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State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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March 29, 1993

Mr. Richard H. Allison, Jr. P.E.
Project Supervisor
AMAX Coal Company
2273 Bishop Road
P. O. Box 3005
Gillette, Wyoming 82717-3005

Dear Mr. Allison:

Re: 2nd review of Castle Gate Area and ADIT #1/Gravel Canyon area, AMAX Coal Company, Castle Gate Mine, ACT/007/004, Folder #3, Carbon County, Utah

The Division has completed a review of your submittals intended to satisfy the requirements of the settlement agreement under Docket 91-001 for the Castle Gate area and the Adit #1/Gravel Canyon areas. A majority of the original deficiencies has been addressed, however, there remain a few items that need further attention. Please review the enclosed technical memos which discuss the remaining problems.

With respect to the Castle Gate area, Priscilla and Paul each had one remaining deficiency. Randy had none, but you should be aware that some information needs to be supplied when addressing the remaining areas. Sharon's review identified a number of remaining deficiencies with the Castle Gate area with respect to hydrology. These will all need to be addressed with the exception of two items which, although listed as deficiencies, do not require a response. These are listed as number 2 and 4 under the heading of General Operational and Reclamation Designs, All Canyons. Number 2 is a statement that indicates the Division will field verify the Mannings "n" used, and number 4 is to be considered only as a recommendation.

With regard to the Adit #1/Gravel Canyon area, Sharon identified 3 remaining deficiencies that need to be addressed. Again Randy had no deficiencies but there is information again required to be submitted under the remaining areas submittal.

Although not anticipated, it appears that a third submittal is necessary to complete the settlement agreement for the Castle Gate area and the Adit #1/Gravel Canyon areas. Please correct the outlined deficiencies and submit a response by April 16, 1993.

Please call me or the appropriate reviewer, if you have any questions.

Sincerely,

A handwritten signature in cursive script that reads "Daron R. Haddock".

Daron R. Haddock
Permit Supervisor

Enclosures

cc: R. Harden
P. Baker
S. Falvey

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March 23, 1993

TO: File

THRU: Daron Haddock, Permit Supervisor

FROM: Sharon Falvey, Reclamation Hydrologist *SVF*

RE: Castle Gate Preparation Plant and Adit #1, and Gravel Canyon, Price River Complex, AMAX Coal Company, ACT/007/004, Folder #2, Carbon County, Utah.

Summary

Castle Gate's amendments for the Preparation Plant were received at the Division May 1, 1992, September 30, 1992, December 16, 1992. This review includes the following review segments: Castle Gate School House Canyon Refuse Diversion Designs, General Operational Preparation Plant Review for Castle Gate Preparation Plant, Gravel Canyon, and Adit 1. This review is addressed according to the segments indicated. Analysis follows the deficiencies except where original deficiency reviews are referenced.

Castle Gate School House Canyon Refuse Diversion Designs

DEFICIENCY AND ANALYSIS:

1. Provide drainage designs for runoff from the face of the pile within CGWS-D2F, or demonstrate that no erosive flow occurs on the area.

With the changes made to the refuse area drainage the Operator no longer provides for runoff from the face of the pile for the portion within CGWS-D2F.

2. Provided a 100-year 6-hour event design for ditch CGD-19 and culvert CGC-4.

The Operator has not provided a 100 year 6 hour design for ditch CGD-19 and culvert CGC-4. The Operator contends the ditch and the culvert are not constructed on or near the mine refuse. The regulations require " Runoff from areas above the refuse pile and runoff from the surface of the refuse pile will be

diverted into stabilized diversion channels designed to meet the requirements of R645-301-742.300 to safely pass the runoff from a 100-year, 6-hour precipitation event." Ditch CGD-19 and Culvert CGC-4 directly receive runoff from the refuse pile. R645-301-742.312. states, "The diversion and its appurtenant structures will be designed ...". This was discussed in the meeting with the Operators representative on October 20, 1992. Refer to the memo from William Hendrickson, Earth Fax Engineering a contracted representative of AMAX addressed to Rick Summers October 20, 1992.

3. The Operator must clarify the information in text stating how the remainder of the drainages will be brought in compliance with the proposed design.

The Operator has not made it clear that the recommended channel designs for each diversion including riprap designs will be implemented for all phases of mine operations. For instance the Operator currently has a portion of ditch CGD-7 which is not designed with the proposed method (e.g. has grouted riprap and no graded filter blanket). At some point in time the pile will be extended beyond it's current height yet, there is no discussion of how the designed ditch will be implemented as the refuse progresses and when the remainder of the drainages will be brought in compliance with the proposed design.

4. Include information on design terraces proposed over the face of the refuse pile. Provide cross sections and longitudinal profiles of the drainage down the refuse pile.

The Operator indicates terraces will exist on the refuse pile but does not provide a description of the grade (both axes) of the terraces for drainage. Cross sections and longitudinal profiles of the refuse terraces and drainages should be submitted.

General Operational and Reclamation Designs, All Canyons

DEFICIENCIES AND ANALYSIS:

1. Remove conflicting information on Page 3.4-6 for the addition of culvert CGC-10.

Page 3.4-6 conflicts with the proposed design for the refuse pile ditch CGC-10. CGD-4 has a proposed culvert extension to Pond 013. This is an acceptable practice but should be sized according to Deficiency #2. outlined above.

2. Use a Manning's "n" in ditch design that is representative for the site.

The Operator proposes a Manning's "n" of 0.030 for earthen ditches. This value is high unless the material is graded loam to cobbles and shingles. This information will be field verified. The ditches are located on the pad area and are shown in Appendix 8-B to be sandy loam to a clay loam. In these cases the "n" value would be considered high. See Barfield et.al. 1971, Table 3.2.

3. The Operator should include a commitment to rip the soil parallel to contours on slopes from 10 to 20 % and all other places where practical.

The Operator discusses use of mechanical treatment of soils with a mechanical ripper on slopes <20%. Standard practices include ripping parallel to contours.

4. Provide stream gauging stations to determine peak flow in reclaimed channels and demonstrate stable channel designs for reclamation bond release.

Over time the Operator has significantly changed the methods used in determining the peak runoff for the drainage area. According to the 1984 Mine Plan Decision Document Technical Environmental Assessment, the Operator initially used the rational formula for portions of the drainage area including the refuse pile drainage. In the previous submittal the Operator used the SCS Type II curve methodology which is less conservative than the rational method. The current proposal uses the Type "b" methodology to determine peak flows. This method generally results in peak flows approximately 2/3 smaller than the values obtained by the SCS Type II methodology assuming all other conditions remain the same. The Operator has provided designs that meet the regulations but, provides less conservative peak flow values than the previously approved documents.

Because the Operator has minimized peak flow designs through a less conservative hydrograph method than the originally approved mine plan, and since no other mine has previously used the type 'b' methodology the potential for ditch failure may be increased. If the Operators designs fail, a peak flow calculation would determine if failure of the channel resulted from exceedence of the design flow. If the channel remains stable for events exceeding the peak flow the demonstration of stability would be met. It is recommended the Operator could use a staff gage (cork float) in a portion of the channel which is stable and uniform, preferably not in the reclaimed channel.

Remaining Deficiencies from June 12, 1992 memo

See deficiency in original memo.

1. No water supply intakes were supplied on Exhibit 1.1. Piezometers and other monitoring wells to be monitored during the reclamation period could not be located as well as, slurry/recovery wells, exportation holes, operational water lines and monitoring wells.
9. Fate of drainage for reclamation channels terminate at the Price River. Although, the placement of the culvert outlets at the river already exist, the reclamation design requires addition of riprap. The area of channel alteration will be small however, the Operator is required to submit a plan to the Division of Water Rights for stream channel alteration. The Operator needs to submit details of the extent of riprap placement and toe protection. This information may be in diagram form.

There appears to be a continuation of drainage control below CGRD-2 within the disturbed area and adjacent to the railroad right of way. The drainage pattern appears to collect water from the adjacent watershed as well as drainage CGRD-2. Discharge dissipation for drainages discharging at the railroad right of way remains unclear.

19. The Operator has not included a reclamation plan for the areas disturbed by removal of structures and foundation for the no.3 belt area.
28. Riprap filter gradation is only found for the refuse pile drainages. Note: At completion of this review the riprap amendment received January 7, 1993 was found. A review is forthcoming.
- 28a. Correct the design slope and calculations for ditch CGRD-2.

While reviewing drainages it was noted that a discrepancy exists in CGRD-2 reclamation channel design slope from the map, and that described by the applicant. The applicant indicates a maximum slope of 0.09 ft/ft while the map indicates a maximum of 0.28 ft/ft.

32. No drainage for CGWS-9 reclamation channel is presented.
34. The Operator indicates the ponds will be removed 2 years after seeding. However, Regulations R645-301-763.100 specifically state the Operator must first obtain an authorization from the Division. The Operator also leaves out the condition that water quality criteria must be met.
38. The Operator has provided a sediment removal plan. However, the plan

does not state that survey stakes are used for determination of sediment level and it does not contain a de-watering plan. Additionally the Acid Toxic testing should be reported to the Division, prior to sediment removal.

41. Post-mining land use requirements R-645-301-400 and R645-302.270 must be addressed for those features to remain as permanent features.
42. Page 3.4-39 states that sediment will be removed when either side will be built up to half it's height. If the downstream side is built up with sediment it may indicate a failure in design and may require immediate action. Therefore, reference to the height of sediment on the downstream section is not prudent. The Operator has indicated silt fences and soil in the vicinity of the fence will be removed during Phase II reclamation. This was requested in the June 12, memo. However it is felt that the Operator could remove the fence by cutting the material at the soil surface and then removing the stakes in areas where soil has stabilized with minor volumes of soil. When it is recognized that the silt fence retains large amounts of sediment (near clean out point), that would be the time to remove sediment and reseed the area prior to removal of the fence.
46. The Operator has not provided a clear Water Monitoring program to demonstrate that the Performance standards required by R645-751 will be met. The monitoring plan should also describe how the data will be used to demonstrate the requirements of R645-880 are met for bond release. Monitoring of the pond water does not demonstrate the water coming off the site meets water quality criteria for removal of the sediment ponds. The monitoring should include, at a minimum, water quality sample points at the inlet of ponds and at the perimeter of the disturbed area drainages.
47. The narrative addressing Rules R645-301-731.111-121, could not be located. The Operator indicates the Acid or Toxic forming materials which may adversely affect water quality or vegetation, will be treated or buried. The location of burial is important to meeting the requirements of R645-301-731.111-112. The Operator needs to expand the discussion on this issue. The Operator should include in the discussion a commitment to provide the analysis to the Division and receive approval for burial prior to such action or, provide a descriptive location and method for burial for advanced approval. The Operator does not discuss what materials will be used to fill the ponds and retain the approximate pre-mining recharge for areas on alluvial material. This is particularly important for ponds in the Preparation Plant adjacent to the Price River.

Gravel Canyon and Adit #1

See original deficiency from the July 21, 1993 memo by Rick Summers.

3. The belt line area, buttresses removal, is not discussed in the reclamation plan. Include a reclamation plan for the areas disturbed by removal of structures and foundation for the no. 3 belt area.

8. The Operator states that the channel does not have to meet the requirements of R645-301-742-323 which applies to perennial and intermittent streams having no less capacity of the upstream and downstream channel. However, the designs do have to meet the requirements of stable channel design as well as R645-742.313 which indicate that a permanent diversion or a stream channel be designed to approximate the pre-mining characteristics of the original channel. It is well documented that the channel geometry is related to the dominant flows received by stream. Therefore prudent engineering designs incorporates these characteristics. Provide crosssections for the upstream and downstream channels base stream channel designs on those channel characteristics.

9. The reclamation time tables commit to retaining the sediment control measures until the disturbed area is stabilized and revegetated. However, the Operator must indicate that it will receive approval from the Division prior to removal of sediment control structures.

CGREVPRE.TAM



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January 5, 1993

TO: Daron Haddock, Permit Supervisor
FROM: Randy Harden 
RE: Castle Gate Area Submittal, AMAX Coal Company, Castle Gate Mine,
ACT/007/004-92B, Folder #2, Carbon County, Utah

Summary:

In accordance with Stipulation under Docket 91-001, AMAX Coal Company has submitted revised plans for the Castle Gate Area. These plans were received by the Division on May 1, 1992, with supplemental information received on May 5, 1992. Based on a review of these plans, additional information was requested by the Division. This information was received on September 8, 1992. The following review is in consideration of the outstanding information as a result of the Division Order issued to AMAX and the information incorporated into those proposed changes to the mining and reclamation plan.

Comments and completeness of the information within the text of this review is in regard only to those areas described in Castle Gate Area unless noted otherwise in the comments. Determination of completeness of the response to the Division Order and Compliance of those requirements for approval cannot be made until such time that all of the required information has been submitted as required by the Division Order.

Analysis:

Division Order 2)

R614-301-122. Permit Application Format and Contents. The information contained within the permit must be organized to ensure that each Figure, Plate, Diagram, Analysis etc. that is referenced is included within the Permit Application. The language used in the permit application must accurately differentiate existing and proposed facilities, activities, treatments, etc. This information shall be provided on or before June 1, 1991.

Proposal:

Page 2.
ACT/007/004-92B
January 5, 1993

Information submitted for the Castle Gate Area is specific only to that section of the plan. A new table of contents for section 3.4 of the plan has been provided.

Analysis:

With respect to section 3.4 of the plan, the operator has revised the plan. However, requirements of this section of the Division Order apply to the plan in its entirety.

The current cross reference to the coal mining rules is not in detail and not sufficiently detailed to locate information which is meant to address specific regulatory requirements. Many of the rules listed within the cross reference are listed as not applicable when they need to be addressed in the plan. This cross reference should be presented in the plan as part of the mid-term permit review process. However, organization of the plan with regard to consistent map numbering, table of contents, and referencing within the text of the plan is considered as part of this Division Order.

The operator has committed to provide a cross reference between the permit documents and the R645 rules by December 1, 1992.

Deficiencies:

None.

Division Order 3)

R614-301-140. Maps and Plans. The PERMITTEE shall submit to the DIVISION, a schedule for providing complete and accurate maps and drawings to depict the current existing conditions for all facilities, and, proposed reclamation treatments. This schedule shall be provided on or before March 1, 1991.

Proposal:

In accordance with the terms and conditions of the Stipulation (Settlement Agreement), the operator has committed to a schedule for the submittal of the information required in this section of the Division Order.

Analysis:

The schedule submitted in conjunction with the Stipulation will be administered, revised and completed under the terms and conditions of the Stipulation. Comments

regarding the adequacy of the information submitted as required by this Division Order are found under other sections of this review as they apply.

Deficiencies:

None.

Division Order 4)

R614-301-142. Maps and Plans. The PERMITTEE has not provided maps and plans with the permit application which distinguish among each of the phases during which coal mining and reclamation operations were or will be conducted at any place within the life of operations. At a minimum, distinctions will be clearly shown among those portions of the life of operations in which coal mining and reclamation operations occurred: prior to August 3, 1977; after August 3, 1977, and prior to either May 3, 1978; after May 3, 1978 and prior to the approval of the State Program; and, after the estimated date of issuance of a permit by the Division under the State Program. The PERMITTEE must provide identification as to the date and the use of those areas and facilities within the permit area which have been incorporated into the underground mining activities. Those areas affected by previous mining operations (including cutslopes and outslopes of pads and roads) and used in conjunction with current underground coal mining facilities are to be included in the disturbed areas. This information shall be provided on or before March 1, 1991.

Proposal:

The operator has provided revised drawings for the Castle Gate Area. The Post Mining Reclamation Treatments Map, Exhibit 3.4-3 shows the proposed final contours of the area.

Plans for the area have been revised and are found in section 3.4 of the Mining and Reclamation Plan and supporting appendices.

Exhibit 3.4-1 shows the location and the extent of the areas previously disturbed by mining (pre-SMCRA) and those portions of the previously disturbed area which are incorporated into the disturbed area boundary for current mining operations. This exhibit is also used to identify surface facilities within the Castle Gate Area.

Maps have been revised to consistently reflect the disturbed and permit area boundaries. Cut slopes have been identified on Exhibit 3.4-3A. Vegetation treatments have been depicted on the same drawings.

Analysis:

Exhibit 3.4-1 shows the areas which were previously affected by mining operations (pre-SMCRA), and identifies those areas which lay within the disturbed area boundaries which are used in conjunction with current mining operations. In the text of the mining and reclamation plan, the operator has indicated that essentially all of the disturbed area shown with the exception of drainage controls, occurred prior to 1977. In context with the requirements of this section of the regulations, it can be assumed that these disturbances occurred prior to August 3, 1977.

The exhibits in the plan have been revised to clearly depict permit and disturbed area boundaries and it appears that these boundaries are now consistent for all operational and reclamation maps in the plans.

Exhibit 3.4-3A has further been revised to show the cut slope areas which will be left in conjunction with the reclamation activities. The operator has also delineated various reclamation revegetation treatments which are to be applied for the preparation plan area.

The underground permit areas (lease areas) have been added to show the extent of those permitted areas. It is intuitive that where the disturbed areas pass outside of the underground permitted areas that the disturbed area boundary and the permit boundary become one in the same. For bonding purposes, the operator will need to determine the acreages for each sub area and the total area for the surface disturbed area, the area affected by surface and underground mining operations, and, the total mining and reclamation permit area which incorporates all areas to be affected by both surface and subsurface mining and reclamation operations. This information should be tabled and incorporated into Chapter 1 of the Mining and Reclamation Plan. This will need to be provided in conjunction with the submittal of information required for other areas as scheduled in the Settlement Agreement.

Previous concerns regarding reclamation treatment areas, permit area boundaries and disturbed area boundaries appear to have been addressed by the operator.

Deficiencies:

None.

Division Order 13)

R614-301-340. Reclamation Plan. The PERMITTEE must provide plans to protect reclaimed areas for a minimum 2-year period. The PERMITTEE will revise the MRP to show 1) seedbed preparation plans(i.e. deep ripping to 18-24 inches), 2) that seed and fertilizer will not be mixed in the hydroseeder, 3) plans for the use of the supplemental planting mix for ephemeral/intermittent drainages, including locations(shown on the reclamation maps) and timing of the planting operations, 4) the final revegetation plans (as identified in the July 1990 correspondence) for the cut and fill slopes associated with the Crandall Canyon access road, 5) Clear plans for the reclamation of Gravel Canyon. This information must be provided on or before March 1, 1991.

Proposal:

This Division Order was not specifically addressed as part of the Castle Gate Area submittal.

Analysis:

The requirements of this section of the Division Order apply to the plan in its entirety.

Deficiencies:

This information should be provided with the information provided for the Remaining areas as part of the Settlement Agreement.

Division Order 17)

R614-301-550. Reclamation Design Criteria and Plans. The permit application must include site specific plans that incorporate the design criteria for reclamation activities. These design criteria and plans shall include but not be limited to: phased reclamation treatments and designs throughout the permit liability period, designs for temporary and permanent surface features, including diversions, impoundments, sediment control structures, and other facilities which will require construction throughout the reclamation process; specific plans and details for all permanent facilities to remain as part of or in conjunction with post mining land use, including roads, utilities, and structures; and, maps and drawings which clearly show the areal and vertical extent of the existing facility areas and those areas throughout all phases of reclamation. This information shall be provided on or before June 1, 1991.

Proposal:

Existing hydrology information and reclamation operations are shown on Exhibits 3.4-2 and 3.4-2A respectively.

The operator has stated that grading will be done in order to establish drainage and stabilize highwalls and cutslopes. The operator states that the disturbed areas are to be graded to approximate the original contours by blending into the surrounding area and creating landforms which resemble the surrounding terrain. Cutslope areas which are left, resemble the cliffs in the surrounding topography and were analyzed for slope stability.

The operator's plan states that during the grading process, berms and temporary diversions will be eliminated, grading will establish surface overland flow drainage where possible, culverts will be removed, sediment ponds will be removed, and paved surfaces will be removed prior to the placement of soil. The operator will construct permanent stream channels and provide for alternative sediment control practices following reclamation construction.

Phases of reclamation are discussed in section 3.4-4 of the proposal. Phase I activities include demolition, grading, soil preparation and soil amendments, and sediment control measures. Phase II activity is listed as removal of the sediment ponds, ditches and berms with seeding and mulching activities for these areas. Phase III work includes reclamation monitoring of water and vegetation.

The timing of the reclamation activities is provided in section 3.4-5.

The operator has indicated that the post mining land use for the Castle Gate Area is wildlife and grazing.

Analysis:

The operator has incorporated the closure and sealing of the underground injection wells which are used in conjunction with the coal processing facility, and, monitoring wells associated with the refuse disposal facility. The location of the injection wells is referenced on drawing 3.4-2A to Exhibit 3.10-1. The text of the plan has been revised to incorporate these injection and monitoring holes into the operation and reclamation plans.

The operator has revised the plan to incorporate monitoring requirements for the School House Canyon refuse facility is discussed in the text of the Mining and Reclamation Plan in section 3.4-2. The operator has committed to quarterly inspections

of the refuse facilities and submittal of a certified annual reports to the Division. The operator has also indicated that the installed piezometers will be checked during inspections for water depth, which is considered critical to maintain the stability of the refuse structure as discussed in the consultant's report by Golder and Associates in Appendix 3.4A.

The configuration of the top of the refuse pile has been changed to reflect the original design parameters. Additionally, contours now show sufficient slope for water to drain off of the top of the pile.

Details of the unit train loadout are found on Exhibit 3.8-5, Unit Train Loadout, Elevation and Drainage Controls. At this time no detailed review by the Division of the information contained within chapter 3.8 has been made. This information will be reviewed in conjunction with the review for the remaining areas as mentioned in the schedule for the Settlement Agreement.

Some structures are proposed to remain as part of the final reclamation configuration. These primarily include culverts which will remain to protect utility water lines within and adjacent to the disturbed area boundary, and culverts to remain to pass water beneath the adjacent railroad right-of-way. Additionally, the operator has identified a utility corridor within the disturbed area boundary, which is adjacent to the railroad right-of-way. These facilities to remain are identified on Exhibit 3.4-3. The culvert structures and the utility corridor associated with the buried waterlines in the property are not considered as an alternate post mining land use, but rather as reasonable structures to protect adjacent and existing facilities and utilities.

Deficiencies:

None.

Division Order 18)

R614-301.553. Backfilling and Grading. Backfilling and grading design criteria must be described in the permit application. Disturbed areas must be backfilled and graded to: achieve the approximate original contour, except as provided in R614-301-553.600 through R614-301-553.642; eliminate all highwalls, spoil piles, and depressions, except as provided in R614-301-552.100 (small depressions); R614-301-553.620 (previously mined highwalls); and in R614-301-553.650 (retention of highwalls); achieve a postmining slope that does not exceed either the angle of repose or such lesser slope as is necessary to achieve a minimum long-term static safety factor of 1.3 and to prevent slides; minimize erosion and water pollution both on and off the site; and, support the approved postmining land use. Information

within the plan does not specifically address the above requirements. This information shall be provided on or before June 1, 1991.

Proposal:

Information regarding backfilling and grading is found in section 3.4-4 of the mining and reclamation plan. The operator has indicated that backfilling and grading will be done in order to establish overland flow drainage and approximate original contour. The operator indicates that AOC is achieved by blending the spoil into the surrounding area and creating landforms which resemble the surrounding topography.

The cutslope areas to be retained are as analyzed by EarthFax in Appendix 3.4K and are as shown on Exhibit 3.4-3. In the conclusions of the slope stability analysis by EarthFax, a determination was made that based on the five "worst case" slopes encountered in the Castle Gate area, that all five slopes are stable and that all exceed the required minimum factor of safety of 1.3. No buttressing of any of the cut or fill slopes is necessary for the purpose of slope stability. Slopes at cross sections A and C will require fill to develop adequate drainage. The lack of fill material in the general vicinity of cut slope are precludes the option of backfilling that slope to the top of the exposed cut.

Section 3.4-4 of the plan further states that the reclamation of the Castle Gate Plant area will take place over the area which was the old town site of Castle Gate. Old utilities, foundations and debris may be uncovered during the grading operation. This may result in the alteration of the contours shown on map 3.4-3 by as many as two contour intervals [4 feet] in order to keep from uncovering the old town site.

Analysis:

The operator has not requested a variance for any structures or facilities to be left upon completion of reclamation or as part of an alternative postmining land use. In order to demonstrate compliance with AOC requirements the operator has conducted stability analysis of the slopes to be left for final reclamation, and, has found those slopes to be designed to have a static factor of safety of 1.3 or greater. Cutslopes associated with roads and pads within the Castle Gate Area have been proposed to be left in some areas and are included in the stability analysis previously described.

In accordance with R645-301-553.130, disturbed areas must be graded and backfilled to achieve a postmining slope that does not exceed either the angle of repose or such lesser slope as is necessary to achieve a minimum long-term static safety factor of 1.3 and to prevent slides. Backfilled portions of the area are in general, graded to the

most moderate slope possible. The steepest backfilled slopes are designed to be no greater than 2h:1v (26.6° slope angle).

Cut slope areas which are to remain as part of final reclamation have been delineated on Exhibit 3.4-3A. Specific treatments regarding revegetation of these areas as well as other reclamation treatments for the disturbed area facilities are to be found in Chapter 9 of the Mining and Reclamation Plan.

It is also apparent from the orthophoto and from site visits that there are areas within the disturbed area boundary which have not been substantially been disturbed by current or previous mining activities. These natural slopes within the disturbed area boundary appear, in some areas, to be steeper than the 2h:1v maximum backfill slopes as proposed by the operator. The operator has indicated that treatments for reclamation of those areas is also discussed in Chapter 9 of the plan.

The drawings have been revised to incorporate several of the disturbed areas which were not delineated on the drawings into the disturbed area boundary. Diversions and cut and fill slopes above and below roads and pad areas have been incorporated into the disturbed area boundary as were discussed in the previous review of this section of the plan.

A grading cut/fill grid has been added to the reclamation designs as Exhibit 3.4-10 to more clearly delineate distribution of the cut and fill areas within the disturbed areas. Mass balance calculations were determined by elevation grids taken on 25 foot centers for the existing and proposed reclamation contours. The summary of these computer generated calculations is found on Table 3.4-10. Approximately 127,000 cubic yards of material will be moved during grading operations. Additionally, approximately 97,000 cubic yards of substitute topsoil materials will be obtained from Gravel Canyon to cover the refuse piles with 2 feet of cover/topsoil materials.

The operator has indicated that remnants of the old town of Castle Gate and old mining facilities underlie portions of the areas to be graded and that contours may vary as a result of allowing some of these buried facilities to remain covered.

Deficiencies:

None.

Division Order 19)

R614-301-553.500. Previously Mined Areas. The PERMITTEE shall demonstrate in writing, that the volume of all reasonably available spoil material is insufficient to

completely backfill the reaffected or enlarged highwalls to be retained throughout the mine facilities. The PERMITTEE must also demonstrate that the remaining highwalls shall be eliminated to the maximum extent technically practical in accordance with the following criteria: (1) All spoil generated by the remining operation and any other reasonably available spoil shall be used to backfill the area. Reasonably available spoil in the immediate vicinity of the remining operation shall be included within the permit area. (2) The backfill will be graded to a slope which is compatible with the approved postmining land use and which provides adequate drainage and long term stability. (3) Any highwall remnant shall be stable and not pose a hazard to the public health and safety or to the environment. The PERMITTEE shall demonstrate, to the satisfaction of the regulatory authority (DIVISION), that the highwall remnant is stable. (4) Spoil placed on the outslope during previous mining operations shall not be disturbed if such disturbances will cause instability of the remaining spoil or otherwise increase the hazard to the public health and safety or to the environment. This information shall be provided on or before June 1, 1991.

Proposal:

Discussion of previously mined areas is found in section 3.4-2 of the plan and is indicated on Exhibit 3.4-1. Within the permit area, two, mines, the old preparation plant facilities, and the historic town of Castle Gate.

Analysis:

While much of the mining activity within and adjacent to the permit area is historic, essentially all of the mining operations as they exist, with the exception of the unit train loadout facilities, are part of an ongoing mining operation which was active prior to and continued operation through the implementation of SMCRA. The unit train loadout area was added to the permit as a minor permit modification.

No "highwalls" exist within the Castle Gate area. Mining operations within this area consist of coal preparation and loadout facilities. No underground mining operations are proposed within this area.

There are however, cutslopes found within the Castle Gate area. The Division has determined that, in some cases, cut slope areas can remain when they are found to be stable, compatible with the post mining land use and meet AOC requirements. Refer to comments under Division Order #18.

Exhibit 3.4-1 does not conform closely to the disturbed area boundaries shown on other drawings within the mining and reclamation plan due primarily to distortion of the

orthophoto. However the general location and the extent of the disturbed areas and those areas which have been previously disturbed within the permit area are considered to be sufficient to meet the requirements of the regulations.

Deficiencies:

None.

Division Order 21)

R614-301-731. Operation Plan. General Requirements. The operational plan must be specific to the local hydrologic conditions and will contain steps to be taken during coal mining and reclamation operation through bond release. The PERMITTEE needs to correct the MRP to include monitoring plans specific to ground water and surface water during reclamation through bond release. These monitoring plans should reflect the requirements of R614-301-731.200, and must reflect the language of R614-301-731.212, R614-301-731.233, R614-301-731.214, and R614-301-731-224. The PERMITTEE shall submit a reclamation plan for all phases of reclamation indicating how the relevant requirements for R614-301-730. through R614-301-760. will be met. This shall be required on or before June 1, 1991.

Proposal:

No comments regarding the above division order are part of this review.

Division Order 25)

R614-301-800. Bonding and Insurance. The PERMITTEE shall provide to the DIVISION, the Certificate of Liability Insurance Form which is incorporated into the Reclamation Agreement. Bonding calculations do not include the following information: a map specifying each area of land for which bond will be posted; mass balance calculations presented in sufficient detail to show backfilling and grading requirements for distribution and disposal of excess spoil and mine development waste, backfilling to meet AOC requirements, subsoil, topsoil and substitute topsoil distribution and quantities for each sub area of the permit; calculations for determination of quantities, equipment selection and productivity used in determining the bond amount which reflect the quantities determined in the mass balance calculations; determination of Phase I and Phase II reclamation activities including a map showing those facilities to be constructed and/or removed during each phase of reclamation. This information shall be required on or before June 1, 1991.

Proposal:

Bonding information previously found in section 3.4 has been eliminated from the plan.

Analysis:

It is anticipated that the bonding information previously provided for the Castle Gate Area will be incorporated into the final plan and that calculations will be provided on or before the due date for the submittal of all remaining areas. Mass balance calculations, especially in regard to Gravel Canyon cannot be completed until all topsoil distribution requirements are determined for the entire permit area.

Deficiencies:

1. The operator will need to provide revised bonding calculations in conjunction with the Remaining Areas.

RECOMMENDATIONS:

Outstanding concerns and deficiencies found for the Castle Gate Area are considered minor with regard to the engineering aspects of the Mining and Reclamation Plan. Some deficiencies within the plan are noted which will need to be addressed by the Operator prior to approval but in conjunction with submittal of information noted as the Remaining areas under the Settlement Agreement. These deficiencies deal primarily with reclamation cost estimates for determining the bond amount and reclamation treatments which are considered general to all areas of the Mining and Reclamation Plan. No specific engineering deficiencies were found or noted in this review in regard to the Castle Gate Area.

cc: BTEAM



State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Norman H. Bangerter
Governor

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Executive Director

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355 West North Temple
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Salt Lake City, Utah 84180-1203
801-538-5340

October 8, 1992

TO: Daron Haddock, Permit Supervisor

FROM:  Priscilla Burton, Reclamation Soils Specialist

RE: Technical Deficiency Review of Castle Gate Prep Plant Reclamation Plans.
Castle Gate, second submittal. AMAX Coal Co. ACT/007/004. Folder #2.
Carbon Co. Utah.

SUMMARY:

Amendments will be added to the Preparation Plant soils based upon sampling and analysis conducted within one year of final reclamation. At the present time, the cost of incorporation of alfalfa hay (3T/ac) of *in situ* soils at the 58 acre Preparation Plant should be included in the bond estimate.

The present submittal (9/8/92) calls for 24 inches of cover over the refuse in Schoolhouse Canyon. Supporting documentation in the form of chemical analyses of the coal mine waste is provided in Appendix 8B. A reference to the location of these analyses is requested.

TECHNICAL ANALYSIS:

224. Substitute Topsoil.

Deficiency:

1. The Division requires that a suitable soil amendment is incorporated into the surface prior to seeding of the Preparation Plant *in situ* soils.
2. The Castle Gate Preparation Plant reclamation submittal must reference the location of preparation plant soil sample analyses in the MRP's, Appendix 8B.

Proposal:

Soil amendments will be added according to samples taken within one year of final reclamation. Sampling will be conducted at a rate of 1 sample/2.5 acres and will include all the parameters listed in the Division Guidelines for substitute topsoil. Sampling will be depth segregated. (Refer to page 3.4-24 of section 3-4-4(1).

Analysis:

The commitment to resample and determine amendment levels at the time of final reclamation is acceptable. However, the Division should include in the bond estimate a projected a soil amendment treatment based on presently available results (App 8B of the MRP). The bond should include the cost of incorporation into the surface (prior to seeding) alfalfa hay (3T/ac) on 58 acres of *in situ* soils of the Preparation Plant.

Eight samples were taken from the Preparation Plant (Appendix 8B). The sample locations are no longer marked on Ex. 3.4-3 Reclamation Map, but were on this map in the June revision of Ex 3.4-3. Sample locations may be found on the Soil Survey map for Castle Gate.

A reference to the soils map and Chapter 8 appendix for the location and analysis of samples is required within the Castle Gate proposal. Deficiency #2 or R645-301-224 remains outstanding:

Deficiency:

2. *The Castle Gate Preparation Plant reclamation submittal must reference the location of preparation plant soil sample analyses in the MRP's, Appendix 8B.*

553.252. Coal mine waste

Deficiency:

1. The permanent disposal of refuse at the Castle Gate refuse site must be covered with a minimum of two feet of suitable substitute soil cover material.
2. The mining and reclamation plan must contain a commitment to resample the Schoolhouse Refuse site for a confirmation of its non-toxic, non-acidic characteristics within one year of the grading and seeding steps of final

reclamation.

Proposal:

Page 3.4-24 of Section 3-4-4(1) of the MRP describes reclamation of the refuse site utilizing 24 inches of cover material. The required 96,000 yd³ of material will come from gravel canyon.

A sampling program has been described for the year prior to final reclamation.

Analysis:

Supporting documentation is found in Appendix 8B. Sample locations are found on drawings in the Appendix of Sec 3.5 of the July 1990 submittal.

Final reclamation is may not occur until the year 2015. In the intervening decade, a significant change in the pH, alkalinity and oxidation status of heavy metals may occur. The sampling described will insure adequate burial of acidic or toxic waste.

Deficiency:

none.

RECOMMENDATIONS:

The proposal to cover the refuse site at Castle Gate Preparation Plant with 24 inches of soil cover is recommended for approval. At the Preparation Plant, addition of a suitable soil amendment to the graded *in situ* soils should be included in the bonding estimate.



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TO: Daron Haddock, Permit Supervisor

FROM: Paul Baker, Reclamation Biologist

A handwritten signature in black ink, appearing to be 'P. Baker'.

DATE: November 30, 1992

RE: Castle Gate Preparation Plant Reclamation Plan, AMAX Coal Co., Castle Gate Mine, Folder #2, ACT/007/004, Carbon County, Utah

SUMMARY, ANALYSIS, AND RECOMMENDATIONS

The above-referenced plan has been updated to conform with the revised Chapter IX that is being developed. Pending final approval of Chapter IX, the revegetation portions of the Castle Gate Preparation Plant area reclamation plan can be approved.



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TO: Daron Haddock, Permit Supervisor

FROM: Paul Baker, Reclamation Biologist 

DATE: October 9, 1992

RE: Castle Gate Preparation Plant Reclamation Plan, Amax Coal Co., Castle Gate Mine, Folder #2, ACT/007/004, Carbon County, Utah

SUMMARY

The second submittal for the Castle Gate Prep Plant area was received by the Division September 8, 1992. Portions of this plan dealing with revegetation have been reviewed for compliance with the regulations and consistency with Chapter 9. Changes need to be made in the seed mix, and changes are recommended for the seeding and mulching plans.

ANALYSIS

R645-301-340

Reclamation Plan

Proposal:

The majority of the Castle Gate Prep Plant area will be seeded with species list 1 from Chapter 9. Riparian areas will be seeded with species list 4. In both cases, seed will be mixed with a small amount of wood fiber mulch then hydroseeded. Following seeding, the balance of the mulch, a tackifier, and fertilizer will be applied. The total coverage of the mulch will be 2000 lbs. per acre.

In areas inaccessible to the hydroseeder, seed will be broadcast by hand. mulched with straw at 2000 lbs. per acre, and the mulch will be anchored with nylon or other suitable netting.

Analysis:

Species list 1 contains introduced species that are probably not needed for the area. It is anticipated that this list will be deleted from Chapter 9 with the next submittal

and that species list 3 will be the seed mix used for most of the prep plant area.

Species list 4 for the riparian areas is acceptable.

The proposed Chapter 9 states that seed will be planted using either a drill, by hydroseeder, or by broadcasting. The seeding and mulching plans are tied by the statement that hydromulching will be used in areas not accessible to tub mulching equipment or where hydroseeding is the method of planting. The drill seeding method proposed in the proposed Chapter 9 is preferred for all areas where it is practical for the following reasons. The drill seeding plan includes a commitment to broadcast seed of some small-seeded species and some species that usually have fluffy or trashy seed. This method is recommended in the "Interagency Forage and Conservation Planting Guide for Utah" and in other publications and is probably more likely to be successful than hydroseeding. Mickey Steward of Amax has also told me that this method is less expensive and time-consuming than hydroseeding. No matter what seeding method is used, however, Amax will ultimately be responsible for the success or failure of revegetation efforts.

Hydromulching is also not recommended for seeding success. One literature source indicates three to seven times better seedling emergence with straw mulch compared to hydromulch.

Several literature sources state that long-fibered mulches, such as straw or hay, tend to be better for erosion control than hydromulch. The difference is not clear-cut, however. Therefore, a different technology is not being required.

Deficiencies:

1. Species list 1 from the proposed Chapter 9 must not be used unless the Operator can demonstrate that using the introduced species that this list contains is desirable and necessary to achieve the postmining land use. Species list 3 from the proposed Chapter 9 is acceptable.

RECOMMENDATIONS

It is recommended that seeding and mulching plans be changed to incorporate better technology that is available and which would cost about the same as or possibly less than hydroseeding and hydromulching. Species list 1 must not be used unless the Operator can demonstrate that the introduced species in this mixture are desirable and necessary to achieve the postmining land use.



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801-538-5340

January 13, 1993

TO: Daron Haddock, Permit Supervisor

FROM: Randy Harden 

RE: Gravel Canyon and Adit #1 Submittal, AMAX Coal Company, Castle Gate Mine, ACT/007/004-92D, Folder #2, Carbon County, Utah

Summary:

In accordance with Stipulation under Docket 91-001, AMAX Coal Company has submitted revised plans for the Gravel Canyon and the Adit #1 Areas. These plans were received by the Division on June 19, 1992. A deficiency review as made by the Division and revisions to the proposal were submitted by the Operator on September 29, 1992. The following review in consideration of the outstanding information as a result of the Division Order issued to AMAX and the information incorporated into those proposed changes to the mining and reclamation plan.

Comments and completeness of the information within the text of this review is in regard only to those areas described in the Adit #1 and the Gravel Canyon areas unless noted otherwise in the comments. Determination of completeness of the response to the Division Order and Compliance of those requirements for approval cannot be made until such time that all of the required information has been submitted as required by the Division Order.

Analysis:

Division Order 2)

R614-301-122. Permit Application Format and Contents. The information contained within the permit must be organized to ensure that each Figure, Plate, Diagram, Analysis etc. that is referenced is included within the Permit Application. The language used in the permit application must accurately differentiate existing and proposed facilities, activities, treatments, etc. This information shall be provided on or before June 1, 1991.

Proposal:

Information submitted for the Adit #1 and the Gravel Canyon areas are specific only to those sections of the plan. A new table of contents for sections 3.5 and 3.6 of the plan has been provided.

Analysis:

With respect to section 3.5 and 3.6, the operator has revised the plan. However, requirements of this section of the Division Order apply to the plan in its entirety.

Deficiencies:

The organization and contents of the plan must be revised to comply with this section of the Division Order. This information should be provided with the information provided for the Remaining areas as part of the Settlement Agreement.

Division Order 3)

R614-301-140. Maps and Plans. The PERMITTEE shall submit to the DIVISION, a schedule for providing complete and accurate maps and drawings to depict the current existing conditions for all facilities, and, proposed reclamation treatments. This schedule shall be provided on or before March 1, 1991.

Proposal:

In accordance with the terms and conditions of the Stipulation (Settlement Agreement), the operator has committed to a schedule for the submittal of the information required in this section of the Division Order.

Analysis:

The schedule submitted in conjunction with the Stipulation will be administered, revised and completed under the terms and conditions of the Stipulation. Comments regarding the submittal of this information will be made as part of the ongoing review.

Deficiencies:

None.

Division Order 4)

R614-301-142. Maps and Plans. The PERMITTEE has not provided maps and plans with the permit application which distinguish among each of the phases during which coal mining and reclamation operations were or will be conducted at any place within the life of operations. At a minimum, distinctions will be clearly shown among those portions of the life of operations in which coal mining and reclamation operations occurred: prior to August 3, 1977; after August 3, 1977, and prior to either May 3, 1978; after May 3, 1978 and prior to the approval of the State Program; and, after the estimated date of issuance of a permit by the Division under the State Program. The PERMITTEE must provide identification as to the date and the use of those areas and facilities within the permit area which have been incorporated into the underground mining activities. Those areas affected by previous mining operations (including cutslopes and outslopes of pads and roads) and used in conjunction with current underground coal mining facilities are to be included in the disturbed areas. This information shall be provided on or before March 1, 1991.

Proposal:

The operator has provided revised drawings for the Gravel Canyon and Adit #1 areas. The Post Mining Reclamation Treatments Maps, Exhibit 3.5-3 and 3.6-3 show the proposed final contours of the area, cross section locations and watershed areas used for reclamation drainage area calculations.

Exhibit 3.5-1 and 3.6-1 have been revised to show the location and the extent of the areas previously disturbed by mining (pre-SMCRA) and those portions of the previously disturbed areas which are incorporated into the disturbed area boundary for current mining operations. These exhibits are also used to identify surface facilities within the areas.

Analysis:

Exhibit 3.5-1 shows the areas which were previously affected by mining operations (pre-SMCRA) for the Adit #1 area and has incorporated the conveyor crossing beneath US Highway 6 & 50. The disturbed area boundary shown for the facilities has been revised to incorporate the transformers and access to them located on the southeastern corner of the site or the conveyor passing beneath the highway. Surface disturbed area and underground permit area boundaries are now provided on the drawing.

Exhibit 3.6-1 shows the areas which were previously affected by mining operations (pre-SMCRA) for the Gravel Canyon Area. Delineation of the previously disturbed areas appear to be adequately marked on the drawing and is assumed to coincide with the permit area boundary for that area.

Deficiencies:

None.

Division Order 13)

R614-301-340. Reclamation Plan. *The PERMITTEE must provide plans to protect reclaimed areas for a minimum 2-year period. The PERMITTEE will revise the MRP to show 1) seedbed preparation plans (i.e. deep ripping to 18-24 inches), 2) that seed and fertilizer will not be mixed in the hydroseeder, 3) plans for the use of the supplemental planting mix for ephemeral/intermittent drainages, including locations (shown on the reclamation maps) and timing of the planting operations, 4) the final revegetation plans (as identified in the July 1990 correspondence) for the cut and fill slopes associated with the Crandall Canyon access road, 5) Clear plans for the reclamation of Gravel Canyon. This information must be provided on or before March 1, 1991.*

Proposal:

This Division Order was not specifically addressed as part of the Adit #1 and Gravel Canyon Submittals.

Analysis:

The requirements of this section of the Division Order apply to the plan in its entirety.

Deficiencies:

This information should be provided with the information provided for the Remaining Areas as part of the Settlement Agreement.

Division Order 17)

R614-301-550. Reclamation Design Criteria and Plans. *The permit application must include site specific plans that incorporate the design criteria for reclamation activities. These design criteria and plans shall include but not be limited to: phased reclamation treatments and designs throughout the permit liability period, designs for temporary and permanent surface features, including diversions, impoundments, sediment control structures, and other facilities which will require construction throughout the reclamation process; specific plans and details for all permanent facilities to remain as part of or in conjunction with post mining land use, including*

roads, utilities, and structures; and, maps and drawings which clearly show the areal and vertical extent of the existing facility areas and those areas throughout all phases of reclamation. This information shall be provided on or before June 1, 1991.

Proposal:

Reclamation contour maps are provided for Adit #1 and Gravel Canyon on Exhibits 3.5-3 and 3.6-3 respectively.

Reclamation of the Adit #1 area will include removal of all existing structures within the disturbed area boundary except for some stone cut retaining walls and concrete brows over the portal entrances which will be left for historical reference. The concrete box culvert which contains the conveyor under the highway will be left in place and backfilled. Water discharging from the portals will flow through a pipeline through this concrete box culvert. Portals will be sealed in accordance with the provisions shown on Figures 3.1-3 and 3.1-4.

The disturbed area at Adit #1 will be graded to approximate original contour by blending spoil into the surrounding area and creating a landform which resembles the surrounding terrain. Sandstone cliffs currently exist to the north and south sides of the portal area and will remain exposed. No cut slopes are proposed to remain within the disturbed area. Resoiling will consist of amending the existing soil materials and substitute topsoil since no topsoil was salvaged in this pre-law disturbed area.

Phases of reclamation for Adit #1 are discussed in section 3.5-5 of the proposal. Phase I activities include demolition, grading, portal sealing, soil preparation and soil amendments, seeding, and mulching activities. Phase II work includes removal of sediment control structures and Phase III allows for vegetation and water monitoring activity until bond release.

The Gravel Canyon area is located to the west of the coal preparation facilities and across US Highway 6 & 50. The primary use of this area is for storage of resoiling materials for reclamation of other areas within the permit area. The operator has estimated that approximately 109,000 cubic yards of material is available from Gravel Canyon for this purpose. Since the area was previously disturbed, reclamation of the site will be accomplished by utilization and amendment of existing soils within the canyon for reclamation.

The operator proposes to leave no cut slopes or highwalls within the disturbed area boundary for Gravel Canyon. Reclamation will include relocation of the ephemeral drainage to the center of the canyon, and elimination of the access road into the canyon.

Analysis:

Information found in the Adit #1 submittal is found to be adequate. Structures and disturbed areas currently used in conjunction with surface mining and reclamation activities have been incorporated into the plans and drawings. The conveyor and associated structures from the Adit #1 area to the preparation plant facilities have been identified. Transformers and their associated disturbed areas located on the southeastern portion of the site have been incorporated into the disturbed area boundary. These facilities and the permit and disturbed areas associated with them are identified on the drawings and characterized in the text of the mining and reclamation plan.

The operator has proposed to allow some evidence of the mining history at the Adit #1 mine site which would include some hand cut stone walls and the portion of the concrete portal structure which dates back to 1888. These structures have, to some degree, both aesthetic and historic significance, it is believed by the Division that allowing such remnants to remain will have no detrimental effect on the reclamation plan or the post mining land use.

All structures which are contained within the Gravel Canyon area are to be removed during final reclamation.

Deficiencies:

None.

Division Order 18)

R614-301.553. Backfilling and Grading. Backfilling and grading design criteria must be described in the permit application. Disturbed areas must be backfilled and graded to: achieve the approximate original contour, except as provided in R614-301-553.600 through R614-301-553.642; eliminate all highwalls, spoil piles, and depressions, except as provided in R614-301-552.100 (small depressions); R614-301-553.620 (previously mined highwalls); and in R614-301-553.650 (retention of highwalls); achieve a postmining slope that does not exceed either the angle of repose or such lesser slope as is necessary to achieve a minimum long-term static safety factor of 1.3 and to prevent slides; minimize erosion and water pollution both on and off the site; and, support the approved postmining land use. Information within the plan does not specifically address the above requirements. This information shall be provided on or before June 1, 1991.

Proposal:

Information regarding backfilling and grading for the Adit #1 area is found in section 3.5-4 of the mining and reclamation plan. Reclamation contour information is shown on Exhibit 3.5-3. The operator has indicated that the area will be regraded to approximate original contour by blending spoil into the surrounding area and creating a landform which resembles the surrounding terrain. Sandstone cliffs exist on both the north and south sides of the portal facilities and will remain exposed.

The operator has indicated that the disturbed areas will be graded to approximate the original contours by blending spoil into the surrounding area and creating landforms which resemble the surrounding terrain. The operator has indicated that no cut slope areas or highwalls are to remain in either canyon.

Analysis:

Backfilling and grading in the Adit #1 area will consist primarily of excavation to reestablish drainage in the canyon. Natural cliffs on either side of the canyon will not be covered as part of the reclamation activity however backfilling will occur at the base of these cliffs. Although the operator has indicated that remnant of some of the concrete and rock wall structures in the canyon will remain for aesthetic reasons, they appear not to interfere with the reestablishment of the surface drainage system.

Excavation of resoiling materials in Gravel Canyon indicates that there is approximately 97,000 yd³ available. This indicates that there is sufficient cover material for 2 feet of cover material over the Schoolhouse Canyon refuse disposal area. Plans for the reclamation of the Schoolhouse Canyon area and associated bonding costs should be revised to incorporate those quantities.

Mass balance calculations and the grading plan for the Gravel Canyon area were revised to eliminate cut slopes which were shown to remain. The proposed grading plan now essentially eliminates all cut slopes associated with mining and reclamation activities. It should be noted that some surrounding earthwork and excavations adjacent to the disturbed area will not be reclaimed because they were associated with sand and gravel operations which occurred prior to the acquisition of the Gravel Canyon are for coal mining and reclamation activities.

Deficiencies:

None.

R614-301-553.500. Previously Mined Areas. The PERMITTEE shall demonstrate in writing, that the volume of all reasonably available spoil material is insufficient to completely backfill the reaffected or enlarged highwalls to be retained throughout the

mine facilities. The PERMITTEE must also demonstrate that the remaining highwalls shall be eliminated to the maximum extent technically practical in accordance with the following criteria: (1) All spoil generated by the remining operation and any other reasonably available spoil shall be used to backfill the area. Reasonably available spoil in the immediate vicinity of the remining operation shall be included within the permit area. (2) The backfill will be graded to a slope which is compatible with the approved postmining land use and which provides adequate drainage and long term stability. (3) Any highwall remnant shall be stable and not pose a hazard to the public health and safety or to the environment. The PERMITTEE shall demonstrate, to the satisfaction of the regulatory authority (DIVISION), that the highwall remnant is stable. (4) Spoil placed on the outslope during previous mining operations shall not be disturbed if such disturbances will cause instability of the remaining spoil or otherwise increase the hazard to the public health and safety or to the environment. This information shall be provided on or before June 1, 1991.

Proposal:

Gravel Canyon is a source for resoiling materials to be used to cover the refuse materials. The area was disturbed prior to coal mining and reclamation activities by utilization of the canyon as a source of materials for road construction. Castle Gate claims valid existing rights to mine within 100 feet of US Highway 6 & 50 since the property was acquired to conduct coal mining activities prior to the enactment of SMCRA. The pre-mining disturbances for the Gravel Canyon area are shown on Exhibit 3.6-1.

The Adit #1 area was first opened and mined in 1888 and essentially all of the area within the disturbed area boundary was previously affected by pre-law mining operations. As shown on Exhibit 3.5-1, the previously disturbed area is shown to encompass the entire disturbed area and also extends primarily to the south of the area shown on that drawing.

Analysis:

Technically the disturbances within Gravel Canyon prior to SMCRA were not caused by coal mining activities prior to SMCRA, but were affected by gravel operations within the area. However, the operator has not prepared the reclamation design that would require application of "previously mined areas" to this portion of the plan. Accordingly, no request for any variance in regard to backfilling and grading or to highwalls has been made in this section of the plan. Based on the information presented in the plan, Gravel Canyon meets AOC requirements in accordance with the general backfilling and grading requirements.

The Adit #1 area was previously disturbed by coal mining operations. The operator has not requested nor does the reclamation plan indicate any request for highwall retention or from a variance from AOC requirements.

The operator is considered to be in compliance with the requirement of this division order, with the exception of the disturbed and permit area boundaries as previously discussed.

Deficiencies:

None.

Division Order 21)

R614-301-731. Operation Plan. General Requirements. The operational plan must be specific to the local hydrologic conditions and will contain steps to be taken during coal mining and reclamation operation through bond release. The PERMITTEE needs to correct the MRP to include monitoring plans specific to ground water and surface water during reclamation through bond release. These monitoring plans should reflect the requirements of R614-301-731.200, and must reflect the language of R614-301-731.212, R614-301-731.233, R614-301-731.214, and R614-301-731-224. The PERMITTEE shall submit a reclamation plan for all phases of reclamation indicating how the relevant requirements for R614-301-730. through R614-301-760. will be met. This shall be required on or before June 1, 1991.

Proposal:

No comments regarding the above division order are part of this review.

Division Order 25)

R614-301-800. Bonding and Insurance. The PERMITTEE shall provide to the DIVISION, the Certificate of Liability Insurance Form which is incorporated into the Reclamation Agreement. Bonding calculations do not include the following information: a map specifying each area of land for which bond will be posted; mass balance calculations presented in sufficient detail to show backfilling and grading requirements for distribution and disposal of excess spoil and mine development waste, backfilling to meet AOC requirements, subsoil, topsoil and substitute topsoil distribution and quantities for each sub area of the permit; calculations for determination of quantities, equipment selection and productivity used in determining the bond amount which reflect the quantities determined in the mass balance calculations; determination of Phase I and Phase II reclamation activities including a

map showing those facilities to be constructed and/or removed during each phase of reclamation. This information shall be required on or before June 1, 1991.

Proposal:

Bonding information is not found in the Adit #1 or Gravel Canyon area sections.

Analysis:

It is anticipated that the bonding information previously provided for these areas will be incorporated into the final plan and that calculations will be provided on or before the due date for the submittal of all remaining areas. Mass balance calculations, especially in regard to Gravel Canyon cannot be completed until all topsoil distribution requirements are determined for the entire permit area.

Deficiencies:

The operator will need to provide revised bonding calculations in conjunction with the Remaining Areas.

RECOMMENDATIONS:

Remaining deficiencies found within the review of the Adit #1 and Gravel Canyon areas are considered minor in respect to the total reclamation plan submitted for the area and will be addressed by the Operator in conjunction with the submittal of information for the Remaining Areas. Overall, the revised proposal by the operator is a considerable improvement over the information previously found in the mining and reclamation plan.