



State of Utah  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

Michael O. Leavitt  
Governor

Kathleen Clarke  
Executive Director

Lowell P. Braxton  
Division Director

1594 West North Temple, Suite 1210

PO Box 145801

Salt Lake City, Utah 84114-5801

801-538-5340

801-359-3940 (Fax)

801-538-7223 (TDD)

March 23, 1999

Gary Gray, Resident Agent  
Genwal Resources, inc.  
P. O. Box 1420  
Huntington, Utah 84528

Re: Deficiencies in Incidental Boundary Change Application, Genwal Resources, Inc.,  
Crandall Canyon Mine, ACT/015/032-IBC98-1, Folder #3, Emery County, Utah.

Dear Mr. Gray:

The Division has completed a review of your response to deficiencies dated November 9, 1999. There are some areas that still need to be addressed concerning the groundwater wells. This Technical Analysis also includes comments by the Forest Service. Some deficiencies outlined in the TA do not particularly pertain to the IBC, but to the mine site and permit.

Mr. Darby discussed these issues with Jean Semborski, and she mentioned that they could be addressed along with the information needed for the IBC. A technical analysis is enclosed which identifies the issues that will need to be resolved. Please review it carefully and respond as necessary. If you have any questions please contact Mr. Darby at (801) 538-5241.

In order for us to keep this in our review loop we will expect a response by no later than April 30, 1999.

Sincerely,

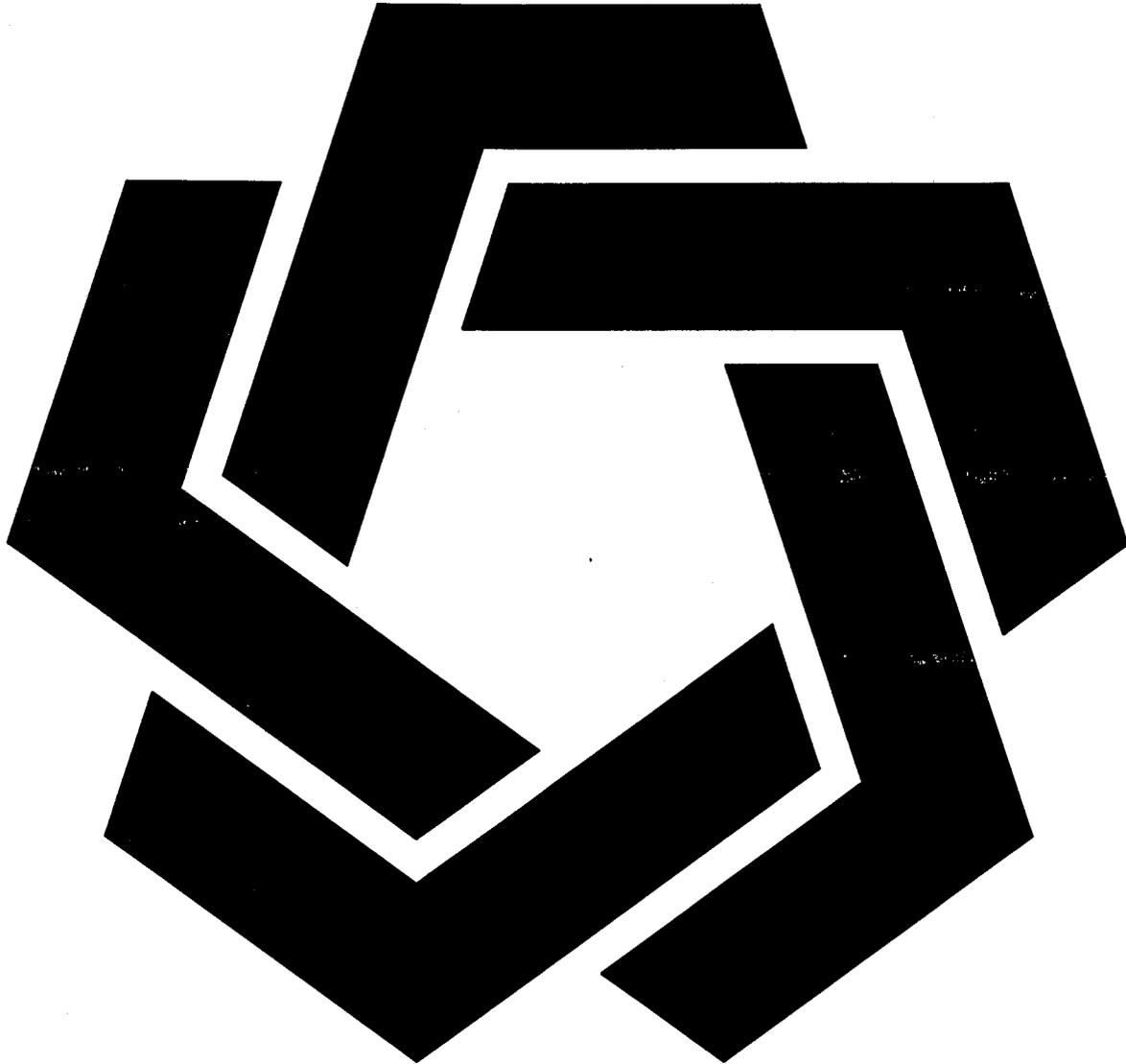
Daron R. Haddock  
Permit Supervisor

tam

cc: Steve Demczak  
Jean Semborski

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State of Utah  
Division of Oil, Gas and Mining  
Utah Coal Regulatory Program



Crandall Canyon Mine  
ACT/015/032  
444 Acre Incidental Boundary Change  
March 22, 1999

## INTRODUCTION

This Technical Analysis (TA) is written as part of the permit review process. It documents the Findings that the Division has made to date regarding the application for a permit and is the basis for permitting decisions with regard to the application. The TA is broken down into logical section headings which comprise the necessary components of an application. Each section is analyzed and specific findings are then provided which indicate whether or not the application is in compliance with the requirements.

Often the technical review of an application finds that the application contains some deficiencies. The deficiencies are discussed in the body of the TA and are identified by a regulatory reference which describes the minimum requirements. In this Technical Analysis we have summarized the deficiencies at the beginning of the document to aid in responding to them.

It may be that not every topic or regulatory requirement is discussed in this version of the TA. Generally only those sections are analyzed that pertain to a particular permitting action. TA's may have been completed previously and the revised information has not altered the original findings. Those sections that are not discussed in this document are generally considered to be in compliance.

## SUMMARY OF DEFICIENCIES

**R645-300-113.** In regard to requirements under R645-300-113 the U.S. Forest Service has supplied a list of concerns and deficiencies that need to be addressed by the applicant. A copy of the document received from the Manti-La Sal National Forest is enclosed.

**R645-301-114.** The applicant needs to provide right of entry information for the proposed incidental boundary change.

**R645-301-333.** Information provided in the proposal is not considered adequate to meet the requirements of this section of the regulations. Prior to final approval, the applicant must include a discussion of the stream modifications above the mine and of transplanting the fish back into Crandall Creek.

**R645-301-724.** With the latest submittal the applicant described, page 7-9, the existence of wells MW-6 and MW-6a drilled in the South Mains. Data have been collected and a report prepared by Mayo and Associates. This information should be incorporated in the MRP. Acceptance of this information could stand in lieu of the need to establish a monitoring well in the vicinity of the IBC, since the wells are located in the synclinal trough that dips toward down Little Bear Canyon. Maps well maps and water monitoring maps supporting this information should also be submitted.

## TECHNICAL ANALYSIS

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# ADMINISTRATIVE INFORMATION

## IDENTIFICATION OF INTERESTS

Regulatory Reference: R645-301-112

### Analysis:

Some changes have been made to the ownership and control section of the mining and reclamation plan. The applicant is Genwal Resources, Inc., which is jointly owned by Intermountain Power Agency (IPA) and Andalex Resources, Inc. The current plan says Genwal is owned by IPA and Genwal Resources. The amendment says the abandoned mine reclamation fee will be paid by Gary Gray representing Genwal Resources. There are a few changes to the officers and directors.

Land ownership information for the permit area, the proposed addition, and contiguous areas is in the text of the application and in Plate 1-1. In the future, the applicant intends to submit an amendment for the Mill Fork Lease Tract.

### Findings:

Information provided in the proposed amendment is considered adequate to meet the requirements of this section of the regulations.

## VIOLATION INFORMATION

Regulatory Reference: R645-301-113

### Analysis:

The application says neither the applicant nor any subsidiary, affiliate, or persons controlled by or under common control with the applicant has had a federal or state mining permit suspended or revoked in the last five years. They have not forfeited a mining bond or similar security deposited in lieu of bond. There are no unabated cessation orders or air and water quality violation notices received prior to the date of the application by any coal mining and reclamation operation owned or controlled by Genwal or by any person who owns or controls Genwal.

### Findings:

Information provided in the proposal is considered adequate to meet the requirements of this section of the regulations.

## TECHNICAL ANALYSIS

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### RIGHT OF ENTRY

Regulatory Reference: R645-301-114

**Analysis:**

The plan and application contain right of entry information for the current permit area. The application does not show right of entry for the Mill Fork Lease of which the current proposal is a part. Before the Division approves the application, Genwal will need to submit right of entry information for this area.

**Findings:**

Information provided in the proposal is not considered adequate to meet the requirements of this section of the regulations. Prior to final approval, the applicant must supply the following in accordance with:

**R645-301-114**, The applicant needs to provide right of entry information for the proposed incidental boundary change.

### UNSUITABILITY

Regulatory Reference: R645-301-115

**Analysis:**

According to the application, the IBC area was evaluated for unsuitability criteria in the Environmental Assessment for the Mill Fork Tract. None of the area that would be included in the lease was considered unsuitable for mining.

It appears there are no man-made features in the area, including roads, buildings, and gas wells. No threatened or endangered species or other wildlife or plant species of special interest are known to inhabit the area, and there is little likelihood of adversely affecting other species since the area will only be first-mined.

**Findings:**

Information provided in the application is considered adequate to meet the requirements of this section of the regulations.

**TECHNICAL ANALYSIS**

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**ENVIRONMENTAL RESOURCE INFORMATION**

**VEGETATION RESOURCE INFORMATION**

Regulatory Reference: R645-301-321

**Analysis:**

The applicant has updated Plate 3-2, the regional vegetation map. This map shows vegetation types of the entire permit area and the incidental boundary change area. In addition, the applicant has proposed to delete some maps from the current plan. The maps proposed to be deleted overlap, and the updated Plate 3-2 has consolidated information that will make the plan more concise.

The surface of most of the IBC area is a north-facing slope with a conifer vegetation community. Other communities in the area are sagebrush/grass and aspen/conifer.

**Findings:**

Information provided in the proposal is considered adequate to meet the requirements of this section of the regulations.

**FISH AND WILDLIFE INFORMATION**

Regulatory Reference: R645-301-322

**Analysis:**

The application includes a wildlife map, Plate 3-1. This map only shows moose habitat in the area. The text of the application says no raptor nests have been found in the proposed addition to the permit area. While the area may contain a few cliffs, it is not good habitat for any cliff-nesting raptors. Tree-nesting birds generally inhabit areas closer to streams although the area could contain some tree nests that have not been found.

There are no additional details needed for the application; the existing mining and reclamation plan contains the required wildlife information.

**Findings:**

Information provided in the application is considered adequate to meet the requirements of this section of the regulations.

## TECHNICAL ANALYSIS

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### HYDROLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-724.

#### Analysis:

##### **Sampling and analysis.**

The applicant identifies that 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.**

The applicant has conducted a survey of surface and ground waters in and adjacent to the IBC. Locations and ownership of surface water and ground water sources are presented in Appendix 7-51. The appendix is a report by Mayo and Associates that describe the recommended Water monitoring program. Monitoring has already begun on and adjacent to the IBC and will continue throughout mining operations.

##### **Ground-water information.**

The applicant has proposed a groundwater monitoring program for the IBC which incorporates four springs (Figure 1, Appendix 7-51) adjacent to the IBC the springs on the IBC discharge at low rates. The applicant also presents a comprehensive description of the groundwater monitoring program for the complete mine site in Chapter 7 revised November 1998. The ground water monitoring program will monitor and analyze water quality and flow from in-mine wells and springs.

An earlier deficiency summary identified that an in-mine groundwater monitoring well should be established in the vicinity of the IBC do to the proximal location of the mining activities to the synclinal trough that dips into Little Bear Canyon. Information was presented on Page 7-9 of the revised amendment which identified the existence of two wells in the South Mains of the mine. The existence of these wells can facilitate the collection of groundwater information necessary to define groundwater in the vicinity of the synclinal trough and Star Point Sandstone, however more information is needed about the wells and data collected from them.

##### **Surface-water information.**

The applicant proposes to measure flows of streams that collect runoff from the IBC, Figure 1, Appendix 7-51.

## TECHNICAL ANALYSIS

### **Baseline cumulative impact area information.**

The applicant has collected baseline information which is reported Table 1, Appendix 7-51. Other data has been supplied which reports on spring and stream flow on sites adjacent to the IBC.

### **Probable hydrologic consequences determination.**

The applicant provides a probable hydrologic consequences (PHC) determination in Appendix 7-15, Volume 4 of the MRP. The PHC describes possible impacts from the mine. Any impacts from mining the IBC would likely be noticed as a change in surface flow from the area or to Little Bear Spring. With the interest of protecting flow to Little Bear Spring, the applicant has identified the potential for interception of groundwater or surface water due to subsidence which may affect shallow overlying groundwater systems.

The applicant contends that mine development is not intercepting regionally continuous aquifers, rather, the mine is dewatering localized pockets of water. The applicant, using tritium dating techniques, has analyzed the age of water emanating from Little Bear Spring at less than 50 years. The high rate of fluctuation of the spring indicates that flow comes from younger recharge source near the surface.

The applicant describes plans to monitor surface flows to detect changes in flow patterns.

A groundwater survey was conducted by Hydro Geoscience Inc. during the autumn of 1998. They identified two sources of groundwater recharging the spring. Approximately 60 to 70 percent of the flow is derived from a fault that trends N. 57° E., whereas 30 to 40 percent comes from an undefined source that flows S. 26° E..

One theory for partial recharge to Little Bear Spring is that groundwater flows down the synclinal trough via the Star Point Sandstone. For this reason, the applicant was asked to install an in-mine monitoring well in the vicinity of the IBC that could detect groundwater parameters.

### **Findings:**

With the latest submittal, the applicant described, page 7-9, the existence of wells MW-6 and MW-6a that were drilled in the South Mains which could supply the necessary groundwater information. Data have been collected and a report prepared by Mayo and Associates. This information should be incorporated in the MRP. Acceptance of this information could stand in lieu of the need to establish a monitoring well in the vicinity of the IBC, since the wells are located in the synclinal trough that dips toward down Little Bear Canyon. Maps well maps and water monitoring maps supporting this information should also be submitted.

## TECHNICAL ANALYSIS

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### MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

#### Analysis:

##### **Affected Area Boundary Maps**

The applicant submitted Map 1-1 depicting the extent of the IBC.

##### **Coal Resource and Geologic Information Maps**

The applicant has submitted a complete set of maps depicting the geologic setting and processes. The geologic maps are provided in Chapter 6 of the MRP.

##### **Existing Surface Configuration Maps**

Topographic features are identified in several maps, however Map 7-12 identifies all springs and streams on and adjacent to the IBC.

##### **Mine Workings Maps**

A mine workings map (Plate 5-2) in the MRP illustrates where mining will take place under the IBC. Entries will be developed southward via new portals on the south side of Crandall Canyon. The entries will then turn west across the IBC to connect to the South Mains which will provide access to coal reserves in State Lease of the existing permit. Rock slopes will branch off of the mains to access the Blind Canyon Seam.

##### **Monitoring Sampling Location Maps**

Water sampling sites for springs and streams are identified on Figure 1 in the IBC submittal. On page 7-9 the applicant anticipates adding an additional in-mine water monitoring well. The location of the anticipated in-mine well is not depicted on any map.

##### **Permit Area Boundary Maps**

The permit boundary is identified on several maps in the MRP. Plate 1-1 shows the boundaries of state, private and federal leases. The area and boundary is also shown.

##### **Surface and Subsurface Ownership Maps**

Plates 7-14 and 7-15 Identify the water rights in and adjacent to the IBC

## TECHNICAL ANALYSIS

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### **Subsurface Water Resource Maps**

Plate 7-13 illustrates the potentiometric surface of the Spring Canyon Member of the Star Point Formation, thought to be one of the potential recharge sources to Little Bear Spring.

### **Surface Water Resource Maps**

Plate 7-12 portrays the location and elevation of springs and streams in and adjacent to the IBC.

### **Well Maps**

Map 4-3 indicates that no oil or gas wells exist on the IBC or on any of the Crandall Canyon Mine property.

### **Contour Maps**

Several Maps illustrate the contour of the IBC and adjacent properties. The hydrologic resource map (Plate 7-12) identifies the surface water resources in relation to topographic features.

### **Findings:**

The applicant should update the MRP with information and data pertaining to MW-6 and MW-6a .

## **OPERATION PLAN**

### **PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES**

Regulatory Reference: R645-301-333

### **Analysis:**

Since the proposal is for first mining only, there should be no subsidence that would affect any wildlife. Even if subsidence did occur, there are no known raptors or other species of high interest that would be affected.

The Forest Service commented that the information concerning the mitigation that was done for Colorado cutthroat trout needs to be included in the plan. The plan should discuss the mitigation work that was actually done, such as the stream improvements above the mine and transplanting fish into that section of stream.

## TECHNICAL ANALYSIS

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### Findings:

Information provided in the proposal is not considered adequate to meet the requirements of this section of the regulations. Prior to final approval, the applicant must supply the following in accordance with:

**R645-301-333**, Information concerning mitigation for the culvert installation should be updated to show what work was actually performed. This needs to include a discussion of the stream modifications above the mine and of transplanting the fish back into Crandall Creek.

### MINING OPERATIONS AND FACILITIES

Regulatory Reference: 30 CFR Sec. 784.2, 784.11; R645-301-231, -301-526, -301-528.

#### Analysis:

##### General

The hydrologic operational plan begins on page 7-26 of Chapter 7. A general description of the geology is presented in Chapter 6. The Blackhawk Formation is the principal coal bearing unit on the mine plan area.

##### Type and Method of Mining Operations

The applicant plans to conduct mining activity within the IBC is shown as single development of entries from the portals to longwall mining operations in federal leases west of the IBC.

##### Facilities and Structures

No structures are located on the surface above or immediately adjacent to the IBC.

#### Findings:

The applicant has provided information for this section.

### EXISTING STRUCTURES:

#### Analysis:

Regulatory Reference: 30 CFR Sec. 784.12; R645-301-526.

## TECHNICAL ANALYSIS

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Most of the structures associated with the mine are located in Crandall Canyon. The IBC surface covers most of the ridge, which are U.S. Forest Service lands. No structures exist on the surface of the IBC.

### **Findings:**

The applicant complies with this section.

### **COAL RECOVERY**

Most of the mining will take place in the Hiawatha coal seam, however the applicant has proposed to develop ramps to gain access to the Blind Canyon seam where drilling shows sufficient reserves. Coal recovery is addressed on Page 5-8.

### **SUBSIDENCE CONTROL PLAN**

The applicant comments on page 5-10 that mining in the IBC will be limited to first mining only.

### **HYDROLOGIC INFORMATION**

#### **Ground-water monitoring.**

The applicant describes the regional groundwater system beginning on page 7-3 and 7-27. The plan describes the relationship of groundwater to the geologic formations. Earlier geologic reports determined that most groundwater in the region is derived from snowmelt. Seep and spring inventories have been conducted over and adjacent to the IBC. Only four small springs were identified on the IBC, whereas several springs are identified on areas adjacent to the IBC.

#### **Surface-water monitoring.**

The applicant has submitted a surface water monitoring plan which will continue throughout the operational phase and into the reclamation phase. A plan to monitor springs, considered groundwater sources, has been submitted will be conducted over the minesite and adjacent areas. Because of low yields of springs on the IBC, the applicant will monitor surface water sources which include intermittent and perennial streams that flow from the IBC. Baseline information has already been presented.

#### **Acid and toxic-forming materials.**

Acid and toxic information is presented on page 7-38. Samples indicate that no acid/toxic forming minerals are present.

## TECHNICAL ANALYSIS

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### **Transfer of wells.**

Wells will be sealed.

### **Discharges into an underground mine.**

Applicant intends to seek approval from the regulatory authority prior to and discharges into underground workings.

### **Gravity discharges.**

The applicant anticipates no gravity discharges due to the dip of the coal seam.

### **Water quality standards and effluent limitations.**

The applicant proposes

### **Diversions.**

There will be no diversions on the IBC.

### **Impoundments.**

There will be no impoundments on the IBC.

### **Casing and sealing of wells.**

The applicant will seal all wells in accordance with regulatory requirements.

### **Findings:**

The applicant has submitted information to define the baseline characteristics and potential of mining impacts. The applicant should submit the requested information as outlined under Resource Information

### **Recommendations**

The applicant should submit information describing the in-mine monitoring wells and present applicable maps to be included into the MRP.