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

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September 11, 1997

TO: File

THRU: Daron Haddock, Permit Supervisor *DH*

FROM: Jess Kelley, Reclamation Engineer *JK*

RE: Renewal Changes, Cyprus Plateau Mining Company, Star Point Mine,
ACT/007/006-96C, Folder #2, Carbon County, Utah

SUMMARY:

The permittee submitted this major revision to the approved plan in late 1996. The Division reviewed that submittal and responded to the permittee with an analysis thereof and a list of deficiencies. The permittee then corrected those deficiencies and resubmitted relevant portions of a revised plan in July of 1997. This memorandum constitutes this writer's review and approval of the July, 1997 submittal. It is written in a form in which it can be inserted directly into the plan which was submitted in late 1996 to form a complete, technically adequate plan

TECHNICAL ANALYSIS:

ENVIRONMENTAL RESOURCE INFORMATION

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

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

Analysis:

Mine Workings Maps

The location and extent of known mine workings, along with anticipated mine workings, are shown on Map 116.100a--Mine Plan Hiawatha Seam, Map 116.100b--Mine Plan Third Seam, and Map 116.100c--Mine Plan Wattis Seam. The location and extent of known, prelaw mine workings are shown on Map 142.100a--Pre-Law Mining Activity Hiawatha Seam, Map 142.100b--Pre-Law Mining Activity Third Seam, and Map 142.100c--Pre-Law Mining Activity Wattis Seam.

Maps 116.100a and 116.100b were certified by David E. Hansen, a professional engineer licensed and registered in the state of Utah. Map 116.100c and 142.100a through 142.100c were certified by Daniel Thomas Hurst, a professional engineer registered in the state of Utah.

Findings:

The plan fulfills the requirements of this section.

OPERATION PLAN

COAL RECOVERY

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

Analysis:

A description of the measures used by the permittee to maximize the use and conservation of the coal resource is found on pages 500-7 to 500-8 of the plan.

The permittee commits to using sound engineering practices to recover the highest percentage of the coal resource possible. Longwall methods, which at present achieve the highest possible recovery rate, are used to extract coal. Room-and-pillar methods are used where longwall methods are not feasible and the permittee practices full pillar recovery where possible.

Exhibit 522a includes a copy of an approval letter for the Resource Recovery and Protection Plan (R2P2) from the Price office of the Bureau of Land Management (BLM). The letter itself is dated September 19, 1991. It was transmitted to the permittee on March 6, 1997, at the request of the Division, for the purpose of documenting the fact that the approved R2P2 was current and that the permittee was adhering thereto as of August, 1997.

Findings:

The plan fulfills the requirements of this section.

USE OF EXPLOSIVES

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

Analysis:

Blasting procedures are described on pages 500-13 through 500-17 of the plan.

The permittee will comply with all applicable state and Federal laws in the use of explosives. The permittee does surface blasting rarely and only for splitting boulders, clearing chutes, clearing trenches, and other such maintenance purposes.

Persons conducting blasting will be properly certified and certification will be carried by those doing the blasting or will be on file at the mine office. A certified blaster and at least one other person will be present at the firing of all blasts. The person responsible for blasting will be familiar with the blasting plan and site-specific performance standards and will give on-the-job training to uncertified persons who will assist in the use of explosives.

A blasting record will be completed and submitted to the Division for approval prior to any blast, including those which are to take place within 500 feet of an active or underground mine. A sample blasting record is found on pages 500-14 and 500-15 of the plan. A copy of the blasting record will be filed at the minesite for at least three years.

Page 500-16 states that there are no dwellings or other structures within one half mile of the permit area. Therefore, neither a preblasting survey nor a blasting schedule is

required.

Blasting signs will be posted in the vicinity of blasting operations. Warning signs will be posted at points of public access to the blasting area. Warning and all-clear signals of different character or pattern, audible within a range of one half mile from the blast, will be given. All persons in the permit area or who regularly work within one half mile of the permit area will be notified of the meaning of the signals.

Airblast will not exceed the limits set forth in R645-301-524.621 at any dwelling, public building, church, school, or community or institutional building outside the permit area. Flyrock will be prevented from traveling in the air or along the ground more than one half the distance to the nearest dwelling or other occupied structure or beyond the permit area.

Ground vibration will not exceed the limits set forth in R645-301-524.642 at any dwelling, public building, school, church, or community or institutional building outside the permit area.

If necessary, the permittee will use the scaled distance equation found in R645-301-524.651 to determine the allowable charge weight to be detonated in any eight-millisecond period. If the scaled distance equation is used, a seismographic record of that blast will not be required, as stipulated by R645-301-524.651.

Findings:

The plan fulfills the requirements of this section.

RECLAMATION PLAN

APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -301-270, -301-271, -301-412, -301-413, -301-512, -301-531, -301-533, -301-553, -301-536, -301-542, -301-731, -301-732, -301-733, -301-764.

Analysis:

Table 542.100a (page 500-73) is a reclamation timetable and also gives a brief description of all reclamation activities.

This site was disturbed prior to SMCRA and there are, therefore, no reliable

predisturbance maps. Nevertheless, the site will be restored to its approximate original contour, as can be best determined, as shown in plan view on Maps 542.200a through 542.200c and in cross section on Maps 542.200d1 through 542.200f.

Fairly large portions of several pre-SMCRA highwalls and cut slopes will be retained following final reclamation, as will some very small portions of post-SMCRA highwalls. The locations and extent of these slopes are shown in plan view on Maps 542.200a through 542.200c. Their final configurations are shown by cross section on Maps 542.200d1 through 542.200f. All of these highwall and cutslope remnants are associated with the cut of the main access road, Carbon County Road 290, which will be retained as a permanent feature following final reclamation. Their retention is made necessary by the fact that, because of the space taken by the retained road, there is not enough room to backfill them completely without creating fills so steep that they would be unstable.

Findings:

The plan fulfills the requirements of this section.

BACKFILLING AND GRADING

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

Analysis:

The backfilling and grading plan is found on pages 500-83 through 500-86 of the plan and is shown graphically on Maps 542.200a through 542.200f.

Table 542.100a (page 500-73) is a reclamation timetable and contains backfilling and grading information as well. Table 542.100a divides reclamation area into 5 geographically-determined phases and tells what reclamation activities will be carried out in each of them. The 5 phases are:

- Phase 1-No. 1 and No. 2 Mines and Access Road
- Phase 2-Mudwater Canyon Fan, Corner Canyon Fan, and Little Park Canyon Breakout (if constructed)
- Phase 3-Gentry Mountain Air Shaft
- Phase 4-Lion Deck
- Phase 5-Lower Operations (Coal Preparation Plant, Refuse Disposal Area, and Unit Train Loadout)

Phase 1, the No. 1 and No. 2 Mines and Access Road, will be accomplished in months 1 through 5 of the reclamation period. Phase 2, Mudwater Canyon Fan, Corner Canyon Fan, and Little Park Canyon Breakout, will be accomplished in months 3 through 5. Phase 3, the Gentry Mountain Air Shaft, will be accomplished in months 5 and 6. Phase 4, the Lion Deck, will be accomplished in months 10 through 18. Phase 5, the Lower Operations, will be accomplished in 3 subphases: the first in months 4 through 7, the second in months 11 through 18, and the third in months 22 through 24.

Sidehill cuts will be reduced by dragging fill material from the outslope of the operations benches and placing it at the toe of the cuts. Road surfacing material will be broken up and buried at the toe of the cut under at least two feet of material. Entrances to reclaimed roads will be blocked to vehicle access by native rock barriers or earthen berms.

Roads will be reclaimed by pulling material back from the outslope and placing it in the cuts. The replaced fill material will be shaped to conform to the adjacent topography and replace the natural drainage patterns. Natural drainage will be reestablished and erosion protection provided. Culverts will be removed and water bars and cross drains will be constructed where necessary to minimize erosion.

The refuse pile will be configured for the duration of the operation period as described under **SPOIL AND WASTE MATERIALS** and as shown on Map 542.200c. Following the completion of mining and the sampling program described on pages 500-54 to 500-55, the pile will be graded and then ripped and scarified to insure good contact between the refuse and the cover material. After placement of the cover material, the surface will be gouged to produce a rough surface which will minimize runoff and enhance plant growth.

The results of a volume analysis are shown in Table 542.200a, page 500-76. They show an overall cut availability of 1,127,592 cubic yards and a fill requirement of 993,859 cubic yards. The excess of 133,733 cubic yards, which is a little less than 12% of the total available cut, is expected to be taken up with compaction.

A stability analysis of the reclaimed slopes was done by the consulting firm of Rollins, Brown and Gunnel, Inc. Of Provo, Utah. The results of this analysis are found in Exhibit 553.130a. The analysis was based on fill material characteristics determined from five samples and used a computer model based on the Modified Bishop's Method. It showed that, for an ultimate slope of 1.5h:1v, the backfill material has a minimum static stability safety factor of approximately 1.4.

Findings:

The plan fulfills the requirements of this section.

MINE OPENINGS

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

Analysis:

The plan for the reclamation of mine openings is found on pages 500-81 to 500-82 and in Figure 551a of the plan.

All drill holes are to be partially filled with a slurry, the consistency of which is approximately 5.5 gallons of water to 1 bag of cement. The bottom 200 feet of each hole is to be filled first and the rest of the hole is then to be filled in 200-foot increments until the hole is filled to the collar. This is in accordance with the USGS guidelines, which the Division accepts, which require that drill holes be filled with concrete slurry or some other suitable material from bottom to collar in order to prevent the migration of water between strata within the hole.

The Gentry Mountain air shaft will be reclaimed following the cessation of underground mining operations. The shaft casing will be cut off four feet below the surface of the ground. The shaft will be completely filled with either concrete or else a bentonite mixture specifically designed for well plugging. The barbed wire fence will then be removed and the area will be graded and revegetated.

The stope hole on the Lion Deck, through which coal passes vertically from the mine conveyor to the main conveyor, will be completely filled from bottom to collar with earthen material. The top 10 feet will be filled with a substitute topsoil material.

Portals will be sealed and backfilled. Seals will consist of double rows of solid concrete block set on a concrete footing. The footing will be keyed into the floor at least 12 inches. The block seal will be keyed into the ribs at least 16 inches. The backfill will extend at least 25 feet from the seal to the surface and will be graded to conform to the postmining contour. A typical portal seal is shown in Figure 551a of the plan.

Findings:

The plan fulfills the requirements of this section.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

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

Analysis:

Information regarding the reclamation of roads is found on pages 500-73 through 500-75 of the plan and shown on Maps 542.200a through 542.200i.

Roads will be reclaimed as discussed under **BACKFILLING AND GRADING** above. Material will be pulled back from the outslope and placed in the cuts. The replaced fill material will be shaped to conform to the adjacent topography and replace the natural drainage patterns. Natural drainage will be reestablished and erosion protection provided. Culverts will be removed and water bars and cross drains will be constructed where necessary to minimize erosion.

County Road No. 290, which is the main portal access road that crosses the Lion Deck area, is owned by Carbon County. This road will remain as a permanent feature as part of the postmining land use. The short access road between County Road No. 290 and Treatment Facility No. 1 is within the right-of-way corridor of County Road No. 290. It will also remain, as part of the postmining land use, for powerline access.

Findings:

The plan fulfills the requirements of this section.

BONDING AND INSURANCE REQUIREMENTS

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

Analysis:

Form of bond. (Reclamation Agreement)

A copy of the bonding form is found in Exhibit 820.100a.

At present (January, 1997) the permittee holds a surety bond with Aetna Casualty and Surety Company. The bond is for the amount of \$5.18 million and covers 173 acres of disturbed land.

Determination of bond amount.

In 1997, the reclamation plan was revised significantly, particularly the earthwork. This, of course, required a thorough recalculation of the reclamation cost estimate. Details of the revised reclamation cost estimate are found in Appendix 542.800a. Unit costs for site demolition, drainage control, surveying and most revegetation were taken from the 1997 edition of Means© *Heavy Construction Cost Data*. Unit costs for excavation, backfilling, surface preparation and topsoil distribution were taken from the *Caterpillar© Performance Handbook*, Edition 27 (1997), and the 1997 *Rental Rate Blue Book for Construction Equipment*. Equipment operator costs were also taken from the 1997 edition of Means© *Heavy Construction Cost Data*. Indirect costs were calculated using the methods set forth in the 1987 edition of the Office of Surface Mining Reclamation and Enforcement's *Handbook for Calculation of Reclamation Bond Amounts*.

The revised reclamation cost estimates are summarized on the second page of Appendix 542.800a. The total of the direct costs is \$6,232,556. The indirect costs, including mobilization, engineering redesign, management and contractor overhead and profit, come to a total of \$1,190, 418. The total of direct costs and indirect costs, \$7,422,974, is escalated over 5 years at an annual rate of 2.5% to obtain a total reclamation cost estimate of \$8,395,384 (2002 dollars).

Since the approved bond at this time (1997) is in the amount of \$5.18 million, it must be increased to at least the revised total of \$8,395,384 summarized above.

Terms and conditions for liability insurance.

A copy of the certificate of liability insurance is found in Exhibit 117.100a.

The permittee holds general liability insurance with National Union Fire Insurance Company. The policy number is RMGL1437605. The policy was originally issued July 1, 1991, but its current effective period is from June 1, 1996 to June 1, 1997.

The policy specifically includes explosives, as required by R645-301-890.100. It has a general aggregate liability limit of \$6,000,000 and a limit of \$1,000,000 for each occurrence, which exceed the respective minimums of \$500,000 and \$300,000 required by R645-301-890.100. As required by R645-301-890.300, the policy includes a rider, dated July 3, 1991, which states that National Union Fire Insurance Company will notify the Division, by certified mail, of any change or cancellation of the policy, within 45 days of the change or cancellation.

Findings:

The plan fulfills the requirements of this section. The permittee must increase the reclamation bond from its present total of \$5.18 million to at least \$8,395,384, as explained above.

RECOMMENDATION:

It is recommended that this significant revision be approved, conditional only upon the permittee's submittal of a revised, increased bond, as explained in the technical analysis above.