parks, etc.), 761.11 {f} (public buildings, etc.) and 761.11 {g} (cemeteries);
 - d. not within 100 feet of the outside right-of-way of a public road R645-300-133.220);
 - e. not within 300 feet of any occupied dwelling (R645-300-133-220).
5. The regulatory authority's issuance of a permit is in compliance with the National Historic

Preservation Act and implementing regulations (36 CFR 800) See attached letter from State Historic Preservation Officer ('SHPO') dated October 23, 2003. (R645-300-133.600)

6. The applicant has the legal right to enter and complete mining activities through federal coal lease issued by the Bureau of Land Management (See attached lease U-78953 effective August 1, 2003). (R645-300-133.300).
7. A 510(c) report has been run on the Applicant Violator System ('AVS'), which shows that: prior violations of applicable laws and regulations have been corrected; neither Genwal Resources, Inc., or any affiliated company, are delinquent in payment of fees for the Abandoned Mine Reclamation Fund; and the applicant does not control and has not controlled mining operations with demonstrated pattern of willful violations of the Act of such nature, duration, and with such resulting irreparable damage to the environment as to indicate an intent not to comply with the provisions of the Act, see memo to file dated March 28, 2005. (R645-300-133.730).
8. Underground mining operations to be performed under the permit will be consistent with other operations anticipated to be performed in areas adjacent to the proposed permit area. There are no other mines immediately adjacent to the Crandall Canyon Mine.
9. The applicant has posted a surety bond for the Crandall Canyon Mine in the amount of \$1,654,000 (Surety #14-96-15 issued by American Home Assurance Company). No additional surety will be required, since there is no additional surface disturbance proposed. (R645-300-134)
10. No lands designated as prime farmlands or alluvial valley floors occur on the permit area (R645-302-313.100) (R645-302-321.100)
11. The proposed postmining land-use of the permit area is the same as the pre-mining land use and has been approved by the regulatory authority and the surface land management agency.
12. The regulatory authority has made all specific approvals required by the Act, the Cooperative Agreement, and the Federal Lands Program.
13. The proposed operation will not affect the continued existence of any threatened or endangered species or result in the destruction or adverse modification of their critical habitats. See concurrence letter from US Fish and Wildlife Service dated September 10, 2004. (R645-300-133.500)
14. All procedures for public participation required by the Act, and the approved Utah State Program are in compliance. See Affidavit of Publications dated January 6, 2004. (R645-300-120)
15. No existing structures will be used or affected in conjunction with mining of the underground right-of-way, other than those constructed in compliance with the performance standards of R645-301. (R645-300-133.720)

Wayne Hedberg (per page)

Permit Supervisor

Archie J. Jolly

Permit Supervisor

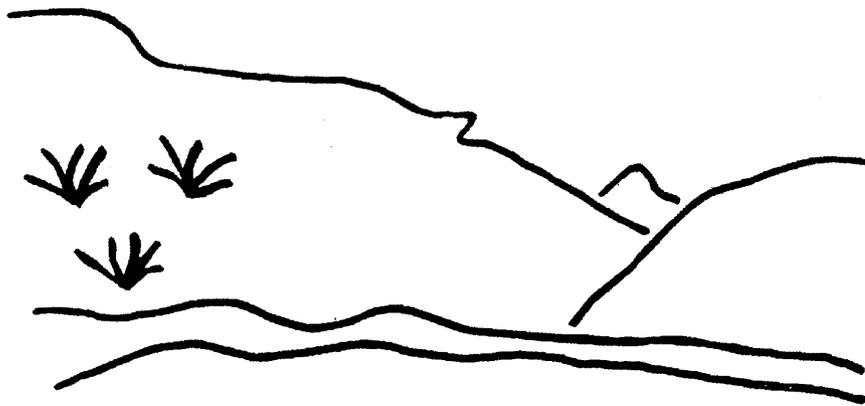
Wanda Wanda

Acting Associate Director, Mining

Raymond J. King

Acting Director

State of Utah



Utah Oil Gas and Mining

Coal Regulatory Program

Crandall Canyon Mine
C/015/0032
Technical Analysis
March 25, 2005

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TECHNICAL ANALYSIS DESCRIPTION

TECHNICAL ANALYSIS DESCRIPTION

The Division ensures that coal mining and reclamation operations in the State of Utah are consistent with the Coal Mining Reclamation Act of 1979 (Utah Code Annotated 40-10) and the Surface Mining Control and Reclamation Act of 1977 (Public Law 95-87). The Utah R645 Coal Mining Rules are the procedures to implement the Act. The Division reviews each permit or MRP for permit change, renewal, transfer, assignment, or sale of permit right for conformance to the R645-Coal Mining Rules. The Applicant/Permittee must comply with all the minimum regulatory requirements as established by the R645 Coal Mining Rules.

The regulatory requirements for obtaining a Utah Coal Mining Permit are included in the section headings of the Technical Analysis (TA) for reference. A complete and current copy of the coal rules can be found at <http://ogm.utah.gov>

The Division writes a TA as part of the review process. The TA is organized into section headings following the organization of the R645-Coal Mining Rules. The Division analyzes each section and writes findings to indicate whether or not the MRP is in compliance with the requirements of that section of the R645-Coal Mining Rules.

GENERAL CONTENTS

GENERAL CONTENTS

IDENTIFICATION OF INTERESTS

Regulatory Reference: 30 CFR 773.22; 30 CFR 778.13; R645-301-112

Analysis:

Identification of Interests, found in section 1.12, Chapter 1 - Volume 1 of the MRP was updated with current information as part of the South Crandall Lease addition in January 2004.

Findings:

The information provided adequately addresses the minimum requirements of the General Contents – Identification of Interests section of the regulations.

PERMIT MRP FORMAT AND CONTENTS

Regulatory Reference: 30 CFR 777.11; R645-301-120.

Analysis:

The permit format and contents of the Crandall Canyon No. 1 Mine Mining and Reclamation Plan (MRP) was updated in May 1993 with the LBA #9 Amendment – a significant mine plan addition. All subsequent additions have followed the appropriate format.

Findings:

The information provided adequately addresses the minimum requirements of the General Contents – Permit MRP Format and Contents section of the regulations.

VIOLATION INFORMATION

Regulatory Reference: 30 CFR 773.15(b); 30 CFR 773.23; 30 CFR 778.14; R645-300-132; R645-301-113

Analysis:

Violation information has been updated with information through October 2004 with the submittal of the current MRP.

Findings:

The information provided adequately addresses the minimum requirements of the General Contents – Violation Information section of the regulations.

RIGHT OF ENTRY

Regulatory Reference: 30 CFR 778.15; R645-301-114

Analysis:

The 120-acre Incidental Boundary Change (IBC) is an extension of federal lease UTU-68082. A copy of the lease addition is included, as appendix 1-15.

Findings:

The information provided adequately addresses the minimum requirements of the General Contents – Right of Entry section of the regulations.

LEGAL DESCRIPTION AND STATUS OF UNSUITABILITY CLAIMS

Regulatory Reference: 30 CFR 778.16; 30 CFR 779.12(a); 30 CFR 779.24(a)(b)(c); R645-300-121.120; R645-301-112.800; R645-300-141; R645-301-115.

Analysis:

The IBC MRP includes documentation from the Bureau of Land Management (BLM) concerning the extension of federal lease UTU-68082.

Findings:

The information provided adequately addresses the minimum requirements of the General Contents – Legal Description and Status of Unsuitability Claims section of the regulations.

PERMIT TERM

Regulatory References: 30 CFR 778.17; R645-301-116.

Analysis:

The current five (5) year permit term began May 13, 2003, and expires on May 13, 2008. The permit will need to be modified by DOGM to include the IBC when the MRP is approved.

GENERAL CONTENTS

Findings:

The information provided adequately addresses the minimum requirements of the General Contents – Permit Term section of the regulations.

PUBLIC NOTICE AND COMMENT

Regulatory References: 30 CFR 778.21; 30 CFR 773.13; R645-300-120; R645-301-117.200.

Analysis:

The addition of an Incidental Boundary Change (IBC) is not subject to public notice or comment and no public notice has been submitted.

Findings:

The information provided adequately addresses the minimum requirements of the General Contents – Public Notice and Comment section of the regulations.

PERMIT MRP FORMAT AND CONTENTS

Regulatory Reference: 30 CFR 777.11; R645-301-120.

Analysis:

The Crandall Canyon No.1 Mine was significantly updated in May 1993 with the LBA #9 amendment. The MRP consists of eight (8) Volumes. The MRP has continued to be modified within the same format since 1993.

Findings:

The information provided adequately addresses the minimum requirements of the General contents – Permit MRP Format and Contents section of the regulations.

GENERAL CONTENTS

ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

PERMIT AREA

Regulatory Requirements: 30 CFR 783.12; R645-301-521.

Analysis:

The information in the 120-acre IBC is adequate for the Division to identify the permit area expansion. The area for the 120-acre IBC is show in Section 5.21.13 of the MRP. The 120-acre addition consists of W1/2NW1/4 and the NW1/4SW1/4 of Section 32 T. 15S R. 7E.

Findings:

The information provided adequately addresses the minimum requirements of the Environmental Resource Information - Permit Area section of the regulations.

HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.12; R645-301-411.

Analysis:

The MRP includes a cultural resource survey and inventory of the proposed 120-acre IBC addition to lease U-68082. The survey was prepared by Senco-Phenix, a private consulting firm. The survey findings indicated that there were no known cultural resources located within the proposed lease addition.

Findings:

The information provided adequately addresses the minimum requirements of the Environmental Resource Information – Historic and Archeological Resource Information section of the regulations.

VEGETATION RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.19; R645-301-320.

Analysis:

The vegetation resource information is provided for in chapter three of the MRP. Text changes for the 120-acre IBC addition to lease U-68082 include pages 3-iv, 3-1, 3-7, 3-8, and 3-9,. Additional appendices include 3-16 and 3-16 -A. Revised maps include plates 3-1A, B, and C and 3-2. Crandall Canyon contains ten vegetative communities. Six of these occurred in areas that have been disturbed. These communities were classified as cottonwood, sagebrush, mountain shrub/grassland, mixed mountain shrub/conifer/aspen, spruce/fir/aspen, and riparian. Also, portions of the disturbed area were previously disturbed. Appendix 3-1 contains details of the original vegetation sampling.

Genwal Resources Inc. committed to take aerial color infrared photographs every five years beginning in 1995 to monitor the effects of underground mining on vegetation. Photographs were taken in 1985, 89, 94 and 2000. The 1994 and 2000 photos were chosen for comparison. The evaluation was completed by Pat Collins from Mt. Nebo Scientific and included in the 2001 annual report. The conclusions suggest that there were no noticeable impacts on vegetation as a result of mining within the angle of draw.

The MRP also contains a report from Environmental Industrial Services about the vegetation in the riparian area. Included is a vegetation survey of north-facing slopes done in 1996 by Patrick Collins of Mt. Nebo Scientific. The current mining and reclamation plan contains vegetation information gathered in 1980 including the riparian area. One of the dominant grasses in the 1994 sampling of the riparian area was downy brome, but this grass was not present in any areas, including the previously disturbed area, before the mine was reopened. It is unlikely this grass would have invaded on its own without some disturbance.

There are 7 threatened or endangered and candidate plant species identified in the U. S. Fish and Wildlife Service October 2004 listing for Emery County. They include,

Barneby Reed-mustard	<i>Schoenocrambe barnebyi</i>	E
Jones Cycladenia	<i>Cycladenia humilis</i> var. <i>jonesii</i>	T
Last Chance Townsendia	<i>Townsendia aprica</i>	T
Maguire Daisy	<i>Erigeron maguirei</i>	T
San Rafael Cactus	<i>Pediocactus despainii</i>	E
Winkler Cactus	<i>Pediocactus winkleri</i>	T
Wright Fishhook Cactus	<i>Sclerocactus wrightiae</i>	E

Several more sensitive species are listed for the Manti La Sal National Forest:

- Chatterley Onion *Allium geyeri chatterleyi*
- Sweet-flowered rock jasmine *Androsace chamaejasme carinata*
- Link Trail columbine *Aquilegia flavescens rubicunda*
- Bicknell Milkvetch *Astragalus consobrinus*
- Creutzfeldt-flower cryptanth *Cryptantha creutzfeldtii*
- Pinnate spring-parsley *Cymopterus beckii*

ENVIRONMENTAL RESOURCE INFORMATION

- Abajo daisy *Erigeron abajoensis*
- Carrington daisy *Erigeron carringtonae*
- Kachina daisy *Erigeron kachinensis*
- LaSal daisy *Erigeron mancus*
- Canyonlands lomatium *Lomatium latilobum*
- Canyon sweetvetch *Hedysarum occidentale* var. *canone*
- Arizona willow *Salix arizonica*
- Musinea groundsel *Senecio musiniensis*
- Maguire campion *Silene petersonii*

The MRP has been updated to include these current listings.

There are no threatened or endangered plant species known for the area according to information from Bob Thompson of the Forest Service, and no threatened or endangered plant species were encountered in the vegetation survey. However, at least two sensitive species have been found in the general vicinity. Canyon sweetvetch (*Hedysarum occidentale* var. *canone*) is present in Huntington Canyon near the turnoff to Crandall Canyon. Intermountain bitterweed (*Hymenoxys helenioides*) has been collected in Carbon and Emery Counties in mountain brush, sagebrush, aspen, and meadow communities between 8800 and 10,700 feet elevation. The permit area probably contains suitable habitat for this species, but it is unlikely to be adversely affected.

A reference area has been established in a mountain shrub/grassland community on a south-facing slope above the mine, and one in a spruce/fir/aspen community on the north-facing slope. The South Crandall lease area is primarily in riparian and spruce/fir/aspen communities.

Adequate numbers of samples were taken for the riparian and spruce/fir/aspen areas. However, the required sample size for the naturally-disturbed areas is 19.5 although only 12 samples were taken. Not meeting the minimum sample size is not a problem unless the applicant proposes to use the baseline information as a success standard for final bond release.

Since baseline information will be used as the revegetation success standard for the riparian areas, the MRP includes raw data for the riparian area sampling. This data is needed when comparing for final bond release to make a pooled standard deviation. Depending on the sampling distribution of the data, it might also be necessary to transform it, and the raw data would be needed for this purpose.

Woody plant density information is in reports from Mt. Nebo Scientific in Appendices 3-11 and 3-14. Measured woody plant densities were 11224 and 11989 per acre for the riparian and non-riparian areas respectively.

The MRP contains productivity information for the different plant communities and for the spruce/fir/aspen reference area. This information is commonly gathered using Natural Resources Conservation Service methods.

The location of the spruce/fir/aspen reference area is shown on Plate 2-4.

Findings:

The information provided is adequate to meet the requirements of this section of the regulations.

FISH AND WILDLIFE RESOURCE INFORMATION

Regulatory Reference: 30 CFR 784.21; R645-301-322.

Analysis:

Fish and wildlife information is presented in Section 3.22 and in Appendixes 3-2 and 3-3. Updates to chapter three for lease addition UTU-78953, include appendixes 3-16 and 3-17, and plates 3-1A, B, and C, 3-2 and 4-1. The MRP also contains results from several studies, including macroinvertebrate studies done in 1980 and 1994; fish and stream investigations performed in 1982, 1983, 1994, and 1995; several raptor surveys; and a survey for all birds in the area of the current portal development. A 2003 raptor survey is included in the new lease addition as appendix 3-16. It is identified in the table of contents but not in the MRP. A 2004 raptor survey is also included in the MRP and is properly identified as appendix 3-16-A.

The current disturbed areas contain some habitat for big game animals. Primary summer ranges are on the plateaus, and most winter range areas are at lower elevations than the mine. Both the South Crandall lease and 120-acre IBC addition to U-68082 MRPs contain mostly summer range for deer and elk with some moose winter range along the north lease boundary. Both additions to the permit area include critical value summer deer and elk and high value winter moose habitats.

Most of the permit area does not contain good cliff nesting habitat, but there are a few areas with golden eagle nests. A pair of eagles nested in a cliff above the mine in 1995. Raptor nests are shown on Plate 3-1A and on a map submitted as an addendum to Appendix 3-3. The map in the addendum contains results from the 1996 survey. The 2003 and 2004 raptor surveys are included as appendixes 3-16 and 3-16-A for the new lease area. The surveys indicate that there are no active nests within ½ mile of both the South Crandall lease area and the 120-acre IBC addition to U-68082 area.

Appendix 3-3 contains a 1980 report that discusses accipiters in Crandall Canyon. The report has evidence of past nesting and hunting activity, but no birds have been found in more recent searches. However, Crandall Canyon and similar canyons in the Huntington Creek area should be considered good accipiter habitat.

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A list of twenty-two bird species identified by the Fish and Wildlife Service as migratory birds of high federal interest is in Appendix 3-3. Section 3.22.21 lists seven of these species that have the potential of migrating within the region where the mine is located.

Table 5 in Appendix 3-3 has a list of reptile and amphibian species which may be found in the area according to published information. Reptiles are found throughout the permit area, but amphibians are only associated with water. The MRP says baseline studies in the spring of 1994 did not encounter any threatened or endangered reptiles or amphibians. More detail of this work is in an addendum to Appendix 3-2. The MRP contains studies of macroinvertebrates and fish populations in Crandall Creek from 1994. In response to comments from the Forest Service, the permittee has committed to inventory macroinvertebrate populations in the creek every three years.

Appendix 3-2 and Section 3.22.1 discuss the importance of Crandall Creek as fish habitat. One of the recommendations in a 1982 report from Walter Donaldson, regional fish manager for the Division of Wildlife Resources, was to occasionally blow up beaver dams as they tend to accumulate silt and deter upstream trout movement. However, April 1, 1996, correspondence from the Forest Service says beaver dams are rarely barriers to fish passage. Cutthroat trout spawn during high water periods in the spring when they can swim over the dams. In March 8, 1996, correspondence to the Division, Wildlife Resources said, for its size, Crandall Creek contains a significant population of resident fish and provides a significant spawning ground/nursery.

In three years of surveys, the Division of Wildlife Resources has not found fish above a beaver pond just above the mine. However, the Forest Service in February 5, 1997, correspondence said the surveys done in 1995 were taken in late June and August and do not give any kind of picture of the function of the higher reaches of the creek for the cutthroat population. The correspondence also says the culvert would cause a significant loss of habitat and will affect the population's ability to access headwaters.

Appendix 3-10 is a memorandum from Marvin Boyer and Pete Cavalli of the Division of Wildlife Resources concerning a fish population survey done in 1996 with some data from 1994 and 1995 surveys. This document says the data strongly suggest that the middle reach of Crandall Creek, the area near the mine, is an important spawning and nursery area. It also says preliminary results of sampling for genetic study indicate the fish are a pure strain of Colorado River cutthroat trout.

Threatened or Endangered Species

There are 9 threatened or endangered and candidate wildlife species identified in a U. S. Fish and Wildlife Service October 2003 listing for Emery County. They include,

Bonytail ^{4,10}	<i>Gila elegans</i>	E
Colorado Pikeminnow ^{4,10}	<i>Ptychocheilus lucius</i>	E

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Humpback Chub ^{4,10}	<i>Gila cypha</i>	E
Razorback Sucker ^{4,10}	<i>Xyrauchen texanus</i>	E
Bald Eagle ¹	<i>Haliaeetus leucocephalus</i>	T
Mexican Spotted Owl ^{1,4}	<i>Strix occidentalis lucida</i>	T
Western Yellow-billed Cuckoo	<i>Coccyzus americanus occidentalis</i>	C
Black-footed Ferret ⁶	<i>Mustela nigripes</i>	E
Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>	E

¹ Nests in this county of Utah.

⁴ Critical habitat designated in this county.

⁶ Historical range.

⁹ Candidate species have no legal protection under the Endangered Species Act. However, these species are under active consideration by the Service for addition to the Federal List of Endangered and Threatened Species and may be proposed or listed during the development of the proposed project.

¹⁰ Water depletions from *any* portion of the occupied drainage basin are considered to adversely affect or adversely modify the critical habitat of the endangered fish species, and must be evaluated with regard to the criteria described in the pertinent fish recovery programs.

Of the 9 species, only one, the bald eagle, could potentially occur in the permit area. However, the occurrence is most likely to be migration through the area rather than nesting or roosting.

In addition to the species discussed in the MRP, there is also a potential to affect the threatened and endangered fish of the upper Colorado River basin through surface water depletion.

The MRP includes an updated list of the current T&E wildlife species for the 120-acre IBC addition to lease U-68082. The MRP lists those species that may occur in Emery County and it contains a separate list of those species that are known or suspected of being in the Manti La Sal National Forest.

The MRP lists five sensitive species potentially present in the mine's area of influence. As discussed above, the Division of Wildlife Resources has recently (1997) preliminarily identified Colorado River cutthroat trout from Crandall Creek through genetic tests. However, the tests are not conclusive. If the fish in Crandall Creek are Colorado River cutthroats, it is very significant because this would be the only known population of Colorado River cutthroat trout in the Wasatch Plateau. It would indicate there is a barrier to fish passage that keeps Yellowstone cutthroats from coming up Crandall Creek from the Huntington River. Neither the South

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Crandall lease nor the 120-acre IBC addition would affect the fish populations in the Crandall Canyon watershed.

Another sensitive species, the goshawk, was found near the old portals in 1980. This information is contained in a wildlife inventory report for the original MRP. It is almost certain other goshawks nest in the permit area. The current raptor survey confirms that there are no goshawks nesting within the proposed South lease addition.

Findings:

The information provided is adequate to address the minimum requirements of this section of the regulations.

GEOLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR 784.22; R645-301-623, -301-724.

Analysis:

There is geologic information in the current MRP for the permit and adjacent areas, including the South Crandall Canyon Extension (with the 40-acre SITLA-PacifiCorp sub lease) and IBC addition to lease U-68082. Geologic information was added with the submittal for the South Crandall Canyon Extension, but other than information from adjacent mine workings, geologic data for the IBC addition to lease U-68082 area are sparse: the nearest borehole, DH-2, is located roughly one-half mile north of the IBC boundary.

Test borings and coal sampling; coal seams, overburden, and strata

Drill hole and geological information for the South Crandall Canyon Tract has been added on pages 6-5 and 6-5a. HC-4, the only borehole in the South Crandall Canyon tract, provides information on coal seam thicknesses (driller's log in Appendix 6-6).

The lowest coal seam in the Blackhawk Formation is the Hiawatha, characteristically on or just above the Star Point Sandstone. This seam has been mined in the Cottonwood/Wilberg, Deer Creek, Des-Bee-Dove, Huntington #4, and Genwal #1 Mines. The Hiawatha Seam thins to less than 5 feet in the north end of the Cottonwood/Wilberg Mine, but then thickens again to the north. The Hiawatha Seam reaches a thickness of 12 feet in the Crandall Canyon permit area, located mainly north and west of the #1 Mine portal. For the Hiawatha Seam in the South Crandall Canyon Tract and IBC addition to lease U-68082, thickness of the coal seam and cover are shown with contour lines on Plate 5-2 (H). Hiawatha to Blind Canyon interburden thicknesses are noted at the borehole locations. Hiawatha Seam thickness and cover for the Crandall Canyon #1 Mine area are on Plates 6-3 and 6-6.

The Blind Canyon Seam lies approximately 40 to 100 feet above the Hiawatha Seam. The Blind Canyon Seam has been mined in the Deer Creek, Huntington #4, and Des-Bee-Dove Mines, but is too thin to mine economically at the Cottonwood/Wilberg Mines. The Permittee states in Section 6.22.2 that the thickness of the Blind Canyon Seam is, respectively, 59 and 40 inches at in-mine drill holes DH-1 and DH-2 (although Plates 5-2 (H) and (BC) indicate a thickness of 56 inches at both drill holes) and 54 and 40 inches in surface drill-holes DH-3 and DH-4. On Plate 6-4, the Permittee has mapped a relatively small area (60 acres according to the text but the map shows approximately 150 acres) where the Blind Canyon Seam has a thickness of 5 feet or more. The Permittee concludes that the Blind Canyon Seam does not contain sufficient coal (approximately 418,000 tons) for economic mining in the vicinity of the #1 Mine.

The Blind Canyon Seam will be mined in the South Crandall Canyon Extension, where it is thicker. For the Blind Canyon Seam in the South Crandall Canyon tract, thickness of the coal seam and cover are shown on Plate 5-2 (BC), along with the Hiawatha to Blind Canyon interburden thickness. Plate 5-2 (BC) shows that the seam is just less than 5 feet thick at HC-4 but thickens to the west. Blind Canyon Seam thickness for the Crandall Canyon #1 Mine area is on Plate 6-4.

The Bear Canyon Seam is too thin to mine economically in both the Crandall Canyon #1 Mine and the South Crandall Canyon Tract. Plate 6-5 is the Bear Canyon Seam thickness isopach map for the #1 Mine area. The Bear Canyon Seam is only 2 feet thick in borehole HC-4 (Appendix 6-6), the only borehole in the South Crandall Canyon Tract.

There is little or no thickness information for the Blind Canyon and Bear Canyon Seams for areas in or adjacent to the IBC addition to lease U-68082: the small size of the IBC area and the absence of access through adjacent workings indicate recovery of coal from these seams, even if thick coal were present, would probably not be economic. Although Plates 6-4 (Blind Canyon Seam Thickness) and 6-5 (Bear Canyon Seam Thickness) cover the area of this lease addition, these plates have not been updated to show the lease addition boundary. Plate 6-7, Hiawatha Structure, also does not show the boundary.

Test Borings and Coal Sampling information (section 6.22.1, pages 6-4 and 6-5) includes coal quality for both the Hiawatha and Blind Canyon Seams. Borehole HC-4 is the source of information for the South Crandall lease. Section 6.22.2 on page 6-5 includes information on coal reserves and on the nature, depth, and thickness of coal seams, rider seams, overburden, and interburden. Appendices 6-1, 6-5, and 6-6 contain additional geologic information. Drill-hole locations are shown on Plates 5-2 (BC) and 5-2 (H). Reference is made in several places to Plate 5-2, which can be understood to cover 5-2 (H) and 5-2 (BC).

The first paragraph on page 6-6 refers to the State leases only, so the information regarding the coal seams in the State leases is sufficient.

Acid- and toxic-forming materials

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For the Crandall Canyon #1 Mine, acid- and toxic-forming characteristics for strata immediately over and under the Hiawatha and Blind Canyon Seams in the #1 Mine area are discussed on pages 6-8 and 6-9. Analysis results for the Hiawatha coal also are discussed on page 6-9. The Permittee has not provided analyses for acid- and toxic-forming characteristics for the Blind Canyon Seam, in either the #1 Mine area or the South Crandall Canyon Tract. The Permittee states on page 6-9 of the proposed amendment that there is currently no access to unweathered Blind Canyon materials (the cores taken in 1981 at HC-4 are apparently not available for analysis); however, coal and adjacent strata will be analyzed when the rock tunnels reach the Blind Canyon Seam.

Engineering properties - clays and soft rock

According to section 6.24.34 on page 6-9, strata immediately above and below the "seam to be mined" do not contain clays or soft rock. Those statements are based on information in Appendices 6-1 and 6-5 and apply to the Hiawatha Seam only.

The lithology log of HC-4 in Appendix 6-6 shows the thickness of the claystone and shale immediately above and below the Blind Canyon Seam. There is currently no access to unweathered materials for analysis. Engineering properties will be determined after rock tunnels are constructed to the Blind Canyon Seam. The Blind Canyon Seam is not thick enough to allow the leaving of thick layers of coal on the roof and floor, and soft rock in the roof and floor increases the probability that there will be waste rock that will need to be disposed of.

Geologic information pertaining to hydrology (Little Bear Spring in particular)

Because of concerns from the US Forest Service that full extraction mining would occur where overburden thickness was less than 600 feet, and that this might affect the perennial nature of the stream in Little Bear Canyon above Little Bear Spring, Genwal Resources used surveying and geopositioning to more accurately map the contact between the Price River and Blackhawk Formations and the locations of seeps and springs in the canyon, and Appendix 7-63 has been added.

Location coordinates of seep and springs and field quality and quantity data are tabulated in Appendix 7-63. The Hiawatha and Blind Canyon Seam maps show the relation of the streams, springs, and seeps to the projected workings and where there is 600 feet of cover above the seam. The Geology map shows the location of seeps and springs in relation to the contact between the Price River and Blackhawk Formations.

Little Bear Spring is located adjacent to the South Crandall Canyon Tract, and Castle Valley Special Service District (CVSSD) has great concerns about protecting this important water supply from mining related damage. Information on how geology may affect the occurrence, availability, movement, quantity and quality of potentially impacted surface and ground water in the South Crandall Canyon Tract and adjacent areas was studied extensively before the South Crandall Canyon lease was issued. Using these studies, the BLM and the Manti-La Sal National Forest concluded that mining in the South Crandall Canyon Tract has a

low potential to disrupt Little Bear Spring, and they signed a FONSI in February 2003. Copies of the reports prepared from these studies are included in the proposed amendment as appendices to Chapter 7, and the appendices number and title are listed on page 6-7a.

Findings:

The information provided adequately addresses the minimum requirements of the Environment Resource Information – Geologic Resource Information section of the regulations.

HYDROLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-724.

Analysis:

Sampling and Analysis

The MRP for the Crandall Canyon No. 1 Mine includes the monitoring of fourteen springs, five stream locations, eleven groundwater wells (only two of which have not been either sealed off or destroyed), and two UPDES sites. The Permittee has added eight spring and six stream monitoring locations for the South Crandall Lease area to their water monitoring program. Two spring and one stream monitoring location has been added for the the 120-acre IBC addition to U-68082 area. As stated in Section 7.2 Sampling and Analysis of the mines existing MRP, "all water samples are collected and analyzed according to methods in either the "Standard Methods for the Examination of Water and Waste Water" or the 40 CFR parts 136 and 434".

Baseline Information

A description of the hydrologic and geologic characteristics of the Crandall Canyon Mine permit area, the South Crandall lease area and the additional 40-acre sublease area (part of the South Lease), and the 120-acre IBC addition to U-68082 areas are included in Section 7.24.1, Groundwater Information, and Section 7.24.2, Surface Water Information. Spring and seep surveys were conducted in and adjacent to the permit area in 1985, 1987, 1989, and 1993. Baseline spring and seep information is provided in Appendices 7-16 through 7-20. Baseline surface flow information provided from a USGS gaging station located at the mouth of Crandall Canyon Creek from 1978 through 1984 is presented in Appendix 7-2 and provided from Parshall flumes and instantaneous stream flow measurements from Crandall Canyon, Blind Canyon, Horse Canyon, and Indian Creek are presented in Appendix 7-23. Baseline information of the premining groundwater and surface water features within and adjacent to the South Crandall lease area and the U-68082 Lease Addition area are included in Appendix 7-58 and 7-64, respectively.

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Appendix 7-58 identifies and shows the locations of seeps, springs, surface water, and drainages that have been monitored within and adjacent to the lease area since 1980. Little Bear Spring and Little Bear Creek have been monitored since 1957 and 1970, respectively. The tabulated baseline data presents discharge, flow, and field parameter (including temperature, pH, and conductivity) data available for each monitoring site. Major ion, trace metal, and nutrient water quality data collected by Genwal in June and August, 2003, are also presented for the four springs and six surface water monitoring sites that were included in the Genwal's original amended water monitoring program for the South Crandall lease area and the additional 40-acre sublease area (portion of the South Lease area). Because of USFS concerns of certain seeps and springs associated with riparian vegetation in Little Bear Canyon, several seeps and springs were added to the monitoring program (LB-7, LB-7A, LB-7B, LB-7C, and LB-12) and one spring was removed (LB-2). These additional seeps and springs were not part of the baseline study reported in Appendix 7-58. However, quarterly monitoring of these springs will begin in 2005 assuring that at least two years of seasonal monitoring (flow and field parameters) of these springs will be acquired prior to mining beneath Little Bear Canyon.

Supplemental hydrologic information has been added as Appendices 7-52 through 7-57, and 7-59 through 7-62 to address the complex hydrogeology of Little Bear Spring. Little Bear Spring is an important municipal water source and is located approximately 600 feet south of the South Crandall Lease Area in Little Bear Canyon. These appendices are scientific studies that describe, among other things, the groundwater systems encountered in the Crandall Canyon mine, their relation to Little Bear Spring, and the potential source of water for the spring. The Division agrees with the Permittee's assessment that the studies indicate that Little Bear Spring is recharged primarily through surface water and alluvial groundwater losses in Mill Fork Canyon. This position is supported by the USFS/BLM Joint Decision Notice/Finding of No Significant Impact, Coal Lease MRP UTU-78953.

However, the Forest Service has commented that the hydrologic studies have not conclusively determined that Little Bear Spring is recharged primarily from water losses in Mill Fork Canyon and that there is also a component of flow reaching the spring from the north and west. The Forest Service bases their comment on earlier studies of the spring (pre-1998) suggesting a north and west source area that was not eliminated as a possibility in later studies. The MRP addresses the Forest Service comment and references pre-1998 studies that suggest a northerly component of flow feeding Little Bear Spring. Because these studies are not the property of Genwal, the Division will keep these studies available for review in the Division's Public Information Center.

Baseline information of the premining groundwater and surface water features within and adjacent to the proposed 120-acre IBC addition to U-68082 is included as Appendix 7-64, Baseline Information for the 120-acre IBC addition to U-68082. Appendix 7-64 identifies and shows the locations of seeps, springs, surface water, and drainages that have been monitored within and adjacent to the lease area since 1985. Baseline monitoring of the seeps and springs was collected during June and October 1985, June and September/October 1993, and May 2004. Shingle Creek was monitored during May, June, and July of 2004. The tabulated baseline data presents discharge, flow, and field parameter (including temperature, pH, and conductivity) data

available for each monitoring site including the two springs (SP-18 and SP-22) and Shingle Creek added to the monitoring program.

The listing of water rights in and adjacent to the permit boundary, as obtained from the Utah Division of Water Rights, has been updated for the South Crandall lease area and the 102-acre IBC addition to lease U-68082 on the groundwater and surface water rights maps (Plates 7-14 and 7-15, respectively), the tabulated listing of surface water rights (Table 7-6), and the supporting water rights information (Appendix 7-1).

Modeling

A conceptual recharge model of Little Bear Spring is presented as Appendix 7-55, Investigation of the Potential for Little Bear Spring Recharge in Mill Fork Canyon, Emery County, Utah. The model uses information obtained from studies presented in other appendices including two isotopic studies, an in-mine slug test, a resistivity study, hydrogeologic information, and historical flow data. In addition, a dye tracing study and three electromagnetic (AquaTrack) studies of the Little Bear Spring recharge system are presented in the appendices. Combined, these studies make a compelling argument that the primary source of recharge to Little Bear Spring is through surface water and alluvial groundwater losses in Mill Fork Canyon.

Probable Hydrologic Consequences Determination

The Probable Hydrologic Consequences Determination (PHC) (Appendix 7-15) has been updated to include reference to the 120-acre addition to lease U-68082 and the hydrologic, geologic, baseline, and supplemental information provided for the South Crandall lease area and the additional 40-acre sublease area of the South Crandall lease. No new information describing the probable hydrologic consequences of mining within the U-68082 Lease Addition area is presented except to mention that the drainages in the U-68082 lease addition are all ephemeral or intermittent. Updates in the PHC center around the recharge source to Little Bear Spring and the potential impacts of the proposed mine workings on the spring. Studies indicate that fractures in the Star Point Sandstone act as a conduit to provide surface and alluvial water from Mill Fork Canyon to Little Bear Spring. Because this fracture system lies outside of the South Crandall Lease permit boundary, and a regional Star Point aquifer does not likely contribute to the fracture system, then it is considered extremely unlikely that the proposed mining activities will impact the spring. In addition, the Star Point Formation will not be undermined by the proposed mining in the South Crandall Lease area or the 120-acre IBC addition to lease U-68082 because the coal seams proposed for mining are stratigraphically above the Star Point Formation.

As stated above (Hydrologic Resource Information, Baseline Information) the Forest Service has commented that the hydrologic studies have not conclusively determined that Little Bear Spring is recharged primarily from water losses in Mill Fork Canyon and that there is also a component of flow reaching the spring from the north and west. The PHC addresses the Forest Service comment and references pre-1998 studies that suggest a northerly component of

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flow feeding Little Bear Spring. Because these studies are not the property of Genwal, the Division will keep these studies available for review in the Division's Public Information Center.

Groundwater Monitoring Plan

The groundwater monitoring plan has been updated to include the monitoring of eight springs and seeps located within and adjacent to the South Crandall lease area as shown on Plate 7-18. These sites include: Little Bear Spring, a municipal water source, that discharges water from fractures within the Star Point Sandstone and is located approximately 600 feet outside of the lease area; springs LB-7, LB-7A, and LB-7B, that discharges from the base of the Castlegate Sandstone north slope of Little Bear Canyon; springs LB-7c, LB-5A, and LB-12 that discharges from a sandstone channels in the Blackhawk Formation in Little Bear Canyon; and site SP-79 that discharges from the Star Point Sandstone at the northeast portion of the lease area. All of the spring sites will be monitored for the field and laboratory water quality parameters listed in Table 7-4. Protocols for monitoring are listed in Table 7-10 of the MRP.

In order to conduct multiple seam mining beyond spring site LB-7, a monitoring plan must be submitted and approved by the Division in concurrence with the Forest Service at least two years prior to mining in that area. Multiple seam mining will therefore be contingent upon meeting this requirement.

Because of USFS concerns on the effects of subsidence to Little Bear Creek and its associated ecosystem, additional surveys are to be conducted in 2005 that include: a map identifying and showing the general location of vegetation in the area that could potentially be affected by mining in Little Bear Canyon; and a detailed map of riparian and wetland vegetation associated with spring sites LB-7, LB-7A, LB-7B, LB-7C, LB-5A, and LB-12. As a stipulation of the South Crandall lease agreement (Special Coal Lease Stipulation #17), the Permittee has committed to mitigate for potential disruption to Little Bear Spring. Stipulation #17 states "In order to adequately protect flow from Little Bear Spring, the Lessee must enter into a written agreement with Castle Valley Special Services District (CVSSD) to assure an uninterrupted supply of culinary water equivalent to historical flows from the spring. The agreement must be in place prior to mining." A water treatment plant is to be constructed under the provisions of an agreement between Genwal, Pacificorp, and the Castle Valley Special Service District. The supply of culinary water will be assured irrespective of whether mining can be conclusively shown to have affected Little Bear Spring. A copy of the agreement that meets the requirements of Special Coal Lease Stipulation #17 is included as Appendix 7-51.

The groundwater monitoring plan has been updated to include the monitoring of two springs and seeps (SP-18 and SP-22) located within the U-68082 Lease Mod Area as shown on Plate 7-18. According to Map 7-12, Seep and Spring Locations, and Appendix 7-64, Baseline Information for the U-68082 Lease Mod Area, eight seeps and springs have been inventoried within the 120-acre addition as part of the 1985 inventory. Based on the low flow reported for the springs in the area, because the springs do not appear to discharge from a significant groundwater system, and the low likelihood that the groundwater discharge at the springs would be diverted to the mine workings through mine-induced fractures, the Division did not

recommend additional groundwater monitoring. However, the USFS owns water rights for Shingle Creek and believes that contributing springs in the canyon should be protected. The Division, in consultation with the Forest Service, has agreed that a water monitoring plan for Shingle Canyon should be incorporated in the MRP for the Crandall Canyon Mine. The Permittee has committed, at the Division's request, to a water monitoring plan that includes quarterly monitoring for flow and field parameters of spring sites SP-18 and SP-22. Spring SP-22 issues from the Blackhawk Formation within the potential subsidence area of the 120-acre addition. Spring SP-18 issues from the Star Point Formation beneath the coal seam and outside of the potential subsidence boundary. The spring sites will be monitored for the field and laboratory water quality parameters listed in Table 7-4. Protocols for monitoring are listed in Table 7-10 of the MRP.

Surface-Water Monitoring Plan

The surface water monitoring plan has been updated to include the monitoring of four creeks with six monitoring sites located within and adjacent to the South Crandall lease area as shown on Plate 7-18. The creeks to be monitored include: the perennial Little Bear Canyon Creek (intermittent upstream of Little Bear Spring), the ephemeral drainage in SW $\frac{1}{4}$ of Section 4, T16S R7E (Section 4 Creek), the ephemeral drainage located along the west permit boundary along the border of Sections 5 and 6, T16S R7E, and the intermittent creek in Section 5, T16S R7E that drains into Crandall Creek downstream of the Genwal surface facilities (Section 5 Creek). Both Little Bear Canyon Creek and Section 4 Creek will be monitored approximately 100 feet above their confluence with Huntington Creek, the drainage along the west permit boundary will be monitored at station IBC-1 above the confluence with Crandall Creek. Section 5 Creek will be monitored above the confluence with Crandall Creek and at two stations located at the confluence of the drainages upper left and right forks. All of the creek sites will be monitored for the field and laboratory water quality parameters listed in Table 7-8. Protocols for monitoring are listed in Table 7-10 of the MRP.

The surface water monitoring plan has been updated to include the monitoring of Shingle Creek within the 120-acre IBC addition to lease U-68082 as shown on Plate 7-18. Shingle Creek is an intermittent creek that branches into a right and left fork at the east boundary of the lease mod area. Because Shingle Creek is intermittent, and only a portion of the upper reaches of the right and left forks flows within the potential subsidence area, no additional surface water monitoring was recommended by the Division. However, the Forest Service owns water rights for Shingle Creek and believes that contributing springs in the canyon should be protected. The Division, in consultation with the Forest Service, has agreed that a water monitoring plan for Shingle Canyon should be incorporated in the MRP for the Crandall Canyon Mine. The Permittee has committed, at the Division's request, to a water monitoring plan that includes quarterly monitoring for flow and field parameters of a stream site for Shingle Creek located just downstream of spring site SP-18 and the confluence of the left and right forks of Shingle Creek. The creek sites will be monitored for the field and laboratory water quality parameters listed in Table 7-8. Protocols for monitoring are listed in Table 7-10 of the MRP.

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Baseline Cumulative Impact Area Information

The Division has updated the East Mountain CHIA to incorporate the expansion of the Crandall Canyon Mine into the South Crandall Canyon Lease Tract and the U-68082 Lease Addition area (March 28, 2005). Hydrogeologic information provided by the amendments was adequate for the Division to complete the update.

Findings:

Hydrologic Resource Information meets the minimum requirements of the Environmental Resource Information – Hydrologic Resource Information section of the regulations.

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

Analysis:

Affected Area Boundary Maps

The Permittee shows the proposed affected area boundaries on Plate 5-2 (BC). The information is adequate for the Division to determine the affected area boundaries.

Archeological Site Maps

The archeological site map provided for in appendix 4-1A of the MRP does not include the South Crandall lease addition. However Appendix 4-9 of the MRP includes a letter and a map of the lease area from Gary Gray to Jim Dykman. This information was provided to the SHPO on September 9, 2003.

Coal Resource and Geologic Information Maps

Plate 6-1, the geology map, and Plates 5-2 (H) and 5-2 (BC), the mine plan maps for the Hiawatha and Blind Canyon Seams, have been updated to include the 120-acre IBC addition to lease U-68082 and the South Crandall Canyon Extension. Although older maps such as 6-3, 6-4, 6-5, 6-6, and 6-7 are still in the MRP and provide valuable information for the #1 Mine, they have effectively been superseded by 6-1, 5-2 (H), and 5-2 (BC) in the area of the IBC and South Crandall Canyon Tract and do not need to be updated.

Plate 5-2 (H) shows Hiawatha Seam thickness and cover thickness in the IBC and South Crandall Canyon Extension. Mining projections on Plate 5-2 (H) show one east-west oriented longwall panel extending into the south end of the IBC. Projected subsidence from Hiawatha Seam mining in the IBC is shown on Plate 5-2 (H).

Plate 5-2 (BC) shows Blind Canyon Seam cover thickness, but coal thickness is not shown for this seam in this area: there is no thickness information for the Blind and Bear Canyon Seams in or near the IBC, and these seams will not be mined in the IBC area.

The coal outcrop and strike and dip of the coal seams are on Plates 5-2 (H) and 5-2 (BC). Appendix 6-7 contains a generalized geologic cross-section that parallels the strike of the Mill Fork graben and goes from Rilda Canyon and Mill Fork through the Huntington #4 Mine and Little Bear Spring to Huntington Canyon. Because of concerns from the US Forest Service that full extraction mining in Little Bear Canyon would occur where overburden thickness was less than 600 feet, and that this might affect the perennial nature of the stream in Little Bear Canyon above Little Bear Spring, Genwal Resources used surveying and geopositioning to more accurately map the contact between the Price River and Blackhawk Formations and the locations of seeps and springs in the canyon. The Geology map in Appendix 7-63 shows the seeps and springs locations, which are based on surveying and geopositioning, in relation to the contact between the Price River and Blackhawk Formations. The Hiawatha and Blind Canyon Seam maps in Appendix 7-63 show the relation of the streams, springs, and seeps to the projected workings and a contour line indicating where there is 600 feet of cover above the seam.

Cultural Resource Maps

The cultural resource map provided for in appendix 4-1A of the MRP did not include the South Crandall lease addition. However Appendix 4-9 of the MRP includes a letter and a map of the lease area from Gary Gray to Jim Dykman. This information was provided to the SHPO on September 9, 2003.

Existing Structures and Facilities Maps

The Permittee did not need to update the existing structures and facilities maps. Plate 1-1, Crandall Canyon Mine Lease Map, shows that the area is mountainous and that only structure that exists is a U.S.F.S. trail. Plate 4-3, Crandall Canyon Mine Oil & Gas Development, does not show any activity in the South Crandall lease area.

Existing Surface Configuration Maps

The Permittee shows the existing surface configuration on several maps including Plate 1-1, Crandall Canyon Mine Lease Map.

Mine Workings Maps

Mine workings are shown on Plates 5-2 (H) and 5-2 (BC) Map 5-1, Old Works Plate, shows the locations of the old workings in and around the Crandall Canyon Mine.

ENVIRONMENTAL RESOURCE INFORMATION

Monitoring and Sampling Location Maps

Genwal Resources used surveying and geopositioning to more accurately map the contact between the Price River and Blackhawk Formations and the locations of seeps and springs related to this contact in Little Bear Canyon. Locations of seeps and springs are on the Hiawatha and Blind Canyon Seam maps in Appendix 7-63. In addition to Little Bear Spring, Genwal has added the monitoring of six other springs in this canyon; LB-7, LB-7A, LB-7B, LB-7C, LB-5A, and LB-12. Plates 7-12 and 7-18 have been updated with the correct identification and locations of the seeps and springs in Little Bear Canyon.

Drill-hole locations are shown on Plates 5-2 (BC) and 5-2 (H). There are no new water-monitoring points in the South Crandall lease, but the location of Little Bear Spring is on several maps.

Plate 7-12 shows the seep and spring locations for the Crandall Canyon mine and surrounding area. The baseline seep and spring locations for the South Crandall lease area and the 120-acre IBC addition to lease U-68082 area are shown on this plate as well as in Appendices 7-58 and 7-64, respectively. Plate 7-18 has been updated to show surface and groundwater monitoring locations for the South Crandall lease area and the 120-acre IBC addition to lease U-68082 area.

In order to clarify the locations of significant springs in relation to the geology and longwall mining projections in Little Bear Canyon watershed, topographic maps of the watershed have been provided (Appendix 7-63) that show the following:

- Surveyed locations and identity of all springs;
- The Hiawatha and Blind Canyon seam outcrop contours;
- The Blind Canyon seam 600-foot overburden contour;
- The Hiawatha and Blind Canyon seam mining projections; and
- Surface geology.

In order to address Special Coal Lease Stipulation #9 and conduct mining in Little Bear Canyon beyond Spring LB-7, the Forest Service and the Division have agreed that a monitoring program should be developed by the Permittee and in place at least two years prior to mining in that area. Depending upon the monitoring program developed, additional maps or an update of existing maps will be provided by the Permittee as part of the monitoring plan. Because of USFS concerns on the effects of subsidence to Little Bear Creek and its associated ecosystem, additional surveys are to be conducted in 2005 that include: a map identifying and showing the general location of vegetation in the area that could potentially be affected by mining in Little Bear Canyon; and a detailed map of riparian and wetland vegetation associated with spring sites LB-7, LB-7A, LB-7B, LB-7C, LB-5A, and LB-12. These maps are to be included in the MRP following the 2005 field season.

Permit Area Boundary Maps

The permit area boundaries are shown on several maps including Plate 5-2 (BC) and Plate 5-2 (H).

Subsurface Water Resource Maps

Plate 7-14, Groundwater Rights, has been updated to include the South Crandall lease area, the associated additional 40-acre sublease area, and the U-68082 Lease Addition area.

Surface Water Resource Maps

Plate 7-15, Surface Water Rights, has been updated to include the South Crandall lease area, the associated additional 40-acre sublease area, and the U-68082 Lease Addition area.

Vegetation and Wildlife Maps

The MRP includes wildlife and vegetation maps for the proposed 120-acre lease addition. They are identified as plates 3-1A, B, and C and 3-2. Plate 3-2, (Regional Vegetation), has been revised to accurately reflect the vegetative communities and stream courses that are present in the canyon where the proposed IBC is located. Additional vegetative communities observed in the proposed lease addition were conifer, Pinyon Juniper Mountain Brush, Sagebrush, and riparian. Both forks of the canyon exhibited intermittent flow. Plates 3-1 and 3-2 appear to show perennial flow in the canyon and proposed lease area.

Findings:

The information provided is adequate to meet the requirements of this section of the regulations.

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COAL RECOVERY

Regulatory Reference: 30 CFR 817.59; R645-301-522.

Analysis:

Appendix 5-24, Resource and Recovery Protection Plan (R2P2) Approval Letter, is included in the amendment. The Division uses the R2P2 when evaluating the coal recovery plan. In addition to the approval letter the Permittee needs to state in the amendment what they are doing to maximize coal recovery.

The Permittee plans to mine both seams in the South Crandall Canyon Lease Extension, as shown on Plate 5-2 (H) and Plate 5-2 (BC). The Permittee has developed a mine plan that will recover as much coal as is economically possible. There is no or little thickness data for the Blind Canyon and Bear Canyon Seams in or adjacent to the IBC addition to lease U-68082, and these seams will not be mined there. The nearest borehole, DH-2, is located roughly one-half mile north of the lease addition. The Division sees the small size of the area and the absence of access through adjacent workings as indicators that recovery of coal from these seams, even if thick coal were present, would probably not be economic.

Mining projections on Plate 5-2 (H) show one east-west oriented longwall panel in the Hiawatha Seam, extending into the south end of the IBC area. The Permittee states that recovery of Hiawatha coal in the IBC is speculative.

The Division is required to make a finding about maximum use and conservation of coal. On mines with federal leases, such as South Crandall Canyon Lease Extension, the BLM does this analysis through their resource recovery protection plan (R2P2) and review of the MRP. The R2P2 is included by reference in the MRP. The recommendation for approval of the R2P2 was made by the BLM on November 14, 2004.

The information in the Genwal Resources submittal for the 120-acre IBC addition to lease U-68082 is adequate to meet the minimum requirements for the coal recovery regulations. Genwal Resources added the 120 acres in order to recover a small amount of coal in the 1st Right Panel. They permitted additional areas because of the possibility of additional mining to the north.

The coal to the north is low (5 feet or less). The Permittee determined that a drilling program would be inadequate to determine if the area is mineable. They will do exploration with a continuous miner. If mining is feasible Genwal Resources will develop additional panels to the north.

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The coal in the 120-acre IBC addition to lease U-68082 is bounded on the north and to the east by outcrops. The only practical access to the coal is through the Genwal Mine. The coal in the 120-acre IBC addition to lease U-68082 is marginal due to the seam thinness. The addition of the 120-acre IBC addition to lease U-68082 will allow the Permittee the ability to recover coal that would otherwise be sterilized.

The BLM placed the following restrictions on the South Crandall lease area:

- Full extraction mining is not authorized in panels BC-4 and HIA-5 in areas with less than 600' of overburden until it is determined that these areas can be mined without adverse impacts to the Little Bear Canyon municipal watershed. Therefore, Condition #3 has been added to the permit.
- Mining will not be permitted until the water treatment plant is in operation for those areas identified in lease stipulation 17. At present no mining is scheduled for those areas.

Findings:

The information provided adequately addresses the minimum requirements of the Operation Plan – Coal Recovery section of the regulations.

SUBSIDENCE CONTROL PLAN

Regulatory Reference: 30 CFR 784.20, 817.121, 817.122; R645-301-521, -301-525, -301-724.

Analysis:

Renewable Resources Survey

The renewable resources in the area consist of grazing, timber and water. The Permittee stated in the South Crandall amendment that some of the renewable resources in the area were surface and groundwater. The Permittee has designed the mine plan to prevent damage to those resources particularly Little Bear Spring.

Subsidence Control Plan

The updated subsidence plan includes the following information about the South Crandall lease:

- In most of the South Crandall lease, the Hiawatha and Blind Canyon seams will be extracted by longwall methods. Those areas where full extraction is not permitted by the lease agreement are: 1) Areas under Little Bear Stream with less than 600 feet of overburden, 2) areas within 1,000 feet of the southeast corner of the lease in order to protect the Mill Fork Graben and 3) areas within 1,000 feet of the southern boundary of the lease in order to protect the possible water-bearing fracture system.
- Map 5-2 BC and Map5-2H have been updated to show the area of maximum possible subsidence.

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- The subsidence-monitoring program for the South Crandall Lease is similar to that of the other areas. The area will have initial survey points established. The area will be aerial surveyed and surface inspections will be done.
- Effects of planned subsidence are anticipated to be a lowering of the surface and temporary tensional fractures at the margins of the subsidence areas.
- Mitigation for any disruption to the Little Bear Spring will be done through construction of a water treatment plant, which will provide replacement water for the spring.

The Permittee gave adequate information about the main power line for the site and the potential effects of subsidence because:

- The Permittee showed the location of the main power line on Plate 5-2 (BC) and Plate 5-2 (H). Those maps have a yellow line labeled as a 12.5 kV powerline.
- The Permittee updated Map 5-5 to show the areas where subsidence has and is expected to occur.
- The Permittee discussed the anticipated effects that subsidence would have on the main power lines. On page 5-26b the Permittee states that they talked with Utah Power & Light officials. The officials were quoted as saying that the risks are minimal.
- The Permittee committed to notify the Forest Service in the event of any damage to the powerline so that proper fire prevention measures can be implemented. The line is equipped with ground fault protection that will automatically and instantly de-energize the line in the event of any damage.

The Permittee stated that they will not do full extraction mining in areas with less than 600 feet of coal. The Permittee showed the areas with more than 600 feet of cover on Plate 5-2 (BC) and Plate 5-2 (H).

Due to lease stipulations, the Permittee made the following commitment.

“According to this plan full extraction mining (i.e. longwall mining) is not authorized in panels BC-4 and HIA-5 in areas with less than 600’ overburden unless it can be determined that these areas can be mined without adverse impacts to the Little Bear Canyon municipal watershed.

The Permittee was able to meet part of the subsidence control plan requirements in connection with the 120-acre IBC because they included the following:

- All mining in the 120-acre IBC will be done in the Hiawatha Seam. The purpose of the 120-acre addition is to allow the Permittee to mine coal that would otherwise be inaccessible.
- Map 5-2 (H) shows the location of the mining that will occur in the 120-acre IBC.
- Map 5-5, Subsidence Control Point Location, shows that no new subsidence control points were added for the 120-acre IBC. The area has two existing monitoring points. Because of the small area the Division believes that additional monitoring points are not needed.

Performance Standards For Subsidence Control

The Permittee is required to keep all performance standards for subsidence controls.

Notification

The Permittee is required to notify the water conservancy district, and all surface owners 6 months before undermining an area. The Division will inspect the Permittee's records to determine if notification was given during quarterly complete inspections.

Findings:

The information provided meets the minimum requirements of this section of the regulations.

FISH AND WILDLIFE INFORMATION

Regulatory Reference: 30 CFR Sec. 784.21, 817.97; R645-301-322, -301-333, -301-342, -301-358.

Analysis:

Protection and Enhancement Plan

The only impacts to fish and wildlife would be those to habitat loss as a result of subsidence.

Crandall Creek is considered important fish habitat, and all riparian habitat is considered critical wildlife habitat. The MRP contains correspondence from the Division of Wildlife Resources discussing a wildlife protection and mitigation plan that has been developed through several months of negotiations between the permittee, Wildlife Resources, the Forest Service, Water Rights, and the Division. This plan is intended to protect the Colorado River cutthroat trout population and to mitigate for the loss of fisheries and riparian habitat.

Major points of the plan included:

1. Certain additions would be made to Crandall Creek above the mine.
2. All the fish in the area of the culvert would be captured and transplanted to a secure and suitable temporary location. Some of these fish will be put back into Crandall Creek above the mine.
3. Alterations would be made to another stream to isolate it from other fish populations. This stream would be treated to eliminate all fish, and Colorado River cutthroats would be transplanted to it.

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4. In Scad Valley, a sheep corral would be eliminated and two or three new corrals constructed. Some roads would be reclaimed to try to improve the quality of spawning habitat in this area.

Unfortunately, it is possible that moving the sheep corral and reclaiming certain roads may not result in improved stream habitat in Scad Valley Creek and would not fulfill the requirements of R645-301-333 and R645-301-358. The Forest Service and Wildlife Resources intend to monitor this section of stream to see if the project is successful.

Endangered and Threatened Species

Of the 16 vegetative and wildlife species, one, the bald eagle, could potentially occur in the permit area. However, the occurrence is most likely to be migration through the area rather than nesting or roosting. Most threatened or endangered species that could occur in Emery County occur at lower elevations than the mine and have no habitat in the proposed permit area expansion.

There have been no confirmed sightings of Black-Footed Ferrets in Emery County in several years.

The mine has potential, through water depletions, of adversely affecting four listed threatened and endangered fish species of the upper Colorado River drainage. The Fish and Wildlife Service requires mitigation when water depletions exceed 100 acre-feet annually. Page 7-12 and appendix 3-18 of the MRP describe the use of water for mining operations. The information on page 7-12 indicates that approximately 150 gpm, (242 acre/ft/yr), are used in water consumption for mining activities. This was an estimate based on experience at other mines. The most recent submittal dated July 7, 2004 includes calculations in appendix 3-18 that define the actual amount of water used in the mining process and water that is discharged into Crandall Creek. The calculations in appendix 3-18 indicate that 79.4-acre feet per year of water are used in mining processes and approximately 800 acre feet per year of water are discharged into Crandall Creek annually. According to these calculations, the mine would provide a net gain of 729.6 acre-feet per year of water to Crandall Creek. According to the Mayo age dating studies, this mine water is old and would not be intercepting the water associated with the springs located above the mine workings.

Bald and Golden Eagles

The bald eagle could potentially occur in the permit area. However, the occurrence is most likely to be migration through the area rather than nesting or roosting. Bald eagles are common in the area during the winter and could occasionally fly through or roost in the proposed lease addition to the permit area. The raptor survey conducted in the spring of 2003 indicated that there were no golden eagle nests in the proposed lease area. The proposed mining in both the South Crandall lease and 120-acre IBC addition to lease U68082 areas would have negligible effects on these birds.

Wetlands and Habitats of Unusually High Value for Fish and Wildlife

The springs and riparian areas within the proposed 120-acre IBC addition to lease U-68082 addition would be considered habitats of high value for fish and wildlife. However, since no surface disturbance is anticipated by this permitting action the only effects on habitat would possibly be from subsidence. Any impacts on fish and wildlife habitat due to subsidence would be negligible.

Findings:

The information provided adequately addresses the minimum requirements of the Operation Plan – Fish and Wildlife sections of the regulations.

VEGETATION

Regulatory Reference: R645-301-330, -301-331, -301-332.

Analysis:

Vegetation should not be affected by the addition of the 120 -acre parcel. Genwal Resources Inc. is committed to taking aerial color infrared photographs every five years beginning in 1995 to monitor the effects of underground mining on vegetation.

Findings:

The information provided adequately addresses the minimum requirements of the Operation Plan - Vegetation section of the regulations.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

Groundwater Monitoring

The groundwater monitoring plan has been updated to include the monitoring of eight springs and seeps located within and adjacent to the South Crandall lease area as shown on Plate 7-18. These sites include: Little Bear Spring, a municipal water source, that discharges water from fractures within the Star Point Sandstone and is located approximately 600 feet outside of the lease area; springs LB-7, LB-7A, and LB-7B, that discharges from the base of the Castlegate

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Sandstone north slope of Little Bear Canyon; springs LB-7c, LB-5A, and LB-12 that discharges from a sandstone channels in the Blackhawk Formation in Little Bear Canyon; and site SP-79 that discharges from the Star Point Sandstone at the northeast portion of the lease area. All of the spring sites will be monitored for the field and laboratory water quality parameters listed in Table 7-4. Protocols for monitoring are listed in Table 7-10 of the MRP.

In order to conduct multiple seam mining beyond spring site LB-7, a monitoring plan must be submitted and approved by the Division in concurrence with the Forest Service at least two years prior to mining in that area. Multiple seam mining will therefore be contingent upon meeting this requirement.

Because of USFS concerns on the effects of subsidence to Little Bear Creek and its associated ecosystem, additional surveys are to be conducted in 2005 that include: a map identifying and showing the general location of vegetation in the area that could potentially be affected by mining in Little Bear Canyon; and a detailed map of riparian and wetland vegetation associated with spring sites LB-7, LB-7A, LB-7B, LB-7C, LB-5A, and LB-12.

As a stipulation of the South Crandall lease agreement (Special Coal Lease Stipulation #17), the Permittee has committed to mitigate for potential disruption to Little Bear Spring. Stipulation #17 states "In order to adequately protect flow from Little Bear Spring, the Lessee must enter into a written agreement with Castle Valley Special Services District (CVSSD) to assure an uninterrupted supply of culinary water equivalent to historical flows from the spring. The agreement must be in place prior to mining." A water treatment plant is to be constructed under the provisions of an agreement between Genwal, Pacificorp, and the Castle Valley Special Service District. A copy of the agreement that meets the requirements of Special Coal Lease Stipulation #17 is included as Appendix 7-51.

The groundwater monitoring plan has been updated to include the monitoring of two springs and seeps (SP-18 and SP-22) located within the U-68082 Lease Mod Area as shown on Plate 7-18. According to Map 7-12, Seep and Spring Locations, and Appendix 7-64, Baseline Information for the U-68082 Lease Mod Area, eight seeps and springs have been inventoried within the 120-acre addition as part of the 1985 inventory. Based on the low flow reported for the springs in the area, because the springs do not appear to discharge from a significant groundwater system, and the low likelihood that the groundwater discharge at the springs would be diverted to the mine workings through mine-induced fractures, the Division did not recommend additional groundwater monitoring. However, the USFS owns water rights for Shingle Creek and believes that contributing springs in the canyon should be protected. The Division, in consultation with the Forest Service, has agreed that a water monitoring plan for Shingle Canyon should be incorporated in the MRP for the Crandall Canyon Mine. The Permittee has committed, at the Division's request, to a water monitoring plan that includes quarterly monitoring for flow and field parameters of spring sites SP-18 and SP-22. Spring SP-22 issues from the Blackhawk Formation within the potential subsidence area of the 120-acre addition. Spring SP-18 issues from the Star Point Formation beneath the coal seam and outside of the potential subsidence boundary. The spring sites will be monitored for the field and

laboratory water quality parameters listed in Table 7-4. Protocols for monitoring are listed in Table 7-10 of the MRP.

Surface Water Monitoring

The surface water monitoring plan has been updated to include the monitoring of four creeks with six monitoring sites located within and adjacent to the South Crandall lease area as shown on Plate 7-18. The creeks to be monitored include: the perennial Little Bear Canyon Creek (intermittent upstream of Little Bear Spring), the ephemeral drainage in SW ¼ of Section 4, T16S R7E (Section 4 Creek), the ephemeral drainage located along the west permit boundary along the border of Sections 5 and 6, T16S R7E, and the intermittent creek in Section 5, T16S R7E that drains into Crandall Creek downstream of the Genwal surface facilities (Section 5 Creek). Both Little Bear Canyon Creek and Section 4 Creek will be monitored approximately 100 feet above their confluence with Huntington Creek, the drainage along the west permit boundary will be monitored at station IBC-1 above the confluence with Crandall Creek. Section 5 Creek will be monitored above the confluence with Crandall Creek and at two stations located at the confluence of the drainages upper left and right forks. All of the creek sites will be monitored for the field and laboratory water quality parameters listed in Table 7-8. Protocols for monitoring are listed in Table 7-10 of the MRP.

The surface water monitoring plan has been updated to include the monitoring of Shingle Creek within the 120-acre IBC addition to lease U-68082 as shown on Plate 7-18. Shingle Creek is an intermittent creek that branches into a right and left fork at the east boundary of the lease mod area. Because Shingle Creek is intermittent, and only a portion of the upper reaches of the right and left forks flows within the potential subsidence area, no additional surface water monitoring was recommended by the Division. However, the Forest Service owns water rights for Shingle Creek and believes that contributing springs in the canyon should be protected. The Division, in consultation with the Forest Service, has agreed that a water monitoring plan for Shingle Canyon should be incorporated in the MRP for the Crandall Canyon Mine. The Permittee has committed, at the Division's request, to a water monitoring plan that includes quarterly monitoring for flow and field parameters of a stream site for Shingle Creek located just downstream of spring site SP-18 and the confluence of the left and right forks of Shingle Creek. The creek sites will be monitored for the field and laboratory water quality parameters listed in Table 7-8. Protocols for monitoring are listed in Table 7-10 of the MRP.

Transfer of Wells

Transfer of wells is not currently considered. Any future transfers will be in accordance with DOGM approval.

Findings:

The information provided meets the minimum requirements of the Operation Plan - Hydrologic Information section of the regulations.

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RECLAMATION PLAN

GENERAL REQUIREMENTS

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR Sec. 784.13, 784.14, 784.15, 784.16, 784.17, 784.18, 784.19, 784.20, 784.21, 784.22, 784.23, 784.24, 784.25, 784.26; R645-301-231, -301-233, -301-322, -301-323, -301-331, -301-333, -301-341, -301-342, -301-411, -301-412, -301-422, -301-512, -301-513, -301-521, -301-522, -301-525, -301-526, -301-527, -301-528, -301-529, -301-531, -301-533, -301-534, -301-536, -301-537, -301-542, -301-623, -301-624, -301-625, -301-626, -301-631, -301-632, -301-731, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-732, -301-733, -301-746, -301-764, -301-830.

PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES

Regulatory Reference: 30 CFR Sec. 817.97; R645-301-333, -301-342, -301-358.

Analysis:

For those areas disturbed by mining activities, high value habitats (pinyon-juniper, agricultural and riparian areas) will be restored; in many cases, they will be enhanced beyond their premining condition. The goals are to create a diversified cover and/or habitat that will support a wide range of species while restoring to a premining condition and, where feasible, enhancing habitat. On September 21, 1993, representatives from Genwal, the Division, and Wildlife Resources met on-site to discuss wildlife habitat enhancement for reclamation. Subsequently, Wildlife Resources wrote Genwal a letter with enhancement suggestions. This letter has been incorporated in the plan, and Genwal commits to use the recommendations. They include making several rock piles and placing modified utility poles with attached nesting boxes near the perimeter of the disturbed area. These measures were felt by Wildlife Resources to be the most practical means of enhancing wildlife habitat in this area. Combined with the revegetation plan, these methods can be considered the best technology currently available.

Findings:

The information provided adequately addresses the minimum requirements of the Reclamation Plan – Protection of Fish, Wildlife, and Related Environmental Values sections of the regulations.

REVEGETATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.111, 817.113, 817.114, 817.116; R645-301-244, -301-353, -301-354, -301-355, -301-356, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

Revegetation: General Requirements

It should be noted that there is no surface disturbance associated with the South Crandall lease area, the additional 40-acre sublease area, or the 120-acre IBC addition to lease U-86082. However, for those areas disturbed by mining activities topsoil will be redistributed within 30 days of completion of grading in late September or early October. Soil amendments will be applied if necessary before the end of October. Seeding will commence as soon as the seedbed is finished in the late fall. Tree planting will be done in conjunction with seeding or in the following spring as soon as the soil is workable.

The Permittee commits to inoculating the soil with microorganisms prior to seeding. Some research indicates this is a necessary step for establishing certain species although there has been successful revegetation in some areas with essentially sterile soil and no attempt to inoculate. The Permittee and the Division should look at current findings at the time of reclamation to determine the best methods.

The MRP contains a seed/planting mix for riparian and one for non-riparian areas. The seed mix for non-riparian areas was developed primarily for the south-facing slope where existing disturbances are located. The north-facing slope has a very different vegetation community, but many of the species in the existing seed/planting mixture are appropriate for the north-facing slopes. Also, the MRP contains a plan to transplant woody plants of species more suited to the north-facing slopes.

The seed/planting mix for riparian areas includes a mixture of species suitable for both upland and riparian areas. Willows, dogwoods or roses would be planted at one-foot intervals along the stream. In response to comments from the Forest Service, the Permittee has committed to plant horsetail plugs about every two feet. Additional trees and shrubs would be planted farther away from the creek.

The seeding and planting mixes in the plan fulfill regulatory requirements for introduced species, diversity, seasonality, and the postmining land use. Three introduced species are included, and they are all highly desirable. They should not be overly competitive or displace native species in the area. Small burnet and yellow sweet clover are fairly short-lived species that will probably not be present after the ten-year extended responsibility period. The seed and planting mixes are expected to provide successful revegetation if proper reclamation methods are used.

The entire area of disturbance will be hydromulched with long fiber wood mulch. Tackifying agents will be added to the hydromulch, and the MRP shows tackifier MRP rates for varying slopes.

The Permittee and the Division investigated the use of various mulches, particularly for the steep north-facing hillside. There are many types of hydromulch available, and the Permittee

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intends to use one with coarse, long fibers. This type of mulch is preferred over a mat because mats often have erosion under them.

It is anticipated that mulch technology will change over the next several years until the site is reclaimed. The Permittee will need to use the best technology currently available to control erosion and sedimentation, particularly in the area near the stream.

No irrigation is anticipated. The Permittee commits to avoid using persistent pesticides and to prevent personnel-caused fires. However, a contingency irrigation plan is recommended for transplants. Dry conditions could necessitate watering transplants for the first one or two summers.

Musk thistle is a very serious problem at mid- to high elevations in Utah. Although this noxious weed is not widespread in Huntington Canyon, it has been found at the Crandall Canyon Mine. Disturbed and newly seeded areas are very prone to noxious weed invasion. The Permittee should plan now for noxious weed control during reclamation as it will almost certainly be necessary.

On January 1, 1994, the Forest Service issued a closure order for any straw or hay that is not certified to be free of noxious weeds. This includes transportation across Forest Service lands. The applicant is not planning to use straw or hay mulch in reclamation, but any straw or hay bales that are used for sediment control will need to be certified.

Revegetation: Standards For Success

A vegetation reference area has been established in the mountain shrub/grassland community above the mine portals for comparison with vegetation on reclaimed areas that had this community before mining. Another reference area has been established to compare to areas with spruce/fir/aspen communities. This reference area is south of the portal development area.

Woody plant density standards have been established for three areas of the mine. For areas to be compared with the mountain shrub/grassland reference area, the standard for woody species density has been set at 1336 shrubs per acre. This is based on reference area data. The standard for north-facing slopes has been set at 4000 per acre based on baseline information in the plan and consultation with Wildlife Resources. The riparian area has about 11,224 shrubs and trees per acre, and shrubs and trees will be planted in this area at the rate of about 3000 per acre. It is expected that these will multiply through the extended responsibility period, and the success standard has been set at 6000 per acre.

There are some differences between the disturbed and reference area spruce/fir/aspen communities, but they are primarily in species composition rather than the total amount of cover. The current reference area has 75.25% total living cover, and the disturbed area has 78.75%.

These values are not statistically different at the 90% confidence level. The proposed disturbed area has statistically more overstory than the reference area, but understory cover

values are statistically the same for both areas. Also, the woody species density is higher in the reference area.

Despite the differences between the proposed disturbed and reference areas, there are several similarities, including location, community type, soils, aspect, and total cover. The actual species present and the amount of cover from overstory vary, but these will vary even more significantly when comparing reclaimed and reference areas. Additionally, the woody plant density success standards are established in consultation with Wildlife Resources rather than being based strictly on baseline information in the plan. For these reasons, the reference area is considered an acceptable revegetation success standard for spruce/fir/aspen areas.

Portions of the north-facing slope have been affected by natural soil movement and have less vegetation than adjacent areas. The Division could accept a different revegetation success standard for these areas rather than comparing them to the spruce/fir/aspen reference area. However, the permittee has not included a separate standard in the MRP even though the report from the permittee's consultant discusses using another standard. A revegetation reference area was not proposed, and the number of samples taken in these areas is not sufficient to allow the baseline method to be used.

In order to meet the erosion control performance standards in the areas that have had soil movement, it will probably be necessary to establish nearly as much vegetation as in spruce/fir/aspen areas. The main question is whether establishing this much vegetation is feasible. The various revegetation and stabilization techniques that are planned should allow more vegetation to become established than currently exists. If, in the future, the permittee desires to propose a reference area revegetation success standard in a similar area, the Division could compare it to the area now proposed to be disturbed. If there is some possibility a different success standard may be proposed in the future, the areas with soil movement should be mapped now.

The approved MRP includes diversity standards for all disturbed areas. The standards currently in the plan are minimum and maximum relative cover values for grasses, shrubs, and broadleaf forbs in the three major disturbed vegetation types. In addition, the MRP states that no one species will make up more than 60% of the cover in its respective vegetation class except that individual species of shrubs and trees will make up no more than 80% of the density for this class. The approved MRP gives a monitoring schedule and methodologies for checking success of revegetation. In the disturbed spruce/fir/aspen areas, the standard will be 3-15% relative cover from broadleaf forbs, at least 15% cover from trees and shrubs, and the balance from grasses. This leaves a lot of latitude between grasses and woody plants since woody plants are expected to eventually dominate the area. Until then, grasses are expected to dominate the cover.

The riparian area should be dominated by woody species. The standard is 5-10% relative cover from broadleaf forbs, 40-85% relative cover from trees and shrubs, and 10-50% relative cover from grasses and grasslike plants.

RECLAMATION PLAN

For both riparian and spruce/fir/aspen areas, as in the other areas, no one species will make up more than 60% of the cover in its respective vegetation class except that individual species of trees and shrubs will make up no more than 80% of the density for this class.

The diversity standards for south-facing slopes are based on Natural Resource Conservation Service range site potential plant community data. For riparian areas and north-facing slopes, the standards are based on professional judgment by a soil scientist and botanist with the Forest Service and a Division biologist. The standards allow some flexibility but ensure a reasonably diverse plant community.

R645-301-353.140 requires that the vegetative cover be capable of stabilizing the soil surface from erosion. The permittee intends to use the Erosion Condition Classification System to compare reclaimed areas with adjacent undisturbed areas. This method was developed by the Office of Surface Mining, and, while it is a qualitative judgment, it provides a reasonably good estimate of how stable a site is. Even if vegetative cover is equal to that of the reference area, the reclaimed area may not be stable. R645-301-356.250 says that for areas previously disturbed by mining that were not reclaimed and that are remined or redisturbed, at a minimum, the vegetative ground cover will be not less than the ground cover existing before redisturbance and will be adequate to control erosion. The vegetative ground cover existing before redisturbance was 50.3%. Relatively little of this cover was from plants that would be considered weeds. This figure has been established as the vegetative cover standard for success for the areas previously disturbed by mining.

Findings:

The information provided adequately addresses the minimum requirements of the Reclamation Plan - Revegetation section of the regulations.

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT (CHIA)

Regulatory Reference: 30 CFR Sec. 784.14; R645-301-730.

Analysis:

The Division has updated the East Mountain CHIA to incorporate the expansion of the Crandall Canyon Mine into the South Crandall Canyon Lease Tract and the U-68082 Lease Addition area (March 28, 2005).

Findings:

The submittal contains sufficient hydrogeologic information for the Division to update the East Mountain CHIA.

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