0002

Document Information Form

Mine Number: C/007/016

File Name: Internal

To: DOGM

From:

Person N/A

Company N/A

Date Sent: December 19, 1983

Explanation:

Findings Document

cc:

File in:
C/ 007 , 016 , Internal
Refer to:
- ☐ Confidential
- ☐ Shelf
- ☐ Expandable

Date _____ For additional information

DRAFT

File in:
- ☐ Confidential
- ☐ Shelf
- ☐ Expandable

Refer to Record No 0000 Date 12-9-83
In C/ 007 , 016 , Internal
For additional information

FINDINGS DOCUMENT

Beaver Creek Coal Company
Gordon Creek #2 Mine
ACT/007/016, Carbon County, Utah

December 19, 1983

1. The plan and the permit application are accurate and complete and all requirements of the Surface Mining Control and Reclamation Act (the "Act"), and the approved Utah State Program have been complied with (786.19[a]).

2. The applicant proposes acceptable practices for the reclamation of disturbed lands. These practices have been shown to be effective in the short-term; there are no long-term reclamation records utilizing native species in the western United States. Nevertheless, the Utah Division of Oil, Gas and Mining (DOGM) staff has determined that reclamation, as required by the Act, can be feasibly accomplished under the Mining and Reclamation Plan (MRP) (see Technical Analysis [TA], Section UMC 817.111-.117) (UMC 786.19[b]).

3. The assessment of the probable cumulative impacts of all anticipated coal mining in the general area on the hydrologic balance has been made by the DOGM. The mining operation proposed under the application has been designed to prevent damage to the hydrologic balance in the permit area and in the associated off-site areas (UMC 786.19[c]). (See Cumulative Hydrologic Impact Analysis (CHIA) Section, attached to this Findings Document.) (Note: the CHIA is not available at this time.)

4. The proposed permit area is:

   A. Not included within an area designated unsuitable for underground coal mining operations (see attached Bureau of Land Management [BLM] letter dated September 13, 1983).

   B. Not within an area under study for designated lands unsuitable for underground coal mining operations (see attached BLM letter dated September 13, 1983).

   C. Not on any lands subject to the prohibitions or limitations of 30 CFR 761.11(a) (national parks, etc.), 761.11(f) (public buildings, etc.) and 761.11(g) (cemeteries).

   D. Within 100 feet of the outside right-of-way line of a public road, however, the mine was in operation prior to August 3, 1977 (UMC 761.11).

   E. Not within 300 feet of any occupied dwelling (UMC 786.19[d]).

5. DOGM's issuance of a permit is in compliance with the National Historic Preservation Act and implementing regulations (36 CFR 800) (UMC 786.19[e]). See letters from SHPO dated August 25 and November 7, 1983 attached to TA.

6. The applicant has the legal right to enter and begin underground activities in the permit area through two Federal leases, one USGS permit to mine and one fee lease (see MRP, Section 4.3.4) (UMC 786.19[f]).

7. The applicant has shown that prior violations of applicable law and regulations have been corrected (MRP, Section 2.3.3, Table 2-3) (UMC 786.19[g]).

8. Beaver Creek Coal Company is not delinquent in payment of fees for the Abandoned Mine Reclamation Fund for its active mining operation (UMC 786.19[h]) (personal communication, John Sender, OSM, Albuquerque, December 9, 1983).

9. The applicant does not control and has not controlled mining operations with a demonstrated pattern of willful violations of the Act of such nature, duration and with such resulting irreparable damage to the environment as to indicate an intent not to comply with the provisions of the Act (UMC 786.19[i]) (see MRP, Section 2.3).

10. Underground coal mining and reclamation operations to be performed under the permit will not be inconsistent with other such operations anticipated to be performed in areas adjacent to the proposed permit area (UMC 786.19[j]). The C & W #1 Mine and the Gordon Creek #3 and #6 Mines are immediately to the east of Gordon Creek #2. Neither mine is currently operating.

11. A detailed analysis of the proposed bond had been made. The bond estimate is attached to the TA. The DOGM has made appropriate adjustments to reflect costs which would be incurred by the State, if it was required to contract the final reclamation activities for the minesite. The bond shall be posted (UMC 786.19[k]) with DOGM prior to final permit issuance. A preliminary bond in the amount of $58,814.00 is currently on file.

12. No lands designated as prime farmlands or alluvial valley floor occur on the permit area (MRP, Section 8.4, Figure 8-1; Section 7.27) (UMC 786.19[l]).

13. The proposed postmining land-use of the permit area has been approved by DOGM (see TA, Section UMC 817.133) (UMC 786.19[n]).

14. The DOGM has made all specific approvals required by the Act, and the approved State Program (UMC 786.19[n]).

15. The proposed operation will not affect the continued existence of any threatened or endangered species or result in the destruction or adverse modification of their critical habitats (MRP, Section 9.4, Section 10.3.3.1; see attached U. S. Fish & Wildlife Service [USFWS] letter dated September 2, 1983) (UMC 786.19[o]).

16. All procedures for public participation required by the Act, and the approved Utah State Program have been complied with (UMC 741.21[a][2][ii]).

Prior to the permit taking effect, the applicant must forward a letter stating its compliance with the special stipulations in the permit and post the performance bond for reclamation activities.

Mary M. Boucek
DOGM Lead Reviewer

Coordinator of Mined Land Development

TECHNICAL ANALYSIS DRAFT

Beaver Creek Coal Company
Gordon Creek #2 Mine
ACT/007/016, Carbon County, Utah

December 19, 1983

Introduction

The Gordon Creek #2 Mine is owned and operated by Beaver Creek Coal Company, a wholly owned subsidiary of the Atlantic Richfield Company of Los Angeles, California. The operation is located in Bryner Canyon approximately 20 road miles northwest of Price, Carbon County, Utah, Township 13 South, Range 7 and 8 East. The mine was opened in 1969 and has remained in continuous production.

An application for a mining permit was received by the regulatory authority on March 20, 1981. Additional information concerning Vegetation Resources and Fish and Wildlife Resources was submitted on July 14, 1982. An Apparent Completeness Review (ACR) was prepared and sent to the applicant on September 30, 1982. Beaver Creek Coal Company responded to the review with a revised Mining and Reclamation Plan (MRP) submitted on March 9, 1983. A Determination of Completeness Review (DOC) was performed by the Division and a request for additional information was sent to the operator on June 9, 1983.

On October 31, 1983, Beaver Creek Coal Company submitted a major revision to the MRP. This revision incorporated the Southwest Lease Area, which will provide access to a portion of existing Federal Coal Lease #U-8319 and an additional Federal Coal Lease #U-47975, and associated disturbance already approved under coal exploration, into the existing plan. The regulatory authority reviewed the Southwest Lease information and prepared a DOC review. A request for additional information was sent to the operator on November 15, 1983. The operator submitted their response on November 25, 1983 and the Gordon Creek #2 Mine MRP (including the Southwest Lease) was declared complete on December 2, 1983. Newspaper advertisement of the application has been published in the Price, Utah, Sun Advocate beginning on December 14, 1983.

A total of 16.68 acres of surface area has been disturbed, mainly during construction of portals and pad facilities. Approximately 9.18 acres of surface disturbance occurred prior to enactment of the Surface Mining Control and Reclamation Act of 1977 and implementation of the Utah Interim Program. The additional acreage has been disturbed for diversions, ponds and culverts installed subsequent to this legislation and for exploration access and facilities for the Southwest Lease Area.

The Gordon Creek #2 Mine will operate in the Castlegate "A" and Hiawatha coal seams. All mining will be by room-and-pillar methods. Present production is approximately 1,500 tons per day. When the Southwest Lease becomes operative, total production for the Gordon Creek #2 Mine will be 2,700 tons per day with an estimated annual production of 860,000 tons per year over the life of the mine.

The surface is 100 percent fee and mineral leases are approximately 75 percent Federal and 25 percent fee. Total acreage is 2,286 acres. The Gordon Creek #2 Mine at full operation will employ approximately 90 people.

Existing Environment

The Gordon Creek #2 Mine is located within the northeastern portion of the Wasatch Plateau. The Wasatch Plateau is the northwestern outlier of the eroded San Rafael Swell.

The permit area is characterized by steep, narrow canyons containing conspicuous sandstone cliffs. Intermittent and perennial streams occupy the drainages. The complex geological and geomorphological conditions have produced a variety of site specific soils that support the Douglas fir forest, sagebrush-grassland and oak-scrub vegetation communities and scattered areas of riparian habitat.

Beaver Creek is the only perennial stream that flows through the permit area. Perennial flow is maintained by a series of beaver ponds and by Jewkes Spring and Gunnison Homestead Spring. Two other principal water courses are found within the permit area--North Fork of Gordon Creek and Bryner Canyon. Both of these streams are considered ephemeral. Bryner Canyon contains the mine facilities and surface operations and thus is the only stream that could be directly impacted by surface disturbance associated with mining. Due to the extensive overburden over much of the mined area, no significant hydrologic or other surface impacts are expected to occur due to subsidence.

The land on which the #2 Mine is located has long been used for coal mining. Three underground operations were located within a short distance of the #2 Mine--Sweets, National and Consumers mines. These mines were active in the 1940's and are presently closed. Other than coal mining, private landowners presently administer the lands in this area for limited livestock, forage, wildlife habitat, watershed and dispersed recreation. No threatened or endangered species are known to occur on the permit area.

UMC 785.19 Alluvial Valley Floors

Applicant's Proposal

The applicant has identified two potential areas which are either on or adjacent to the lease area for the Gordon Creek #2 Mine.

Compliance

Based on the information supplied by the applicant and an on-site review by Division representatives, the Division has determined pursuant to UMC 785.19(c)(3)(ii), that the area identified as a potential Alluvial Valley Floor (AVF) would provide negligible support for farm production should the

area ever be brought into production. The high elevation (approximately 8,200 feet) and generally unsuitable terrain would impede greatly any efforts to economically farm the small area. Thus, pursuant to UMC 785.19(c)(3)(ii), the requirements of paragaph (d) and (3) of UMC 785.19 and Section 822 are waived.

Stipulations

None.

UMC 817.11 Signs and Markers

Applicant's Proposal

The applicant has placed identification signs at the entrance to the mine area. Perimeter markers have been placed around the perimeter of the disturbed area and buffer zone signs have been placed along Bryner Creek to prevent further disturbance of this ephemeral drainage. The one existing topsoil stockpile has been adequately marked. No explosives are present on the permit area. The applicant has committed to placing the appropriate signs if this condition changes.

Compliance

The applicant complies with this section.

Stipulations

None.

UMC 817.13-.15 Casing and Sealing of Underground Openings

Applicant's Proposal

All exploration drill holes within the permit boundary have been identified as to location, elevation at the collar, extent of casing if any and type of plug. All holes have either been cemented entirely or cased with a cement plug at the surface.

Upon final abandonment of the mine entries, a permanent block seal will be placed 20 to 50 feet in by the portal. The area out by the seals will be backfilled, the portal structures will be removed and all the exposed coal, including the portal areas, will be covered during reclamation of the upper pad and highwall areas.

Figures 3-7 and 3-8, pages 3-56 and 3-57, show cross-sectional views of typical portal seals to be used at the time of final abandonment.

Compliance

The applicant will comply with Sections UMC 817.13-.15 when the following stipulation is met.

Stipulation 817.13-.15-(1)-CY

1. The applicant has not addressed the potential for impoundment of water behind the portal seals and if, in fact, such seals should be hydrologic seals. This should be addressed in the mine plan under Section 3.5.3.1.

UMC 817.22 Topsoil: Removal

Applicant's Proposal

The Gordon Creek #2 Mine is located in the Wasatch Plateau at an elevation of 7,900 to 8,300 feet. The native vegetation consists of aspen, snowberry, gambel oak, bitterbrush and perennial grasses. The mean annual air temperature is 38° to 45° F, the frost-free days are between 60 and 120, with an annual precipitation of 16 to 20 inches.

Soils in the area are derived from weathered sandstone and shale on slopes ranging from 30 to 70 percent. Three soils series were found within the permit area: Benteen--a cryoborall; Gappmeyer--an argiboroll; and Patmos--an Ustiorthent. A horizons range from as deep as 20 inches in the Gappmeyer to as shallow as 5 inches in parts of the Benteen series. All three soils are deep, well drained with permeability of moderate to moderately slow. The native soils have textures of loam, silt loam and sandy loam, a pH range from 6.8 to 7.8 and an electroconductivity ranging from 1.6 to 2.2.

Development of the Gordon Creek #2 Mine has taken place in two major steps. The first part was developed prior to the enactment of Public Law 95-87, and the second step developed after Public Law 95-87. During the construction of the initial portal and pad areas, approximately nine acres were disturbed and no topsoil salvaged and stockpiled for final reclamation.

The applicant has proposed to use the soil material in the pad and road areas as an alternate soil material. Random samples of the proposed soil substitute material were taken for chemical and physical analyses. Results of these analyses, presented in Table 8-7, indicate favorable soil characteristics in all except for one sample location. Sample Number 3 indicates high levels of sodium.

At the time of final reclamation, the substitute soil material will be redistributed back into the highwall cut areas. Coarse fragments greater than 18 inches will be removed from the fill-soil material. Areas of compaction will be deep-chiseled and cloddy surface areas will be pulverized with a disc, slope chain and/or harrow prior to seeding in accordance with the revegetation plan.

The newly developed Southwest Lease disturbed an additional 7.5 acres. Of this 7.5 acres, 4.4 acres were on slopes of between 50 and 70 percent. Because of these steep slopes, a variance from topsoil removal was requested and granted for the 4.4 acres. The remaining 3.1 acres generated approximately 6,000 cubic yards of topsoil. To supplement the 6,000 yd^3 of topsoil, an additional 8,000 cubic yards of soil material generated during construction of

the Pioneer Road have been stockpiled. Soil samples of the soil supplement were taken and the analytical results indicate that the soil material is suitable as a plant growth medium. All topsoil and supplemental material have been stockpiled and protected by construction of a three foot berm at the toe and planting with the approved interim seed mix.

During reclamation, backfilled and graded areas will be ripped to reduce compaction, then topsoil will be applied to a thickness of approximately 12 inches. The area will then be seeded in accordance with the revegetation plan.

Compliance

Applicant will be in compliance with these sections when the following stipulation is met.

Stipulation 817.22-(1)-EH

1. The applicant must take additional soil samples in the area of high sodium to determine the extent of the area.

UMC 817.41 Hydrologic Balance: General Requirements

Applicant's Proposal

The Gordon Creek #2 Mine is located within the northern portion of the Wasatch Plateau. The Wasatch Plateau is the northwest outline of the eroded San Rafael Swell. The Plateau dips westward producing a great monoclinal fold that is interrupted by faults in the border lands of the Great Basin.

The coal producing formation found within the Gordon Creek #2 Mine permit area is the Blackhawk Formation. It measures 900 feet thick in the Gordon Creek area and consists of interbedded sandstone, siltstone, shale and coal. A total of eight coal seams can be identified in the Gordon Creek region. Five of the eight seams crop out along the North Fork of Gordon Creek, Coal Canyon and Bryner Canyon. Weathering, burning and vegetation cover obscures the majority of coal outcrops of the Hiawatha, Gordon, Castlegate "A", Haley and Bob Wright seams. The Hiawatha and Castlegate "A" seams have been or will be mined in the Gordon Creek #2 Mine area. The Hiawatha Seam marks the base of the Blackhawk Formation. Currently, Beaver Creek Coal Company is mining the Castlegate "A" Seam. Also within this vicinity, the seam was mined at the Blue Blaze, Gordon Creek #1 and #6 Mines. The area of the Gordon Creek #2 Mine is heavily faulted. The three major fault zones that affect the lease block are the North Gordon, Plesant Valley and Fish Creek fault zones. Displacements of the faults in the mine plan area are variable. Displacements as great as 200 feet have been encountered and have altered original mine plans several times. A 110 foot downdrop box fault was encountered during mining and has prevented Beaver Creek Coal from expanding in a westward direction. The zone which separated the coal seam was approximately 300-400 feet wide. Rock slopes to tie the two seams together is not possible and, therefore, an entry way will be required to expand mining within the Castlegate "A" Seam in a westerly direction.

Most of the regional area is drained by tributaries to the Green and Colorado rivers; principal tributaries are the Price and San Rafael rivers and Muddy Creek. The Price River drainage is approximately 1,900 square miles and flows in a southeasterly direction towards its junction with the Green River. Elevations within the basin vary from 10,440 feet in its headwaters to 4,200 feet at its mouth. Normal annual precipitation taken from records of 1931-1960 varies from 30 inches in headwater regions to 8 inches in downstream regions. Surface rocks in the basin range in age from Jurassic to Quaternary, but the rocks having predominant influence on water quality are the marine shales of Cretaceous age.

The Gordon Creek #2 Mine site lies near the headwaters of the North Fork of Gordon Creek. Three principal surface water courses are found within 100 horizontal feet of the mine permit area--Beaver Creek, North Fork of Gordon Creek and Bryner Creek.

Beaver Creek is a perennial stream that flows through the permit area. Perennial flow is maintained by a series of beaver ponds and by Jewkes Spring and Gunnison Homestead Spring. Both springs have dried up during drought periods, but normally provide contributions during low flow periods.

The general flow direction of Beaver Creek is northeast toward the Price River. The Gordon Creek lease block is near the headwaters of Beaver Creek. The watershed areas of Beaver Creek or its tributaries above the base boundary are less than one square mile. The drainage pattern in the upper portions of the Beaver Creek basin near the lease block is dendritic. The valley profile is not as steep as Bryner Canyon or North Fork of Gordon Creek. Beaver ponds are common along the stream channel.

The North Fork of Gordon Creek is the other principal stream found on the lease block. The drainage area above the lease block, about four square miles, is considerably larger than Bryner Canyon. Stream flows in the North Fork are also larger than Bryner. Two water monitoring stations on the North Fork of Gordon Creek show that the stream is losing flow between the upper and lower stations. Thus, the lower reaches of the North Fork of Gordon Creek within the coal lease area exhibit characteristics of an ephemeral stream in the sense that the ground water table is generally below the bottom of the channel and flow is from the stream.

Bryner Canyon is a small basin of about one square mile in an area that is located almost entirely with the lease block. Bryner Canyon contains an ephemeral stream which flows east into the North Fork of Gordon Creek just below the coal lease. The stream normally flows during the snowmelt period and is usually dry throughout the remainder of the year. The North and South Fork of Bryner Canyon meet at the mine yard. The South Fork is diverted around the site and the North Fork is culverted through the pad. The North and South Fork of Gordon Creek have springs and seeps which flow year round during wet years. Just upstream of the disturbed area at the Gordon Creek #2

is a subsided area which currently intercepts the flow of the North Fork of Gordon Creek and routes it underground into the old workings of the Sweets Mine. It is currently not known if this water surfaces elsewhere or remains underground.

Some small springs and seeps are located on the property and are either dry or producing water dependent on the amount of precipitation in any given year. Jewkes Spring and Gunnison Homestead Spring, two larger springs identified on the property, have dried up during drought years, but normally provide contributions during low flow period. Several intermittent springs or seeps are found on the Bryner Canyon watershed. The primary spring in the South Fork of Bryner Canyon appears as seepage emanating from below the coal seam immediately south of west portal. Even when this spring is flowing, stream flow is not observed in the main channel unless there is snowmelt or an extreme rainfall event that produces flow. During wet years, like 1983, springs and seeps flow year round in response to ground water recharge.

Ground water recharge in the Gordon Creek #2 Mine permit area is complex and, due to the extensive fautling in the area, may be hard to identify. Due to the discontinuous and lenticular nature of the sandstone units and interbedded impervious shales in the area combined with extensive faulting, it is impossible to model the movement of ground water within the region. Most of the water encountered within the mine dries up within a short period after it is encountered. Any mining under a perennial stream like Beaver Creek should be closely monitored and a protective barrier should possibly be left where faulting is prevalent. The Blackhawk Formation is the principal surficial bedrock unit. The Blackhawk is disconformably overlain by the massive, coarse grained fluvial Castlegate Sandstone. The typical dewatering of the fluvial sandstone channels occurs within the Gordon Creek #2 Mine. These channels produce small quantities of water that dewater within several weeks. This confirms the existence of perched water existing within these aquifers. The Starpoint Sandstone, approximately 200 feet below the Castlegate "A" Seam, is the principal ground water aquifer in the area. Unless the head is sufficient in the Star Point to yield artesian flow within the mine, 200 feet above, then it is unlikely that mining will disrupt this regional aquifer.

Compliance

After revewing the general discussion of the hydrologic regime in the Gordon Creek #2 Mine permit area and the area adjacent to the permit area, it is felt that the applicant has not as yet adequately defined the existing hydrologic environment. Several areas of insufficient information have been encountered during the review process. Generally speaking, these areas involve the following:

1. Spring identification and monitoring.

2. North Fork of Bryner Creek's general hydrologic regime. Discussion of how it is intercepted by the Sweets Mine and where this flow is transmitted.

3. Past and current mining plans under both Beaver Creek and the North Fork of Gordon Creek and the hydrologic mitigation measures associated with these plans.

Stipulation 817.41-(1, 2, 3)-TM

1. See stipulations under UMC 817.52 and 817.54.

2. The applicant shall submit, by _____, adequate discussion of the North Fork of Bryner Creek's general hydrologic regime, how it is intercepted by the Sweets Mine and where this flow is transmitted to.

3. The applicant shall submit, by _____, adequate discussion of past and current mining plans under both Beaver Creek and the North Fork of Gordon Creek and the hydrologic mitigation measures associated with these mining plans.

UMC 817.42 Hydrologic Balance: Water Quality Standards and Effluent Limitations

Applicant's Proposal

All drainage which affects the disturbed area at Gordon Creek #2 is routed via ditches, berms and culverts to one of two sediment ponds. The majority of natural drainage above the site is diverted around the site and the pond. The applicant has calculated design velocities for ditches and culvert outlets throughout the minesite with the exception of the sediment pond conveyance. The applicant notes that riprap has been placed at the outlet of culvert U-1 and that erosion control is accomplished by the use of riprap at critical points, although the critical points are unspecified.

The applicant has implemented a surface water monitoring program since 1980 (some pre-1980 data may exist). The sampling program encompasses two springs, the North Fork of Gordon Creek (intermittent), the discharge point of the sediment pond, the upper and lower sites on Beaver Creek (perennial) and two upper sites and one lower site on Bryner Canyon (ephemeral).

The applicant has identified three storage areas at the original minesite for stockpiling snow from snow removal operations (see Plate 7-5). These areas reside on the disturbed area with all snowmelt being routed to the sediment pond. With the development of the Southwest Lease, one of the storage sites is now used for topsoil storage. No snow storage area has been designated for the Southwest Lease site.

Compliance

Detailed calculations and a discussion of the technical aspects of sediment control can be found under UMC 817.46 and UMC 817.47. The applicant has presented partially acceptable plans of sediment control to meet water quality standards and effluent limitations. Certain problem areas have been

DRAFT

identified and need to be clarified. On-site specific drainage control problems have also been identified in regulations UMC 817.43, 817.44, 817.45, 817.46, 817.47, 817.52 and 817.54. An overview of the applicant's ability to meet water quality standards and effluent limitations is unanswered in the technical review of these regulations.

Particular areas have not been adequately addressed in the MRP and cannot be assessed at this point. They are the "water truck fill-up area at the confluence of the North Fork and Bryner Canyon" and the "old fan portal area east of the main minesite area."

On November 3, 1983, the State regulatory authority met with Beaver Creek Coal at the Gordon Creek #2 main minesite. During this visit, two important issues were resolved in terms of commitment on the part of Beaver Creek Coal. These issues related to the main sediment pond inlet and outlet structures. Beaver Creek Coal committed to extending the culvert for the outlet culvert down to the Bryner Canyon drainage and to extend the inlet culvert out into the pond to get the necessary freeboard between sediment levels and the inlet culvert.

The applicant should designate an area at the Southwest Lease Mine site for snow storage to assure that all snowmelt from snow on the disturbed area is routed to the sediment pond.

Stipulation 817.42-(1, 2, 3, 4, 5)-TM

The applicant shall submit, by _____:

1. Adequate plans regarding the "water truck fill-up area" which will include the sediment control measures necessary to meet State and Federal water quality standards and effluent limitations.

2. Adequate plans regarding the "Old Fan Portal Area" which will include the sediment control measures necessary to meet State and Federal water quality standards and effluent limitations.

3. Adequate plans on how obvious erosion problems in the Bryner Canyon bypass ditch, as stated in the November 8, 1983 Memo to Coal File sent to Beaver Creek Coal, based on the November 3, 1983 site visit by the regulatory authority, will be stabilized and corrected.

4. Adequate plans in the MRP regarding sediment pond improvements and commit to construction of these improvements. These improvements involve extending the outlet culvert down to the Bryner Canyon drainage and extending the inlet culvert out into the pond to get the necessary freeboard between the current sediment levels and the inlet culvert.

5. Plans and/or maps which indicate/show storage areas for the Southwest Lease minesite.

DRAFT

UMC 817.43-.44 Hydrologic Balance: Diversions

Applicant's Proposal

The Bryner Canyon drainage and its Right Fork Tributary (both ephemeral drainages) are the only diversions of natural stream channels at the Gordon Creek #2 original minesite. The main Bryner Canyon drainage is routed past the original minesite via a trapezoidal channel. The Right Fork at the Bryner Canyon drainage is routed under the disturbed area via a 24-inch, 340-foot long culvert.

The applicant has proposed disturbed area diversion ditches and culverts to route disturbed area drainage to the sediment pond. The three culverts for the original minesite are delineated on Plate 7-5. The ditches are not shown on Plate 7-5.

The applicant has utilized the Soil Conservation Service (SCS) runoff curve number method along with the TR-20 computer model to predict peak flows and runoff volumes. Times of concentration were calculated using the SCS basin lag method outlined in TR No. 55. In lieu of the SCS type II storm, the rainfall distribution proposed by Farmer and Fletcher 1972 was utilized.

The applicant's Southwest Lease development proposes a 36 inch bypass culvert to route flows in the Bryner Canyon drainage down the highwall. A trapezoidal channel from the outlet of the 36 inch culvert routes undisturbed flows along the edge of the disturbed area and back into the stream channel.

Two disturbed area ditches route drainage from the Southwest Lease minesite into the sediment pond.

Compliance

Verification of the applicant's design calculations raises a few questions in regards to the peak flows predicted.

The slope utilized in time of concentration calculations on the original minesite for undisturbed areas appears to be understated by a factor of 4. Apparently, the applicant mistook the contour interval of 80 feet as 20 feet on Plate 7-2.

The curve number of 54 utilized for undisturbed areas appears low. The applicant does not include the computations to arrive at the weighted averages used. During this Technical Analysis, a curve number of 66 was used to verify design capacity of the undisturbed drainage through the culvert and ditch (see SCS TR55, Table 2-2 for curve number selection).

Plate 7-5 clearly delineates the culverts, both disturbed and undisturbed, which will be utilized. The ditches proposed to route disturbed drainage on the minesite are not clearly delineated on Plate 7-5 making it difficult to follow water courses on the disturbed areas. Further, the cross-sectional diagram provided in Plate 7-5a, cross-section C-C does not show any dimensions making sizing calculations and enforcement awkward.

The sizing calculations for undisturbed flows given the revised times of concentration and a curve number of 66 produces significantly higher peak flows than calculated by the applicant. However, the applicant has oversized the Bryner Canyon diversions. The Division's calculations show these two undisturbed diversions as adequately sized even when using the revised assumptions.

The disturbed area culverts D-2, D-3 and D-4 appear to be adequately sized even when using outlet control assumptions.

The proposal for the Southwest Lease area raises several questions with regard to the design specifications of ditches as follows:

1. The disturbed area ditch and road drainage ditch specifications on pages 3-31c and 3-31d apparently are in error with regard to depth. Freeboard requirements are apparently omitted. Further, the applicant refers to Plate 7-5B in the original Gordon Creek #2 Mine plan for cross-sections of these ditches. Cross-sections on Plate 7-5b do not correspond in configuration with the design specifications on pages 3-31c and 3-31d.

2. The undisturbed ditches DU-1, DU-2 and DU-3 specifications (Plate 7-7a) again do not correspond with the cross-sections proposed on Plate 7-7a. The side slopes of the ditch cross-section is 1:1, while the design specification notes 1.5:1.

3. Based on the 10-year, 24-hour peak flows calculated by the Division (four cfs), undisturbed diversions DU-1 and DU-3 need protection from erosive velocities. Additionally, a section of DU-2, just below the sediment pond discharge culvert, appears steep enough to require protection from erosive velocities.

Stipulation 817.43-.44-(1, 2, 3)-JW

1. The applicant shall, by _____, identify on Plate 7-5 (Drainage Control Plan), the locations of disturbed area drainage ditches including beginning and ending points of each ditch. The cross-sectional configuration of each ditch shall be identified with cross-sections having clearly indicated dimensions (see Plate 7-5a).

2. The applicant shall, by _____, supply corrections to the disturbed area ditches and road drainage ditch design specifications to allow for freeboard requirements and provide cross-sections for disturbed area ditches which clearly indicate actual configuration.

3. The applicant shall, by _____, provide cross-sections which correspond to the design specifications for undisturbed ditches DU-1, DU-2 and DU-3. In addition, the applicant shall provide the measures which will be taken for erosion protection for undisturbed ditches DU-1, DU-3 and the section of DU-2 adjacent and downstream from the Southwest Lease sediment pond outlet.

UMC 817.45 Hydrologic Balance: Sediment Control Measures

Applicant's Proposal

All disturbed area drainage with the exception of the water truck fill-up area and the old fan portal area is routed via ditches, berms and culverts around the disturbed areas or through it to the sediment pond. The applicant maintains that through this system, they provide adequate sediment control and prevent, to the extent possible, additional contributions of sediment to stream flow or to runoff outside the permit area. By doing this, they meet the applicable State and Federal effluent regulations and minimize erosion to the extent possible.

Compliance

There are four areas of concern either addressed in the MRP or not included in the MRP. They are as follows:

1. Water truck fill-up area at the confluence of the North Fork and Bryner Canyon.

2. Old fan portal area east of the main minesite area.

3. Outlet from sediment pond.

4. Bryner Canyon Bypass Ditch.

The first two areas (#1 and 2) have not been addressed in regards to sediment control and must be included in the MRP. The next area (#3) needs outlet protection, other than conveyor belting. Culvert extensions can be implemented to correct erosive outlet structures at this site. The last site (#4) is determined marginal because the Division has calculated velocities in excess of five fps in the Bryner Bypass Ditch and an on-site inspection by Division hydrologists showed that erosion was a problem in certain areas of the bypass ditch.

Stipulation 817.45-(1, 2)-JW

1. The applicant shall, by _____, provide protection against erosion based on the Division's conclusions.

2. See Sections UMC 817.42, .43, and .47 for specific stipulations.

DRAFT

UMC 817.46 Hydrologic Balance: Sedimentation Pond

Applicant's Proposal

The sedimentation pond for the original minesite was designed to store runoff from a 10-year, 24-hour precipitation event, from areas Sub-1, Sub-2 and Sub-3. Area Sub-3 includes all undisturbed runoff from upslope areas that is not diverted around the site and the sedimentation pond. Storm hydrographs from these subareas were generated using the TR-20 computer model.

Combined flows from Sub-1 and Sub-2 were determined by routing the hydrograph from area Sub-1 through culvert D-4 and through a diversion and combining with the hydrograph from area Sub-3.

Total combined flows to the pond were obtained by routing combined flow from Sub-1 and Sub-2 through culvert D-2 and combining with the hydrograph from area Sub-3. Discharge from the pond was obtained by routing the total combined flows through the pond.

The total runoff from the 10-year, 24-hour precipitation event for all areas draining to the sedimentation pond is 0.68 ac-ft.

Using the Universal Soil Loss Equation (USLE), the sediment yield was calculated for the disturbed areas. All erosion was assumed to be delivered to and deposited in the pond. Total sediment yield from Subarea 1 and 2 was figured to be 0.196 ac-ft for three years.

Total capacity below the invert of the spillway is 1.3 ac-ft. The potential for mine water discharge is handled by allowing for .42 ac-ft of mine water storage in the pond below the invert of the spillway.

The Division has used several methods to calculate peak flows and has listed them in a table to compare to Beaver Creek Coal's methodologies. The Divison used the exact same input parameters to determine peak flows for the original minesite.

VARIOUS PEAK FLOW CALCULATIONS

	SUB-1	SUB-2	SUB-3
Area	1.54	6.4	25.6
CN	86	89	54
10-year, 24-hour precipitation	2.0	2.0	2.0
25-year, 24-hour precipitation	2.7	2.7	2.7
Time of Concentration	0.1	0.18	0.23

DRAFT

CALCULATED PEAK DISCHARGES (cfs)
TR-20 Model

	SUB-1	SUB-2	SUB-3
10-year, 24-hour precipitation (Combined total for Sub 1, 2, 3 = 1.15 cfs)	.194	.927	.029
25-year, 24-hour precipitation (Combined total for Sub 1, 2, 3 = 1.86 cfs)			

SEDIMOT (DOGM)

TYPE II DISTRIBUTION	SUB-1	SUB-2	SUB-3
25-year, 24-hour precipitation		9.87	.49
25-year, 24-hour precipitation (Combined toal for Sub 1, 2, 3 = 13.05 cfs)			

FLOW FLOWS FOR STEEP SLOPED WATERSHED (DOGM)
Soil Conservation Service Method

10-year, 24-hour precipitation (Combined total = 17.86 cfs)	3	12	2.86
25-year, 24-hour precipitation (Combined total = 26.00 cfs)	5	18	3.0

The sedimentation pond proposed for the Southwest Lease area is designed to contain a three year sediment volume and contain the 10-year, 24-hour storm runoff. The Universal Soil Loss Equation (USLE) was used to calculate sediment volumes. The TR-20 computer model was used by the applicant to calculate runoff volumes for the 10-year, 24-hour storm. A weighted curve number was used by the applicant for the disturbed and undisturbed areas draining into the sediment pond.

Compliance

Based on the information for the main minesite submitted in the MRP and the values computed by the Division, the peak discharges for both the 10-year, 24-hour storm event and 25-year, 24-hour storm event were not in agreement. This discrepancy was not off by a small amount, but a large enough amount to question the values submitted by Beaver Creek Coal.

DRAFT

The applicant's use of a weighted curve number approach in the Southwest Lease runoff calculations is inappropriate. The disturbed area curve number of 90 is significantly reduced by averaging it with the undisturbed area curve number of 63. In effect, the runoff calculations for the disturbed area alone are greater than that proposed for the combined drainage areas used with the weighted curve number.

Utilizing the SEDIMOT II computer model, the Division calculated runoff volumes for the areas draining into the sediment pond (.42 acre feet). Verification of the actual size of the pond was awkward based on the incomplete depth dimensions provided by the applicant on Plate 7-8a, however, it appears that the pond is undersized.

On page 3-30 of the Southwest Lease MRP, the applicant notes that the pond size will be increased by 15 percent to accommodate for any error in estimating runoff volumes. Even with a 15 percent increase in the volume calculated, the pond appears undersized by about 0.17 acre feet (15 percent of calculated capacity).

The narrative on page 3-30 which notes that the pond volume will be increased by 15 percent appears to invalidate Plate 7-8a. Accurate dimensions and depths are necessary on Plate 7-8a.

Stipulation 817.46-(1, 2, 3, 4, 5)-TM

1. The applicant shall, by _____, justify the results of the TR-20 model peak flow calculations with some other established procedure or utilize the Division peak flow calculations for design criteria.

2. The applicant shall, by _____, justify the capacity of the emergency spillway to handle the calculated peak flow from 25-year, 24-hour storm event calculated by the Division of 13.05 cfs (SEDIMOT). Also, discuss the ability of the pond to handle this increase of head above the emergency spillway.

3. The applicant shall, by _____, redo the sediment pond cross-sections, so the Division can cross reference volume and storage calculations with the pond's peak flow storage capacity. The drawing submitted in the plan is not of adequate scale or detail to check against calculations for adequacy.

The applicant shall, by _____:

4. Recalculate the runoff volumes from the 10-year, 24-hour storm entering the sedimentation pond at the Southwest Lease site using methodology which more accurately reflects actual volumes anticipated.

5. Revise Plate 7-8a to show actual dimensions, including depths of top of embankment, spillway height and sediment cleanout level.

DRAFT

UMC 817.47 Hyrologic Balance: Discharge Structures

Applicant's Proposal

The applicant has calculated design velocites for ditches and culvert outlets throughout the minesite with the exception of the sediment pond discharge conveyance and the discharge from the spring above the fan site. The applicant notes that riprap has been placed at the outlet of culvert U-1 and that erosion control is accomplished by use of riprap at critical points. The critical points are unspecified. Additionally, page 7-76a, Figure 7-7 shows 18 inches minimum riprap size at the sediment pond outlet.

At the Southwest Lease site, the applicant has proposed an energy dissipating apron at the outlet of the highwall culvert incorporating eight inch riprap to reduce erosive velocities exiting this culvert. Velocity calculations and riprap sizing for the outlet of the sediment pond at the Southwest Lease site have also been proposed.

Compliance

Using the larger peak flows predicted from Division calculations, velocity predictions were made for each culvert outflow and diversion ditch. Based on the velocities calculated, the culvert outlets and diversion ditches, except as specified in the following paragraphs, should experience no problem in regards to erosion from excessive flow velocities.

The Bryner Canyon undisturbed bypass ditch at the main minesite and the disturbed area ditch which parallels it show peak velocities of 5.4 fps and 5.0 fps, respectively, which could prove to be an erosion problem. An on-site inspection of these two ditches indicated that there are points which will require protection measures. The point where the undisturbed ditch empties into the natural channel (near the septic tank area) is quite steep and will require protection measures. Additionally, a relatively steep drop off of both undisturbed and disturbed ditches occurs near the existing coal stockpile (not the new Southwest Lease stockpile area) and will require protection measures also. The remainder of the ditch appeared stable and at slopes which should not require protection measures.

The applicant has failed to provide velocity calculations for the discharge from the sediment pond and the discharge from the spring above the fan as it enters the Bryner Canyon channel. Field observations have shown that the use of conveyor belting to channel discharges down steep slopes is not generally effective. The two most observed problems are that the belting produces excessive velocities due to its extremely smooth nature and that the belting frequently collapses.

While the applicant has proposed riprap installations at the Southwest Lease site, the specifications offered indicate only velocity calculations and riprap sizing. The depth of riprap material to be installed as well as specifications for bedding or filter blanket installation have not been provided.

DRAFT

Stipulation 817.47-(1, 2, 3)-JW

1. The applicant shall submit, by _____, discharge velocity calculations at the point where the discharge from the main minesite sediment pond outflow intersects the natural channel and where the outflow from the spring above the fan intersects the natural channel. The applicant shall submit plans for a permanent means to convey the peak discharges from the sediment pond and outflow from the spring above the fan into the Bryner Canyon channel in a nonerosive manner.

2. The applicant shall submit, by _____, plans for erosion protection measures at the two points noted in the preceding compliance section, namely, the Bryner Canyon bypass channel and the one point in the disturbed ditch paralleling the Bryner Canyon bypass.

3. The applicant shall submit, by _____, design specifications for the depth of riprap material to be installed at the outlet of the Southwest Lease highwall culvert and Southwest Lease sediment pond outlet and filter blanket or bedding material specifications for these two areas.

UMC 817.48 Hydrologic Balance: Acid-forming and Toxic-forming Materials

Applicant's Proposal

The applicant has provided chemical analyses (page 6-22) of roof, floor and interburden between the two seams to be mined. Based on this analysis, the potential for acid or toxic drainage should any underground development waste be generated is minimal.

Compliance

The applicant appears to comply with this section.

Stipulations

None.

UMC 817.49 Hydrologic Balance: Permanent and Temporary Impoundments

Applicant's Proposal

Temporary impoundments on the Gordon Creek #2 Mine site include the two sediment ponds and a small impoundment on the North Fork of Gordon Creek adjacent to the truck water fill-up area. The sedimentation ponds are discussed in UMC 817.46.

DRAFT

Compliance

The applicant has not proposed plans and maps demonstrating that the requirements of this section will be met for the impoundment on the North Fork of Gordon Creek, truck water fill-up. This must be done to proceed further with the Technical Analysis.

Stipulation 817.49-(1)-TM

1. The applicant shall submit, by _____, information demonstrating compliance with this section.

UMC 817.50 Hydrologic Balance: Underground Mine Entry and Access Discharges

Applicant's Proposal

The applicant notes that the mine has not encountered underground water of sufficient quantity to necessitate pumping from the mine. Further, the Hiawatha Seam (the second seam to be mined) lies approximately 100-200 feet below the elevation of portals thus making the potential for underground discharges minimal.

Compliance

The applicant's proposal appears to comply with this regulation.

Stipulations

None.

UMC 817.52 Hydrologic Balance: Surface and Ground-Water Monitoring

Applicant's Proposal

Beaver Creek Coal Company has implemented a surface water monitoring program since 1980 (some pre-1980 data may exist). The sampling program encompasses two springs, the North Fork of Gordon Creek (intermittent), the discharge point of the sediment ponds, upper and lower sites on Beaver Creek (perennial) and five sites in Bryner Canyon (ephemeral).

Sampling includes field measurement of pH, temperature, specific conductance and flow. A chemical analysis for constituents listed on Table 7-13 (page 7-83) of the MRP is performed on samples taken. The sampling frequency proposed for the Bryner Canyon sites is quarterly, and all other sites are monthly (except for the Beaver Creek sites which are shown as continuous).

The two springs noted above are the only representation of ground-water available for the Gordon Creek #2 Mine. The plan commits to monitoring water encountered in underground workings only if significant volumes are encountered. Significant volumes are not defined.

Compliance

The applicant's surface water monitoring plan proposal for the most part meets the requirements of this section. Some confusion exists on the frequency that chemical analysis of samples from sites 2-3-W, 2-4-W, 2-5-W and 2-6-W will be taken. This needs clarification. It appears from an operational point of view, that flow measurements have for the most part been omitted for the summers of 1981 and 1982, particularly for the two stations on Beaver Creek. A better record of flow for Beaver Creek and the two springs is needed.

The applicant has added two additional surface water monitoring points (2-10-W and 2-11-W) for the Southwest Lease area. However, the sampling frequency or chemical constituents to be sampled for are not specified. This could be easily accomplished by updating Table 7-12 on page 7-82 in the original Gordon Creek #2 MRP.

The applicant's ground water monitoring proposal is highly deficient. In effect, no monitoring of ground water levels, subsurface flow, storage characteristics and quality is proposed. Further, the applicant has proposed monitoring only the springs residing on the lease area when it appears based on information obtained from the Gordon Creek CHIA that additional springs (with water rights on them) exist on the lease area. A much better characterization of the quantity and quality of ground water via spring discharges is necessary both for springs on and adjacent to the lease area. One option to assess mining impacts on spring flows in the area would be to establish recession curves for springs on and adjacent to the lease area. Flow measurements from these same springs in subsequent years could be analyzed using the previously established recession curves.

Water encountered in underground workings needs to be quantified and quality assessed. A formal plan to accomplish this is warranted. The applicant's proposal to monitor "significant" volumes of water encountered in the mine needs specifics.

Stipulation 817.52-(1, 2, 3 4)-JW

1. The applicant shall, by _____, commit in writing to monthly chemical analysis of sampling sites 2-3-W, 2-4-W and quarterly chemical analysis for sampling of sites 2-5-W and 2-6-W utilizing the parameters listed in Table 7-13 on page 7-83 of the plan.

2. The applicant shall, by _____, develop an underground water monitoring program designed to characterize inflows, discharges and consumption of water within the mine. Measurable inflows (one gpm or larger) which are sustained flows for over a one month duration shall be sampled on a monthly basis for water quality (field and laboratory analysis) and quantity.

The applicant shall submit to the Division a quarterly report of the results of the monitoring program which shall include: a map of underground workings showing the locations of all points sampled; a symbol indicating the type of source (e.g., roof, floor, fault, sandstone, channel, etc); quantity and quality data for all points sampled; a table showing water imported, discharged and consumed in the mine. A narrative discussion of the water balance within the mine shall accompany the quarterly report.

3. The applicant shall incorporate into the plan, by _____, one more season of flow data for Beaver Creek to provide an accurate characterization of the flow regime for this drainage. Data measurements using monthly observations or average monthly flow from recording gage strip chart data shall be utilized. The applicant shall incorporate into the plan one more season of discharge data for the Gunnison Homestead Spring to accurately characterize the flow regime for this spring.

4. The applicant shall submit, by _____, additional springs on and adjacent to the Gordon Creek Southwest Lease area for inclusion in the hydrologic monitoring program, based on the water rights information available in the Gordon Creek Cumulative Hydrologic Impact Assessment.

UMC 817.53 Hydrologic Balance: Transfer of Wells

Applicant's Proposal

Only one drill hole, GCD-13, is currently open for hydrologic monitoring. It is not anticipated that this well will be transferred to another party for any use.

Compliance

The applicant complies with this section.

Stipulations

None.

UMC 817.54 Water Rights and Replacement

Applicant's Proposal

The applicant's MRP commits 177.1 shares (one share = one ac-ft) of Scofield Reservoir water rights to replace any water affected by mining activities of the Gordon Creek #2 Mine. The applicant includes water quality data for the replacement water on page 3-33 of the MRP.

Compliance

Existing water rights for the Gordon Creek #2 lease area and adjacent areas have not been identified in detail in the MRP. It is impossible to assess if the applicant's proposal to replace existing water rights with Scofield Reservoir water is valid unless the existing water rights, flows, seasons of use and type of use are delineated.

Stipulation 817.54-(1)-JW

1. The applicant will, by _____, provide a written compilation of existing water rights in the lease area including any downstream water rights on Beaver Creek or Gordon Creek, which could be impacted by mining activities at the Gordon Creek #2 Mine. Included in this written compilation will be the water right application or certificate number, the owner's name, flow in second-feet, quantity of water right in acre-feet, inclusive periods of use, direct source of supply, points of diversion and approved use. The applicant must show the locations of these water rights on a map pursuant to UMC 784.14.

UMC 817.55 Hydrologic Balance: Discharge of Water Into an Underground Mine

Applicant's Proposal

The applicant does not propose to route drainage into any of the portal entries. The drainage control plan pictured on Plate 7-5 shows surface drainage conveyed away from portal entries.

Compliance

The applicant complies with this section.

Stipulations

None.

UMC 817.56 Hydrologic Balance: Postmining Rehabilitation of Sedimentation Ponds, Diversions, Impoundments and Treatment Facilities

Applicant's Proposal

No permanent sedimentation ponds, impoundments, diversions or treatment facilities are planned for the Gordon Creek #2 Mine.

Compliance

The applicant complies with this section.

Stipulations

None.

UMC 817.57 Hydrologic Balance: Stream Buffer Zones

Applicant's Proposal

The applicant's mining activites will fall within the 100 foot buffer zone for the truck water fill-up area in Sweets Canyon (North Fork of Gordon Creek).

Compliance

The applicant has not demonstrated compliance with this section of the regulations and must do so.

Stipulations

See UMC 817.42.

UMC 817.59 Coal Recovery

Applicant's Proposal

The Gordon Creek #2 Mine is extracting coal from the Castlegate "A" and will begin extracting coal from the Hiawatha Seam in 1986. All mining is done with a continuous miner/shuttle car haulage. In second mining, a standard room-and-pillar method is used to maximize coal recovery. Recovery within the room-and-pillar panels is approximately 75 percent to 78 percent with an overall recovery factor (including barriers) estimated at 50 percent.

Compliance

The applicant will comply with UMC 817.59 when the following requirements have been addressed to the Chief, Branch of Solid Minerals, State Office, Bureau of Land Management (BLM):

1. The applicant has assembled the application in a format consistent with the Division of Oil, Gas and Mining's (DOGM) permanent regulations, Sections UMC 771 through UMC 786. As required by 30 CFR 211.10(b) effective August 30, 1982, the applicant must furnish a cross-reference index showing where each specific part of the new 30 CFR 211.10(b) rules, effective August 30, 1982 can be found in the total submission of the permit application package.

2. Submit a statement to be a part of the underground mining plan that is worded similar to the following: "The BLM is to be involved in and approve any changes in resource recovery or abandonment including portal sealing." This statement is being required to emphasize that the BLM is responsibile for seeing that the resource will be fully recovered considering existing economics, mining conditions and available equipment.

Stipulations

None.

UMC 817.61-.68 Use of Explosives

Applicant's Proposal

No surface blasting is employed at the lower minesite. Surface blasting which takes place at the Southwest Lease site will be for the construction of the pad and portals. It will be done in accordance with State and Federal laws and by certified persons.

Compliance

The applicant is in compliance with UMC 817.61-.68.

Stipulations

None.

UMC 817.71-.74 Disposal of Underground Development Waste and Excess Spoil and Nonacid and Nontoxic-forming Coal Processing: General Requirements

Applicant's Proposal

The operator states that all underground development waste is gobbed in cross cuts and no longer needed entries.

Compliance

The applicant complies with this section.

Stipulations

None.

UMC 817.81-.88 Coal Processing Waste Banks: General Requirements

There are no coal processing facilities planned for use at the Gordon Creek #2 Mine. All raw coal will be hauled from the site.

Compliance

Not applicable.

Stipulations

None.

UMC 817.89 Disposal of Noncoal Waste

Applicant's Proposal

Noncoal waste is temporarily stored in a metal trash receptacle within a fenced area on-site. This dumpster is loaded out on an as needed basis by a local contractor and the trash is hauled to an approved Carbon County landfill northeast of Price.

Compliance

The applicant complies with this section.

Stipulations

None.

UMC 817.91-.93 Coal Processing Waste: Dams and Embankments: General Requirements

There are no coal processing facilities planned for use at the Gordon Creek #2 Mine. All raw coal will be hauled from the site.

Compliance

Not applicable.

Stipulations

None.

UMC 817.95 Air Resources Protection

Applicant's Proposal

Dust suppression sprays are used on the continuous miners at the face underground and as coal is loaded onto the underground mine conveyor. Limited drop distances from the conveyor and coal loading by front-end loaders to haul trucks will further reduce fugitive dust emissions. During haulage, mitigation measures include non-overloading of haul trucks, abiding by speed limits, watering the road surface as needed and application of a chemical dust suppressant and roadbed stabilizer.

DRAFT

Compliance

The applicant complies with this section.

Stipulations

None.

UMC 817.97 Protection of Fish, Wildlife and Related Environmental Values

Existing Environment and Applicant's Proposal

A wide variety of wildlife species utilize habitats present within and adjacent to the permit area. Economically important and high interest species include mule deer, elk, moose, black bear, mountain lion, bobcat, coyote, mountain cottontail, snowshoe hare, flying squirrel and beaver. Thirty species of birds including gamebirds and raptors are listed as being of high State interest. Seven species of raptors have been observed on the permit area and nesting areas for goshawks, great horned owls, long-eared owls, red-tailed hawks and golden eagles have been found on-site. Gamebirds include blue grouse and ruffed grouse, bandtailed pigeons and mourning doves.

Aquatic habitat is limited to two streams on the study area, North Fork Gordon Creek and Beaver Creek. North Fork Gordon Creek is limited as a fishery because it does not support game species. Beaver Creek, however, is ranked by the Utah Division of Wildlife Resources (DWR) as being substantial as a salmonid fishery with a self-sustaining population of introduced Yellowstone cutthroat trout. Disturbance has occurred primarily in Bryner Creek, a tributary of North Fork Gordon Creek. Habitat loss or deterioration of the North Fork Gordon Creek aquatic ecosystem has been limited by installation of sediment ponds and diversions and reseeding of disturbed areas adjacent to Bryner Creek. Buffer zone signs have also been placed along this drainage. In addition, Beaver Creek Coal Company has initiated monthly inspections of surface water to determine any changes in water quality which may be attributed to mining operations at the #2 Mine. Should change in quality occur, the applicant will identify the source of the problem and take measures to correct the deficiencies.

Beaver Creek has not been impacted by the mining operation. No future surface disturbance is planned in the area and subsidence under the stream is not expected.

Mitigation and management plans for terrestrial species focus on minimizing impacts related to continued mining activities and facilitating rapid return of the site to suitable habitat following mining.

The applicant has committed to avoiding important or sensitive habitats such as riparian zones, to not using persistent pesticides, to the use of powerpole and line configurations designed as raptor-protected, and to promptly reporting the presence of any threatened or endangered species observed on the permit area.

Other mitigation measures include conducting future surveys to evaluate raptor electrocution hazards during winter and early spring on selected powerlines and conducting "employee awareness" programs for mine personnel.

Roadkills of large animals, particulary mule deer, will be mitigated by an awareness program, speed limits and game crossing signs. In addition, routine reporting or roadkills along the access corridor by selected personnel will be conducted. If reports indicate that kills are increasing, the applicant will consult with UDWR for recommendations.

The overland conveyor associated with the Southwest Lease Area has been designed to provide passage for big game animals. Two designated elk crossings are provided. The applicant has also committed to mitigation if the conveyor is shown to be a signficiant barrier to big game.

Following mining, the applicant will implement revegetation methods designed to restore and enhance wildlife habitat on disturbed areas. The revegetation plant mix includes herbaceous and woody species that are adapted to on-site conditions and are of known value to wildlife for cover, forage or both. A complete revegetation plan including species lists and site specific revegetation procedures is given in Section 3.5.5.

Compliance

The applicant has submitted mitigation and management techniques which address the requirements of UMC 817.97. However, the MRP fails to provide sufficient information on the design and implementation of elk crossings along the conveyor system. In addition, the plan does not adequately discuss plans for restoration of riparian vegetation at the Gordon Creek #3 and #6 Mines to mitigate affects at the Southwest Lease area. The applicant will comply with this section when the following stipulations are addressed.

Stipulation 817.97-(1, 2)-SC

1. The applicant shall submit detailed designs and narrative describing selection and establishment of elk corssings along the conveyor system. Also discuss plans to mitigate the effects of the conveyor system if it is found to present a signficant barrier to big game movement.

2. The applicant shall provide detailed plans for restoration of four acres of riparian habitat on the Gordon Creek #3 and #6 Mines site. Include specific methods and designs for establishment of the community, plans for its protection, landowners concurrence and consent, etc.

UMC 817.99 Slides and Other Damage

Applicant's Proposal

The applicant has committed to immediately notify the Division at any time a slide occurs.

Compliance

The applicant complies with this section.

Stipulations

None.

UMC 817.100 Contemporaneous Reclamation

Applicant's Proposal

The applicant has committed to contemporaneous reclamation of disturbed areas as they become available. Areas will be backfilled, graded, retopsoiled and revegetated to acceptable reclamation standards.

Compliance

The applicant complies with this section.

Stipulations

None.

UMC 817.101 Backfilling and Grading

Applicant's Proposal

Beaver Creek justifies leaving highwalls based on the fact that they have been stable for 14 years, that they blend in with the existing terrain, that greater instability would result from blasting and that no known seeps or springs exist on these highwalls. The highwalls on the Southwest Lease will be reduced along the pad and road areas where feasible.

(b)(7) The operator indicates on page 3-59 that upon the completion of backfilling and grading the surface will be scarified.

Compliance

Detail regarding the scarification and the implements to be employed in scarification must be provided.

The applicant has addressed reduction of highwalls on the roads and pads on the Southwest Lease. They want to leave the highwalls in other areas to be consistent with the existing and surrounding terrain and from which no known seeps or springs exist. No geotechnical data have been provided as is necessary, however. There are details lacking regarding the scarification and the implements to be employed in the scarification.

Stipulation 817.101-(1, 2)-PGL

1. If highwalls are to be left, these areas must be delineated on a map and described in the narrative.

2. The applicant must provide the information demonstrating compliance with this section by submitting geotechnical data and detail regarding the scarification and the implements to be employed in the scarification.

UMC 817.106 Regrading or Stabilizing Rills and Gullies

Applicant's Proposal

In Section 3.5.4.2, the operator states that if rills and gullies deeper than nine inches develop in regraded areas they "will be filled, graded or otherwise stabilized" and reseeded.

Compliance

This section will comply when more details regarding methods needed to perform fill work, as well as the source of the fill, are submitted.

Stipulation 817.106-(1)-PGL

1. The applicant must provide detail regarding methods needed to perform fill work as well as the source of the fill.

UMC 817.111-.117 Revegetation

Existing Environment and Applicant's Proposal

The Gordon Creek #2 permit area contains 14 vegetation types. Two forest types (aspen woodlands and mixed coniferous forests), seven shrublands types (cherry thickets, willow thickets, oak shrublands, mixed mountain shrublands, manzanita shrublands, big sagebrush shrublands and bottomland sagebrush shrublands), one shrub/forest type (riparian community) and two grassland types (mountain grassland and wet sedge meadow). Of these, two have been disturbed by existing mining operations, the oak shrubland type and the mountain grassland type. No further disturbnce is planned for the area.

Since much of the disturbance occurred prior to 1977, the exact nature of the disturbed vegetation is unknown. However, reference areas were selected to best represent the species composition, topography, soils and aspect of affected communities within the permit area. The reference areas are located within the permit area on sites which will not be disturbed throughout the life of the mine.

Both reference communities were sampled for total vegetative cover, total ground cover, cover by species, productivity by life form and by species, shrub density and shrub height. Sample adequacy was achieved for all parameters with the exception of production on the oak shrubland type which met the Division's maximum sample requirement of 40 samples.

The disturbance of areas associated with the Southwest Lease (approximately 7.5 acres) occurred subsequent to the Surface Mining Control and Reclamation Act of 1977. Therefore, baseline data were obtained for this area. Total vegetative cover, productivity by life-form and by species and woody plant density were adequately sampled.

No species currently listed as threatened or endangered have been found to occur on or near the permit area.

The applicant has submitted a complete revegetation plan (Section 3.5.5). The plan adequately addresses the schedule of revegetation, species and seeding or planting rates, planting methods and mulching techniques. All areas will be seeded with species native to the area, capable of stabilizing soil and of the same seasonal variety as the existing vegetation. Introduced species are used only to provide erosion control or to enhance species diversity.

The applicant has committed to seeding during the first normal period of favorable planting conditions except where temporary erosion control is required.

An adequate monitoring and management program for the revegetated areas has been given. Plans for erosion control, weed control, initiating of grazing on reclaimed areas and methods to determine the success of revegetation are acceptable.

Feasibility of Reclamation

The Gordon Creek #2 Mine site receives approximately 12-16 inches of precipitation annually. This amount is sufficient for the establishment of many of the species native to the area. Gordon Creek #2 Mine is also near Beaver Creek's Gordon Creek #3 and #6 Mines, which are scheduled for reclamation to begin in 1984. This will provide a prime area for testing the feasibility of reclamation and revegetation.

Compliance

The applicant complies with this section.

Stipulations

None.

UMC 817.121-.126 Subsidence Control

Applicant's Proposal

There are no man-made structures above the mine either currently in use or of historical significance and, therefore, in need of protection from subsidence. The only renewable resources are of a hydrologic or biologic nature. Portions of Beaver Creek and several surface springs were mined under several years ago and monitoring results have shown no affect on hydrologic resources due to subsidence. Maximum subsidence for an average panel is predicted at 5.25 feet. Since past pillaring has shown no obvious surface expression, it is expected this figure will be substantially less, if even measurable.

A subsidence monitoring plan will be implemented which includes monitoring stations located above active mine panels and surveyed twice yearly, weather permitting. Mitigation measures, should a substantial water inflow occur, may include: attempts to seal off the inflow; increase monitoring efforts; pumping and cleaning of inflow water; replacement of lost water if indicated by monitoring.

Compliance

The plan has addressed the potential amount of subsidence per seam but not as an affect of pillaring in both seams. Data provided are not sufficient to ascertain the potential for subsidence caused by second mining in the Hiawatha Seam, especially in the area of Beaver Creek.

Stipulations 817.121-.126-(1)-CY

1. Provide calculations showing the potential affect of second mining in both seams. As required by UMC 817.126, detailed subsurface information must be provided before the Division can make the determination that subsidence will not cause material damage to Beaver Creek.

UMC 817.131 Cessation of Operations: Temporary

Applicant's Proposal

The applicant has committed to submit to the Division a notice of intention to cease or abandon the operations in accordance with UMC 817.131 and to MSHA standards. This notice will be submitted whenever it is known that operations are to be temporarily ceased for more than 30 days.

Compliance

The applicant complies with this section.

Stipulations

None.

UMC 817.132 Cessation of Operations: Permanent

Applicant's Proposal

Upon permanent cessation of operations, permanent reclamation will commence. Mine openings will be sealed, all surface equipment, structures and facilities associated with the operation will be removed, and all affected lands reclaimed. The schedule for permanent reclamation can be found in Section 3.5.7.1.

Compliance

Applicant complies with this section.

Stipulations

None.

UMC 817.133 Postmining Land-Use

Applicant's Proposal

The land on which the #2 Mine is located has long been used for coal mining. Other than coal mining, this area has long been used for deer hunting, sightseeing, and hiking. There are no developed campgrounds or public roads within the area and none planned for the future.

Private landowners presently administer the lands in this area for limited livestock forage, wildlife habitat, watershed, dispersed recreation and coal mining. There are no range improvements on the area.

The postmining uses of the land will be the same as the pre-mining and present uses described above. In areas of surface disturbance, reclamation and revegetation will restore the area to a condition capable of supporting premining uses.

Compliance

Applicant complies with this section.

Stipulations

None.

UMC 817.150-.156 Roads: Class I

Existing Environment and Applicant's Proposal

The coal haul road is used for all access to and from the minesite. It is approximately 2,700 feet long. The road is bermed on the Bryner Canyon side until it enters the minesite area. This is a gravel-surfaced road sloped slightly toward the highwall side where a conveyance ditch is maintained to carry runoff to the culvert below. The road is regularly maintained to provide safe access for men and material to the mine as well as providing for safe, efficient coal haulage. The road joins the Gordon Creek County Road at the permit boundary. The overall grade is about eight percent.

Compliance

This pre-existing road complies with the Class I road regulations. The maintenance of the road is not adequately addressed, however.

Stipulation 817.150-.156-(1)-PGL

1. A commitment is needed by the applicant that the roads will be maintained in such a manner that the approved design standards are met throughout the life of the transportation facility.

UMC 817.160-.166 Roads: Class II

Existing Environment and Applicant's Proposal

The mine access road is used for men and material access to the west portals and is approximately 530 feet long. This road is bermed for safety and runoff control. There is another access road that leads to the old east portals. The road is used less than once per day because the portals are still used for intake air. This road is 1,150 feet long. The Southwest Lease road is approximately 1,200 feet long and leads to the new upper portal area from the lower mine area. This road is designed with a 12 percent vertical grade, will be gravel surfaced, with a three foot high berm on the outside of the roadway.

Compliance

The pre-existing mine access road complies with the Class II regulations. The maintenance of the road is not adequately addressed, however. The Southwest Lease Road does not adequately address the geotechnical specfications of the cut slope, placement and type of embankment material, and a minimum safety factor of 1.5 for the embankment.

Stipulation 817.160-.166-(1, 2, 3, 4)-PGL

1. A commitment by the operator is needed that will assure the roads will be maintained in such a manner that the required design criteria are met throughout the life of the facility.

2. A geotechnical analysis must be submitted for the road cut slope on the Southwest Lease. There needs to be a demonstration of a minimum safety factor of 1.5, especially in the seep area. It was mentioned that where steep slopes occur, additional supports such as reinforced concrete walls or bin walls may be used. When will this be determined? How much sloughing? A blow out? Specifics must be submitted.

3. Describe how material is tested for moisture content within acceptable levels before it is placed in an embankment to achieve design compaction.

4. Show a minimum embankment safety factor of 1.25 for the Southwest Lease Road.

UMC 817.170-.176 Roads: Class III

Not applicable.

UMC 817.180 Other Transportation Facilities

Applicant's Proposal

Coal is transported from the mine via a surface conveyor where it is discharged into the coal storage area. It is then loaded by front-end loader into trucks and hauled to the preparation plant. There are no railroads in the Gordon Creek #2 Mine area. The transportation facilities are shown on Plate 3-2.

Compliance

The applicant complies with this section.

Stipulations

None.

UMC 817.181 Support Facilities and Utility Installations

Applicant's Proposal

The support facilities required to operate the underground mine are shown on Plate 3-1. The central facility includes an office, bathhouse, supply building and fan building. The project has a substation and receives its power from Utah Power & Light Company.

Compliance

The applicant complies with this section.

Stipulations

None.

STIPULATIONS

DRAFT

Beaver Creek Coal Company
Gordon Creek #2 Mine
ACT/007/016, Carbon County, Utah

December 19, 1983

Stipulation 817.13-.15-(1)-CY

1. The applicant has not addressed the potential for impoundment of water behind the portal seals and if, in fact, such seals should be hydrologic seals. This should be addressed in the mine plan under Section 3.5.3.1.

Stipulation 817.22-(1)-EH

1. The applicant must take additional soil samples in the area of high sodium to determine the extent of the area.

Stipulation 817.41-(1, 2, 3)-TM

1. See stipulations under UMC 817.52 and 817.54.

2. The applicant shall submit, by _____, adequate discussion of the North Fork of Bryner Creek's general hydrologic regime, how it is intercepted by the Sweets Mine and where this flow is transmitted to.

3. The applicant shall submit, by _____, adequate discussion of past and current mining plans under both Beaver Creek and the North Fork of Gordon Creek and the hydrologic mitigation measures associated with these mining plans.

Stipulation 817.42-(1, 2, 3, 4, 5)-TM

The applicant shall submit, by _____:

1. Adequate plans regarding the "water truck fill-up area" which will include the sediment control measures necessary to meet State and Federal water quality standards and effluent limitations.

2. Adequate plans regarding the "Old Fan Portal Area" which will include the sediment control measures necessary to meet State and Federal water quality standards and effluent limitations.

3. Adequate plans on how obvious erosion problems in the Bryner Canyon bypass ditch, as stated in the November 8, 1983 Memo to Coal File sent to Beaver Creek Coal, based on the November 3, 1983 site visit by the regulatory authority, will be stabilized and corrected.

4. Adequate plans in the MRP regarding sediment pond improvements and commit to construction of these improvements. These improvements involve extending the outlet culvert down to the Bryner Canyon drainage and extending the inlet culvert out into the pond to get the necessary freeboard between the current sediment levels and the inlet culvert.

5. Plans and/or maps which indicate/show storage areas for the Southwest Lease minesite.

Stipulation 817.43-.44-(1, 2, 3)-JW

1. The applicant shall, by _____, identify on Plate 7-5 (Drainage Control Plan), the locations of disturbed area drainage ditches including beginning and ending points of each ditch. The cross-sectional configuration of each ditch shall be identified with cross-sections having clearly indicated dimensions (see Plate 7-5a).

2. The applicant shall, by _____, supply corrections to the disturbed area ditches and road drainage ditch design specifications to allow for freeboard requirements and provide cross-sections for disturbed area ditches which clearly indicate actual configuration.

3. The applicant shall, by _____, provide cross-sections which correspond to the design specifications for undisturbed ditches DU-1, DU-2 and DU-3. In addition, the applicant shall provide the measures which will be taken for erosion protection for undisturbed ditches DU-1, DU-3 and the section of DU-2 adjacent and downstream from the Southwest Lease sediment pond outlet.

Stipulation 817.45-(1, 2)-JW

1. The applicant shall, by _____, provide protection against erosion based on the Division's conclusions.

2. See Sections UMC 817.42, .43, and .47 for specific stipulations.

Stipulation 817.46-(1, 2, 3, 4, 5)-TM

1. The applicant shall, by _____, justify the results of the TR-20 model peak flow calculations with some other established procedure or utilize the Division peak flow calculations for design criteria.

2. The applicant shall, by _____, justify the capacity of the emergency spillway to handle the calculated peak flow from 25-year, 24-hour storm event calculated by the Division of 13.05 cfs (SEDIMOT). Also, discuss the ability of the pond to handle this increase of head above the emergency spillway.

3. The applicant shall, by _____, redo the sediment pond cross-sections, so the Division can cross reference volume and storage calculations with the pond's peak flow storage capacity. The drawing submitted in the plan is not of adequate scale or detail to check against calculations for adequacy.

The applicant shall, by _____:

4. Recalculate the runoff volumes from the 10-year, 24-hour storm entering the sedimentation pond at the Southwest Lease site using methodology which more accurately reflects actual volumes anticipated.

5. Revise Plate 7-8a to show actual dimensions, including depths of top of embankment, spillway height and sediment cleanout level.

Stipulation 817.47-(1, 2, 3)-JW

1. The applicant shall submit, by _____, discharge velocity calculations at the point where the discharge from the main minesite sediment pond outflow intersects the natural channel and where the outflow from the spring above the fan intersects the natural channel. The applicant shall submit plans for a permanent means to convey the peak discharges from the sediment pond and outflow from the spring above the fan into the Bryner Canyon channel in a nonerosive manner.

2. The applicant shall submit, by _____, plans for erosion protection measures at the two points noted in the preceding compliance section, namely, the Bryner Canyon bypass channel and the one point in the disturbed ditch paralleling the Bryner Canyon bypass.

3. The applicant shall submit, by _____, design specifications for the depth of riprap material to be installed at the outlet of the Southwest Lease highwall culvert and Southwest Lease sediment pond outlet and filter blanket or bedding material specifications for these two areas.

Stipulation 817.49-(1)-TM

1. The applicant shall submit, by _____, information demonstrating compliance with this section.

Stipulation 817.52-(1, 2, 3 4)-JW

1. The applicant shall, by _____, commit in writing to monthly chemical analysis of sampling sites 2-3-W, 2-4-W and quarterly chemical analysis for sampling of sites 2-5-W and 2-6-W utilizing the parameters listed in Table 7-13 on page 7-83 of the plan.

DRAFT

2. The applicant shall, by _____, develop an underground water monitoring program designed to characterize inflows, discharges and consumption of water within the mine. Measurable inflows (one gpm or larger) which are sustained flows for over a one month duration shall be sampled on a monthly basis for water quality (field and laboratory analysis) and quantity.

   The applicant shall submit to the Division a quarterly report of the results of the monitoring program which shall include: a map of underground workings showing the locations of all points sampled; a symbol indicating the type of source (e.g., roof, floor, fault, sandstone, channel, etc); quantity and quality data for all points sampled; a table showing water imported, discharged and consumed in the mine. A narrative discussion of the water balance within the mine shall accompany the quarterly report.

3. The applicant shall incorporate into the plan, by _____, one more season of flow data for Beaver Creek to provide an accurate characterization of the flow regime for this drainage. Data measurements using monthly observations or average monthly flow from recording gage strip chart data shall be utilized. The applicant shall incorporate into the plan one more season of discharge data for the Gunnison Homestead Spring to accurately characterize the flow regime for this spring.

4. The applicant shall submit, by _____, additional springs on and adjacent to the Gordon Creek Southwest Lease area for inclusion in the hydrologic monitoring program, based on the water rights information available in the Gordon Creek Cumulative Hydrologic Impact Assessment.

Stipulation 817.54-(1)-JW

1. The applicant will, by _____, provide a written compilation of existing water rights in the lease area including any downstream water rights on Beaver Creek or Gordon Creek, which could be impacted by mining activities at the Gordon Creek #2 Mine. Included in this written compilation will be the water right application or certificate number, the owner's name, flow in second-feet, quantity of water right in acre-feet, inclusive periods of use, direct source of supply, points of diversion and approved use. The applicant must show the locations of these water rights on a map pursuant to UMC 784.14.

Stipulation 817.97-(1, 2)-SC

1. The applicant shall submit detailed designs and narrative describing selection and establishment of elk corssings along the conveyor system. Also discuss plans to mitigate the effects of the conveyor system if it is found to present a signficant barrier to big game movement.

DRAFT

2. The applicant shall provide detailed plans for restoration of four acres of riparian habitat on the Gordon Creek #3 and #6 Mines site. Include specific methods and designs for establishment of the community, plans for its protection, landowners concurrence and consent, etc.

Stipulation 817.101-(1, 2)-PGL

1. If highwalls are to be left, these areas must be delineated on a map and described in the narrative.

2. The applicant must provide the information demonstrating compliance with this section by submitting geotechnical data and detail regarding the scarification and the implements to be employed in the scarification.

Stipulation 817.106-(1)-PGL

1. The applicant must provide detail regarding methods needed to perform fill work as well as the source of the fill.

Stipulations 817.121-.126-(1)-CY

1. Provide calculations showing the potential affect of second mining in both seams. As required by UMC 817.126, detailed subsurface information must be provided before the Division can make the determination that subsidence will not cause material damage to Beaver Creek.

Stipulation 817.150-.156-(1)-PGL

1. A commitment is needed by the applicant that the roads will be maintained in such a manner that the approved design standards are met throughout the life of the transportation facility.

Stipulation 817.160-.166-(1, 2, 3, 4)-PGL

1. A commitment by the operator is needed that will assure the roads will be maintained in such a manner that the required design criteria are met throughout the life of the facility.

2. A geotechnical analysis must be submitted for the road cut slope on the Southwest Lease. There needs to be a demonstration of a minimum safety factor of 1.5, especially in the seep area. It was mentioned that where steep slopes occur, additional supports such as reinforced concrete walls or bin walls may be used. When will this be determined? How much sloughing? A blow out? Specifics must be submitted.

3. Describe how material is tested for moisture content within acceptable levels before it is placed in an embankment to achieve design compaction.

4. Show a minimum embankment safety factor of 1.25 for the Southwest Lease Road.

BOND ESTIMATE

Beaver Creek Coal Company
Gordon Creek #2 Mine
ACT/007/016, Carbon County, Utah

December 19, 1983

3.5.7 Schedule of Reclamation

3.5.7.1 Detailed Timetable for Completion of Major Reclamation Processes

The following schedule of reclamation is proposed to be initiated within 90 days (weather permitting) of final abandonment of the mining operation:

		Acc. Time
1.	Seal Portals - 1 week	1 week
2.	Remove Structures - 4 weeks	5 weeks
3.	Soil Placement (backfilling & grading)	
	a. Upper Pad - 2 weeks (including road)	7 weeks
	b. Channel Restoration - 2 weeks	9 weeks
	c. Lower Pad & Diversions - 2 weeks (including road)	11 weeks
4.	Seedbed Material & Handling - 1 week	12 weeks
5.	Reseeding & Fertilizing - 1 week	13 weeks
6.	Mulching - 2 weeks	15 weeks
7.	Protective Fencing - 2 weeks	17 weeks

The above reclamation tasks are therefore proposed to be complete within 17 weeks following the start of reclamation activities.

1. Loader - 950B (2 1/2 cy bucket) = $75.50/hr
   Operator = $15.00/hr
   $90.50/hr

2. Crane - Groves RT-580
   20 T = $62.50/hr
   Operator = $15.00/hr
   $77.50/hr

3. Truck and Operator - $65.00/hr

4. Cat D-7G = $ 905.00/day
   Operator = $ 120.00/day
   $1,025.00/day

5. Backhoe (Cat 235) = $1,440.00/day
   Operator = $ 120.00/day
   $1,560.00/day

SUMMARY OF RECLAMATION COST ESTIMATE

2. Seal Portals	$ 2,200.00
(b) Removal Structures	$ 11,753.00
(c) Soil Placement (backfilling & grading)	$ 70,410.00
(d) Seedbed Material Handling	$ 4,100.00
(e) Reseeding and Fertilizer	$ 13,750.00
(f) Mulching	$ 3,500.00
(g) Protective Fencing	$ 6,000.00
(h) Sedimentation Pond Site	$ 5,170.00
	$116,883.00
(i) Maintenance and Monitoring	$ 11,840.00
(j) Foreman for 17 Weeks	$ 10,200.00
	$138,923.00
10% Contingency	$ 13,892.00
1983 Dollars	$152,815.00

Total for Gordon Creek #2 - $152,815.00
Southwest Lease - $163,665.00
$316,480.00 1983 Dollars

1984 - $348,128
1985 - $382,940
1986 - $421,235
1987 - $463,358
1988 - $509,694

3.5.8 Reclamation Cost Estimate

(a) Seal Portals

Labor - 2 men X $100/man day X 5 days	$1,000.00	
Materials - 200 blocks/seal X 5 seals X $1.00/block	$1,000.00	
Mortar, sand, etc.	$ 200.00	
SUBTOTAL	$2,200.00	$2,200.00

(b) Removal Structures

Fan

Labor - 2 men X $100/day X 2 days	$400.00
Equipment (hauling) - 1 truck + operator X 4 hrs X $65/hr	$260.00
20 T Crane X 2 hrs X $77.50/hr	$155.00
SUBTOTAL	$815.00

Structures and Conveyor

Labor - 3 men X $100/day X 2 days	$ 600.00
Equipment (hauling) - 1 truck + operator X 16 hrs X $65/hr	$1,040.00
1 loader + operator X 16 hrs X $90.50/hr (950 B - 2 1/2 cu yd bucket)	$1,448.00
SUBTOTAL	$3,088.00

Substation

Labor - 2 men X $100/day X 2 days	$ 400.00
Hauling - 1 truck + operator X 16 hrs X $65/hr	$1,040.00
Loader - 4 hrs X $90.50/hr (+ operator)	$ 362.00
SUBTOTAL	$1,802.00

Bathhouses		
Labor - 2 men X $100/day X 3 days	$ 600.00	
Equipment (hauling) - 1 truck + operator X 12 hrs X $65/hr	780.00	
Loader - 4 hrs X $90.50/hr (+ operator)	362.00	
	$1,742.00	
Water System		
Labor - 2 men X $100/day X 1 day	$200.00	
Hauling - 1 truck + operator X 4 hrs X $65/hr	$260.00	
Loader - 2 hrs X $90.50 (+ operator)	$181.00	
SUBTOTAL	$641.00	
Bathhouse Water Tank and Water System		
Labor - 2 men X $100/day X 2 days	$ 400.00	
Hauling - 1 truck + operator X 16 hrs X $65/hr	$1,040.00	
Loader - 8 hrs @ $90.50/hr (+ operator)	$ 724.00	
SUBTOTAL	$2,164.00	
Clean-Up		
Labor - 2 men X $100/day X 4 days	$ 800.00	
Hauling - 1 truck + operator X 8 hrs X $65/hr	$ 520.00	
Loader (+ operator) - 2 hrs X $90.50	$ 181.00	
SUBTOTAL	$1,501.00	$11,753.00

(c) Soil Placement (Backfilling & Grading)		
Upper Portal Pad		
Backhoe + operator X $1,560/day X 8 days	$12,480.00	
Cat + operator X $1,025/day X 8 days	$ 8,200.00	
SUBTOTAL	$20,680.00	
Channel Restoration		
Backhoe + operator X $1,560/day X 8 days	$12,480.00	
Cat + operator X $1,025/day X 8 days	$ 8,200.00	
Labor - 4 men X $100/day X 8 days	$ 3,200.00	
SUBTOTAL	$23,880.00	
Lower Pad and Diversions		
Backhoe + operator X $1,560/day X 10 days	$15,600.00	
Cat + operator X $1,025/day X 10 days	$10,250.00	
SUBTOTAL	$25,850.00	$70,410.00
(d) Seedbed Material Handling (9.2 acres)		
Cat/Ripper + operator X $1,025/day X 2 days	$2,050.00	
Cat/Disk + operator X $1,025/day X 2 days	$2,050.00	
SUBTOTAL	$4,100.00	
(e) Reseeding & Fertilizing (9.2 acres)		
Hydroseeder, operator and driver - Seed = $1,275.00 Crew = $100/acre	$13,750.00	
(f) Mulching (9.2 acres)		
Hydromulcher, operator and driver - $350/acre X 10 acres	$3,500.00	$6,000.00

(g) Protective Fencing (9.2 acres)		
6 foot high X 3,000 linear feet X $2.00/foot installed	$6,000.00	$6,000.00
(h) Sedimentation Pond Site		
Backhoe + operator X $1,560/day X 2 days	$3,120.00	
Cat + operator X $1,025/day X 2 days	$2,050.00	
SUBTOTAL	$5,170.00	
(i) Maintenance and Monitoring		
$11,840/year for both Gordon Creek #2 and Southwest Lease	$11,840.00	
		$128,723.00
10% Contingency		$ 12,872.00
TOTAL		$141,595.00

Note: All costs estimates are based on 1983 dollars.

Table 3-3 Species mix, seeding rates and planting rates for species to be used in permanent reclamation. Seeding rates are based on drill-seeding.

SPECIES	POUNDS OF PLS PER ACRE*	COST/POUND
	SEEDING MIX	
Perennial Grasses		
Streambank wheatgrass (Agropyron riparium)	3.5	
Bluebunch wheatgrass (Agropyron spicatum)	2.0	$7.50 - $15.00
Slender wheatgrass (Agropyron trachycaulum)	3.5	$2.55 - $8.92
Salina wildrye (Elymus salina)	4.5	$53.00 - $238.50
Indian ricegrass (Oryzopsis hymenoides)	2.0	$8.15 - $16.30
Forbs		
Cicer milkvetch (Astragalus cicer)	2.0	$4.20 - $8.40
Little sunflower (Helianthella uniflora)	2.0	Not Available
Rocky Mountain penstemon (Penstemon strictus)	0.25	$27.00 - $6.75
Shrubs		
Rubber rabbitbrush (Chrysothamnus nauseosus)	0.5	$68.00 - $34.00
TOTAL	18.75	$327.87

Table 3-3 (continued)

CONTAINERIZED STOCK

	PLANTS/ACRE	COST/POUND
Tall Shrubs ($ .79/plant)		
Gambel's oak (Quercus gambelii)	300	$237.00
Mountain mahogany (Cercocarpus montanus)	340	$276.00
Serviceberry (Amelanchier alnifolia)	100	$ 79.00
Antelope bitterbrush (Purshia tridentata)	100	$ 79.00
Mountain snowberry (Symphoricarpos oreophilus)	150	$118.50
Low Shrubs ($ .79/plant)		
Oregon grape (Mahonia repens)	150	$118.50
Mountain lover (Pachystima myrsinites)	50	$ 39.50
TOTAL	1,200	$947.50

*Seeding rates for hand broadcasting and hydroseeding will be twice the value listed.

BOND ESTIMATE

Beaver Creek Coal Company
Gordon Creek #2 Mine
Southwest Lease
ACT/007/016, Carbon County, Utah

December 19, 1983

3.5.7 Schedule of Reclamation

3.5.7.1 Detailed Timetable for Completion of Major Reclamation Processes

The following schedule of reclamation is proposed to be initiated within 90 days (weather permitting) of final abandonment of the mining operation:

		Acc. Time
1.	Seal Portals - 1 week	1 week
2.	Remove Structures - 4 weeks	5 weeks
3.	Backfilling & Grading	
	a. Pad - 2 weeks	7 weeks
	b. Channel Restoration - 2 weeks	9 weeks
	c. Road & Diversions - 2 weeks (including road)	11 weeks
4.	Seedbed Material Handling - 1 week	12 weeks
5.	Fertilizing - 1 week	13 weeks
6.	Reseeding & Mulching - 2 weeks	15 weeks
7.	Protective Fencing - 2 weeks	17 weeks

The above reclamation tasks are therefore proposed to be complete within 17 weeks following the start of reclamation activities.

1. Loader - $90.59/hr (with operator)
2. Crane - $77.50/hr (with operator)
3. Truck - $65.00/hr (with operator)
4. Cat D-7G - $1,025/day (with operator)

5. Backhoe (Cat 235) - $1,560/day (with operator)
6. Scraper (621B) - $1,360/day (with operator)
7. Foreman $15/hr or $600 (week)

SUMMARY OF RECLAMATION COST ESTIMATE

(a) Seal Portals	$ 2,200.00
(b) Removal Structures	$ 12,660.00
(c) Soil Placement (backfilling & grading)	$ 81,550.00
(d) Seedbed Material Handling	$ 13,040.00
(e) Reseeding and Fertilizing	$ 14,096.00
(f) Mulching	$ 2,800.00
(g) Protective Fencing	$ 6,000.00
(h) Sedimentation Pond Site	$ 6,240.00
(i) Monitoring (included in Gordon Creek #2 Estimate for whole area)	
(j) Foreman for 17 Weeks	$ 10,200.00
	$148,786.00
10% Contingency	$ 14,879.00
	$163,665.00

3.5.8 Reclamation Cost Estimate

(a) Seal Portals

Labor - 2 men X $100/man day X 5 days	$1,000.00	
Materials - 200 blocks/seal X 5 seals X $1.00/block	$1,000.00	
Mortar, sand, etc.	$ 200.00	
SUBTOTAL	$2,200.00	$2,200.00

(b) Removal Structures

Fan

Labor - 2 men X $100/day X 2 days	$400.00
Equipment (hauling) - 1 truck + operator X 4 hrs X $65/hr	$260.00
20 T Crane X 2 hrs X $77.50/hr	$155.00
SUBTOTAL	$815.00

Structures and Conveyor

Labor - 3 men X $100/day X 5 days	$1,500.00
Equipment (hauling) - 1 truck + operator X 40 hrs X $65/hr	$2,600.00
1 loader + operator X 40 hrs X $90.50/hr (950 B - 2 1/2 cu yd bucket)	$3,620.00
SUBTOTAL	$7,720.00

Substation

Labor - 2 men X $100/day X 2 days	$ 400.00
Hauling - 1 truck + operator X 16 hrs X $65/hr	$1,040.00
Loader - 4 hrs X $90.50/hr	$ 362.00
SUBTOTAL	$1,802.00

Water System

Labor - 2 men X $100/day X 1 day	$200.00
Hauling - 1 truck + operator X 4 hrs X $65/hr	$260.00
Loader - 2 hrs X $90.50	$181.00
SUBTOTAL	$641.00

Clean-Up		
Labor - 2 men X $100/day X 4 days	$ 800.00	
Hauling - 1 truck + operator X 8 hrs X $65/hr	$ 520.00	
Loader - 4 hrs X $90.50	$ 362.00	
SUBTOTAL	$1,682.00	$12,560.00
(c) Backfilling & Grading		
Pad		
Backhoe + operator X $1,560/day X 10 days	$15,600.00	
Cat + operator X $1,025/day X 10 days	$10,250.00	
SUBTOTAL	$25,850.00	
Road and Channel Restoration		
Backhoe + operator X $1,560/day X 10 days	$15,600.00	
Cat + operator X $1,025/day X 10 days	$10,250.00	
Labor - 4 men X $100/day X 10 days	$ 4,000.00	
SUBTOTAL	$29,850.00	
Diversions		
Backhoe + operator X $1,560/day X 10 days	$15,600.00	
Cat + operator X $1,025/day X 10 days	$10,250.00	
SUBTOTAL	$25,850.00	$81,550.00
(d) Seedbed Material Handling (8 acres)		
Cat/Ripper + operator X $1,560/day X 2 days	$ 3,120.00	
Scraper + operator X $1,360/day X 5 days	$ 6,800.00	
Cat/Disk + operator X $1,560/day X 2 days	$ 3,120.00	
SBUTOTAL	$13,040.00	$13,040.00

(e) Reseeding & Fertilizing (8 acres)

Hydroseeder, operator and driver - Seed = $1,662/acre Labor = $ 100/acre $1,762/acre X 8 =	$14,096.00	

(f) Mulching (8 acres)

Hydromulcher, operator and driver - $350/acre X 8 acres	$2,800.00	$2,800.00

(g) Protective Fencing (8 acres)

6 foot high X 3,000 linear feet X $2.00/foot installed	$6,000.00	$6,000.00

(h) Sedimentation Pond Site

Backhoe + operator X $1,560/day X 2 days	$3,120.00	
Cat + operator X $1,025/day X 2 days	$3,120.00	
SUBTOTAL	$6,240.00	$6,240.00

(i) Maintenance and Monitoring (included in Gordon Creek #2 bond estimate)

Table 3-6 Species mix, seeding rates and planting rates for species to be used in permanent reclamation. Seeding rates are based on drill-seeding.

SPECIES	POUNDS OF PLS PER ACRE*	COST/POUND
	SEEDING MIX	
Perennial Grasses		
Streambank wheatgrass (Agropyron riparium)	3.5	
Bluebunch wheatgrass (Agropyron spicatum)	2.0	$7.50 - $15.00
Slender wheatgrass (Agropyron trachycaulum)	3.5	$2.55 - $8.92
Salina wildrye (Elymus salina)	4.5	$53.00 - $238.50
Indian ricegrass (Oryzopsis hymenoides)	2.0	$8.15 - $16.30
Forbs		
Cicer milkvetch (Astragalus cicer)	2.0	$4.20 - $8.40
Little sunflower (Helianthella uniflora)	2.0	Not Available
Rocky Mountain penstemon (Penstemon strictus)	0.25	$27.00 - $6.75
Shrubs		
Rubber rabbitbrush (Chrysothamnus nauseosus)	0.5	$68.00 - $34.00
SUBTOTAL	18.75	$327.87

Table 3-6 (continued)

CONTAINERIZED STOCK

	PLANTS/ACRE	COST/POUND
Tall Shrubs ($ .79/plant; $ .65 over 1,000)		
Gambel's oak (Quercus gambelii)	375	$ 296.25
Mountain mahogany (Cercocarpus montanus)	438	$ 346.02
Serviceberry (Amelanchier alnifolia)	125	$ 98.75
Antelope bitterbrush (Purshia tridentata)	125	$ 98.75
Mountain snowberry (Symphoricarpos oreophilus)	188	$ 148.52
Low Shrubs ($ .79/plant)		
Oregon grape (Mahonia repens)	188	$ 148.52
Mountain lover (Pachystima myrsinites)	63	$ 198.29
SUBTOTAL	1,502	$1,335.10/acre
TOTAL		$1,662.97

*Seeding rates for hand broadcasting and hydroseeding will be twice the value listed.