



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

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December 9, 1997

Johnny Pappas, Senior Environmental Engineer
Cyprus Plateau Mining Corp.
P.O. Drawer PMC
Price, Utah 84501

Re: Clean Coal Storage Area Expansion, Cyprus Plateau Mining Co., Willow Creek Mine,
ACT/007/038-97I, File #2, Carbon County, Utah

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Dear Mr. Pappas:

The technical analysis for the referenced amendment has been completed by our staff. A copy of the technical analysis identifying deficiencies is provided for your review and response. Please respond to these deficiencies by December 23, 1997.

If you have any questions, please call.

Sincerely,

A handwritten signature in cursive script that reads "Joseph C. Helfrich".

Joseph C. Helfrich
Permit Supervisor

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Enclosure

cc: Daron R. Haddock, DOGM
Price Field Office

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



Willow Creek Mine
Analysis and Findings
Clean Coal Storage Expansion
Amendment 97I
December 9, 1997

INTRODUCTION

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

Often the first technical review of an application finds that the application contains some deficiencies. The deficiencies are discussed in the body of the TA and are identified by a regulatory reference which describes the minimum requirements. In this Technical Analysis we have summarized the deficiencies at the beginning of the document to aid in responding to them. Once all of the deficiencies have been adequately addressed, the TA will be considered final for the permitting action.

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

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ENVIRONMENTAL RESOURCE INFORMATION

SOILS RESOURCE INFORMATION

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

Analysis:

Appendix 8-3 contains the environmental resource information for soils within the clean coal storage area expansion as follows:

- Soil Identification and Description
- Soil Analytical Data
- Soil Sampling Map

Soil Identification and Description

Three sampling sites (CPTP-1, 2, & 3) were located on the hillside east of the clean coal storage area. Shallow trenches were excavated using a backhoe for sites 1 and 2 while site 3 was excavated by hand into an exposed, existing road cut. Soils were logged at each site and samples were collected from each diagnostic horizon. Attachment B contains the field soil logs.

The dominate soil type on slopes adjacent to the clean coal pile is Travessilla-Rock outcrop-Gerst complex¹. This complex contains 40 percent Travessilla extremely bouldery loam, 30 percent Rock outcrop, 20 percent Gerst very channery loam, and 10 percent other soils. Travessilla soils are found on the north and west aspects at higher elevations on 40 to 70 percent slopes. The Gerst soils are found on south and west aspects at lower elevations on 50 to 70 percent slopes. The Gerst soil is identified as Loamy, mixed (calcareous), mesic shallow Ustic Torriorthents while the Travessilla soil is identified as Loamy, mixed (calcareous), mesic Lithic Ustic Torriorthents. The main difference between these two soils is soil thickness; the Gerst soils are approximately 20 inches thick while the Travessilla soils are thinner at about 10 inches thick. Soil descriptors for *mesic Ustic Torriorthents* are defined as follows:

- mesic - 8 to 15 °C mean annual soil temperature
- Lithic - near stone
- Ustic - dry climate soil moisture regime
- Torr - usually dry
- Orthos - true
- Entisol - recent soil development

¹ Jensen, E.H., and Borchert, J.W., 1988. Soil Survey of Carbon Area, Utah Soil Conservation Service, United States Department of Agriculture, Washington D.C.

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Sampling locations, vegetation, rooting depth, and soil-profile descriptions are given for each of the three sample sites. Sampling sites CPTP-1 and CPTP-2 contain deeper soils at 18 and 26 inches, respectively, while CPTP-3 contains shallower soils at 8 inches thickness. As observed in the field, the shallower soils are found on the hillsides while the deeper soils are found at the toe of the slope. Soils are generally loam to sandy loam; rock, mostly gravels and cobbles, increases with depth.

Soil Analytical Data

Attachment C, contains the analytical data sheets for soil samples collected from each of the samples sites, CPTP-1, 2 and 3. Laboratory data are compiled and condensed into Table 1. Each of the measured parameters fall within the acceptable range of the Division's guidelines for evaluating topsoil and overburden².

Soil Sampling Map

Attachment A, Figure 1, Soil Sample Locations, shows each of the three sample locations in relation to the expanded clean coal pile.

Findings:

The information provided meets the regulatory requirements of this section.

CULTURAL AND HISTORIC RESOURCES INFORMATION

Regulatory Reference: R645-301-411.140

Analysis:

The applicant is proposing to expand its coal storage area into an undisturbed area. The application did not include new cultural resources information, and the existing mining and reclamation plan does not appear to have this information.

The application is required to contain maps as described under R645-301-411.141 and a supporting narrative which describe the nature of cultural and historic resources listed or eligible for listing in the National Register of Historic Places and known archeological sites within the permit and adjacent areas. The description will be based on all available information, including, but not limited to, information from the State Historic Preservation Officer and from local archeological, historic, and cultural preservation agencies.

² Leatherwood, James, and Dan Duce. 1988. Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mining. State of Utah, Department of Natural Resources, Division of Oil, Gas and Mining. Salt Lake City, Utah.

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Because of the proximity of this site to several disturbances, it is likely a cultural resources survey has been done previously and that a literature search would provide necessary information.

The Division and State History cannot determine the potential effect on cultural resources without this information, so an evaluation of potential impacts will need to wait until it is received.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the applicant must provide the following in accordance with:

R645-301-411.140, The applicant needs to provide cultural resources information in compliance with R645-301-411.140. When this information is received, the Division and State History can evaluate it to determine the potential of affecting cultural resources.

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:

Contour Maps

Map 3.4-8, Operations Contour Map, shows the expanded disturbed area boundary. Map 3.4-8 does not show the contours in and around the proposed expansion to the disturbed area nor are the permit boundaries shown. R645-301-521.150 and R645-301-521.151 deal with contour maps and the regulations state:

These maps will clearly indicate sufficient slope measurements or surface contours to adequately represent the existing land surface configuration of the proposed permit area for the purposes of SURFACE COAL MINING AND RECLAMATION ACTIVITIES and the area affected by surface operations and facilities for the purposes of UNDERGROUND COAL MINING AND RECLAMATION ACTIVITIES measured and recorded according to the following:

Each measurement will consist of an angle of inclination along the prevailing slope extending 100 linear feet above and below or beyond the coal outcrop or the area to be disturbed, or, where this is impractical, at locations specified by the Division.

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The Permittee considered showing the contours elevations in and around some parts of the permit boundary as impractical. Since those areas they wish to exclude were outside the disturbed area boundaries the Division agreed with the Permittee.

The Permittee wants to include some of the areas that were excluded from the contour elevation requirements into the disturbed area. The Division considers having contour elevations for all parts of the disturbed area important. Prior to expanding the disturbed area boundary the Permittee must show the contour elevations for all areas in and around the disturbed boundary.

Findings:

The Permittee failed to meet the requirements of **R645-301-150** and **R645-301-151** by not showing the angle of inclination (contour elevations) along the prevailing slope extending 100 linear feet above and below the area to be disturbed.

HYDROLOGIC RESOURCE INFORMATION

Regulatory Reference: R645-301-723 through 726, 728, 729,

Analysis:

The proposed modifications do not affect the baseline information, including sampling and analysis, CHIA, modeling, PHC, surface water monitoring, and ground water monitoring.

Findings:

The plan is in compliance with the above regulations.

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OPERATIONAL PLAN

TOPSOIL AND SUBSOIL

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

Analysis:

The Clean Coal Pile Expansion amendment, Appendix 8-3, covers the following operational considerations for soil salvage and protection of the soil resource:

- Clean Coal Pile Expansion Area
- Soil Specialist Supervision - one recommendation included
- Soil Salvage Considerations

Clean Coal Pile Expansion Area

The maximum extent of the expanded clean coal pile is shown on Figure 1, Soil Sample Locations. The expansion area occupies an additional 3.9 acres. Although Figure 1 shows the coal pile expansion reaching an elevation near 6390 feet, the amendment states that the coal pile will probably only extend to a maximum elevation of 6240 feet.

Soil Specialist Supervision

The actual thickness of soil to be removed will vary across the area. Based on the limited knowledge provided from the three sampling pits, soil depth may vary from 24 inches at the toe of the slope to less than 8 inches on the slope. Additional soil pits randomly located on the hill would help verify soil thickness variability. *Therefore, because of the extent of the expansion area and the extreme variability of soil quality and thickness, the Division recommends that a non-biased, third party, professional soil scientist be on-site during soil salvage to monitor and supervise soil salvage operations for the purpose of maximizing soil salvage volumes and quantities.*

Soil Salvage Considerations

Soil salvage will occur from the slope east of the coal storage area and will be accomplished in stages as the coal pile is enlarged. Soils will be stripped from the slope at least 10 to 15 feet above the maximum level of the coal pile, thus maintaining a buffer zone around the coal pile. Thus, excess areas of the slope will not be unnecessarily denuded while protecting the in-place, undisturbed soils from being contaminated with coal.

The A and C horizons will be stripped from the slope and stored in Gravel Canyon topsoil storage area. The lowermost C horizons (i.e., Cr, C2r, and C3r) are generally very poorly developed soils and will not be salvaged. No B horizon exists. After removing the larger woody plants, the remaining vegetation will be salvaged and stored with the soils in the soil stockpile.

During expansion, Cyprus commits to salvaging all reasonably available soil.

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Findings:

Information provided in the proposed amendment meets the minimum regulatory requirements for this section. However, the following recommendation is given to the permittee in accordance with:

R645-301-232.100 and R645-301-232.300. Because of the extent of the expansion area and the extreme variability of soil quality and thickness, the Division recommends that a non-biased, third party, professional soil scientist be on-site during soil salvage to monitor and supervise soil salvage operations for the purpose of maximizing soil salvage volumes and quantities.

OPERATIONAL ENGINEERING

Regulatory Reference: 30 CFR Sec. 784.2, 784.11; R645-301-231, -301-526, -301-528, -301-521, -301-526.

Mining Operations And Facilities

Type and Method of Mining Operations

Analysis:

Figure 1, Soil Sample Locations map, shows the maximum extent of the expanded clean coal pile. The east boundary of the coal pile is also the permit and disturbed area boundary. The Permittee does not discuss how they will prevent coal from going outside the permit boundary.

Under R645-301-521.180 and R645-301-521.190 the Permittee is required to supply the Division with information about the support facilities. The Division needs to know what type of facilities the Permittee will use to prevent coal from going outside the permit boundary.

Findings:

The Permittee failed to meet the requirements of **R645-301-521.180** and **R645-301-521.190**. Prior to approval of 97I the Permittee must describe the support facilities that will be used to keep coal from going outside the permit boundary.

HYDROLOGIC INFORMATION

Regulatory Reference R645-301-720

Analysis:

There appear to be two minor drafting mistakes that need to be cleaned up. On Map 3.4-4 (E) and (A&B) there are two entirely different ditches with the same designation CGD-6. The ditch on (E) has three designations for one ditch which is confusing. The second item needing

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clarification no designation could be found for the riprap thickness for the emergency spillway on pond 011. See Map 3.4-6 and Appendix 3.4E, Page 7.

Finding:

Information provided in the proposed amendment is not considered adequate to meet the requirements of these sections of the regulations. Prior to approval the Operator must provide the following in accordance with:

R645-301-722.500, provide, "maps to adequately represent the existing land surface configuration of proposed disturbed areas".

RECLAMATION PLAN

GENERAL RECLAMATION REQUIREMENTS

Regulatory Reference R645-300-133.710

Analysis:

The main hydrologic change to the MRP is to increase the size of sedimentation pond 011 due to the increased area reporting to the pond. This area is increased since a ditch that formerly diverted drainage around the coal pile and away from the pond will be covered by the larger coal pile and the water will, in turn, drain into the pond. The pond could be reclaimed in it's previous configuration and can still be reclaimed in it's slightly larger configuration.

A second hydrologic change is the addition of a sediment trap at the unit train loadout. This is an improvement to the area which will reduce erosion. The area is only 0.5 acre and is included in the existing disturbed area. Reclamation will be easily achieved in this area.

The other hydrologic aspects of the submittal are a re-examination of existing facilities such as sedimentation pond 013, drainage ditches, and drainage culverts on the site. These facilities are not changed. They were found to be reclaimable in the previous plan and are still reclaimable now.

Finding:

The modifications to the MRP do not alter the ability of the Operator to reclaim the site. The amendment has, "Demonstrated that reclamation as required by the State Program can be accomplished according to information given in the permit application."

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TOPSOIL AND SUBSOIL

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

Analysis:

Appendix 8-3 references the Mine Reclamation Plan's Section 3.4-6 for final reclamation procedures. However, Section 3.4-6 contains no specifics for reclaiming the coal expansion slope. Appendix 8-3 states that coal will be removed prior to dressing the slope with soils containing a high rock percentage. Appendix 8-3 does not state whether the soil dressing will be in-place soils or soils imported from the Gravel Canyon topsoil stockpile. Furthermore, Section 3.4-6, **Resoiling**, page 3.4-21, states that no soil was salvaged from the Castle Gate site except in the area of the refuse pile. This section states that existing soils at the site will be used as resoiling material except at the refuse pile, where the salvaged topsoil will be used. No mention is given for soils salvaged from, or redistributed to, the clean coal pile expansion area.

Both Appendix 8-3 and Section 3.4-6 need to be correlated and corrected to address reclamation efforts for the coal pile expansion slope. The MRP needs to commit that topsoil materials removed and stored in the Gravel Canyon topsoil stockpile be redistributed on the coal pile expansion slope to the extent possible to achieve reclamation success.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the permittee must provide the following in accordance with:

R645-301-242 and R645-301-120. Both Appendix 8-3 and Section 3.4-6 need to be correlated and corrected to address reclamation efforts for the coal pile expansion slope. The MRP needs to commit that topsoil materials removed and stored in the Gravel Canyon topsoil stockpile be redistributed on the coal pile expansion slope to the extent possible to achieve reclamation success.

REVEGETATION PLAN

Regulatory Reference: R645-301-340

Analysis:

The applicant has proposed to expand its coal storage area at the Castle Gate Preparation Plant. Expansion would be to the north of the existing stockpile area.

Although the area contains undisturbed land, this area has been previously surveyed for threatened, endangered, and sensitive species and for vegetation cover. Therefore, further baseline data is not needed.

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The proposed expansion area overlaps with the Barn Canyon grass-sage reference area. This area would be used for judging revegetation success in parts of Crandall Canyon. The applicant needs to find an alternative to either the disturbance or to the success standard.

According to Table 3.3 on page 29 of Appendix 9-1, the grass-sage reference area would be used to compare to the leach field in Crandall Canyon. Appendix 3.7T indicates the grass-sage reference area would be used for comparison to the area near the shaft in Crandall Canyon. This conflict needs to be resolved although it is not a deficiency related to the application.

Although the existing reference area is approved, there are important differences between it and the disturbed areas in Crandall Canyon. The disturbed areas are near the bottom of the canyon and are relatively flat with fairly deep soil, but the reference area is steep and rocky with shallow soil.

This time of year, it may be difficult to find a more appropriate reference area, so it may be most expedient for the applicant to simply propose moving the reference area north so it is not in the disturbed area. However, the applicant should plan to work with the Division to find a different, more suitable reference area.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the applicant must provide the following in accordance with:

R645-301-340, The proposed expanded disturbed area overlaps with the Barn Canyon grass-sage reference area. The applicant needs to propose an alternative revegetation success standard or to not disturb the existing reference area.

In addition, the plan contains a conflict regarding which reference areas will be used to judge revegetation success in Crandall Canyon. This does not relate directly to the current proposal but will need to be corrected.

GENERAL ENGINEERING REQUIREMENTS

Analysis:

In Section 3.4-6(1) of amendment 97I under the headings of Phase I Reclamation and Demolition the Permittee changes the commitment to removal all the existing structures to a commitment to remove all existing aboveground structures. The Division is concerned about changing the commitment to remove all above ground structures. Footings and foundations could be considered below ground structure and therefore exempt from demolition and removal.

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The Permittee changes another reclamation commitment from removing all piping in the permit area to removing all piping in the permit area to the extent practical.

The Division is aware that there are underground utilities in the permit area and the removal of those utilities is not required under reclamation. The Division realizes that in some cases leaving pipes in place will result in less environmental harm than removing the pipes. Therefore, the Division does not expect the Permittee to removal all underground utilities as part of reclamation. To avoid confusion the Permittee needs to list those underground utilities that will be left in place and describe why those utilities should be left in place.

Findings:

The Permittee failed to meet the requirements of **R645-301-541.200** by not committing to remove all underground structures unless approved for the postmining land use.

The Permittee failed to meet the requirements of **R645-301-121.100** by not stating in a clear and concise manner what underground utilities they plan on leaving as part of the postmining land use.

RECLAMATION ENGINEERING PLAN

Timetable

Analysis:

In Section 3.4-6(1) of amendment 97I the Permittee states:

Reclamation of the School House Canyon refuse site will begin as soon as practical after the canyon is filled to its design capacity.

In Section 3.4-4(1) of the MRP the Permittee states:

Reclamation of the School House Canyon refuse site will begin as soon as the canyon is filled to its design capacity.

The Permittee added the word practical to the timetable for reclamation of the School House Canyon refuse site. The Division realizes that some phases of reclamation can only be completed during certain times of the year. Therefore, the Division approves the Permittee's request to remove the unrealistic commitment to begin reclamation as soon as the canyon is filled. The term as soon as practical is vague. The Permittee needs to make a specific commitment as to when reclamation work will begin. The Permittee could state that reclamation would be completed with a specific time interval after the refuse site is filled.

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Findings:

The Permittee failed to meet the requirements of **R645-301-121.100**. Prior to approval the Permittee must specify when reclamation of the School House Canyon refuse site will begin and be completed.

Backfilling and Grading

Analysis:

In Section 3.4-6(1) under the heading of Grading the Permittee states:

A comparison of Maps 3.4-1 and 3.4-10 indicates that all post-SMCRA and most pre-SMCRA cut slopes will be backfilled to the extent practical during reclamation. Those pre-SMCRA cut slopes which cannot practically be reclaimed are identified on Map 3.4-9. The cut slopes were analyzed for stability in their present configuration and for long-term retention following reclamation. This analysis is presented in Appendix 3.4H, with the cross sections used to analyze the slopes shown on Map 3.4-8.

Appendix 3.4H consists solely of a title page. The Permittee must include the complete slope stability analysis in the amendment.

The Permittee must also justify why some cut slope will remain after final reclamation. The Division needs to document why reclamation of some cut slopes is impractical.

Findings:

The Permittee failed to meet the requirements of **R645-301-121.200** by not being clear and concise about the location of the slope stability analysis of the slope stability analysis for the cut slopes that will remain after final reclamation.

The Permittee failed to meet the requirements of **R645-301-121.200** by not being clear and concise about why some cut slope must remain after final reclamation.

Determination Of Bond Amount

Analysis:

The Permittee did not supply the Division with updated reclamation cost information. Under the requirements of **R645-301-830.140** the Permittee is required to supply the Division with a detailed estimated cost, with supporting calculations for the reclamation cost estimate.

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Findings:

The Permittee did not meet the requirements of **R645-301-830.140**. Prior to approval the Permittee must supply the Division with detailed reclamation cost estimates that include the expanded area of the clean coal stockpile.

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