OLENE S. WALKER
Governor

GAYLE F. McKEACHNIE
Lieutenant Governor

March 9, 2004

Gary Gray, Resident Agent
Genwal Resources, Inc.
P.O. Box 1077
Price, Utah 84501

Re: South Crandall Lease Revision, Genwal Resources, Inc., Crandall Canyon Mine, C/015/0032, Task ID# 1826, Outgoing File

Dear Mr. Gray:

The above-referenced significant revision has been reviewed. There are deficiencies that must be adequately addressed prior to approval. A copy of our Technical Analysis is enclosed for your information. In order for us to continue to process your application, please respond to these deficiencies by April 16, 2004.

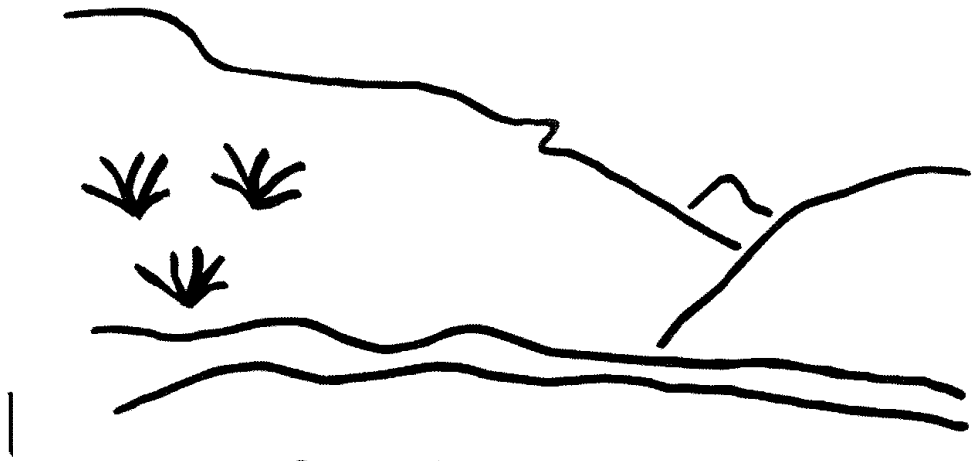
If you have any questions, please call me at (801) 538-5325 or Joe Helfrich at (801) 538-5290.

Sincerely,

Daron R. Haddock
Permit Supervisor

an
Enclosure
cc: Price Field Office
O:\015032.CRA\FINAL\DEF1826.DOC

State of Utah



Utah Oil Gas and Mining

Coal Regulatory Program

Crandall Canyon
South Crandall Lease Revision
C/015/0032, Task ID #1698
Technical Analysis
March 4, 2004

TABLE OF CONTENTS

TECHNICAL ANALYSIS

The Division ensures compliance with the Surface Mining Control and Reclamation Act of 1977(SMCRA). When mines submit a Permit Application Package or an amendment to their Mining and Reclamation Plan, the Division reviews the proposal for conformance to the R645-Coal Mining Rules. This Technical Analysis is such a review. Regardless of these analyses, the permittee must comply with the minimum regulatory requirements as established by SMCRA.

Readers of this document must be aware that the regulatory requirements are included by reference. A complete and current copy of these regulations and a copy of the Technical Analysis and Findings Review Guide can be found at http://ogm.utah.gov/coal

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 first 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. Once all of the deficiencies have been adequately addressed, the TA will be considered final for the permitting action.

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.

INTRODUCTION

On September 16, 2003 the Division received an application from Genwal resources Inc. to modify their mining and reclamation plan to include the new South Crandall Federal Lease (UTU-78953). On December 2, 2003 the Division sent the Technical Analysis document to the applicant as represented by Mr. Gary Gray. The Division received a response to the deficiencies enumerated in the Technical Analysis document on January 30, 2004. The lease encompasses 880 acres and is located on the Rilda Canyon 7.5 minute quadrangle map in The Manti-La Sal National Forest. There is no surface disturbance associated with this lease acquisition. The applicant is currently developing portals adjacent to the existing surface facilities in order to gain access to the coal lease.

The South Crandall Canyon area was reevaluated and was leased to Andalex in June 2003 (lease UTU-78953). Access to the South Crandall Canyon Tract will be through new portals (under construction in 2003) on the south side of Crandall Canyon in fee coal (often referred to as the "Dellenbach" lease) owned by IPA and Andalex.

Little Bear Spring in Little Bear Canyon, located adjacent to the South Crandall Canyon Tract, is an important source of water for the Castle Valley Special Services District (CVSSD), supplying 65 percent of the culinary water to the residents of Huntington, Cleveland, and Elmo. It is probably the largest and most consistently flowing spring in the region, and the only water-treatment required before use is chlorination. CVSSD has great concerns about protecting this important water supply from mining related damage. The South Crandall Canyon Coal Lease Tract was deleted from the Mill Fork Tract because of concerns that were raised regarding Little Bear Spring.

INTRODUCTION

SUMMARY OF DEFICIENCIES

The Technical analysis of the proposed permit changes cannot be completed at this time. Additional information is requested of the permittee to address deficiencies in the proposal. A summary of deficiencies is provided below. Additional comments and concerns may also be found within the analysis and findings made in this Draft Technical Analysis. Upon finalization of this review, any deficiencies will be evaluated for compliance with the regulatory requirements. Such deficiencies may be conditioned to the requirements of the permit issued by the division, result in denial of the proposed permit changes, or may result in other executive or enforcement action and deemed necessary by the Division at that time to achieve compliance with the Utah Coal Regulatory Program.

Accordingly, the permittee must address those deficiencies as found within this Draft Technical Analysis and provide the following, prior to approval, in accordance with the requirements of:

Regulations

R645-301-112; Page 1-7 of the approved MRP (not submitted) needs to be updated. The statement on this page "IPA is currently engaged in the reclamation of the Horse Canyon Mine, under permit ACT/007/013, located in Emery County, Utah…" needs to be modified or removed. IPA is no longer associated with the Horse Canyon Mine. 7

R645-301-121.220, The Permittee needs to correct the title page of Appendix 6-6 so that it refers to the drillers log for HC-4 rather than DH-4. 21

R645-301-121.220, The Permittee still needs to clarify the first and last paragraphs on page 6-5 and the first paragraph on page 6-6. They indicate that the Blind Canyon Seam is not sufficiently thick for economic recovery and will not be mined in the South Crandall Canyon Tract: these paragraphs are confusing and directly contradictory of other statements on the same pages. Reference is made to Plate 5-2, but not 5-2 (H) and 5-2 (BC). Statements are made that were true without the South Crandall Canyon Tract but are not representative of the proposed mining plan..... 21

R645-301-121.220, In the paragraph about drill hole and geological information for the South Crandall Canyon Tract that was added to page 6-5, the Permittee needs to refer to borehole HC-4 rather than DH-4. 21

R645-301-121.220, The Permittee needs to include the South Crandall Canyon Tract in the information on Test Borings and Coal Sampling (section 6.22.1) on page 6-4. Include a discussion of the minability of Blind Canyon Seam in the South Crandall Canyon Tract, and

GENERAL CONTENTS

IDENTIFICATION OF INTERESTS

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

Analysis:

Page 1-7 of the approved MRP (not submitted in Task #1698) was identified in the deficiencies of Task #1698. There is a statement on this page, "IPA is currently engaged in the reclamation of the Horse Canyon Mine, under permit ACT/007/013, located in Emery County, Utah…" that is incorrect. Removal of this statement was requested in Task # 1698, since IPA no longer has connections or ties to the Horse Canyon Mine. Task # 1826 does not address this deficiency.

All other deficiencies identified in Task # 1698 for the administrative section have been addressed by Task #1826.

Findings:

R645-301-112; Page 1-7 of the approved MRP (not submitted) needs to be updated. The statement on this page "IPA is currently engaged in the reclamation of the Horse Canyon Mine, under permit ACT/007/013, located in Emery County, Utah…" needs to be modified or removed. IPA is no longer associated with the Horse Canyon Mine.

VIOLATION INFORMATION

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

Analysis:

Pages 1-8 and 1-9 contain a statement on violation information. This paragraph has been updated to give current information for the three (3) previous years from the time of the application. Appendix 1-11 (list of violations) is referred to under the violation section in the MRP. Appendix 1-11 has been updated and submitted as part of the application.

Findings:

The information provided is adequate to meet the requirements of this section of the regulations.

RIGHT OF ENTRY

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

Analysis:

Page 1-9 and 1-12 were submitted as part of the application package. Page 1-9 identifies the lease and the date it was acquired. Appendix 1-13 is new and contains a copy of the lease agreement for Federal Coal Lease UTU-78953. Page 1-2 contains a legal description of the lease, which correlates with the area identified on Plate 1-1.

Pages 1-10 and 1-11 have been included as part of the application. Information on these pages provides a description of the permit area. This description has been revised to include the new lease.

Findings:

The information provided is adequate to meet the requirements of this 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:

Page 1-12 was submitted as part of the application package. Page 1-9 identifies the lease and the date it was acquired. Page 1-12 contains a legal description of the lease, which correlates with the area identified on Plate 1-1.

Pages 1-10 and 1-11 have been included as part of the application. Information on these pages provides a description of the permit area. This description has been revised to include the new lease. A copy of the notice of publication also needs to be included in the application.

Findings:

The information provided is adequate to meet the requirements of this section of the regulations.

PERMIT TERM

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

Analysis:

The permit term will not have an affect on the addition of the South Crandall lease.

Findings:

The permit term as stated in the current MRP is for five years and meets the requirements of this 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 application includes the publication that has been advertised in the newspaper once a week for four consecutive weeks. Proof of publication has been filed with the Division.

Findings:

The information provided meets the requirements of this section of the regulations.

FILING FEE

Regulatory Reference: 30 CFR 777.17; R645-301-118.

Analysis:

A filing fee is not required for the South lease addition application.

Findings:

The information provided in the current MRP is adequate to meet the requirements of this section of the regulations.

PERMIT APPLICATION FORMAT AND CONTENTS

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

Analysis:

The C1 and C2 forms for the application were notarized with the submission of the application. Page 1-16 of the approved MRP have been updated and included in the application.

Findings:

The information provided in the application is adequate to meet the requirements of this section of the regulations.

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 Permittee states the legal description and acreage for the South Crandall lease (UTU-78953 in Chapter 1 and/or 5 of the MRP.

The total acreage for the mine as well as the number of federal and state acres is given in Chapter 1. In addition, the disturbed area acreages are listed in Chapter 1.

Findings:

The information in the amendment is considered adequate to meet the minimum requirements of this section of the regulations.

CLIMATOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.18; R645-301-724.

Analysis:

The existing climatological information presented in the Crandall Canyon Mine M&RP is also representative of the South Crandall Lease Area. Average seasonal precipitation, average direction of prevailing winds, and seasonal temperature ranges are all presented in Section 7.24.4 Climatological Information.

Findings:

The information reported meets the minimum climatological requirements 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 this amendment include pages 3-vi, 3-1, 3-7 through 3-9. Additional appendices include 3-16 and 3-17. 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 application 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 2003 listing for Emery County. They include,

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

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

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

- Pinnate spring-parsley *Cymopterus beckii*
- 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 application has been updated to include these current listings. They are provided for in the second addendum to appendix 3-3.

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 application 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 plan 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 the new lease addition, (UTU78953) include appendixes 3-16 and a reference to 3-17, and plates 3-1, 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 has been completed for the new lease addition and is included as appendix 3-16.

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. The proposed lease application contains mostly summer range for deer and elk with some moose winter range along the north lease boundary. The proposed addition to the permit area includes 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 raptor survey is included as appendix 3-16 for the new lease area. The survey indicates that there are no active nests within ½ mile of the Lease 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.

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 application 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]	*Gila elegans*	E
Colorado Pikeminnow[4,10]	*Ptychocheilus lucius*	E
Humpback Chub[4,10]	*Gila cypha*	E
Razorback Sucker[4,10]	*Xyrauchen texanus*	E
Bald Eagle[1]	*Haliaeetus leucocephalus*	T
Mexican Spotted Owl[1,4]	*Strix occidentalis lucida*	T
Western Yellow-billed Cuckoo	*Coccyzus americanus occidentalis*	C
Black-footed Ferret[6]	*Mustela nigripes*	E
Southwestern Willow Flycatcher	*Empidonax traillii extimus*	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 application, there is also a potential to affect the threatened and endangered fish of the upper Colorado River basin through surface water depletion.

The application includes an updated list of the current T&E species for the South lease addition as a second addendum to Appendix 3-3 and update to page 3-8 section 3.22.21. The appendix 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. The new lease acquisition would not 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 application. 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 meet the requirements of this section of the regulations.

SOILS RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.21; 30 CFR 817.22; 30 CFR 817.200(c); 30 CFR 823; R645-301-220; R645-301-411.

Analysis:

Since there is no surface disturbance associated with the acquisition of the South Crandall lease there is no additional soils resource information included in the application.

Findings:

The information provided for in the approved MRP regarding soils resource information is adequate to meet the requirements if this section of the regulations.

LAND-USE RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.22; R645-301-411.

Analysis:

The application indicates that a letter from SHPO showing no significant resources exist in the South Crandall Tract is contained in Appendix 4-9. Appendix 4-9 did not contain the letter from SHPO when it was submitted as part of this application. The letter from SHPO is to be sent directly to the Division. The Division received a letter from SHPO on October 28, 2003. This letter indicated that no significant resources exist in the proposed lease area.

Findings:

Information contained in this portion of the application meets the requirements set forth in the regulations. No further information is needed. The permittee needs to assure that a copy of the letter is contained in the approved MRP.

ALLUVIAL VALLEY FLOORS

Regulatory Reference: 30 CFR 785.19; 30 CFR 822; R645-302-320.

Analysis:

Alluvial Valley Floor Determination

Since there is no surface disturbance associated with the acquisition of the South Crandall lease it is not necessary to perform a technical analysis if this section of the regulations.

Applicability of Statutory Exclusions

Since there is no surface disturbance associated with the acquisition of the South Crandall lease it is not necessary to perform a technical analysis if this section of the regulations.

Findings:

The information provided for in the approved MRP regarding AVF determinations and Statutory Exclusions is adequate to meet the requirements if this section of the regulations.

PRIME FARMLAND

Regulatory Reference: 30 CFR 785.16, 823; R645-301-221, -302-270.

Analysis:

Since there is no surface disturbance associated with the acquisition of the South Crandall lease it is not necessary to perform a technical analysis of this section of the regulations.

Findings:

The information provided for in the approved MRP regarding Prime Farmland determinations is adequate to meet the requirements if this section of the regulations.

GEOLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR 784.22; R645-301-623, -301-724.

Analysis:

There is geologic information for the permit and adjacent areas in the current MRP; however, geologic information for the South Crandall Canyon Tract is not sufficient to meet the requirements of the Coal Mining Rules or for the Division to update the CHIA. Some of this needed information may be in the appendices that were submitted as part of the amendment, but the MRP needs to incorporate or clearly reference information that addresses the requirements of the Coal Mining Rules. All geologic maps need to be updated to include the South Crandall Canyon Tract.

The lowest coal seam in the Blackhawk Formation is the Hiawatha, characteristically lying 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 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 current permit area of the Crandall Canyon Mine, located mainly north and west of the mine pad, but thickness information for the South Crandall Canyon has not been submitted to the Division.

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 Blind Canyon Seam is too thin for economic recovery in the current permit area of the Crandall Canyon Mine, but this seam will be mined in the South Crandall Canyon Tract For the Blind Canyon Seam in the South Crandall Canyon tract, thickness of the coal seam and cover are shown on Plate 5-2 (H), along with the Hiawatha to Blind Canyon interburden thickness. Plate 5-2 (BC) shows that the seam is just under 5 feet thick at HC-4 but probably 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 either the Crandall Canyon #1 Mine or South Crandall Canyon Tract. Plate 6-5 is the Bear Canyon Seam thickness isopach map for the #1 Mine area. Borehole HC-4 provides the only information on the Bear Canyon Seam in the South Crandall Canyon tract (Appendix 6-6). On page 6-5, the Bear Canyon Seam

thickness is stated to be 2 feet at the South Crandall Canyon Tract: borehole DH-4, rather than HC-4, is identified as the source of this information.

Information on Test Borings and Coal Sampling (section 6.22.1, page 6-4) discusses only the Crandall Canyon #1 Mine area, does not mention the South Crandall Canyon Tract, and only mentions the Blind Canyon Seam to say it is not mineable. There is no reference made to Plates 5-2 (H) and 5-2 (BC) for information on thickness and extent of the coal seams.

The first and last paragraphs on page 6-5 and the first paragraph on page 6-6 are still contradictory and confusing, indicating the Blind Canyon Seam is not sufficiently thick for economic recovery and will not be mined in the South Crandall Canyon Tract. Reference is made to Plate 5-2, but not 5-2 (H) and 5-2 (BC).

Drill-hole locations for the South Crandall Canyon Tract are shown on Plates 5-2 (BC) and 5-2 (H).

Acid- and toxic-forming materials

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.

Engineering properties of strata above and below the Blind Canyon Seam have not been evaluated in the current MRP or the proposed amendment. The lithology log of HC-4 in Appendix 6-6 shows claystone and shale immediately above and below the Blind Canyon Seam. Mining will be done by both longwall and standard room-and-pillar methods. Also, 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. The Permittee needs to provide data on the thickness and engineering properties of clays or soft rock in the roof and floor of the Blind Canyon Seam in the South Crandall Canyon Tract, particularly for areas where coal recovery will be by standard room and pillar mining operations.

Geologic information pertaining to hydrology (Little Bear Spring in particular)

Little Bear Spring is located adjacent to the South Crandall Canyon Tract, and 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:

Geologic Resource Information is not sufficient to meet the requirements of the Coal Mining Rules. Before the proposed amendment can be approved, the Permittee needs to provide the following information:

R645-301-121.220, In the paragraph about drill hole and geological information for the South Crandall Canyon Tract that was added to page 6-5, the Permittee needs to refer to borehole HC-4 rather than DH-4.

R645-301-121.220, The Permittee needs to correct the title page of Appendix 6-6 so that it refers to the drillers log for HC-4 rather than DH-4.

R645-301-121.220, The Permittee needs to include the South Crandall Canyon Tract in the information on Test Borings and Coal Sampling (section 6.22.1) on page 6-4. Include a discussion of the minability of Blind Canyon Seam in the South Crandall Canyon Tract, and borehole HC-4 and Plates 5-2 (H) and 5-2 (BC) for information on thickness and extent of the coal seams.

R645-301-121.220, The Permittee still needs to clarify the first and last paragraphs on page 6-5 and the first paragraph on page 6-6. They indicate that the Blind Canyon Seam is not sufficiently thick for economic recovery and will not be mined in the South Crandall Canyon Tract: these paragraphs are confusing and directly contradictory of other statements on the same pages. Reference is made to Plate 5-2, but not 5-2 (H) and 5-2 (BC). Statements are made that were true without the South Crandall Canyon Tract but are not representative of the proposed mining plan.

R645-301-624.340, the Permittee needs to include a discussion of engineering properties of roof and floor rock for the Blind Canyon Seam in the South Crandall Canyon Tract.

HYDROLOGIC RESOURCE INFORMATION

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

Analysis:

Sampling and Analysis

The permittee has added four spring and six stream water monitoring locations to their existing water monitoring program. As stated in Section 7.2 Sampling and Analysis of the mines existing M&RP, "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 South Crandall Lease Area has been added to Section 7.24.1 Groundwater Information and Section 7.24.2 Surface Water Information. Geologic characteristics of the lease area have also been included in Chapter 6. Baseline information of the premining groundwater and surface water features within and adjacent to the lease area is included as Appendix 7-58 Summary of Hydrologic Baseline Information, South Crandall Lease Area. 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 Canyon 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 to be included in the Genwal water monitoring program for the South Crandall Lease Area.

Supplemental hydrologic information has been added as Appendices 7-52 through 57, and 7-59 through 62 to address the complex hydrogeology of Little Bear Spring. Little Bear Spring is an important municipal water source and is located approximately 1,000 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 and their relation to Little Bear Spring, and the potential source of water for the spring. The studies indicate that Little Bear Spring is recharged primarily through surface water and alluvial groundwater losses in Mill Fork Canyon.

The listing of water rights in and adjacent to the permit boundary, as obtained from the Utah Division of Water Rights, has been updated on the groundwater and surface water rights maps (Plates 7-14 and 7-15, respectively), and the tabulated listing of surface water rights (Table 7-6). Appendix 7-1, Water Rights Information, needs to be updated to reflect the changes in the water rights information presented in the maps and table.

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 tests, 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 the hydrologic, geologic, baseline, and supplemental information provided for the South Crandall Lease Area. 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 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 because the coal seams proposed for mining are stratigraphically above the Star Point Formation.

Groundwater Monitoring Plan

The existing groundwater monitoring plan has been updated to include the monitoring of four springs 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 1,000 feet outside of the lease area; site LB-2 that discharges from the Castlegate Sandstone at the south end of the lease area; site LB-5A that discharges from a sandstone channel in the Blackhawk Formation overlying mining operations at the south end of the lease area; 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 M&RP.

Surface-Water Monitoring Plan

The existing 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 intermittent Little Bear Canyon Creek, 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). Little Bear Canyon Creek and Section 4 Creeks 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, and 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 in Table 7-10 of the M&RP.

Findings:

Hydrologic Resource Information is not sufficient to meet the requirements of the Coal Mining Rules. Before the proposed amendment can be approved, the Permittee needs to provide the following information:

R645-301-724.100, the Permittee needs to obtain current groundwater rights information in and adjacent to the permit boundary from the Utah Division of Water Rights to update Appendix 7-1.

R645-301-724.200, the Permittee needs to obtain current surface water rights information in and adjacent to the permit boundary from the Utah Division of Water Rights to update Appendix 7-1.

Baseline Cumulative Impact Area Information

The Division needs to update the East Mountain CHIA to incorporate the expansion of the Crandall Canyon Mine into the South Crandall Canyon Lease Tract. Additional geologic and hydrologic information, as described in Findings of other sections of this document, are needed before the Division can complete this update. Hydrogeologic information provided by the amendment is adequate for the Division to complete this update.

Findings:

Baseline cumulative impact information is not sufficient to meet the requirements of the Coal Mining Rules. Before the proposed amendment can be approved, the Permittee needs to provide the following information:

R645-301-725.100, the Permittee needs to provide geologic and hydrologic information as described in the Findings of other sections.

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

From conversations with the Permittee, they do not plan to expand mining operations outside of the proposed permit boundary. Therefore, the permit area is the same as the affected area. The permit boundary is shown on several maps including Plate 1-1. Maps showing the geologic characteristics of the permit and adjacent areas have been amended or augmented to include the boundary for the South Crandall Canyon Tract.

Archeological Site Maps

The archeological site map provided for in appendix 4-1A of the MRP does not include the South Crandall lease addition. The application indicates that a letter from SHPO showing that no significant resources exist in the South Crandall Tract is contained in Appendix 4-9. The application needs to include the information provided to the SHPO in order to make that determination.

Coal Resource and Geologic Information Maps

Subsidence projections for the South Crandall Canyon Tract are on Plates 5-2 (H) and 5-2 (BC).

The Hiawatha Seam thickness isopach (Plate 6-3), the Blind Canyon Seam thickness isopach (Plate 6-4), and Bear Canyon Seam thickness isopach (Plate 6-5), Hiawatha Seam overburden thickness isopach (Plate 6-6), and structure contour map of the top of the Hiawatha Seam (Plate 6-7) need to be expanded to include the South Crandall Canyon Tract and adjacent areas. Hiawatha and Blind Canyon Seam thickness isopachs for the South Crandall Canyon Tract are on Plates 5-2 (H) and 5-2 (BC), and information on interburden is also listed on these maps. The Bear Canyon Seam is 2 feet thick at borehole HC-4 (page 6-5 and Appendix 6-6),

which is the only information on the Bear Canyon Seam in or adjacent to the South Crandall Canyon tract.

Overburden thickness is shown on Plates 5-2 (H) and 5-2 (BC). Taking into consideration the inherent inaccuracy in the large contour interval needed to map the overburden thickness because of the steep topography, the difference between the Hiawatha and Bear Canyon overburden thicknesses is not significant. Similarly, a structure map of the Blind Canyon Seam is not needed.

Cultural Resource Maps

The cultural resource map provided for in appendix 4-1A of the MRP does not include the South Crandall lease addition. The application indicates that a letter from SHPO showing that no significant resources exist in the South Crandall Tract is contained in Appendix 4-9. The application needs to include the information provided to the SHPO in order to make that determination.

Existing Structures and Facilities Maps

The Permittee did not 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 existing surface configuration is shown on several maps including Plate 1-1, Crandall Canyon Mine Lease Map.

Mine Workings Maps

In conversations with the Permittee, they told the Division that no mine works exist within the South Crandall lease. The Permittee has shown the location of the projected mine workings for the South Crandall lease on Plate 5-2H and Plate 5-2 BC.

Monitoring and Sampling Location 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 are shown on this plate as well as in Appendix 7-58. In addition, Plate 7-12 shows the locations of the spring monitoring sites as identified in Section 7.31.21, Groundwater Monitoring Plan, and Table 7-10. However, Little Bear Spring is not identified as a monitoring site on Plate 7-12. Surface and groundwater monitoring locations for the South Crandall Lease Area are shown on

an updated map in Plate 7-18. Maps need to show the locations of test borings in the South Crandall Canyon Tract. Drill-hole locations are shown on Plates 5-2 (BC) and 5-2 (H).

Permit Area Boundary Maps

The permit boundary is shown on Plate 1-1, Crandall Canyon Mine Lease Map.

Subsurface Water Resource Maps

Plate 7-13, Potentiometric Surface of Spring Canyon Member, Star Point Sandstone, is referenced in Section 7.24.1, Groundwater Information, Effects of Mining Operation on Groundwater, of the existing and revised M&RP. The plate should not be removed from the M&RP, nor does it need to be updated to include the South Crandall Lease Area, as stated in the Division's first Technical Analysis, dated December 2, 2003 (Task ID #1698). No subsurface water resource map is included for the South Crandall Lease Area.

Plate 7-14, Groundwater Rights, has been updated to include the South Crandall Lease Area and adjacent areas.

Surface Water Resource Maps

Plate 7-15, Surface Water Rights, has been updated to include the South Crandall Lease Area and adjacent areas.

Plate 7-16, Stream and Monitoring Stations, is referenced in Section 7.24.1, Groundwater Information, Mine Plan Area Surface Hydrology, of the existing and revised M&RP. The plate should not be removed from the M&RP, nor does it need to be updated to include the South Crandall Lease Area, as stated in the Division's first Technical Analysis, dated December 2, 2003 (Task ID #1698).

Surface and Subsurface Manmade Features Maps

With the exception of a trail no surface or subsurface manmade features are shown on any maps of the South Crandall lease.

Surface and Subsurface Ownership Maps

Surface and subsurface ownership maps are provided for on plates 4-4 and 1-1 respectively.

Surface Water Resource Maps

Surface and groundwater monitoring locations and surface water resources for the South Crandall Lease Area are shown on an updated map in Plate 7-18.

Vegetation Reference Area Maps

The vegetation reference area maps will not be affected by the addition of the South Crandall lease; they are provided for on plate 3-2.

Well Maps

No water monitoring wells are proposed for the South Crandall Lease Area.

Findings:

Maps, plans, and cross sections of resource information are not sufficient to meet the requirements of the Coal Mining Rules. Before the proposed amendment can be approved, the Permittee needs to provide the following information:

R645-301-722.300, the Permittee needs to provide an update to Plate 7-12 showing Little Bear Spring as a spring monitoring site.

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OPERATION PLAN

MINING OPERATIONS AND FACILITIES

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

Analysis:

The Permittee does not propose to build any new surface structures or facilities related to the development of the South Crandall lease.

Findings:

The information provided in the approved MRP is considered adequate to meet the minimum requirements of the regulations.

EXISTING STRUCTURES:

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

Analysis:

The Permittee needs to state if there are any existing structures within the South Crandall lease.

Findings:

The information in the South Crandall lease amendment is considered adequate to meet the minimum requirements of this section of the regulations.

PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES

Regulatory Reference: 30 CFR784.17; R645-301-411.

Analysis:

The information provided by the applicant and the concurrence letter provided by the SHPO confirm that there are no public parks or historic places within the proposed lease area.

Findings:

The information provided in the MRP and application is adequate to meet the requirements of this section of the regulations.

RELOCATION OR USE OF PUBLIC ROADS

Regulatory Reference: 30 CFR 784.18; R645-301-521, -301-526.

Analysis:

There are no public roads in or near the South Crandall lease. Therefore, the Permittee cannot relocate or use a public road within the South Crandall lease area.

Findings:

The information in the South Crandall lease amendment is considered adequate to meet the minimum requirements of this section of the regulations.

AIR POLLUTION CONTROL PLAN

Regulatory Reference: 30 CFR 784.26, 817.95; R645-301-244, -301-420.

Analysis:

Only underground mining activities are anticipated by this permitting action; therefore no additional information is required to address this section of the regulations.

Findings:

The information contained in the MRP is considered adequate to meet the minimum requirements of this section of the regulations.

COAL RECOVERY

Regulatory Reference: 30 CFR 817.59; R645-301-522.

Analysis:

Appendix 5-24, Resource and Recovery Protection Plan Approval Letter, was not 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 as shown on Plate 5-2H and Plate5-2 BC. The Permittee has developed a mine plan the will recover as much coal as is economically possible.

Findings:

The information provided in the amendment is not considered adequate to meet the minimum requirements of this section of the regulations. Before, the Division can approve the amendment the Permittee must give the following information in accordance with:

R645-301-122, The Permittee will include a copy of the letter from the BLM about the approval of the R2P2.

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

Subsidence Control Plan

Subsidence projections for the South Crandall Canyon Tract are on Plates 5-2 (H) and 5-2 (BC).

The updated subsidence plan must includes the following information about the South Crandall lease:

- In most of the South Crandall lease, including the Hiawatha and Blind Canyon seams will be extracted with 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.
- 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.

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, if any, and all surface owners 6 month before undermining an area. The Division will inspect the Permittee's records to determine if notification was given.

Findings:

Subsidence Control information is sufficient to meet the requirements of this section of the regulations.

SLIDES AND OTHER DAMAGE

Regulatory Reference: 30 CFR Sec. 817.99; R645-301-515.

Analysis:

Only underground mining activities are anticipated by this permitting action; therefore no additional information is required to address this section of the regulations.

Findings:

The information contained in the MRP is considered adequate to meet 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 modifications 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.

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.

In Section 3.23.3, the MRP contains several methods that would be used during the construction phase to protect water quality in Crandall Creek, including more frequent water monitoring and the use of straw bales and silt fences in and adjacent to the stream. The applicant developed and implemented appropriate mitigation plans with the regulatory authority. Other measures used to protect water quality are discussed in Chapter 7.

Findings:

The information provided is adequate to meet the requirements of this section of the regulations.

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 of the application describes the use of water for mining operations. Approximately 150 gpm, (242 acre/ft/yr), are used in water consumption for mining activities. On page 3-16 section 3.33.300 paragraph 4 of the application submitted January 30, 2004 it states that "At the maximum annual production the amount of water depleted is estimated to be 40 acre feet". This represents a difference of 202 acre/feet of water per year. The applicant needs to explain why the information in the approved MRP represents 202 acre feet of difference from what is currently proposed and provide the calculations for the current 40 acre feet estimate. Whatever the case may be any amount in excess of 100 acre feet per year will require the applicant to develop and implement a mitigation and protection plan with The U. S. Fish and Wildlife Service.

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 this lease area 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 lease area would be considered habitats of high value for fish and wildlife. 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 most likely be negligible.

Findings:

R645-301-333, The Fish and Wildlife Service requires mitigation when water depletions exceed 100 acre-feet annually. The applicant has submitted a response to the Division's findings that indicates only 40 acre feet of water will be consumed annually. The Division's findings however indicate that 242 acre feet of water will be consumed annually based on the water budget described in the approved MRP. Therefore the applicant needs to explain why the information in the approved MRP represents 202 acre feet of difference from what is currently proposed and provide the calculations for the current 40 acre feet estimate. Whatever the case may be any amount in excess of 100 acre feet per year will require the applicant to develop and implement a mitigation and protection plan with The U. S. Fish and Wildlife Service.

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-230.

Analysis:

Only underground mining activities are anticipated by this permitting action; therefore no additional information is required for this section of the regulations.

Findings:

The information contained in the MRP is considered adequate to meet the minimum requirements of this section of the regulations.

VEGETATION

Regulatory Reference: R645-301-330, -301-331, -301-332.

Analysis:

Vegetation should not be affected by the addition of the South Crandall lease. 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 contained in the MRP is considered adequate to meet the minimum requirements of this section of the regulations.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 784.24, 817.150, 817.151; R645-301-521, -301-527, -301-534, -301-732.

Analysis:

No new roads or other surface transportation facilities are proposed in this amendment.

Findings:

The information contained in the MRP is considered adequate to meet the minimum requirements of this section of the regulations.

SPOIL AND WASTE MATERIALS

Regulatory Reference: 30 CFR Sec. 701.5, 784.19, 784.25, 817.71, 817.72, 817.73, 817.74, 817.81, 817.83, 817.84, 817.87, 817.89; R645-100-200, -301-210, -301-211, -301-212, -301-412, -301-512, -301-513, -301-514, -301-521, -301-526, -301-528, -301-535, -301-536, -301-542, -301-553, -301-745, -301-746, -301-747.

Analysis:

No changes to the spoil or waste materials disposal plan are mentioned in the South Crandall lease amendment

Findings:

The information contained in the South Crandall lease application is considered adequate to meet the minimum requirements of this 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 existing groundwater monitoring plan has been updated to include the monitoring of four springs 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 1,000 feet outside of the lease area; site LB-2 that discharges from the Castlegate Sandstone at the south end of the lease area; site LB-5A that discharges from a sandstone channel in the Blackhawk Formation overlying mining operations at the south end of the lease area; 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 M&RP.

The permittee has committed to mitigate for potential disruption to Little Bear Spring through the construction of a water treatment plant. This plant is to be constructed under the provisions of a water replacement agreement between Genwal and the Castle Valley Special Service District. A copy of the agreement is not included in Appendix 7-51 as stated.

Surface Water Monitoring

The existing 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 intermittent Little Bear Canyon Creek, 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). Little Bear Canyon Creek and Section 4 Creeks 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, and 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 M&RP.

Acid- and Toxic-Forming Materials and Underground Development Waste

The existing M&RP has not been updated for the South Crandall Lease Area. If waste rock is generated, the mine has committed to a program of testing the waste rock for acid- or toxic-forming materials. If such materials are identified, then the waste rock will be contained prior to proper disposal.

Transfer of Wells

Transfer of wells is not currently considered. Any future transfers will be in accordance with DOGM approval.

Discharges Into An Underground Mine

There are no planned discharges into underground mines for the South Crandall Lease Area.

Gravity Discharges From Underground Mines

There are no gravity discharges currently planned from the South Crandall Lease Area. No mention specifically regarding discharge from the lease area is made. The mine must obtain a NPDES permit for any water discharge from the lease area.

Water-Quality Standards And Effluent Limitations

No new disturbed surface areas are proposed for the South Crandall Lease Area.

Diversions: General

No new disturbed surface areas are proposed for the South Crandall Lease Area.

Diversions: Perennial and Intermittent Streams

No new disturbed surface areas are proposed for the South Crandall Lease Area.

Diversions: Miscellaneous Flows

No new disturbed surface areas are proposed for the South Crandall Lease Area.

Stream Buffer Zones

No underground mining within 100 feet of a perennial stream is proposed for the South Crandall Lease Area.

Sediment Control Measures

No new disturbed surface areas are proposed for the South Crandall Lease area.

Siltation Structures: General

No new disturbed surface areas are proposed for the South Crandall Lease Area.

Siltation Structures: Sedimentation Ponds

No new disturbed surface areas are proposed for the South Crandall Lease Area.

Siltation Structures: Other Treatment Facilities

No new disturbed surface areas are proposed for the South Crandall Lease Area.

Siltation Structures: Exemptions

No new disturbed surface areas are proposed for the South Crandall Lease Area.

Discharge Structures

No new disturbed surface areas are proposed for the South Crandall Lease Area.

Impoundments

No new disturbed surface areas are proposed for the South Crandall Lease Area.

Ponds, Impoundments, Banks, Dams, and Embankments

No new disturbed surface areas are proposed for the South Crandall Lease Area.

Findings:

Hydrologic Information is not sufficient to meet the requirements of the Coal Mining Rules. Before the proposed amendment can be approved, the Permittee needs to provide the following information:

R645-301-752.240, the permittee needs to provide a copy of the agreement between Genwal and Castle Valley Special Service District regarding mitigation for dimunition to or degradation of the quality or quantity of Little Bear Spring to be included in the plan or made a stipulation for DOGM permitting.

SUPPORT FACILITIES AND UTILITY INSTALLATIONS

Regulatory Reference: 30 CFR Sec. 784.30, 817.180, 817.181; R645-301-526.

Analysis:

Only underground mining activities are anticipated by this permitting action; therefore no additional information is required for this section.

Findings:

The information in the MRP is adequate to meet the requirements of this section of the regulations.

SIGNS AND MARKERS

Regulatory Reference: 30 CFR Sec. 817.11; R645-301-521.

Analysis:

Only underground mining activities are anticipated by this permitting action; therefore no additional information is required.

Findings:

The information in the MRP is adequate to meet the requirements of this section of the regulations.

USE OF EXPLOSIVES

Regulatory Reference: 30 CFR Sec. 817.61, 817.62, 817.64, 817.66, 817.67, 817.68; R645-301-524.

Analysis:

General Requirements

The use of explosives is not required to extract the coal resource from this mining activity. No additional information other than what exists in the current MRP is required to meet the requirements of this section of the regulations.

Findings:

The current MRP contains the required information necessary to meet the requirements of this section of the regulations.

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

Analysis:

Affected Area Maps

From conversations with the Permittee, they do not plan to expand mining operations outside of the proposed permit boundary. Therefore, the permit area is the same as the affected area. The permit boundary is shown on several maps including Plate 1-1.

Mining Facilities Maps

No new surface mine facilities will be constructed. Therefore, the mine facilities maps will not have to be changed.

Mine Workings Maps

The Permittee showed the location of the mine workings for the South Crandall lease on Plate 5-2H and Plate 5-2 BC.

Monitoring and Sampling Location Maps

Maps need to show the locations of test borings in the South Crandall Canyon Tract. 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 are shown on this plate as well as in Appendix 7-58. Surface and groundwater monitoring locations for the South Crandall Lease Area are shown on an updated map in Plate 7-18.

Certification Requirements

The maps submitted by the Permittee that require certification for the South Crandall lease amendment have been certified by a registered professional engineer.

Findings:

The information contained in the South Crandall lease is considered adequate to meet the minimum requirements of this section of the regulations.

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.

Analysis:

The reclamation plan for the Crandall Canyon mine will not be affected by the addition of the South Crandall lease.

Findings:

The information contained in the current MRP is considered adequate to meet the minimum requirements of this section of the regulations.

POSTMINING LAND USES

Regulatory Reference: 30 CFR Sec. 784.15, 784.200, 785.16, 817.133; R645-301-412, -301-413, -301-414, -302-270, -302-271, -302-272, -302-273, -302-274, -302-275.

Analysis:

The post mining land uses will not be affected by the addition of the South Crandall lease.

Findings:

The information contained in the current MRP is considered adequate to meet the minimum requirements of this section of the regulations.

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 is adequate to meet the requirements of this section of the regulations.

APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -301-412, -301-413, -301-512, -301-531, -301-533, -301-553, -301-536, -301-542, -301-731, -301-732, -301-733, -301-764.

Analysis:

The backfilling and grading plan will not be affected by the addition of the South Crandall lease. Therefore, there will be no changes to the approximate original contour restoration.

Findings:

The information contained in the current MRP is considered adequate to meet the minimum requirements of this section of the regulations.

BACKFILLING AND GRADING

Regulatory Reference: 30 CFR Sec. 785.15, 817.102, 817.107; R645-301-234, -301-537, -301-552, -301-553, -302-230, -302-231, -302-232, -302-233.

Analysis:

The backfilling and grading plan will not be affected by the addition of the South Crandall lease.

Previously Mined Areas

Previously mined areas will not be affected by the addition of the South Crandall lease.

Backfilling and Grading On Steep Slopes

Backfilling and grading on steep slopes will not be affected by the addition of the South Crandall lease.

Special Provisions for Steep Slope Mining

Special provisions for steep slope mining will not be affected by the addition of the South Crandall lease.

Findings:

The information provided in the current MRP is adequate to meet the requirements of this section of the regulations.

MINE OPENINGS

Regulatory Reference: 30 CFR Sec. 817.13, 817.14, 817.15; R645-301-513, -301-529, -301-551, -301-631, -301-748, -301-765, -301-748.

Analysis:

No new mine openings will be constructed because of the addition of the South Crandall lease. Plans for casing and sealing holes are covered in the current MRP. Drill-hole locations are shown on Plates 5-2 (BC) and 5-2 (H).

Findings:

The information contained in the South Crandall lease is considered adequate to meet the minimum requirements of this section of the regulations.

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-240.

Analysis:

Topsoil and subsoil will not be affected by the addition of the South Crandall lease.

Findings:

The information provided in the current MRP is adequate to meet the requirements of this section of the regulations.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 701.5, 784.24, 817.150, 817.151; R645-100-200, -301-513, -301-521, -301-527, -301-534, -301-537, -301-732.

Analysis:

The reclamation and retention of road systems and other transportation facilities will not be affected by the addition of the South Crandall lease.

Findings:

The information provided in the current MRP is adequate to meet the requirements of this section of the regulations.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

Analysis:

Hydrologic Reclamation Plan

No update to the existing hydrologic reclamation plan was submitted because no new surface disturbance is planned for the South Crandall Lease Area.

Findings:

The permittee has sufficient information in their approved MRP to meet the requirements of this section of the regulations.

CONTEMPORANEOUS RECLAMATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.100; R645-301-352, -301-553, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

Contemporaneous reclamation will not be affected by the addition of the South Crandall lease. There is no surface disturbance associated with this permitting activity.

Findings:

The information provided in the current MRP is adequate to meet the requirements of this section 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 addition of the South Crandall lease. 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 applicant 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 applicant and the Division should look at current findings at the time of reclamation to determine the best methods.

The application 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 application 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 applicant 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 application shows tackifier application rates for varying slopes.

The applicant 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 applicant 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 applicant 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 applicant 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 Success Standards

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.

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 in the approved MRP is adequate to meet the requirements of this section of the regulations.

STABILIZATION OF SURFACE AREAS

Regulatory Reference: 30 CFR Sec. 817.95; R645-301-244.

Analysis:

The addition of the South Crandall lease will not have an affect on the stabilization of surface areas

Findings:

The information provided for in the approved MRP is adequate to meet the requirements of this section of the regulations.

CESSATION OF OPERATIONS

Regulatory Reference: 30 CFR Sec. 817.131, 817.132; R645-301-515, -301-541.

Analysis:

There is at present no cessation of operations at the Crandall Canyon mine. Acquisition of the new lease will provide continued operations for the mining company.

Findings:

The current status of the MRP meets the requirements of this section of the regulations.

MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-323, -301-512, -301-521, -301-542, -301-632, -301-731.

Analysis:

Reclamation Monitoring And Sampling Location Maps

Reclamation monitoring and sampling location maps will not be affected by the addition of the South Crandall lease. There is no surface disturbance associated with this permitting activity

Affected Area Boundary Maps

There are no changes to the Affected Area Boundary maps.

Bonded Area Map

There are no changes to the bonded (disturbed) area maps.

Reclamation Backfilling And Grading Maps

There are no changes to the backfilling and grading plans. Therefore there is no change to the backfilling and grading maps.

Reclamation Facilities Maps

There are no changes to reclamation facilities maps.

Final Surface Configuration Maps

There are no changes to the final surface configuration in the bonded areas.

Reclamation Monitoring And Sampling Location Maps

There are no changes to the Reclamation Monitoring And Sampling Location Maps.

Reclamation Surface And Subsurface Manmade Features Maps

There are no changes to the Reclamation Surface And Subsurface Manmade Features Maps.

Reclamation Treatments Maps

There are no changes to the reclamation treatment maps.

Certification Requirements.

A registered professional engineer certified all reclamation maps that needed certification.

Findings:

The information contained in the South Crandall lease is considered adequate to meet the minimum requirements of this section of the regulations.

BONDING AND INSURANCE REQUIREMENTS

Regulatory Reference: 30 CFR Sec. 800; R645-301-800, et seq.

Analysis:

No new surface facilities will be built or any new disturbed areas will be added because of the South Crandall lease. Therefore, there will be no change to the bond. The Permittee does not have to change the insurance coverage because of the addition of the South Crandall lease.

Findings:

The information contained in the South Crandall lease is considered adequate to meet the minimum requirements of this section of the regulations.

REQUIREMENTS FOR PERMITS FOR SPECIAL CATEGORIES OF MINING

EXPERIMENTAL PRACTICES MINING

Regulatory Reference: 30 CFR Sec. 785.13; R645-302-210, -302-211, -302-212, -302-213, -302-214, -302-215, -302-216, -302-217, -302-218.

Analysis:

Experimental practices will not be affected by the addition of the South Crandall lease. There is no surface disturbance associated with this permitting activity.

Findings:

The information contained in the MRP is considered adequate to meet the minimum requirements of this section of the regulations.

MOUNTAINTOP REMOVAL MINING

Regulatory Reference: 30 CFR Sec. 785.14, 824; R645-302-220, et. seq.

Analysis:

Special Permanent Program Performance Standards--Mountaintop Removal

Mountain top removal will not occur as a result of the addition of the South Crandall lease. There is no surface disturbance associated with this permitting activity.

Findings:

The information contained in the MRP is considered adequate to meet the minimum requirements of this section of the regulations.

STEEP SLOPE MINING

Regulatory Reference: 30 CFR Sec. 785.15; R645-302-230 et. seq.

Analysis:

Steep slope mining will not occur as a result of the addition of the South Crandall lease. There is no surface disturbance associated with this permitting activity.

Findings:

The information contained in the MRP is considered adequate to meet the minimum requirements of this section of the regulations.

PRIME FARMLAND

Regulatory Reference: 30 CFR Sec. 785.16, 823; R645-301-221, -302-300 et seq.

Analysis:

Prime Farmland Application Contents.

Prime farmland will not be affected by the addition of the South Crandall lease. There is no surface disturbance associated with this permitting activity.

Consultation with Secretary of Agriculture.

Consultation will not be affected by the addition of the South Crandall lease. There is no surface disturbance associated with this permitting activity.

Issuance of Permit.

Issuance of the permit will not be affected by the addition of the South Crandall lease. There is no surface disturbance associated with this permitting activity.

Soil Removal and Stockpiling

Soil Removal and stockpiling will not be affected by the addition of the South Crandall lease. There is no surface disturbance associated with this permitting activity.

Soil Replacement

Soil replacement will not be affected by the addition of the South Crandall lease. There is no surface disturbance associated with this permitting activity.

Revegetation and Restoration of Soil Productivity

Revegetation and restoration of soil productivity will not be affected by the addition of the South Crandall lease. There is no surface disturbance associated with this permitting activity.

Findings:

The information contained in the MRP is considered adequate to meet the minimum requirements of this section of the regulations.

COAL PREPARATION PLANTS NOT LOCATED WITHIN THE PERMIT AREA OF A MINE

Regulatory Reference: 30 CFR Sec. 785.21, 827; R645-302-260, et seq.

Analysis:

Coal preparation plants will not be affected by the addition of the South Crandall lease. There is no surface disturbance associated with this permitting activity.

Findings:

The information contained in the MRP is considered adequate to meet the minimum requirements of this section of the regulations.

OPERATIONS IN ALLUVIAL VALLEY FLOORS

Regulatory Reference: 30 CFR Sec. 822; R645-302-324.

Analysis:

Essential Hydrologic Functions

Essential hydrologic functions will not be affected by the addition of the South Crandall lease. There is no surface disturbance associated with this permitting activity.

Protection of Agricultural Activities

Protection of agricultural activities will not be affected by the addition of the South Crandall lease. There is no surface disturbance associated with this permitting activity.

Monitoring

Monitoring will not be affected by the addition of the South Crandall lease. There is no surface disturbance associated with this permitting activity.

Findings:

The information contained in the MRP is considered adequate to meet the minimum requirements of this section of the regulations.

IN SITU PROCESSING

Regulatory Reference: 30 CFR Sec. 828; R645-302-254.

Analysis:

In situ processing will not be affected by the addition of the South Crandall lease. There is no surface disturbance associated with this permitting activity.

Findings:

The information contained in the MRP is considered adequate to meet the minimum requirements of this section of the regulations.

AUGER MINING

Regulatory Reference: 30 CFR Sec. 785.20, 819; R645-302-240 et. seq.

Analysis:

Auger mining will not be affected by the addition of the South Crandall lease. There is no surface disturbance associated with this permitting activity.

Findings:

The information contained in the MRP is considered adequate to meet the minimum requirements of this section of the regulations.

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT (CHIA)

Regulatory Reference: 30 CFR Sec. 784.14; R645-301-730.

Analysis:

The Division needs to update the East Mountain CHIA to incorporate the expansion of the Crandall Canyon Mine into the South Crandall Canyon Lease Tract. Hydrogeologic information provided by the amendment is adequate for the Division to complete this update.

Findings:

The application has been updated to address the CHIA deficiencies identified in the Division's first review (Task ID #1698). The information reported meets the minimum CHIA requirements of the Regulations.

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