

FINAL TECHNICAL ANALYSIS

Beaver Creek Coal Company
Gordon Creek No. 3 and 6
INA/007/017
Carbon County, Utah

September 10, 1986

UMC 785.19 Alluvial Valley Floors - JWExisting Environment and Applicant's Proposal

Coal Canyon encompasses very limited area for any streamlaid deposits. Further, Coal Canyon Creek is characterized by ephemeral flow and thus sufficient water is not available to support agricultural activities.

Compliance

The Division therefore determines that no alluvial floor exists in the area to be affected by reclamation activities.

The applicant is in compliance with this section.

Stipulations

None

UMC 817.11 SIGNS AND MARKERS - PGLExisting Environment and Applicant's Proposal

Sign specifications and locations are described in Section 3.3.5.1 and Plate 3.1

Compliance

The applicant's plans for signs and markers are acceptable. It should be noted that the location of the perimeter markers shown on plate 3-1 do not coincide with the bonded area shown. The markers are used to delineate the extent of disturbance within the bonded area. The applicant complies with this section.

Stipulations

None.

UMC 817.13-.15 Casing and Sealing of Underground Openings - PGL

Existing Environment and Applicant's Proposal

The four portals at the #3 mine were sealed on September 1, 1983 and the three portals at the #6 mine were sealed on September 6, 1983. The portals were backfilled with a minimum of 25 feet of backfill material (Section 3.5.3.1, p. 3-32).

Compliance

The Division and Mine Safety and Health Administration were notified of the permanent closure of the portals at the Gordon Creek #3 and #6 mine after the portals had already been backfilled. Division guidelines require concrete seals as well as a minimum of 25 feet of incombustible material. Due to the fact that the portals were backfilled, a smoke tube test was performed on May 28, 1986 to test for air intake at the backfilled portals. The results of the test indicated that there was no air movement, and therefore, did not require BCCC to remove the backfill and install concrete seals (Figure 3-4e, p. 3-32e). The applicant complies with this section.

Stipulations

None.

UMC 817.21 - 817.23 TOPSOIL REMOVAL AND STORAGE - DD

Existing Environment and Applicant's Proposal

The applicant states that they do not anticipate any additional areas at the Gordon Creek No. 3 and No. 6 Mine will be disturbed; therefore, no topsoil will be removed and stored. These sections are not applicable.

UMC 817.24 TOPSOIL REDISTRIBUTION - DD

Existing Environment and Applicant's Proposal

All disturbance at the Gordon Creek #3 and #6 Mine was performed prior to Public Law 95-87 (1978). Consequently, no topsoil was salvaged (p3-21, MRP). The disturbed area is comprised of roads and pads constructed by cut and fill methods. Beaver Creek Coal Company proposes to use the fill material as a substitute topsoil or growth medium since the original soil material remains in the fill and thus no "topsoil" is available.

Compliance

On May 28, 1986, Division Soils Specialist James Leatherwood assisted Beaver Creek Coal Company in sampling sites which would be used for topsoil substitute material. This identified any material which is unsuited for the proposed use. From the analyses of the material, all parameters tested meet Division guidelines for substitute topsoil. pH values were in appropriate ranges for calcareous soils. Ec values were surprisingly low. The sandy nature of the soils defined by texture and supported by the low saturation percentages of the material may explain the low Ec values. The low values confirm there are no salinity concerns. SAR is low for all material demonstrating there are no sodium problems. Boron is also low for all materials. The only concern with the materials are their sandy properties, but with the addition of the alfalfa mulch incorporated into the soil on all pad areas, as mentioned in the MRP page 3-36e, the organic matter content of the soil will increase and thus improve the water and nutrient holding capacity of the soil.

The applicant complies with this section.

Stipulations

None.

UMC 817.25 NUTRIENTS AND SOIL AMENDMENTS - DD

Existing Environment and Applicant's Proposal

Samples collected during the original soil survey of the No. 3 and No. 6 Mine were analyzed for N and P. The material in fill areas are very low in P. The applicant proposes to apply 50 lbs per acre of triple super-phosphate which has an analysis of 0-46-0. This will provide approximately 23 lbs per acre of P as P₂O₅. The addition of alfalfa incorporated into the soil on the pad areas as stated in the MRP page 3-36e will also provide, over time, a approximately 9.2 lbs per acre of P. Although, 40 lbs per acre of P is recommended, the proposed application rate should be sufficient to establish and maintain native vegetation. The applicant also proposes to apply an additional 50 lbs of triple super phosphate the following year if it appears necessary based on plant success. 50 lbs per acre of Ammonium nitrate with analysis of 32-0-0 will also be applied by the applicant. This is equivalent to approximately 16 lbs of N per acre. The alfalfa which will be incorporated into the soil will supply approximately 49 lbs per acre of N upon decomposition. The alfalfa has at least 1% N in the material therefore decomposition should not be problem. The ammonium nitrate which will be applied will also aid in microbial decomposition of the material. The applicant also proposes to apply 75 lbs/acre of Ammonium nitrate the following year if it appears necessary based on plant success (p3-36 MRP).

Compliance

The applicant meets the requirements of this regulation. The proposed soil amendment plan is adequate and should provide sufficient nutrients to establish and maintain native vegetation. The alfalfa mulch which will be incorporated into the fill material should improve the water and nutrient holding capacity of the material as well.

Stipulations

None.

UMC 817.41 HYDROLOGIC BALANCE: GENERAL REQUIREMENTS -JRF/RVS

Existing Environment and Applicant's Proposal

Surface Water - JRF

The regional surface water hydrology of the permit area and adjacent lands is described in Section 7.2 of the MRP. The permit area is drained by Coal Canyon Creek which is an ephemeral tributary of the North Fork of Gordon Creek. The North Fork of Gordon Creek drains into the Price River.

The MRP characterizes the baseline water quality and quantity of surface waters in and adjacent to the permit area in Table 7-1, Table 7-2, and Table 7-3.

The applicant proposes to minimize changes to the prevailing hydrologic balance in the permit and adjacent areas through the use of a combination of structures. Diversion berms and a culvert are used to route the disturbed and undisturbed drainages. The disturbed acreage drainage is treated through a series of sediment ponds before progressing downstream.

Reclamation measures for postmining drainage patterns are discussed briefly in Section 7.2.

Ground Water - RVS

The applicant provides information about aquifers, springs and mine inflows in Section 7.1 of the MRP. Supplementary ground-water information occurs in Figure 7-1, Table 7-1, Table 7-2, Table 7-3, Figure 7-5 and Plate 7-1.

The applicant describes the Star Point Sandstone as the "principal aquifer in the Gordon Creek area (Section 7.1.2, p. 7-3)." Water seeped through the floor as the Hiawatha seam was extracted in the No. 3 Mine. Permeable lithologies within the

Blackhawk Formation and the Price River Formation are considered localized and representative of perched aquifer conditions (Section 7.1.2, p. 7-4). A significant inflow (185-50 gpm) was encountered when mining intersected a fault in the No. 3 Mine (Plate 7-2 and Table 7-2). A portion of the ground water was utilized for dust abatement (Section 7.1.4 MRP).

Four seeps and no springs were identified within and adjacent to the permit area during a field reconnaissance (Section 7.1.2, p. 7-8, and Section 7.1.5, p. 7-18).

Ground-water quality was sampled at the No. 3 Mine discharge location 3-3-W (Plate 7-1). Discharge water was more mineralized than ground water from wells and springs located to the west of the North Fork of Gordon Creek and along the upper drainage of Beaver Creek (Section 7.1.3, p. 7-9). Excess ground water was discharged to the system of sediment ponds (Section 7.1.4, p. 7-17).

Mine portals were sealed in September 1983. Consequently, the No. 3 Mine and No. 6 Mine workings are no longer accessible.

Compliance

Surface Water -JRF

The proposed reclamation practices will minimize changes to and ultimately enhance the hydrologic balance in and adjacent to the permit area. Specific descriptions and analyses of the design measures proposed are contained in the following sections (UMC 817.42-57).

The MRP contains adequate discussion of the requirements of this regulation in Chapters 3 and 7. Analysis of the reclamation techniques for restoring the ephemeral channel are discussed in UMC 817.44.

The applicant is in compliance with this regulation.

Ground Water

Springs do not occur within or adjacent to the permit area. Moreover, mine inflow decreases through time indicating localized aquifer conditions (Table 7-2).

Underground mining activities were planned and conducted to minimize changes to the ground-water balance both within and adjacent to the mine plan area. Changes in ground-water quality and quantity and depth to ground water were minimized so that the postmining land use would not be affected. The applicant is in compliance with this section.

Stipulations

None.

UMC 817.42 HYDROLOGIC BALANCE: WATER QUALITY STANDARDS AND
EFFLUENT LIMITATIONS - JRF

Existing Environment and Applicant's Proposal

Portions of undisturbed drainage from the permit area are combined with disturbed area drainage and treated by sediment control structures.

Diversion of the undisturbed area runoff from the disturbed area would result in more environmental damage than accommodating and treating runoff from both areas. The contributing undisturbed area is 74.9 acres which is less than 10 percent of the watershed area (896 acres). The combined runoff will be routed to a two-cell sediment pond. Design specifications and location are shown on Plates 7-4, 3-1 and 3-1A respectively. A detailed analysis of the sediment pond system is contained in UMC 817.46 of this technical analysis. Plate 3-1A shows the installation of a silt fence or straw bales and loose rock check dams upslope from the diversion ditch D-1. Utilization of silt fence, straw bales and loose rock check dams will help to decrease the calculated sediment load to the sediment pond.

Compliance

The treatment methods proposed for the disturbed area drainage are acceptable procedures. The combination of silt fence or strawbales and a two-cell sediment pond will assure that effluent standards are maintained for the disturbed area. Loose rock check dams will serve two purposes. They will effectively reduce velocity of flow therefore reducing erosion as well as serving as sediment traps. The applicant complies with this section.

Stipulations

None.

UMC 817.43 HYDROLOGIC BALANCE: DIVERSIONS AND CONVEYANCES OF
OVERLAND FLOW, SHALLOW GROUNDWATER FLOW, AND EPHEMERAL
STREAMS - JRF

The applicant has proposed a permanent diversion system to intercept runoff from the disturbed area and a portion of the undisturbed area. The diversion ditch (D-1) is designed to safely pass the runoff from a 10-year, 24-hour precipitation event. The diversion system will route the disturbed area drainage to a two-cell sediment pond. In addition, an undisturbed area collection

system is proposed to route runoff to the existing ephemeral channel below the mine site. The design details for the undisturbed diversions and disturbed runoff collection system are contained in Chapter 7 and Plate 3-1A. Design specifications for loose rock check dams for the diversion ditch and disturbed area can be found on Figures 7.2a and 7.2b. Locations of these structures are given on Plate 3-1A.

The peak flow determinations in the MRP are from the Division's "Peak" program. "Peak" is a computer adaptation of the SCS unit hydrograph-curve number methodology. Protection measures for prevention of erosion in disturbed and undisturbed ditches are noted on Plate 3-1A and Figures 7-2a and 7-2b. The applicant shows velocity and design calculations for the D-1 ditch in Section 7.2 3.2, and on Table 7-6 of the MRP. The applicant proposes to use loose rock check dams with stilling basins as energy dissipators (Figures 7-2a and 7-2b).

The applicant commits to maintaining the sediment control features on the reclaimed mine site with an inspection program outlined in section 7.2.5 of the MRP.

The diversion ditch and 24 inch CMP are permanent structures. The land owner has requested that the portal pads, road and sediment ponds be reclaimed such that they can be utilized for stock and grazing capabilities.

Compliance

The applicant has provided an acceptable program for the conveyance of overland flow by utilizing a diversion ditch and sediment control features (i.e. silt fence). Erosion protection devices have been proposed (loose rock check dams and silt fence) for the diversion ditch and the disturbed area.

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.44 HYDROLOGIC BALANCE: STREAM CHANNEL DIVERSIONS - JRF

Existing Environment and Applicant's Proposal

The Coal Canyon ephemeral stream has a drainage area of 1.4 square miles. The stream was diverted under the mine site via a 48-inch culvert. In Section 7.2 applicant has committed to removing or crushing in place the 48-inch culvert.

The stream channel will be routed across the reclaimed mine site. Plate 3-1A presents the location of the stream. The left fork of the drainage is denoted as U-1 on Plate 3-1A. Calculations for U-1 and the reclaimed stream can be found in Section 7.2 3.2, on Figures 7-2c and 7-3, on Tables 7-4 and 7-6. The channels are designed for the 100-year, 24-hour runoff event. Riprap protection is provided for stream reaches that have erosive velocities. Stilling basins will be used for energy dissipation in reach R-3 and R-5. The calculation for riprap and stilling basin design are in Section 7.2.3 of the MRP. A loose rock check dam will be installed in Channel U-1, the dam will provide grade control and energy dissipation. Figure 7-2b provides the design methodology for the loose rock check dam.

Compliance

The reclaimed stream channel is designed in accordance with UMC 817.44. The design specifications for the riprap, stilling basins and loose rock check dams will result in a stable channel design. The natural stilling basin shown on Plate 3-1A will enhance riparian vegetation due to the ponding and holding of water and sediment. The reclaimed channel approximates the natural channel configuration. Figure 7-4 demonstrates that the natural channel above and below the mine site meanders very little. The width of Coal Canyon restricts meandering. The reclaimed channel has a pattern of drops, pools and slight gradient areas.

The applicant's proposal is in compliance with this section.

Stipulations

None.

UMC 817.45 HYDROLOGIC BALANCE: SEDIMENT CONTROL MEASURES - JRF

Existing Environmental and Applicant's Proposal

The MRP describes the methodologies needed to control erosion on site in Section 7.2 and in Section 3.5. The applicant proposes to control erosion during reclamation via straw dikes, silt fences, and sediment ponds. The sediment pond discussion may be found in 817.46.

Placement of erosion protection devices is denoted on Plate 3-1A and Figure 3-8. The applicant has committed to a regular inspection schedule and replacement of the erosion controls.

Compliance

The applicant's proposals for sediment control measures for the disturbed area will result in minimizing to the extent possible additional contributions of sediment to stream flow or to runoff outside the permit area. The applicant is in compliance with this section.

Stipulations

None.

UMC 817.46 HYDROLOGIC BALANCE: SEDIMENTATION PONDS - JRF

Existing Environment and Applicant's Proposal

The MRP describes the sediment pond proposed for runoff from disturbed and undisturbed areas in Section 7.2.3.2, Figure 7-5, Plates 7-4, 3-1A, Tables 7-4, and 7-6. The sediment pond will be a two-celled structure. The ponds will be left as a permanent structures and will provide water for stock. For discussion of permanent impoundments see UMC 817.49.

The pond is designed to contain the 10-year, 24-hour storm event and pass the 100-year, 24-hour storm. The principal spillway design allows for dewatering after a twenty-four hour period. Water discharged from the principal spillway is monitored according to a NPDES permit approved by the EPA on August 24, 1977.

In Section 7.2.3.2 the applicant commits to quarterly inspection of the ponds for structural stability and to cleaning the sediment ponds when they reach 60 percent of the maximum level as shown on the sediment marker on Plate 7-4.

Compliance

According to Plates 7-4, 3-1 and Division calculations, the sediment ponds are undersized. As noted in the following table the contributing drainage area to the ponds includes 22 acres of disturbed area instead of the 8 acre figure used in the application. The principle spillway is also undersized. With the present design specifications the spillway will pass 12.25 cfs. The Division calculated design flow of 22.71 cfs will require a larger principle spillway.

In discussion with the operator, there are areas within the 22 acres indicated as disturbed on Plate 3-1 which are undisturbed. However, the application does not differentiate undisturbed areas within the disturbed area. Therefore, the Division assumed all acreage within the 22 acre area as disturbed area in calculating runoff volumes and peak flows. The Division calculations are as follows:

	<u>Disturbed Ditch To Ponds</u>	<u>Undisturbed Drainage To Ponds</u>
Area	22 Acres	74.9 acres
Slope length	2950 feet	4950 feet
Peak discharge (100-yr, 24-hr event)	43.64 cfs	10.89 cfs
Peak discharge (10-yr, 24-hr event)	22.15 cfs	0.56 cfs
Total Runoff (100-yr, 24-hr event)	4.14 ac. ft.	2.55 ac. ft.
Total Runoff (10-yr, 24-hr event)	2.08 ac. ft.	.378 ac. ft.

The operator will be in compliance when the terms of the following stipulations are met.

Stipulations UMC 817.46-(1, 2)-JRF

1. The sediment ponds shall be constructed by October 31, 1986 so that at least 3.83 acre feet of sediment and runoff can be retained in the ponds and so that a 24 inch cmp riser is installed for the principle spillway.
2. Within 30 days of final pond construction, the applicant shall submit as-built pond designs certified by a Professional Engineer. The designs shall show pond contours with a contour interval no greater than two feet. The as-built designs shall at a minimum contain:
 - a. sideslope characterizations
 - b. section and plan views
 - c. scale of 1" = 20'
 - d. pond floor elevation and dimensions
 - e. bank elevation
 - f. complete spillway dimensions
 - g. sediment levels and markers for both ponds

UMC 817.47 HYDROLOGIC BALANCE: DISCHARGE STRUCTURES - JRF

Existing Environment and Applicant's Proposal

The sediment pond discharge structures are designed according to standard engineering design procedures. UMC 817.43 contains a description of culverts for the diversion ditch D-1 and the left fork of Coal Canyon. A complete description of design methodologies for discharge structures is contained in Section 7.2.3. of the MRP. All pond discharge structures are protected by rip rap. The applicant has committed to quarterly inspection of ponds for signs of structural weakness or erosion in Section 7.2.3 of the MRP.

Compliance

The pond discharge structures are designed to safely pass the predetermined peak flows. The emergency spillway will handle flows much greater than the design flow. Outlet protection is provided in the form of a grouted drop chute. The drop chute will be constructed according to the design specifications outlined in Barfield, Warner and Haan (1981) p. 528 and page 7-24b of the MRP. At the bottom of the drop chute a stilling basin will be installed to reduce erosive velocities. Design specifications for the stilling basin may be found in Section 7.2.3. The applicant is in compliance with this section.

Stipulations

None.

UMC 817.48 ACID-FORMING AND TOXIC-FORMING MATERIALS - DD

Existing Environment and Applicant's Proposal

The applicant states there are no acid- or toxic-forming materials known to exist at this site. The applicant commits that if any are discovered, they will be disposed of on-site or removed to an approved permit area.

Compliance

The applicant proposed to bury material with less than 50 percent coal fines (material that may be potentially toxic) to a minimum depth of 4 feet with non-toxic and noncombustible material. Material with greater than 50 percent coal fines will be removed to the C.V. Spur refuse site. Analysis of materials deposited on the mine site from another mine which were the subject of Notice of Violation N85-8-17-1 indicate some toxicity problem areas exist. This material should be buried to a minimum depth of four (4) feet during backfilling operations. The applicant will be in compliance when the following stipulation is met. ✓

Stipulations UMC 817.48-(1)-DD

1. During the backfilling and grading portion of the reclamation at the Gordon Creek #3 and #6 mine site, but no later than October 31, 1986, the applicant shall bury the material which was the subject of Notice of Violation N85-8-17-1 with a minimum of 4 feet of non-toxic and nonacid-forming material .

UMC 817.49 HYDROLOGIC BALANCE: PERMANENT AND TEMPORARY
IMPOUNDMENTS - JRF

Existing Environment and Applicant's Proposal

The two-celled sediment pond will be left as a permanent structure. The pond will provide water for stock in accordance with the post-mining land use of grazing. The water is protected by a private water right as noted on Figure 3-3a in the MRP. The quality of the water is governed by an NPDES permit. The applicant provides a full discussion of the requirements of this regulation beginning on page 7-22 of the MRP. The pond structure is not subject to the requirements of 30 CFR 77.216.

Compliance

The applicant has provided information suitable to meet all requirements of this regulation. Furthermore, the applicant has committed to quarterly inspections of the pond for structural stability. The applicant is in compliance with this section.

Stipulations

None.

UMC 817.50 HYDROLOGIC BALANCE: UNDERGROUND MINE ENTRY AND ACCESS
DISCHARGES - RVS

Existing Environment and Applicant's Proposal

The Hiawatha seam dips 5.3 degrees to the north-northeast. Accordingly, the No. 3 mine workings dip in a similar fashion and portals are located approximately 200 feet higher and 100 feet lower than the northwestern and southeastern portions of the mine, respectively (Plate 3.2). The Castlegate "A" seam dips 9.6 degrees to the northeast and No. 6 Mine portals are located approximately 20 feet higher and 100 feet lower than western and northern portions of the mine, respectively (Plate 3-3).

Water seeped through the floor as the Hiawatha seam was extracted and a significant inflow was encountered when mining intersected a fault in the No. 3 Mine (Plate 7-2 and Table 7-2).

The applicant proposes to monitor any unplanned portal discharges in accordance with the water quality standards required by UMC 817.42 and other appropriate state and federal regulations. If necessary, water will be treated during the period of discharge (Section 7.1.8, p. 7-19).

Compliance

Portals were designed and constructed to control gravity discharge of water from the mine. Inflow has occurred in the past and the applicant has provided an adequate mitigation plan for unplanned portal discharges.

Stipulations

None.

UMC 817.52 SURFACE AND GROUND WATER MONITORING - JRF

Existing Environment and Applicant's Proposal

Ground Water

The applicant provides information about groundwater in Section 7.1 of the MRP. A thorough discussion of groundwater is contained in UMC 817.41 - Ground Water of this technical analysis. Monitoring of ground water occurred at Station 3-3-W (see Plate 7-1 for location) while the mine was operating. Table 7-2 in Section 7.1 contains the water quality data for this station. Station 3-3-W is no longer accessible due to closure of the mine portals.

Surface Water

The applicant provides information about surface-water monitoring in Section 7.2.6, Figure 7-5 and 7-6 and Table 2 in Section 7.1. Plate 7-1 denotes the location of the three surface-water monitoring locations. The applicant will monitor stations 3-1-W and 3-4-W on a quarterly basis. Station 3-2-W will be monitored according to the NPDES permit.

Compliance

Ground Water

The applicant maintained an adequate monitoring program during active operations. Underground mining activities were planned and conducted to minimize changes to the ground water regime. The applicant is in compliance with this section.

Surface Water

The applicants surface water monitoring program should be altered to reflect the Division's updated water monitoring guidelines. The water quality parameters to be sampled should conform with the Division guidelines of January 1986. Also, a sample station at the entrance of the pond will be required to determine that effluent standards for bond release are achieved.

The applicant will be monitoring the left and right forks of Coal Canyon as well as the sediment pond discharge. With the addition of the above mentioned station and the addition of total dissolved solids to the water quality parameter list, the applicant will have an adequate surface water monitoring program.

Stipulations UMC 817.52-(1, 2)-JRF

Ground Water

None.

Surface Water

1. Within 30 days of permit approval, the applicant shall submit a revised surface water parameter list that includes total dissolved solids.
2. Within 30 days of permit approval, the applicant shall submit a revised surface water monitoring program that incorporates an additional monitoring station at the sediment pond entrance. Sampling of this station shall be initiated upon permit approval utilizing the quarterly frequency for other surface water monitoring.

UMC 817.53 HYDROLOGIC BALANCE: TRANSFER OF WELLS - RVS

Existing Environment and Applicant's Proposal

No wells occur within the permit or adjacent area.

Compliance

Inasmuch as no wells are available for transfer, the applicant is in compliance with this section.

Stipulations

None.

UMC 817.55 DISCHARGE OF WATER TO AN UNDERGROUND MINE - JRF

Existing Environment and Applicant's Proposal

The applicant states that no water will enter the sealed mine portals. All water in Coal Canyon will bypass the sealed mine locations (page 7-21 Section 7.2.2.2).

Compliance

A review of the surface water drainage plan does not indicate any diversion of water into underground workings. The applicant is in compliance with this section.

Stipulations

None.

UMC 817.56 HYDROLOGIC BALANCE: POSTMINING REHABILITATION OF
SEDIMENTATION PONDS, DIVERSIONS, IMPOUNDMENTS, AND
TREATMENT FACILITIES - JRF

Existing Environment and Applicant's Proposal

The applicant proposes to leave the sediment pond and diversion ditch as permanent structures. Information is provided as to specific modification plans upon bond release in Section 7.2 3.2. The applicant proposes to revegetate the diversion ditch and the sediment pond slopes. The applicant commits to removal of silt fence and other temporary controls upon bond release.

Compliance

The applicant commits to renovation of the permanent sediment pond to achieve the desired post-mining land use (Section 7.2 3.2). The applicant is in compliance with this section.

Stipulations

None.

UMC 817.57 HYDROLOGIC BALANCE: STREAM BUFFER ZONE - JRF

Existing Environment and Applicant's Proposal

Coal Canyon Creek is the only drainage that occurs in the permit area. It is ephemeral (Table 2, Chapter 7) and therefore cannot support aquatic life.

Compliance

Neither perennial or intermittent streams exist within the permit boundary, therefore the applicant is in compliance with this section.

Stipulations

None.

UMC 817.59 COAL RECOVERY - RVS

Room and pillar mining commenced during December 1978 and terminated in November 1980 in the #6 Mine. Room and pillar mining commenced during February 1976 and retreat mining was initiated in January 1982 and continued into May 1982 in the #3 Mine. All portals were permanently sealed during September 1983.

The applicant requested permission to initiate retreat mining in the #3 Mine (Hiawatha seam) and described potential impacts to the #6 Mine (Castlegate "A" seam). The Division of State Lands and Forestry (DSLFF) observed that the applicant's assessments of potential impacts to the Castlegate "A" seam were optimistic, and therefore, required submittal of a royalty bond in the amount of \$4,227.00. Bond release is contingent upon either of the following:

1. When a mining operation commences in the Castlegate "A" seam through state leased lands; or
2. At the end of ten years providing state coal (ML 27342) in the Castlegate "A" seam has not been sterilized from recovery as a result of subsidence or shearing pursuant to the applicant's operations in the Hiawatha seam.

Neither of the bond release conditions have been satisfied to date. Moreover, DSLFF has completed an audit on this matter and has requested royalty payments. This matter is currently in litigation.

Compliance

The room and pillar technique with secondary pillaring applied by the applicant in the #6 Mine and #3 Mine meet the requirements of maximizing the conservation of coal while utilizing the best technology currently available to maintain environmental integrity. However, the appropriateness of a secondary pillaring in the #3 Mine prior to complete recovery in the #6 Mine will be resolved and, if necessary, mitigated through pending litigation.

Stipulations

None.

UMC 817.61-68 USE OF EXPLOSIVES - RVS

Existing Environment and Applicant's Proposal

The applicant states that surface blasting is not associated with No. 3 Mine or No. 6 Mine operations (Section 3.3.5.4, p. 3-16).

Compliance

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.71-74 DISPOSAL OF EXCESS SPOIL AND UNDERGROUND DEVELOPMENT
WASTE - PGL

Existing Environment and Applicant's Proposal

The applicant does not have any excess spoil located on site. The mine has been idle since November, 1980 and the portals were sealed in September, 1983. Any underground development waste was either left underground in "gob" storage areas or loaded out with the coal (Section 3.3.2.6, p. 3-12. Therefore, this section is not applicable.

Compliance

The applicant complies with this section.

Stipulations

None.

UMC 817.81-.88 COAL PROCESSING WASTE BANKS - PGL

Existing Environment and Applicant's Proposal

Coal processing was not done at this mine site, therefore, this section is not applicable.

UMC 817.89 DISPOSAL OF NON-COAL WASTES - PGL

Existing Environment and Applicant's Proposal

All surface structures have been removed (Section 3.2.3, p. 3-4).

Compliance

Applicant complies with this section.

Stipulations

None.

UMC 817.91 COAL PROCESSING WASTE - PGL

Existing Environment and Applicant's Proposal

Coal processing was not done at this mine site, therefore, this section is not applicable.

UMC 817.95 AIR RESOURCE PROTECTION - KMM

Existing Environment and Applicant's Proposal

Air quality resources and problems of the permit area are described in Chapter 11 and Section 3.4.7.1. The principal pollutant during reclamation will be particulate matter from construction equipment, predominantly fugitive dust.

Compliance

The applicant has committed to enforcing speed limits and watering road surfaces on as needed basis to control fugitive dust and is, therefore, in compliance with this section.

Stipulations

None.

UMC 817.97 PROTECTION OF FISH, WILDLIFE AND RELATED ENVIRONMENTAL VALUES - KMM

Existing Environment and Applicant's Proposal

Potential impacts on fish and wildlife resources are minor and are described in Sections 3.4.6, 3.4.6.1 and 10.4. Mitigation plans are described in 3.4.6.2 and 10.5. Threatened and endangered species of the permit area are described in Section 9.4 (plants) and 10.3.3 (animals).

The applicant proposes to revegetate the disturbed area by seeding and planting species valuable for wildlife food and cover. Shrubs and trees will be distributed in clumps to maximize edge and useful cover. The establishment of small areas of riparian habitat will constitute wildlife habitat enhancement. Riparian habitat development includes:

1. creation of a pond where the culvert is to be plugged,
2. reestablishment of Coal Creek in the pad area, and
3. conversion of sediment ponds to stock and wildlife watering areas.

Riparian area seeding will consist of the general area seed mix enhanced with three grass and one forb species. Shrub plantings in the riparian areas will include willow cuttings and six-foot saplings.

Compliance

Since the mine is in final reclamation, no additional disturbance is expected and no major adverse impacts on wildlife or vegetation resources are expected. Disturbance of the downstream aquatic system will be minimized by controlling sediment through silt fences and straw bales and a system of ponds until vegetation becomes established.

Implementation of the reclamation plan will improve wildlife habitat of the permit area, enhance natural riparian vegetation and be compatible with the post mining land use of wildlife and grazing. While site specific data are not available on raptor populations, construction activities which might disturb nesting birds will be delayed until after July 15 to avoid potential conflicts. Spring planting of shrubs and trees should not be a major disturbance to nesting activities.

The applicant is committed to notifying the Division if any threatened, endangered or sensitive species are identified in the permit area (9-6).

The applicant complies with this section.

Stipulations

None.

UMC 817.99 SLIDES AND OTHER DAMAGE - PGL

Existing Environment and Applicant's Proposal

The applicant states that "at any time a slide occurs which may have a potentially adverse affect on public property, health, safety or the environment, persons conducting the underground coal mining operations will notify the Division by the fastest available means and comply with any remedial measures required by the Division" (Section 3.3.2.5, p. 3-12).

Compliance

Applicant complies with this section.

Stipulations

None.

UMC 817.100 CONTEMPORANEOUS RECLAMATION - KMM

Since the mine has been idle since 1980, this section is no longer applicable.

UMC 817.101 BACKFILLING AND GRADING - DD, PGL

Existing Environment and Applicant's Proposal

The surface of the area was originally disturbed in 1975 (pre-law) by a previous owner. At that time, no major effort was made to save or store any soil material. Therefore, restoration to approximate original contour is impractical due to the lack of fill material. The surface of the site is privately owned and the postmining land use will be livestock grazing. A letter from the landowner (page 4-33, 4-34, MRP) approved the Beaver Creek Coal Company proposed backfilling and grading plan because it enhances the postmining land use for livestock grazing by providing level pad areas for loading pens, corrals and grazing.

The applicant states that the highwalls which will be left in place are similar in structural composition to the pre-existing cliffs in the surrounding area, and are compatible with the geomorphic processes of the area. The highwalls to be retained on Plate 3-1A are "stable" as stated on page 3-35a (#6). A stability analysis was performed on highwalls at the No. 3 and No. 6 Mine. Results given on page 3-35d and 3-35e show that the No. 3 mine highwall has a static safety factor of 5.01 for dry conditions and 4.62 for saturated conditions. The No. 6 Mine highwall has a static safety factor of 4.62 for dry conditions and 4.29 for saturated conditions. These are well above the 1.5 safety factor required.

Similar results on embankment stability analysis indicate a safety factor of 2.22 for dry conditions and 1.65 for saturated conditions. This meets the 1.30 safety factor requirement.

Compliance

The applicant submitted adequate backfilling and grading plans for the disturbed site in relation to the post mining land use. The applicant included calculations insuring a minimum static safety factor of 1.5 for all highwalls and 1.3 for embankment material. The applicant is in compliance with this section.

Stipulations

None.

UMC 817.103 BACKFILLING AND GRADING: COVERING COAL AND ACID- AND TOXIC-FORMING MATERIALS - DD

Existing Environment and Applicant's Proposal

Material with less than 50 percent coal fines will be buried against the highwalls and covered with a minimum of four (4) feet of incombustible and non-toxic material. Material contaminated with oil and grease or greater than 50 percent coal fines will be disposed of at the C.V. Spur Refuse site.

Compliance

The applicant proposes to bury material with less than 50 percent coal fines with a minimum of four (4) feet of non-toxic and non-combustible material against the highwall. Material with greater than 50 percent coal fines and material contaminated with oil and grease will be disposed of at an approved permit area. The applicant has complied with this section.

Stipulations

None.

UMC 817.106 REGRADING OR STABILIZING RILLS AND GULLIES - PGL, JRF

Existing Environment and Applicant's Proposal

The applicant states that "if rills or gullies deeper than 9 inches form in areas that have been regraded and topsoiled, they will be regraded, filled or otherwise stabilized and the stabilized area reseeded or replanted" (Section 3.4.5, p. 3-24 and Section 3.5.6, p. 3-38).

Compliance

Applicant complies with this section.

Stipulations

None.

UMC 817.111 REVEGETATION: GENERAL - KMM

Existing Environment and Applicant's Proposal

The environment of the GCCC #3 and #6 Mines is described in portions of Section 9.3 of the MRP. Principal disturbed vegetation types are Sagebrush-Grassland and Oak Shrub.

Chapter 3 of the MRP describes the proposed reclamation of roads, pads and the total affected area.

Revegetation plans for the area including soil preparation, seeding, fertilization, mulch, shrub/tree planting and monitoring are described in Section 3.5.5. A primary seed list and additional species proposed for the riparian zone are listed in Section 3.4.5. Shrub and tree species to be planted as cuttings, saplings and seedlings are described in Section 3.5.5.4.

Compliance

Seed bed preparation includes ripping to 12 to 24 inches to loosen the fill profile. The technique is specified for pad areas (3-36e) but should be used on all areas accessible to the ripping equipment. Two tons per acre of hay will be incorporated into the soil on all pad areas.

The revegetation species were chosen to provide a prompt and permanent vegetative cover appropriate to the post mining land use.

To verify that the designated mix of pure live seed is used in the revegetation, the operator should request that the Price area State Agricultural Inspector collect a seed sample and submit it for analysis. Results should be provided to the Division within 90 days of collection. Seeding/planting rates and locations are presented in the text and most plantings are schematically designated on Plate 3-1A. The locations of willow cuttings are not designated on Plate 3-1A but are adequately explained in the text.

The applicant complies with this section.

Stipulations

None.

UMC 817.112 USE OF INTRODUCED SPECIES - KMM

Existing Environment and Applicant's Proposal

Three introduced species are included in the applicant's proposed seed mix. Alfalfa and Yellow Sweetclover are desirable because they provide quick stabilizing cover, are of value to wildlife and can fix nitrogen since they will be inoculated with

appropriate rhyzobia before planting. Kentucky Bluegrass is a desirable species because it establishes easily, is a widely naturalized grass in western states (in both upland and riparian areas), is compatible with native species and is not overly competitive.

Compliance

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.113 REVEGETATION: TIMING - KMM

Existing Environment and Applicant's Proposal

The applicant proposes fall (September 1 through October 31) seeding and, at the Division's request, has agreed to spring planting of woody species (3-37). The MRP designates fall for willow harvest and planting (3-37b), Seedlings and saplings will be planted in early spring of 1987.

Compliance

The application contradicts itself (p. 3-37 and p. 3-37b) on the schedule for planting of willow cuttings. Since there are differing professional opinions on the best time to plant willow cuttings, the Division would like to compare Beaver Creek Coal Company's plantings with cuttings planted in the alternate season at the same location. The Division will be responsible for design and implementation of the experiment which will neither damage nor interfere with the Beaver Creek planted willows. This experiment is agreeable to BCCC (personal communications, Dan Guy). The applicant will be in compliance with this section when the following Stipulation is met.

Stipulation UMC 817.113-(1)-KMM

1. Within 30 days of permit approval, the applicant shall submit amended pages 3-37 or 3-37b to clarify when planting of willow cuttings will occur.

UMC 817.114 REVEGETATION: MULCHING - KMM

Existing Environment and Applicant's Proposal

The applicant states that 3,000 lbs/acre (3-36g) or 2000-3500 lbs/acre (3-37) of wood-fiber mulch will be applied after seeding.

Compliance

The applicant is in compliance with this section if 3000 lbs/acre are applied.

Stipulation UMC 817.114-(1)-KMM

1. The applicant shall apply no less than 3000 lbs/acre of wood fiber mulch after seeding during final reclamation of the site.

UMC 817.116 REVEGETATION: STANDARDS FOR SUCCESS - KMM

Existing Environment and Applicant's Proposal

A 5-acre reference area was established and sampled in 1980 for the two major vegetation types (Oak Shrub and Sagebrush-Grassland). It will be staked in fall of 1986. The approximate location of the site is designated on Plate 3-1A. The applicant describes sampling techniques which will be used to characterize both the reference areas and the reclaimed areas to determine revegetation success (Appendix 3).

Since riparian vegetation is being established as a wildlife habitat enhancement measure rather than to reestablish a significant pre-mining vegetation type, a riparian reference area is not necessary for determining vegetation success.

Plans to expand the GCCC #3 and #6 Mine riparian area to accommodate 0.5 acres of wetland mitigation area (off-site mitigation for disturbance at the GCCC #2 mine) have been abandoned with concurrence of the Division of Wildlife Resources. A program of supplying dam building materials for beaver and planting fish in the Sweets Canyon pond and upper Gordon Creek has been initiated instead.

A detailed timetable for reclamation monitoring is provided in Appendix 3.

Compliance

UMC 819.116 requires that ground cover and productivity equal (within 90%) the approved standard (i.e., the reference area) for the last two years of the responsibility period. The determination must be based on techniques approved by the Division. The techniques described in Appendix 3 are acceptable. A monitoring schedule is provided in Appendix 3, page 4. The applicant is in compliance with this section.

Stipulations

None.

UMC 817.121-.126 SUBSIDENCE CONTROL - RVS

Existing Environment and Applicant's Proposal

The applicant utilized room and pillar methods with secondary pillaring in both the No. 3 Mine and No. 6 Mine (Section 3.3.1.3, p. 3-10). Overburden thickness ranges from 150 to 550 feet above the No. 6 Mine and 100 to 1,000 feet above the No. 3 Mine. Coal thickness averaged six feet in the No. 6 Mine and eight feet in the No. 3 Mine (Section 6.5.2, p. 6-6 and 6-7). Thus, the combined extracted thickness averaged from six (6) to fourteen (14) feet.

The applicant conducted a field inspection of the surface above the No. 3 Mine and No. 6 Mine workings (Section 3.4.8, p. 3-30a). Tension fractures from subsidence were identified and located on a map (Plate 3-5).

The applicant has installed six (6) monuments to monitor subsidence (Section 3.4.8, p. 3-30a and Plate 3-5). Monuments will be surveyed yearly until bond release to document vertical movement. Moreover, a yearly surface inspection will be conducted. The applicant commits to annually providing a map that shows the results of subsidence to the Division (Section 3.4.8, p. 3-30a).

Compliance

The applicant has provided information about mining methods and overburden thickness to indicate mining activities were planned and conducted in order to prevent subsidence from causing material damage to the surface (UMC 817.121).

An assessment of regulatory compliance with UMC 817.122 is not applicable due to permanent cessation of mining. The mine plan and adjacent area contain neither perennial streams, impoundments, aquifers significant to public water supplies or public buildings. The applicant is in compliance with UMC 817.126.

The applicant has identified areas of vertical movement and associated upward propagation of tension cracks to the surface that have caused a reduction in the reasonably foreseeable use of surface lands. Specifically, certain areas characterized by surface tension cracking pose a potential hazard to livestock grazing and/or wildlife. To comply with the requirements, of UMC 817.124 the applicant has committed (P. 3-30d) to repairing or compensation surface owner, for subsidence control surface impacts.

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.131 CESSATION OF OPERATIONS: TEMPORARY - DD

Existing Environment and Applicant's Proposal

This section is not applicable due to the permanent cessation of mining activities.

UMC 817.132 CESSATION OF OPERATIONS: PERMANENT - DD

Existing Environment and Applicant's Proposal

The applicant proposes to reclaim the disturbed site according to an approved reclamation plan after a permit has been issued in Section 817.132 of the MRP.

Compliance

The applicant complies with this section.

Stipulations

None.

UMC 817.133 POSTMINING LAND USE - KMM

Existing Environment and Applicant's Proposal

Livestock grazing and wildlife habitat are the proposed post mining land uses. The applicant proposes to leave both the coal haul road and main access roads for access to the UP&L powerline road and livestock herding activities (Section 3.2.10). In addition, the applicant proposes to leave existing pad areas in their current configuration for use in livestock management. They further state that some highwalls will be left because their elimination would reduce or eliminate pad areas and access roads which would be incompatible with post mining land use plans (Section 3.5.4.2).

The MRP includes letters from the landowner supporting the proposed reclamation plan (p. 4-33, 34 MRP).

Compliance

The Division approves the post mining land use proposed. The applicant is in compliance with this section.

Stipulations

None.

UMC 817.150-.156 ROADS: CLASS I - PGL

Existing Environment and Applicant's Proposal

The coal haul road extends over 5,000 feet within the permit area and was used for coal haulage by 28 to 40 ton trucks. This road connects to the Carbon County road in Gordon Creek Canyon. The road is located on privately-owned surface land and at the landowner's request, will be left in place to provide access to the Coal Canyon area as well as to the Utah Power and Light power line access (Section 3.2.10, p. 3-7).

The applicant requests that the haul road be downgraded to a Class II road because:

1. Coal is no longer hauled from the canyon; and
2. Access is controlled by a gate near the county road at the mouth of Cottonwood Canyon; and
3. The road is on privately owned surface lands and will have limited access.

The applicant will maintain drainage controls in place to insure Class II drainage standards are met. The road surface will be graveled and maintained at a 16-foot width in a stable condition during the bond liability period.

Compliance

The applicant's proposal to downgrade the haul road to Class II is acceptable. The applicant's proposal meets the standards for the Class II road. The applicant included the haul road in the permit area as shown on Plate 1-3, the permit area map.

The applicant has committed to gravel the haul road on p. 3-7b. However, in discussions with Dan Guy, the intent of BCCC is to gravel the haul road from the sediment pond north. Therefore, the applicant will be in compliance when the following stipulation is met.

Stipulation UMC 817.150-.156-(1)-PGL

1. Within 30 days of permit approval, the applicant shall provide amended page 3-37a which will specifically describe where the Class II road extending from within the permit area to the main Gordon Creek road will be graveled.

UMC 817.160-.165 ROADS: CLASS II - PGL

Existing Environment and Applicant's Proposal

The mine access road (approximately 2400 feet long) at Gordon Creek #3 and #6 was used for men and material access to the upper portals and is designated as a Class II road. This road originates on privately-owned surface land and crosses through a portion of state-owned surface to reach the upper portal pad which is on privately-owned surface land. This road will be left in place at the landowner's request to provide access to the Utah Power and Light Power Line road as well as to the upper pad area. The access road will be retained as a Class II road, as stated in Section 3.2.10, p. 3-7b, and will be maintained throughout the bond liability period.

Compliance

The access road meets the Class II road standards and will be retained as such during the bond liability period.

Stipulations

None

UMC 817.180 and .181 OTHER TRANSPORTATION FACILITIES AND SUPPORT FACILITIES AND UTILITY INSTALLATION - PGL

Existing Environment and Applicant's Proposal

All transportation and support facilities have been removed (Section 3.2.3, p. 3-4a). These facilities were removed in such a manner as to present damage to fish, wildlife and related environmental values as well as the prevention of additional contributions of suspended solids to streamflow.

Compliance

Applicant complies with this section.

Stipulations

None.

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