



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

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September 28, 2001

Wendell Owen, Mine Manager
Co-Op Mining Company
P.O. Box 1245
Huntington, Utah 84528

Re: Ballpark Drainage, Co-Op Mining Company, Bear Canyon Mine, C/015/025-AM01A-1, Outgoing File

Dear Mr. Owen:

The above-referenced amendment has been reviewed. There are deficiencies that must be adequately addressed prior to approval. A copy of our Technical Analysis is enclosed for your information. In order for us to continue to process your application, please respond to these deficiencies by October 30, 2001.

If you have any questions, please call me at (801) 538-5325 or Jim Smith at (801) 538-5262.

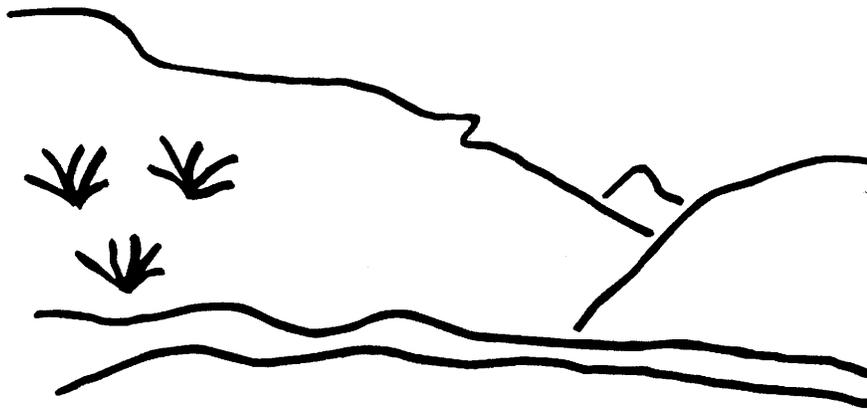
Sincerely,

A handwritten signature in black ink that reads "Daron R. Haddock".

Daron R. Haddock
Permit Supervisor

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Enclosure:
cc: Price Field Office
O:\015025.BCN\FINAL\DEF01A-1.DOC

State of Utah



Utah Oil Gas and Mining

Coal Regulatory Program

Bear Canyon Mine
Ballpark Drainage
C/015/025-AM01A-1
Technical Analysis
September 27, 2001

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INTRODUCTION

TECHNICAL ANALYSIS

INTRODUCTION

On March 14, 2001 the Division received an amendment to the Bear Canyon Mine MRP that proposes to add an undisturbed drainage diversion across the upslope side of the Ball Park Topsoil Pile. The purpose is to divert water that originates at springs located above the ball park: during 2000, the flow from these springs was higher than in the past and this water flowed across the ball park and deposited sediment on the field, eroded the outslope of the topsoil pile, and carried sediment over or through the silt fence and straw bales at the boundary of the permit and disturbed area. This amendment was instigated by the operator to eliminate the potential for future erosion of topsoil from the south slope of the pile and deposition of that sediment outside the disturbed area and permit area boundary.

The amendment is also intended to clarify that topsoil now stored in the ballpark will not be needed for reclamation. Topsoil availability is summarized in Chapter 8. The engineering issues are covered in revised cut and fill calculations in Appendix 3L, updated reclamation maps and cross sections, and revised reclamation cost estimates.

Of the total 36.4 acres within the disturbed area boundary, there will be approximately 27 acres to be regraded. Of these 27 acres, 18 acres will either receive a layer of substitute topsoil or utilize the in-place soil as substitute topsoil. The remainder, nine acres, will receive topsoil which was salvaged prior to disturbance. The plan calls for a cover of 12 inches of suitable topsoil substitute over most of the site with the tippie and coal yard receiving 18 inches of suitable topsoil substitute.

In concept, use of the material from the mine pad should be acceptable with the commitment that testing of the soil will be conducted prior to reclamation and again (to a limited extent) after grading to ensure that the surface soil is not contaminated by salts, mine waste, oil or grease. Several inaccuracies with the submittal have stifled review of the plan to utilize pad material as substitute topsoil.

This submittal is not ready for approval. There are several inaccuracies that have been pointed out by this Technical Analysis.

Co-Op Mining	Date of Action	Division	Date of Action
Initial Submittal	Received March 14, 2001	AM01A	TA - Sent May 7, 2001
First Revision	Received August 6, 2001	AM01A-1	TA - This document

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September 27, 2001

INTRODUCTION

SUMMARY OF OUTSTANDING DEFICIENCIES

SUMMARY OF DEFICIENCIES

The Technical Analysis of the proposed permit changes cannot be completed at this time. Additional information is requested of the permittee to address deficiencies in the proposal. A summary of deficiencies is provided below. Additional comments and concerns may also be found within the analysis and findings made in this Draft Technical Analysis. Upon finalization of this review, any deficiencies will be evaluated for compliance with the regulatory requirements. Such deficiencies may be conditioned to the requirements of the permit issued by the Division, result in denial of the proposed permit changes, or may result in other executive or enforcement action as deemed necessary by the Division at that time to achieve compliance with the Utah Coal Regulatory Program.

Accordingly, the permittee must address those deficiencies as found within this Draft Technical Analysis and provide the following, prior to approval, in accordance with the requirements of:

Regulations

R645-301-150, Please make the eight corrections listed: 1) The sum total of regraded acres listed in Table 8.9-1 should be revised to reflect recent changes. 2) Table 8.9-6 Summary Table should not retain the 3,400 cu yds in the Ball Park Topsoil Pile. 3) Page 8-26 of the submittal refers to Table 8.5-4, Substitute Topsoil Generated from Cuts. This table was not listed in the Table of Contents and was not found with the submittal or with the MRP. 4) Table 8.9-1 Reclamation Area Summary includes the Ball Park Topsoil Pile to be re-contoured. If the intent of this submittal is to withdraw these soils from reclamation use and to retain the ballpark for recreation, then the area TS-1 should not be included in this summary chart. 5) Page 3L-13 indicates that 16 inches of substitute topsoil will be placed over the tippie and loadout area (TS-5). However all tables in chapter 8 assume an eighteen-inch cover depth. 6) Information provided in Appendix 3-L should agree with that given in Chapter 8 for substitute topsoil cover depths, please adjust the information and calculations accordingly. 7) Correct the discrepancy between Table 3L-1 and Table 3L-2 for the Area TS-3 Cut & Fill Summary. 8) Correctly sum the information provided in Table 3L-6 Area TS-7 Cut & Fill Summary. 9) Eliminate misleading information in Table 8.9-3 concerning the volume of soil tallied in the total substitute topsoil column. 6

R645-301-200, Include in the commitment on page 8-26 of the submittal that the next sampling undertaken will correlate sampling locations with the areas generating the most substitute topsoil as described in Appendix 3-L and also provide a commitment to sample soils remaining on the surface as substitute topsoil at the time of reclamation for pH, EC, and Total Organic Carbon by methods described in Table 3K-1 of the MRP and Total Petroleum Hydrocarbons by EPA methods 8015 for diesel fuel and 418.1 for waste oil. 11

R645-301-234, Areas where operational contours (shown on Plate 8-5C) and reclamation contours (shown on Plate 3-2C) match will utilize the surface soil as substitute topsoil and no

SUMMARY OF OUTSTANDING DEFICIENCIES

- additional material will be brought to the location for cover (page 3L-13). After matching contour lines, the Division concludes that the slopes on the west half of the tipple and yard and loadout area will be backfilled to cover mine waste, graded, ripped and prepared for seeding and that no further cover in the form of substitute topsoil will be applied to the west half of the tipple yard. Please clarify this by providing a map outlining areas to receive substitute topsoil replacement. 31
- R645-301-234**, Cross-sections provided in Appendix 3-L do not match the contours provided on Plate 3-2B & C for Area TS-5 or TS-4. The Permittee must check the accuracy of all the cross-sections in Appendix 3-L and resubmit the information. 27
- R645-301-512.120 and R645-301-542.300** have the cross-sections in Appendix 3-L certified by a registered, professional engineer or land surveyor and make sure that all copies of the plates are also certified. 35
- R645-301-553.252**, Provide a commitment in the plan that all coal mine waste will be buried four feet deep in the fill. 27
- R645-542.300** Correct the inconsistency between Plate 8-5 and Appendix 3-L with regard to the disturbed area boundary and have the cross-sections in Appendix 3-L and correct the discrepancies between the elevations shown on the cross sections and plates. 35

GENERAL CONTENTS

GENERAL CONTENTS

COMPLETENESS

Regulatory Reference: 30 CFR 777.15; R645-301-150.

Analysis:

This submittal revised the acreages to be regraded during final reclamation (see Table 8.9-1). The sum total of regraded acres listed in Table 8.9-1 should also have been revised, but was not.

Table 8.9-6 Summary Table retains the 3,400 cu yds in the Ball Park Topsoil Pile. This table should be revised to sum the available topsoil at the mine site for reclamation.

Page 8-26 of the submittal refers to Table 8.5-4, Substitute Topsoil Generated from Cuts. This table was not listed in the Table of Contents and was not found with the submittal or with the MRP.

Table 8.9-1 Reclamation Area Summary includes the Ball Park Topsoil Pile to be re-contoured. If the intent of this submittal is to withdraw these soils from reclamation use and to retain the ball park for recreation, then the area TS-1 should not be included in this summary chart.

The Total substitute topsoil available column of Table 8.9-3 is very misleading and should be deleted as the numbers do not reflect the reality that the volumes of soil tallied in the total substitute topsoil column are necessary as backfill to cover the waste and highwalls. The soil is not available as substitute topsoil.

Page 3L-13 indicates that 16 inches of substitute topsoil will be placed over the tipple and loadout area (TS-5). However all tables in chapter 8 assume an eighteen inch cover depth. Information provided in Appendix 3-L should agree with that given in Chapter 8 for substitute topsoil cover depths, please adjust the information and calculations accordingly.

Some confusion exists between Table 3L-1 and Table 3L-2 for the Area TS-3 Cut & Fill Summary. In Table 3L-1 the fill volume for Area TS-3 is given as 1,454 cu yards and the cut as 1,468 cu yds. In Table 3L-2, for Area TS-3 Cut & Fill Summary, the total cut is given as 2,691 cu yards and the total fill is given as 2,679 cu yards.

Also in Appendix 3-L, the information provided in Table 3L-6 Area TS-7 Cut & Fill Summary does not sum correctly for Cut Volumes.

Findings:

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

R645-301-150, Please make the eight corrections listed: 1) The sum total of regraded acres listed in Table 8.9-1 should be revised to reflect recent changes. 2) Table 8.9-6 Summary Table should not retain the 3,400 cu yds in the Ball Park Topsoil Pile. 3) Page 8-26 of the submittal refers to Table 8.5-4, Substitute Topsoil Generated from Cuts. This table was not listed in the Table of Contents and was not found with the submittal or with the MRP. 3) Table 8.9-1 Reclamation Area Summary includes the Ball Park Topsoil Pile to be re-contoured. If the intent of this submittal is to withdraw these soils from reclamation use and to retain the ballpark for recreation, then the area TS-1 should not be included in this summary chart. 4) Page 3L-13 indicates that 16 inches of substitute topsoil will be placed over the tipple and loadout area (TS-5). However all tables in chapter 8 assume an eighteen-inch cover depth. 5) Information provided in Appendix 3-L should agree with that given in Chapter 8 for substitute topsoil cover depths, please adjust the information and calculations accordingly. 6) Correct the discrepancy between Table 3L-1 and Table 3L-2 for the Area TS-3 Cut & Fill Summary. 7) Correctly sum the information provided in Table 3L-6 Area TS-7 Cut & Fill Summary. 8) Eliminate misleading information in Table 8.9-3 concerning the volume of soil tallied in the total substitute topsoil column.

ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

SOILS RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.21; 30 CFR 817.22; 30 CFR 817.200(c); 30 CFR 823; R645-301-220; R645-301-411.

Minimum Regulatory Requirements:

Provide adequate soil survey information on those portions of the permit area to be affected by surface operations or facilities consisting of a map delineating different soils, soil identification, soil description, and present and potential productivity of existing soils.

Where selected overburden materials are proposed as a supplement or substitute for topsoil, provide results of the analysis, trials and tests required. Results of physical and chemical analyses of overburden and topsoil must be provided to demonstrate that the resulting soil medium is equal to or more suitable for sustaining revegetation than the available topsoil, provided that trials and tests are certified by an approved laboratory. These data may be obtained from any one or a combination of the following sources: U.S. Department of Agriculture Soil Conservation Service published data based on established soil series; U.S. Department of Agriculture Soil Conservation Service Technical Guides; State agricultural agency, university, Tennessee Valley Authority, Bureau of Land Management or U.S. Department of Agriculture Forest Service published data based on soil series properties and behavior; or, results of physical and chemical analyses, field site trials, or greenhouse tests of the topsoil and overburden materials (soil series) from the permit area. If the permittee demonstrates through soil survey or other data that the topsoil and unconsolidated material are insufficient and substitute materials will be used, only the substitute materials must be analyzed.

Analysis:

Native soil types are identified on Plate 8-1 as Datino-Sheepcan-Winetti bouldery loams, 5 – 20% slopes (DZE) in the vicinity of the coal storage yard, and Travessilla-Rock outcrop Strych complex (TR) in the upper pad location. Appendix 8-B contains the 1980 soil survey.

Datino-Sheepcan-Winetti bouldery loams, 5 – 20% slopes (DZE)

In a typical profile of both the Datino and Sheepcan bouldery loams, the soil survey in Appendix 8-B indicates that above the B horizon there is about a foot of loam (page 8B-7). The narrative in Chapter 8 also indicates that there is a foot or more of loam in the surface layer. In the Datino profile, the four-inch topsoil layer is underlain by a seven-inch thick (B_w) loam layer which differs from the A horizon only in color and structure. The Sheepcan bouldery loam also has a five- inch topsoil layer underlain with an eleven-inch subsoil loam.

The Datino bouldery loam is classified as a loamy skeletal, mixed Typic Haploborall. The Sheepcan bouldery loam is classified as a fine-loamy, mixed (Calcareous), frigid Typic Ustorthent.

The Winetti is classified as Loamy-skeletal, mixed (calcareous), frigid, Typic Ustifluvents. It occurs along stream banks and is subject to flooding and erosion. As a result, a shallow topsoil horizon (one inch) lies over the recently deposited alluvium.

Rooting depth of these soils is approximately 60 inches and the available water capacity is 5 – 8 inches to a depth of 60 inches.

Travessilla-Rock outcrop Strych complex (TR)

The Travessilla very bouldery fine sandy loam occurs on ridges and side slopes. It is classified as a loamy mixed, calcareous, mesic, Lithic Ustic Torriorthent. The typical profile has a two-inch A horizon over the fine sandy loam C horizon and bedrock at approximately 14 inches.

The Strych soils are found in the draws and concave positions. Strych soils are loamy-skeletal, mixed, mesic Ustollic Calciorthids. They typically have a four-inch thick loam horizon over a four-inch (B_w) loam layer. A layer of clay accumulation (B_k) lies from 8 – 36 inches below. The C horizon extends to 60 inches.

Substitute topsoil

In 1985, 3,400 cubic yards of soil was imported to the mine site and stored in the “Ball Park.” The soil was deposited over the 1.28 acres to a depth of 24 inches. Appendix 8-A contains the results of soil sampling of the imported ballpark topsoil. Currently the reclamation plan does not propose the use of the ball park soil. Rather, reclamation will utilize buried soil within the operations pads as substitute topsoil.

In 1991 a search for other substitute topsoil (Section 8.9.1) identified the downcast material from the road cuts (further information is in Appendix 8-A and 8-D); the “in-place” soil covered over by pad development (information in App 8-E); the reclaimed outslope of the coal storage pad (page 8-29). The in-place soils were sampled and analyzed (Appendix 8-E). The soil sampling conducted in 1991 of the substitute topsoil did not include analysis of acid/base accounting, selenium, or boron levels. These analyses have been standard for the use of overburden as substitute topsoil since the implementation of the Division’s 1988 guidelines.¹ Most of these soils are buried beneath the operations pad, which is in continual use. Therefore, a commitment in the plan (page 8-26), states that the proposed substitute topsoil material will be re-tested in the final five years of operations according to Table 3K-1 and will include Total Petroleum Hydrocarbons by EPA methods 8015 for diesel fuel and 418.1 for waste oil. Table 3-K includes the analysis of selenium, boron, total organic carbon and acid/base accounting according to the methods described in Table 6 of the Division’s 1988 guidelines.

Table 8.9-2, Available Substitute Topsoil Material, reports a volume available based

¹ 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.

ENVIRONMENTAL RESOURCE INFORMATION

upon utilization of the entire depth of the drill sample. i.e. Drill Depth X Area = Volume Available. (Drill hole and sample locations are illustrated on Plates 8-5 B through G.) This information assumes that all soils tested are equally valuable for substitute topsoil usage and that the entire reclamation area (acreage) will be recontoured (which is not the case according to Tables 8.9-3 and 8.9-4).

The Minimum Cut Depth column in Table 8.9-2 indicates the depth of soil to be excavated to arrive at the proposed cover depth for each reclamation area. On page 8-26, the reader is referred to Appendix 3-L for further descriptive information about regrading.

In Appendix 3-L (page 3L-6) the reader is referred to sections 8.9 and 8.10 for information on topsoil depths and sources. Section 8.10 indicates the volume of soil required from each section to achieve the cover depths, but does not discriminate the depths of recovery of the most suitable soil for the reader. So the following questions come to mind: After reviewing the soils information available, are there any soils which should be isolated and buried? Are there any soils should be selectively sorted because of qualities which would make them superior? Or were all soils tested equally valuable for substitute topsoil use.

Patrick Collins of Mt. Nebo Scientific evaluated the soil test results in 1992. His conclusion (found in Appendix 8E) was that "no significant problems exist in the spoils that were sampled."

The Division has reviewed the soil tests and makes the following recommendations:

Area TS-3**Sediment Pond B and Scalehouse Pad**

- The west embankment will be used to fill the pond and substitute topsoil will come from the removal of culvert C-10U.
- Sediment pond B surface soils (from 0 – 2 feet) have a lower Electrical Conductivity (2.68 mmhos/cm) and are therefore better than those soils sampled between 2 – 4 feet deep (EC 6.24 mmhos/cm), probably due to contact with the salts diffusing into the soil from pond waters.
- The top six inches of soil in the vicinity of the Scalehouse should not be used as substitute topsoil resource due to high SAR (7.98 and 8.2) and EC (4.68 – 5.64 mmhos/cm) values.

Area TS-4**Sediment Pond A**

- Eastern and western embankments will be used to fill sediment pond A.
- This soil is represented by SEDA-2 in Appendix 8-3.
- This soil was sampled to a depth of 2 feet, but the cross-sections show that there will be about ten feet of cut from the sediment pond banks.

Area TS-5

Tipple and Loadout Area

- Coal storage pad samples are represented in Appendix 8E as CSP1-5.
- EC values are between 1 and 3.5 mmhos/cm with the exception of a higher value (5.04 mmhos/cm) recorded at CSP-1 in the top four feet. However, the SAR values are all very low (less than 1.0) due to the fact that the salt creating the conductivity appears to be magnesium.
- Cuts shown in cross-sections provided in Appendix 3-L are deeper than testing of the soils. Soils remaining on the surface as substitute topsoil must be tested at the time of reclamation for the parameters described in Table 3K-1.

Area TS-6

Portal Access Road

- Portal access road samples are represented by sample PAR – 1 at station 8+00 in Appendix 8-3.
- 2,553 cubic yards of material will be generated from the cuts and taken to areas TS – 7 and TS-8.
- 7.111 cubic yards of substitute topsoil will come mainly from station 14+00 and station 26+00. Station 8+00 will yield only 52 cubic yards of substitute topsoil. The next sampling undertaken should correlate sampling locations with the areas generating the most substitute topsoil.

Area TS-7

Blind Seam Portal Pad

- This area was sampled down to a depth of 10 feet and is represented by LHP-1 in Appendix 8-3.
- Sample location LHP-1 as shown on Plate 8-5C represents the material from cross section station 2+00 where according to Table 3L-6, 578 cubic yards of substitute topsoil will be generated. This soil has high SAR values and is not recommended for surface cover.

Area TS-8

Upper Storage Pad

- This area was sampled down to a depth of 10 feet and is represented by USP-1 in Appendix 8-3. No problems were noted below 6 inches where EC is elevated.

Area TS-9

Sediment Pond C and Bathhouse Pad

- 1,008 yards of topsoil were salvaged and are stored for use in the location of TS-9.
- 1,762 cubic yards of soil from the bathhouse parking area will be used to fill the ditch leading to sediment pond C and also sediment pond C.
- Samples REF-1 and 2 represent the quality of the topsoil salvaged from this location.

ENVIRONMENTAL RESOURCE INFORMATION

- A sample of the bathhouse pad parking lot should be taken within five years of reclamation.

In summation, pad material samples provide an idea of the quality of the material to be found on the surface, but specifics will not be available until final reclamation grading brings the subsoils which will function as substitute topsoil to the surface. The Permittee should note that there are some areas which have high salts: TS3, TS7 and TS8. There is no information on area TS 9 for the bathhouse pad and little information on TS6, portal access road soils. It is imperative that sampling is conducted according to the parameters outlined in Table 3K-1 prior to reclamation concentrating the areas that are to yield substitute topsoil. Sampling after reclamation grading should also be conducted on the exposed surface soils for a limited number of parameters outlined in Table 3K-1.

Findings:

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

R645-301-200, Include in the commitment on page 8-26 of the submittal that the next sampling undertaken will correlate sampling locations with the areas generating the most substitute topsoil as described in Appendix 3-L and also provide a commitment to sample soils remaining on the surface as substitute topsoil at the time of reclamation for pH, EC, and Total Organic Carbon by methods described in Table 3K-1 of the MRP and Total Petroleum Hydrocarbons by EPA methods 8015 for diesel fuel and 418.1 for waste oil.

OPERATION PLAN

OPERATION PLAN

TOPSOIL AND SUBSOIL

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

Minimum Regulatory Requirements:

Topsoil removal and storage

All topsoil shall be removed as a separate layer from the area to be disturbed, and segregated. Where the topsoil is of insufficient quantity or of poor quality for sustaining vegetation, the selected overburden materials approved by the Division for use as a substitute or supplement to topsoil shall be removed as a separate layer from the area to be disturbed, and segregated. If topsoil is less than 6 inches thick, the operator may remove the topsoil and the unconsolidated materials immediately below the topsoil and treat the mixture as topsoil.

The Division may choose not to require the removal of topsoil for minor disturbances which occur at the site of small structures, such as power poles, signs, or fence lines; or, will not destroy the existing vegetation and will not cause erosion.

All materials shall be removed after the vegetative cover that would interfere with its salvage is cleared from the area to be disturbed, but before any drilling, blasting, mining, or other surface disturbance takes place.

Selected overburden materials may be substituted for, or used as a supplement to, topsoil if the operator demonstrates to the Division that the resulting soil medium is equal to, or more suitable for sustaining vegetation than, the existing topsoil, and the resulting soil medium is the best available in the permit area to support revegetation.

Materials removed shall be segregated and stockpiled when it is impractical to redistribute such materials promptly on regraded areas. Stockpiled materials shall: be selectively placed on a stable site within the permit area; be protected from contaminants and unnecessary compaction that would interfere with revegetation; be protected from wind and water erosion through prompt establishment and maintenance of an effective, quick growing vegetative cover or through other measures approved by the Division; and, not be moved until required for redistribution unless approved by the Division.

Where long-term surface disturbances will result from facilities such as support facilities and preparation plants and where stockpiling of materials would be detrimental to the quality or quantity of those materials, the Division may approve the temporary distribution of the soil materials so removed to an approved site within the permit area to enhance the current use of that site until needed for later reclamation, provided that: such action will not permanently diminish the capability of the topsoil of the host site; and, the material will be retained in a condition more suitable for redistribution than if stockpiled.

The Division may require that the B horizon, C horizon, or other underlying strata, or portions thereof, be removed and segregated, stockpiled, and redistributed as subsoil in accordance with the above requirements if it finds that such subsoil layers are necessary to comply with the revegetation.

Analysis:

Removal and Storage

The following yardage of topsoil has been segregated for reclamation:

1,000 cubic yards from the tank house road
+1,200 cubic yards from the shower house
+1,480 cubic yards from the main topsoil pile
3,680 cubic yards Total in storage

Material on the outslope of the coal storage pad has been designated as substitute topsoil. Section 8.9.1, On-Site Material, states that this material will be protected from contamination by berms and retaining walls and slopes will be stabilized with erosion control matting until a good vegetative cover is established. Any coal spilled onto the outslope will be removed. This material should be posted as substitute topsoil with a sign.

Findings:

Information provided in the proposed amendment considered adequate to meet the operations plan topsoil and subsoil requirements of the Regulations.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Minimum Regulatory Requirements:

General

All underground mining and reclamation activities shall be conducted to minimize disturbance of the hydrologic balance within the permit and adjacent areas, to prevent material damage to the hydrologic balance outside the permit area, and to support approved postmining land uses in accordance with the terms and conditions of the approved permit and the performance standards of this part. The Division may require additional preventative, remedial, or monitoring measures to assure that material damage to the hydrologic balance outside the permit area is prevented. Mining and reclamation practices that minimize water pollution and changes in flow shall be used in preference to water treatment.

Groundwater Monitoring

In order to protect the hydrologic balance underground mining activities shall be conducted according to the hydrologic reclamation plan. Ground-water quality shall be protected by handling earth materials and runoff in a manner that minimizes acidic, toxic, or other harmful infiltration to ground-water systems and by managing excavations and other disturbances to prevent or control the discharge of pollutants into the ground water.

Ground-water monitoring shall be conducted according to the ground-water monitoring plan. The Division may require additional monitoring when necessary. Ground-water monitoring data shall be submitted every 3 months to the Division or more frequently as prescribed by the Division. Monitoring reports shall include analytical results from each sample taken during the reporting period. When the analysis of any ground-water sample indicates noncompliance with the permit conditions, the operator shall promptly notify the Division and immediately provide for any accelerated or additional monitoring necessary to determine the nature and extent of noncompliance and the results of the noncompliance. Plans and hydrologic information to evaluate and mitigate the noncompliance situation and information relevant to the PHC shall be submitted to the Division as required.

Ground-water monitoring shall proceed through mining and continue during reclamation until bond release. The Division may modify the monitoring requirements including the parameters covered and the sampling frequency if the operator demonstrates, using the monitoring data obtained, that: the operation has minimized disturbance to the prevailing hydrologic balance in the permit and adjacent areas and prevented material damage to the hydrologic balance outside the permit area; water quantity and quality are suitable to support approved postmining land uses; or, monitoring is no longer necessary to achieve the purposes set forth in the monitoring plan.

Equipment, structures, and other devices used in conjunction with monitoring the quality and quantity of ground water onsite and offsite shall be properly installed, maintained, and operated and shall be removed by the operator when no longer needed.

OPERATION PLAN

Surface Water Monitoring

In order to protect the hydrologic balance, underground mining activities shall be conducted according to the approved plan, and the following: surface-water quality shall be protected by handling earth materials, ground-water discharges, and runoff in a manner that minimizes the formation of acidic or toxic drainage; prevents, to the extent possible using the best technology currently available, additional contribution of suspended solids to streamflow outside the permit area; and otherwise prevent water pollution. If drainage control, restabilization and revegetation of disturbed areas, diversion of runoff, mulching, or other reclamation and remedial practices are not adequate to meet water-quality standards and effluent limitations, the operator shall use and maintain the necessary water-treatment facilities or water-quality controls. Surface-water quantity and flow rates shall be protected by handling earth materials and runoff in accordance with the steps outlined in the approved plan.

Surface-water monitoring shall be conducted according to the approved surface-water monitoring plan. The Division may require additional monitoring when necessary. Surface-water monitoring data shall be submitted every 3 months to the Division or more frequently as prescribed by the Division. Monitoring reports shall include analytical results from each sample taken during the reporting period. When the analysis of any surface-water sample indicates noncompliance with the permit conditions, the operator shall promptly notify the Division and immediately provide for any accelerated or additional monitoring necessary to determine the nature and extent of noncompliance and the results of the noncompliance. Plans and hydrologic information to evaluate and mitigate the noncompliance situation and information relevant to the PHC shall be submitted to the Division as required. The reporting requirements of the water monitoring plan do not exempt the operator from meeting any National Pollutant Discharge Elimination System (NPDES) reporting requirements.

Surface-water monitoring shall proceed through mining and continue during reclamation until bond release. The Division may modify the monitoring requirements, except those required by the NPDES permitting authority, including the parameters covered and sampling frequency if the operator demonstrates, using the monitoring data obtained, that: the operation has minimized disturbance to the hydrologic balance in the permit and adjacent areas and prevented material damage to the hydrologic balance outside the permit area; water quantity and quality are suitable to support approved postmining land uses; and, monitoring is no longer necessary to achieve the purposes set forth in the approved monitoring plan.

Equipment, structures, and other devices used in conjunction with monitoring the quality and quantity of surface water onsite and offsite shall be properly installed, maintained, and operated and shall be removed by the operator when no longer needed.

Acid- and toxic-forming materials and underground development waste

Drainage from acid- and toxic-forming materials and underground development waste into surface water and ground water shall be avoided by: identifying and burying and/or treating, when necessary, materials which may adversely affect water quality, or be detrimental to vegetation or to public health and safety if not buried and/or treated; and, storing materials in a manner that will protect surface water and ground water by preventing erosion, the formation of polluted runoff, and the infiltration of polluted water.

Discharges into an underground mine

Discharges into an underground mine are prohibited, unless specifically approved by the Division after a demonstration that the discharge will: minimize disturbance to the hydrologic balance on the permit area, prevent material damage outside the permit area and otherwise eliminate public hazards resulting from underground mining activities; not result in a violation of applicable water quality standards or effluent limitations; be at a known rate and quality which shall meet the effluent limitations for pH and total suspended solids, except that the pH and total suspended solids limitations may be exceeded, if approved by the Division; and, meet with the approval of the Mine Safety and Health Administration.

Discharges shall be limited to the following: water; coal-processing waste; fly ash from a coal-fired facility; sludge from an acid-mine-drainage treatment facility; flue-gas desulfurization sludge; inert materials used for stabilizing underground mines; and, underground mine development wastes.

Water from one underground mine may be diverted into other underground workings according to the requirements of this section.

Gravity discharges from underground mines

Surface entries and accesses to underground workings shall be located and managed to prevent or control gravity discharge of water from the mine. The surface entries and accesses of drift mines first used after the implementation of a State, Federal, or Federal Lands Program and located in acid-producing or iron-producing coal seams shall be located in such a manner as to prevent any gravity discharge from the mine. Gravity discharges of water from an underground mine first used before the implementation of a State, Federal, or Federal Lands Program, may be allowed by the Division if it is demonstrated that the untreated or treated discharge complies with the performance standards and any additional NPDES permit requirements.

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Water-quality standards and effluent limitations

Compliance with all applicable State and Federal water quality laws and regulations and with the effluent limitations for coal mining promulgated by the U.S. Environmental Protection Agency set forth in 40 CFR Part 434.

Diversions: General

With the approval of the Division, any flow from mined areas abandoned before May 3, 1978, and any flow from undisturbed areas or reclaimed areas, after meeting the criteria for siltation structure removal, may be diverted from disturbed areas by means of temporary or permanent diversions. All diversions shall be designed to minimize adverse impacts to the hydrologic balance within the permit and adjacent areas, to prevent material damage outside the permit area and to assure the safety of the public. Diversions shall not be used to divert water into underground mines without approval of the Division.

The diversion and its appurtenant structures shall be designed, located, constructed, and maintained to: be stable; provide protection against flooding and resultant damage to life and property; prevent, to the extent possible using the best technology currently available, additional contributions of suspended solids to streamflow outside the permit area; and, comply with all applicable local, State, and Federal laws and regulations.

Temporary diversions shall be removed when no longer needed to achieve the purpose for which they were authorized. The land disturbed by the removal process shall be restored. Before diversions are removed, downstream water-treatment facilities previously protected by the diversion shall be modified or removed, as necessary, to prevent overtopping or failure of the facilities. This requirement shall not relieve the operator from maintaining water-treatment facilities as otherwise required.

A permanent diversion or a stream channel reclaimed after the removal of a temporary diversion shall be designed and constructed so as to restore or approximate the premining characteristics of the original stream channel including the natural riparian vegetation to promote the recovery and the enhancement of the aquatic habitat. The Division may specify additional design criteria for diversions.

Diversions: Perennial and intermittent streams

Diversion of perennial and intermittent streams within the permit area may be approved by the Division after making the finding relating to stream buffer zones that the diversions will not adversely affect the water quantity and quality and related environmental resources of the stream. The design capacity of channels for temporary and permanent stream channel diversions shall be at least equal to the capacity of the unmodified stream channel immediately upstream and downstream from the diversion. Protection against flooding and resultant damage to life and property shall be met when the temporary and permanent diversions for perennial and intermittent streams are designed so that the combination of channel, bank and flood-plain configuration is adequate to pass safely the peak runoff of a 10-year, 6-hour precipitation event for a temporary diversion and a 100-year, 6-hour precipitation event for a permanent diversion. The design and construction of all stream channel diversions of perennial and intermittent streams shall be certified by a qualified registered professional engineer as meeting the performance standards and any design criteria set by the Division.

Diversions: Miscellaneous flows

Diversion of miscellaneous flows, which consist of all flows except for perennial and intermittent streams, may be diverted away from disturbed areas if required or approved by the Division. Miscellaneous flows shall include ground-water discharges and ephemeral streams. The design, location, construction, maintenance, and removal of diversions of miscellaneous flows shall meet all of the general performance standards of this section. Protection against flooding and resultant damage to life and property shall be met when the temporary and permanent diversions for miscellaneous flows are designed so that the combination of channel, bank and flood-plain configuration is adequate to pass safely the peak runoff of a 2-year, 6-hour precipitation event for a temporary diversion and a 10-year, 6-hour precipitation event for a permanent diversion.

Stream buffer zones

No land within 100 feet of a perennial stream or an intermittent stream shall be disturbed by underground mining activities, unless the Division specifically authorizes underground mining activities closer to, or through, such a stream. The Division may authorize such activities only upon finding that: underground mining activities will not cause or contribute to the violation of applicable State or Federal water quality standards and will not adversely affect the water quantity and quality or other environmental resources of the stream; and, if there will be a temporary or permanent stream-channel diversion, it will comply with the regulatory requirements for diversions.

The area not to be disturbed shall be designated as a buffer zone, and the operator shall mark it accordingly with buffer zone markers.

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Sediment control measures

Appropriate sediment control measures shall be designed, constructed, and maintained using the best technology currently available to: prevent, to the extent possible, additional contributions of sediment to stream flow or to runoff outside the permit area; meet the more stringent of applicable State or Federal effluent limitations; and, minimize erosion to the extent possible.

Sediment control measures include practices carried out within and adjacent to the disturbed area. The sedimentation storage capacity of practices in and downstream from the disturbed areas shall reflect the degree to which successful mining and reclamation techniques are applied to reduce erosion and control sediment. Sediment control measures consist of the utilization of proper mining and reclamation methods and sediment control practices, singly or in combination. Sediment control methods include but are not limited to: disturbing the smallest practicable area at any one time during the mining operation through progressive backfilling, grading, and prompt revegetation; stabilizing the backfilled material to promote a reduction of the rate and volume of runoff; retaining sediment within disturbed areas; diverting runoff away from disturbed areas; diverting runoff using protected channels or pipes through disturbed areas so as not to cause additional erosion; using straw dikes, riprap, check dams, mulches, vegetative sediment filters, dugout ponds, and other measures that reduce overland flow velocity, reduce runoff volume, or trap sediment; treating with chemicals; and, treating mine drainage in underground sumps.

Siltation Structures: General

All surface drainage from disturbed areas shall be passed through a siltation structure before leaving the permit area. Siltation structures shall mean a sedimentation pond, a series of sedimentation ponds, or other treatment facility. Other treatment facilities means any chemical treatments, such as flocculation, or mechanical structures, such as clarifiers, that have a point-source discharge and that are utilized to prevent additional contribution of suspended solids to streamflow or runoff outside the permit area.

Disturbed area requiring treatment through a siltation structure shall not include those areas in which the only underground mining activities include: diversion ditches, siltation structures, or roads that are designed, constructed and maintained in accordance with the regulatory requirements; and, for which the upstream area is not otherwise disturbed by the operator.

Additional contributions of suspended solids and sediment to streamflow or runoff outside the permit area shall be prevented to the extent possible using the best technology currently available. Siltation structures for an area shall be constructed before beginning any underground mining activities in that area, and upon construction shall be certified by a qualified registered professional engineer, or when authorized under the regulations, by a qualified registered professional land surveyor, to be constructed as designed and as approved in the reclamation plan.

Any siltation structure which impounds water shall be designed, constructed and maintained in accordance with the requirements for impoundments.

Siltation structures shall be maintained until removal is authorized by the Division and the disturbed area has been stabilized and revegetated. In no case shall the structure be removed sooner than 2 years after the last augmented seeding. When the siltation structure is removed, the land on which the siltation structure was located shall be regraded and revegetated in accordance with the reclamation plan. Sedimentation ponds approved by the Division for retention as permanent impoundments may be exempted from this requirement.

Any point-source discharge of water from underground workings to surface waters which does not meet effluent limitations shall be passed through a siltation structure before leaving the permit area.

Siltation Structures: Sedimentation ponds

Sedimentation ponds, when used, shall: be used individually or in series; be located as near as possible to the disturbed area and out of perennial streams unless approved by the Division; and, be designed, constructed, and maintained to:

- 1.) Provide adequate sediment storage volume;
- 2.) Provide adequate detention time to allow the effluent from the ponds to meet State and Federal effluent limitations;
- 3.) Contain or treat the 10-year, 24-hour precipitation event ("design event") unless a lesser design event is approved by the Division based on terrain, climate, other site-specific conditions and on a demonstration by the operator that the effluent limitations will be met;
- 4.) Provide a nonclogging dewatering device adequate to maintain the required time;
- 5.) Minimize, to the extent possible, short circuiting;
- 6.) Provide periodic sediment removal sufficient to maintain adequate volume for the design event;
- 7.) Ensure against excessive settlement;
- 8.) Be free of sod, large roots, frozen soil, and acid- or toxic-forming coal-processing waste; and
- 1.) Be compacted properly.

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A sedimentation pond shall include either a combination of principal and emergency spillways or a single open-channel spillway configured as specified in this section, designed and constructed to safely pass the applicable design precipitation event. The Division may approve a single open-channel spillway that is: of nonerodible construction and designed to carry sustained flows; or earth- or grass-lined and designed to carry short-term infrequent flows at non-erosive velocities where sustained flows are not expected.

The required design precipitation event for a sedimentation pond meeting the spillway requirements of this section is: for a sedimentation pond meeting the size or other criteria of 30 CFR Sec. 77.216(a), a 100-year 6-hour event, or greater event as specified by the Division; or, for a sedimentation pond not meeting the size or other criteria of 30 CFR Sec. 77.216(a), a 25-year 6-hour event, or greater event as specified by the Division.

In lieu of meeting the above spillway requirements, the Division may approve a sedimentation pond that relies primarily on storage to control the runoff from the design precipitation event when it is demonstrated by the operator and certified by a qualified registered professional engineer or, as applicable, a qualified registered professional land surveyor that; the sedimentation pond will safely control the design precipitation event; the water from which shall be safely removed in accordance with current, prudent, engineering practices; and, such a sedimentation pond shall be located where failure would not be expected to cause loss of life or serious property damage. If the sediment pond is located where failure would be expected to cause loss of life or serious property damage, a sedimentation pond that relies primarily on storage to control the runoff from the design precipitation event may be allowed if, in addition to the design event, is: in the case of a sedimentation pond meeting the size or other criteria of 30 CFR Sec. 77.216(a), designed to control the precipitation of the probable maximum precipitation of a 6-hour event, or greater event as specified by the Division; or, in the case of a sedimentation pond not meeting the size or other criteria of 30 CFR Sec. 77.216(a), designed to control the precipitation of a 100-year 6-hour event, or greater event as specified by the Division.

Siltation Structures: Other treatment facilities

Other treatment facilities shall be designed to treat the 10-year, 24-hour precipitation even unless a lesser design event is approved by the Division based on terrain, climate, other site-specific conditions and a demonstration by the operator that the effluent limitations will be met. Other treatment facilities shall be designed, constructed and maintained accordance with the applicable requirements as described under sediment ponds.

Siltation Structures: Exemptions

Exemptions to the requirements of this section may be granted if: the disturbed drainage area within the total disturbed area is small; and, the operator demonstrates that siltation structures and alternate sediment control measures are not necessary for drainage from the disturbed drainage areas to meet effluent limitations and applicable State and Federal water-quality standards for the receiving waters.

Discharge structures

Discharge from sedimentation ponds, permanent and temporary impoundments, coal processing waste dams and embankments, and diversions shall be controlled, by energy dissipators, riprap channels, and other devices, where necessary, to reduce erosion, to prevent deepening or enlargement of stream channels, and to minimize disturbance of the hydrologic balance. Discharge structures shall be designed according to standard engineering design procedures.

Impoundments

The following requirements apply to both temporary and permanent impoundments:

- 1.) An impoundment meeting the size or other criteria of 30 CFR Sec. 77.216(a) shall comply with the requirements of 30 CFR Sec. 77.216 and this section.
- 2.) The design of impoundments shall be certified as designed to meet the requirements of the regulations using current, prudent, engineering practices and any design criteria established by the Division. The qualified, registered, professional engineer or qualified, registered, professional, land surveyor shall be experienced in the design and construction or impoundments.
- 3.) An impoundment meeting the size or other criteria of 30 CFR Sec. 77.216(a) or located where failure would be expected to cause loss of life or serious property damage shall have a minimum static safety factor of 1.5 for a normal pool with steady state seepage saturation conditions, and a seismic safety factor of at least 1.2. Impoundments not meeting the size or other criteria of 30 CFR Sec. 77.216(a), except for a coal mine waste impounding structure, and located where failure would not be expected to cause loss of life or serious property damage shall have a minimum static safety factor of 1.3 for a normal pool with steady state seepage saturation conditions. For an impoundment not meeting the size of other criteria of 30 CFR Sec. 77.216(a), where failure would not be expected to cause loss of life or serious property damage, the Division may establish engineering design standards that ensure stability comparable to a 1.3 minimum static safety factor in lieu of engineering tests to establish compliance with the minimum static safety factor of 1.3.
- 4.) Impoundments shall have adequate freeboard to resist overtopping by waves and by sudden increases in

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- storage volume.
- 5.) Foundations and abutments for an impounding structure shall be stable during all phases of construction and operation and shall be designed based on adequate and accurate information on the foundation conditions. For an impoundment meeting the size or other criteria of 30 CFR Sec. 77.216(a), foundation investigation, as well as any necessary laboratory testing of foundation material, shall be performed to determine the design requirements for foundation stability. All vegetative and organic materials shall be removed and foundations excavated and prepared to resist failure. Cutoff trenches shall be installed if necessary to ensure stability.
 - 6.) Slope protection shall be provided to protect against surface erosion at the site and protect against sudden drawdown.
 - 7.) Faces of embankments and surrounding areas shall be vegetated, except that faces where water is impounded may be riprapped or otherwise stabilized in accordance with accepted design practices.
 - 8.) Spillways: An impoundment shall include either a combination of principal and emergency spillways, a single open-channel spillway, or, be configured as an impoundment that relies primarily on storage to control the runoff from the applicable design precipitation event. The Division may approve a single open-channel spillway that is of nonerrodible construction and designed to carry sustained flows; or, earth- or grass-lined and designed to carry short-term, infrequent flows at non-erosive velocities where sustained flows are not expected. Except impoundments that rely primarily on storage to control the runoff, the required design precipitation events for an impoundment having spillways are: for an impoundment meeting the size or other criteria of 30 CFR Sec. 77.216(a) a 100-year 6-hour event, or greater event as specified by the Division; and, for an impoundment not meeting the size or other criteria of 30 CFR Sec. 77.216(a), a 25-year 6-hour event, or greater event as specified by the Division. In lieu of meeting the single open-channel spillway requirements, the Division may approve an impoundment that relies primarily on storage to control the runoff from the design precipitation event when it is demonstrated by the operator and certified by a qualified registered professional engineer or qualified registered professional land surveyor that the impoundment will safely control the design precipitation event, the water from which shall be safely removed in accordance with current, prudent, engineering practices. Such an impoundment shall be located where failure would not be expected to cause loss of life or serious property damage, except where: in the case of an impoundment meeting the size or other criteria of 30 CFR Sec. 77.216(a), it is designed to control the precipitation of the probable maximum precipitation of a 6-hour event, or greater event as specified by the Division; or, in the case of an impoundment not meeting the size or other criteria of 30 CFR Sec. 77.216(a), it is designed to control the precipitation of a 100-year 6-hour event, or greater event as specified by the Division.
 - 9.) The vertical portion of any remaining highwall shall be located far enough below the low-water line along the full extent of highwall to provide adequate safety and access for the proposed water users.
 - 10.) Inspections: Except as provided in paragraph (a)(10)(iv) of this section, a qualified registered professional engineer or other qualified professional specialist under the direction of a professional engineer, shall inspect each impoundment as provided in paragraph (a)(10)(i) of this section. The professional engineer or specialist shall be experienced in the construction of impoundments.

Inspections shall be made regularly during construction, upon completion of construction, and at least yearly until removal of the structure or release of the performance bond. The qualified registered professional engineer, or qualified registered professional land surveyor as applicable, shall promptly after each inspection provide to the Division a certified report that the impoundment has been constructed and/or maintained as designed and in accordance with the approved plan and this section. The report shall include discussion of any appearance of instability, structural weakness or other hazardous condition, depth and elevation of any impounded waters, existing storage capacity, any existing or required monitoring procedures and instrumentation, and any other aspects of the structure affecting stability. A copy of the report shall be retained at or near the minesite.

A qualified registered professional land surveyor may inspect any temporary or permanent impoundment that does not meet the size or other criteria of 30 CFR Sec. 77.216(a) and certify and submit the report required above, except that all coal mine waste impounding structures shall be certified by a qualified registered professional engineer. The professional land surveyor shall be experienced in the construction of impoundments. Impoundments subject to 30 CFR Sec. 77.216 must be examined in accordance with 30 CFR Sec. 77.216-3. Other impoundments shall be examined at least quarterly by a qualified person designated by the operator for appearance of structural weakness and other hazardous conditions.

If any examination or inspection discloses that a potential hazard exists, the person who examined the impoundment shall promptly inform the Division of the finding and of the emergency procedures formulated for public protection and remedial action. If adequate procedures cannot be formulated or implemented, the Division shall be notified immediately. The Division shall then notify the appropriate agencies that other emergency procedures are required to protect the public.

A permanent impoundment of water may be created, if authorized by the Division in the approved permit based upon the following demonstration:

- 1.) The size and configuration of such impoundment will be adequate for its intended purposes.
- 2.) The quality of impounded water will be suitable on a permanent basis for its intended use and, after reclamation, will meet applicable State and Federal water quality standards, and discharges from the impoundment will meet applicable effluent limitations and will not degrade the quality of receiving water below

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- 3.) applicable State and Federal water quality standards.
- 4.) The water level will be sufficiently stable and be capable of supporting the intended use.
- 5.) Final grading will provide for adequate safety and access for proposed water users.
- 6.) The impoundment will not result in the diminution of the quality and quantity of water utilized by adjacent or surrounding landowners for agricultural, industrial, recreational, or domestic uses.
- 7.) The impoundment will be suitable for the approved postmining land use.

The Division may authorize the construction of temporary impoundments as part of underground mining activities.

Ponds, impoundments, banks, dams, and embankments

Each application shall include a general plan for each proposed sedimentation pond, water impoundment, and coal processing waste bank, dam, or embankment within the proposed permit area. Each general plan shall:

- 1.) Be prepared by, or under the direction of, and certified by a qualified, registered, professional engineer, a professional geologist, or in any State which authorizes land surveyors to prepare and certify such plans, a qualified, registered, professional land surveyor with assistance from experts in related fields such as landscape architecture;
- 2.) Contain a description, map, and cross section of the structure and its location;
- 3.) Contain preliminary hydrologic and geologic information required to assess the hydrologic impact of the structure;
- 4.) Contain a survey describing the potential effect on the structure from subsidence of the subsurface strata resulting from past underground mining operations if underground mining has occurred; and
- 5.) Contain a certification statement which includes a schedule setting forth the dates when any detailed design plans for structures that are not submitted with the general plan will be submitted to the Division. The Division shall have approved, in writing, the detailed design plan for a structure before construction of the structure begins.

Each detailed design plan for a structure that meets or exceeds the size or other criteria of the Mine Safety and Health Administration, 30 CFR Section 77.216(a) shall:

- 1.) Be prepared by, or under the direction of, and certified by a qualified registered professional engineer with assistance from experts in related fields such as geology, land surveying, and landscape architecture;
- 2.) Include any geotechnical investigation, design, and construction requirements for the structure;
- 3.) Describe the operation and maintenance requirements for each structure; and
- 4.) Describe the timetable and plans to remove each structure, if appropriate.

Each detailed design plan for a structure that does not meet the size or other criteria of 30 CFR Section 77.216(a) shall:

- 1.) Be prepared by, or under the direction of, and certified by a qualified, registered, professional engineer, or in any State which authorizes land surveyors to prepare and certify such plans, a qualified, registered, professional land surveyor, except that all coal processing waste dams and embankments covered by Sections 817.81-817.84 of this Chapter shall be certified by a qualified, registered, professional engineer;
- 2.) Include any design and construction requirements for the structure, including any required geotechnical information;
- 3.) Describe the operation and maintenance requirements for each structure; and
- 4.) Describe the timetable and plans to remove each structure, if appropriate.

Sedimentation ponds, whether temporary or permanent, shall be designed in compliance with the requirements of Siltation Structures. Any sedimentation pond or earthen structure which will remain on the proposed permit area as a permanent water impoundment shall also be designed to comply with the requirements for Impoundments. Each plan shall, at a minimum, comply with the requirements of the Mine Safety and Health Administration, 30 CFR Sections 77.216-1 and 77.216-2.

Permanent and temporary impoundments shall be designed to comply with the requirements for Impoundments. Each plan for an impoundment meeting the size or other criteria of the Mine Safety and Health Administration shall comply with the requirements of 30 CFR Sec. 77.216-1 and 77.216-2. The plan required to be submitted to the District Manager of MSHA under Sec. 77.216 of this title shall be submitted to the Division as part of the permit application. For an impoundment not meeting the size or other criteria of 30 CFR Sec. 77.216(a) and located where failure would not be expected to cause loss of life or serious property damage, the Division may establish through the State program approval process engineering design standards that ensure stability comparable to a 1.3 minimum static safety factor in lieu of engineering tests to establish compliance with the minimum static safety factor of 1.3.

Coal processing waste banks, dams and embankments shall be designed to comply with the requirements for Coal Mine Waste. Each plan shall comply with the requirements of the Mine Safety and Health Administration, 30 CFR Sections 77.216-1 and 77.216-2, and shall contain the results of a geotechnical investigation of the proposed dam or embankment foundation area, to

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determine the structural competence of the foundation which will support the proposed dam or embankment structure and the impounded material. The geotechnical investigation shall be planned and supervised by an engineer or engineering geologist, according to the following:

- 1.) The number, location, and depth of the borings and test pits shall be determined using current prudent engineering practice for the size of the dam or embankment, quantity of material to be impounded, and subsurface conditions.
- 2.) The character of the overburden and bedrock, the proposed abutment sites, and any adverse geotechnical conditions which may affect the particular dam, embankment, or reservoir site shall be considered.
- 3.) All springs, seepage, and ground-water flow observed or anticipated during wet periods in the area of the proposed dam or embankment shall be identified on each plan.
- 4.) Consideration shall be given to the possibility of mudflows, rock-debris falls, or other landslides into the dam, embankment, or impounded material.

If the structure is 20 feet or higher or impounds more than 20 acre-feet, each plan of this section shall include a stability analysis of each structure. The stability analysis shall include, but not be limited to, strength parameters, pore pressures, and long-term seepage conditions. The plan shall also contain a description of each engineering design assumption and calculation with a discussion of each alternative considered in selecting the specific design parameters and construction methods.

Analysis:

Diversions

Undisturbed drainage ditch RC-BP1 is to be added to the plan. RC-BP1 will remain after reclamation and is listed in Table 7.3-2 with the other post-mining drainage ditches.

This ditch is not intended to capture and divert precipitation runoff, but rather to divert water from springs on the steep, undisturbed slope north of the Ball-Park Topsoil Pile. During 2000, flow from the springs on this slope was higher than in the past and the water breached an embankment along an old road that crosses the slope, flowed across and deposited sediment on the Ball-Park Topsoil Pile, eroded the outslope of the Ball-Park Topsoil Pile, and carried sediment over or through the silt fence and straw bales at the boundary of the permit and disturbed area.

An estimated spring flow of 15 to 20 gpm (0.044 cfs) was used in the ditch design. The design is certified by a licensed professional engineer. Channel flow and cross-section were analyzed using "Flowmaster" channel design software, which uses Manning's formula to determine required depth. Results of the calculations are on pages 7H-124 through 7H-126. Slopes of 0.01 and 0.05 ft/ft were analyzed: the steeper slope produced the greater velocity, 2.03 fps, and the smaller slope produced the greater depth, 0.24 feet. The proposed channel design, tabulated on page 7H-124 and shown in cross-section on page 7H-127, includes an additional foot of freeboard for a depth of 1.24 feet. The predicted maximum velocity indicates riprap will not be required in the channel, according to the table on page 7H-17.

Findings:

The information in this section is sufficient to meet the requirements of the coal mining rules.

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

Regulatory Reference: 30 CFR 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

Minimum Regulatory Requirements:

Each application shall contain maps, plans, and cross sections which show the mining activities to be conducted, the lands to be affected throughout the operation, and any change in a facility or feature to be caused by the proposed operations, if the facility or feature was shown and described as an existing structure.

The following shall be shown for the proposed permit area:

Affected area maps

The boundaries of all areas proposed to be affected over the estimated total life of all mining activities and reclamation activities, with a description of size, sequence, and timing of phased reclamation activities and treatments. All maps and cross sections used for mining design and mining operations shall clearly show the affected and permit area boundaries in reference to the reclamation work being accomplished.

Mining facilities maps

Location of each facility used in conjunction with mining operations. Such structures and facilities shall include, but not be limited to: buildings, utility corridors, roads, and facilities to be used in mining and reclamation operations or by others within the permit area; each coal storage, cleaning, and loading area; each topsoil, spoil, coal preparation waste, underground development waste, and noncoal waste storage area; each water diversion, collection, conveyance, treatment, storage and discharge facility; each source of waste and each waste disposal facility relating to coal processing or pollution control; each facility to be used to protect and enhance fish and wildlife related environmental values; each explosives storage and handling facility; location of each sedimentation pond, permanent water impoundment, coal processing waste bank, and coal processing water dam and embankment, and disposal areas for underground development waste and excess spoil; and, each plan or profile, at cross sections specified by the Division, of the anticipated surface configuration to be achieved for the affected areas during mining operations.

Mine workings maps

Location and extent of known workings of proposed, active, inactive, or abandoned underground mines, including mine openings to the surface within the proposed permit and adjacent areas. Location and extent of existing or previously surface-mined areas within the proposed permit area.

Monitoring and sampling location maps

Elevations and locations of test borings and core samplings. Elevations and locations of monitoring stations used to gather data on water quality and quantity, subsidence, fish and wildlife, and air quality, as required during mining operations.

Certification Requirements

Cross sections, maps, and plans required to show the design, location, elevation, or horizontal or vertical extent of the land surface or of a structure or facility used to conduct mining and reclamation operations shall be prepared by, or under the direction of, and certified by a qualified, registered, professional engineer, a professional geologist, or in any State which authorizes land surveyors to prepare and certify such cross sections, maps, and plans, a qualified, registered, professional land surveyor, with assistance from experts in related fields such as landscape architecture.

Each detailed design plan for an impounding structure that meets or exceeds the size or other criteria of the Mine Safety and Health Administration, 30 CFR Section 77.216(a) shall: be prepared by, or under the direction of, and certified by a qualified registered professional engineer with assistance from experts in related fields such as geology, land surveying, and landscape architecture; include any geotechnical investigation, design, and construction requirements for the structure; describe the operation and maintenance requirements for each structure; and, describe the timetable and plans to remove each structure, if appropriate.

Each detailed design plan for an impounding structure that does not meet the size or other criteria of 30 CFR Section 77.216(a) shall: be prepared by, or under the direction of, and certified by a qualified, registered, professional engineer, or in any State which authorizes land surveyors to prepare and certify such plans, a qualified, registered, professional land surveyor, except that all coal processing waste dams and embankments shall be certified by a qualified, registered, professional engineer; include any design and construction requirements for the structure, including any required geotechnical information; describe the operation and maintenance requirements for each structure; and, describe the timetable and plans to remove each structure, if appropriate.

Analysis:

Mining Facilities Maps

Plates 2-4A – Surface Facilities, 3-2A – Post-mining Topography, and 7-1A – Hydrology Map - have been updated to show undisturbed drainage diversion RC-BP1, which is within the present disturbed area boundary. The map also shows additional silt fence along the toe of the south slope of the Ball Park Topsoil Pile.

Findings:

The information in this section is sufficient to meet the requirements of the coal mining rules.

RECLAMATION PLAN

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BACKFILLING AND GRADING

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

Minimum Regulatory Requirements:

General

Disturbed areas shall be backfilled and graded to: achieve the approximate original contour; eliminate all highwalls, spoil piles, and depressions; 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.

The postmining slope may vary from the approximate original contour when approval is obtained from the Division for a variance from approximate original contour requirements, or when incomplete elimination of highwalls in previously mined areas is allowed under the regulatory requirements. Small depressions may be constructed if they are needed to retain moisture, minimize erosion, create and enhance wildlife habitat, or assist revegetation.

If it is determined by the Division that disturbance of the existing spoil or underground development waste would increase environmental harm or adversely affect the health and safety of the public, the Division may allow the existing spoil or underground development waste pile to remain in place. Accordingly, regrading of settled and revegetated fills to achieve approximate original contour at the conclusion of underground mining activities shall not be required if: the settled and revegetated fills are composed of spoil or nonacid- or nontoxic-forming underground development waste; the spoil or underground development waste is not located so as to be detrimental to the environment, to the health and safety of the public, or to the approved postmining land use; stability of the spoil or underground development waste must be demonstrated through standard geotechnical analysis to be consistent with backfilling and grading requirements for material on the solid bench (1.3 static safety factor) or excess spoil requirements for material not placed on a solid bench (1.5 static safety factor); and, the surface of the spoil or underground development waste shall be vegetated in accordance with the revegetation standards for success, and surface runoff shall be controlled in accordance with the regulatory requirements for diversions.

Spoil shall be returned to the mined-out surface area. Spoil and waste materials shall be compacted where advisable to ensure stability or to prevent leaching of toxic materials. Spoil may be placed on the area outside the mined-out surface area in nonsteep slope areas to restore the approximate original contour by blending the spoil into the surrounding terrain if the following requirements are met: all vegetative and organic materials shall be removed from the area; the topsoil on the area shall be removed, segregated, stored, and redistributed in accordance with regulatory requirements; the spoil shall be backfilled and graded on the area in accordance with the general requirements for backfilling and grading.

Disposal of coal processing waste and underground development waste in the mined-out surface area shall be in accordance with the requirements for the disposal of spoil and waste materials except that a long-term static safety factor of 1.3 shall be achieved.

Exposed coal seams, acid- and toxic-forming materials, and combustible materials exposed, used, or produced during mining shall be adequately covered with nontoxic and noncombustible materials, or treated, to control the impact on surface and ground water, to prevent sustained combustion, and to minimize adverse effects on plant growth and the approved postmining land use.

Cut-and-fill terraces may be allowed by the Division where: needed to conserve soil moisture, ensure stability, and control erosion on final-graded slopes, if the terraces are compatible with the approved postmining land use; or, specialized grading, foundation conditions, or roads are required for the approved postmining land use, in which case the final grading may include a terrace of adequate width to ensure the safety, stability, and erosion control necessary to implement the postmining land-use plan.

Preparation of final-graded surfaces shall be conducted in a manner that minimizes erosion and provides a surface for replacement of topsoil that will minimize slippage.

Previously mined areas

RECLAMATION PLAN

Remining operations on previously mined areas that contain a preexisting highwall shall comply with all other reclamation requirements except as provided herein. The requirement that elimination of highwalls shall not apply to remining operations where the volume of all reasonably available spoil is demonstrated in writing to the Division to be insufficient to completely backfill the reaffected or enlarged highwall. The highwall 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 shall 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 operator shall demonstrate, to the satisfaction of the 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.

Backfilling and grading on steep slopes

Underground mining activities on steep slopes shall be conducted so as to meet other applicable regulatory requirements and the requirements of this section. The following materials shall not be placed on the downslope: spoil; waste materials of any type; debris, including that from clearing and grubbing; abandoned or disabled equipment; land above the highwall shall not be disturbed unless the Division finds that this disturbance will facilitate compliance with the environmental protection standards and the disturbance is limited to that necessary to facilitate compliance; and, woody materials shall not be buried in the backfilled area unless the Division determines that the proposed method for placing woody material within the backfill will not deteriorate the stable condition of the backfilled area.

Special provisions for steep slope mining

No permit shall be issued for any operations covered by steep slope mining, unless the Division finds, in writing, that in addition to meeting all other regulatory requirements, the operation will be conducted in accordance with the requirements for backfilling and grading on steep slopes. Any application for a permit for surface coal mining and reclamation operations covered by steep slope mining shall contain sufficient information to establish that the operations will be conducted in accordance with the requirements for backfilling and grading on steep slopes.

This section applies to any person who conducts or intends to conduct steep slope surface coal mining and reclamation operations, except: where an operator proposes to conduct surface coal mining and reclamation operations on flat or gently rolling terrain, leaving a plain or predominantly flat area, but on which an occasional steep slope is encountered as the mining operation proceeds; where a person obtains a permit under the provisions for mountaintop removal mining; or, to the extent that a person obtains a permit incorporating a variance from approximate original contour restoration requirements.

Analysis:

General

Table 8.9-1 outlines that approximately 27 acres will be regraded during reclamation. Of these, approximately 18 acres will receive substitute topsoil.

In Appendix 3-L, Table 3L-1 is a cut and fill summary of reclamation areas TS-3 through TS-9. (Reclamation areas are illustrated on Plates 8-5 B through G.) The relationship between Table 3L-1 and Table 8.9-4 showing Substitute Topsoil Generated from Cuts (cu yd) is established by using the cut and fill summary tables for each reclamation area. For instance Area TS-5 requires 21,948 cubic yards of fill and will generate 34,392 cubic yards of cut of which 21,861 cubic yards will be substitute topsoil.

RECLAMATION PLAN

Cross sections provided in Appendix 3-L do not match the contours provided on Plate 3-2B & C for Area TS-5 or TS-4. The Division does not have time to check all the contours and cross-sections. It is recommended that the Permittee check the accuracy of all the cross-sections in Appendix 3-L and resubmit the information.

The revised cut and fill calculations are shown in Appendix 3-L. A summary of the cut and fill volumes are as follows:

- Coal Storage Waste 4,278 CY
- Sediment Pond Cleanout Material 3,350 CY
- Concrete Debris, 8,041 CY
- Cut and Fill calculations for areas TS-3 through TS-9 balance. The cut and fill calculations for the mine site balance. See Table 3L-1 for details.

Provide a commitment in the plan that all coal mine waste will be buried four feet deep in the fill.

Cross sections for area are shown in Appendix 3-L. The revised backfilling and grading plan is designed to eliminate all highwalls. In some areas cut slopes will remain, because of slope stability requirements. Cross sections for the revised reclamation plan are shown on Appendix 3L-1. The cross sections and volume calculations are based on the Plate 3-2 and Plate 2-4.

The proposed backfilling and grading plan is similar to that in the MRP. The Division found that the proposed reclamation site would have all highwalls eliminated. No spoil piles or depression other than minor bowl used for surface roughening will be left. The reclaimed slopes will not exceed either the angle of repose and will have long-term static safety factor of 1.3. In addition, the slopes will prevent slides; minimize slides, erosion and water pollution both on and off the site.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the reclamation plan backfilling and grading requirements of the Regulations. Prior to approval, the permittee must provide the following in accordance with:

R645-301-234, Cross-sections provided in Appendix 3-L do not match the contours provided on Plate 3-2B & C for Area TS-5 or TS-4. The Permittee must check the accuracy of all the cross-sections in Appendix 3-L and resubmit the information.

R645-301-553.252, Provide a commitment in the plan that all coal mine waste will be buried four feet deep in the fill.

TOPSOIL AND SUBSOIL

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

Minimum Regulatory Requirements:

Redistribution

Topsoil materials shall be redistributed in a manner that: achieves an approximately uniform, stable thickness consistent with the approved postmining land use, contours, and surface-water drainage systems; prevents excess compaction of the materials; and, protects the materials from wind and water erosion before and after seeding and planting.

Before redistribution of the material, the regarded land shall be treated if necessary to reduce potential slippage of the redistribution material and to promote root penetration. If no harm will be caused to the redistributed material and reestablished vegetation, such treatment may be conducted after such material is replaced.

The Division may choose not to require the redistribution of topsoil or topsoil substitutes on the approved postmining embankments of permanent impoundments or of roads if it determines that placement of topsoil or topsoil substitutes on such embankments is inconsistent with the requirement to use the best technology currently available to prevent sedimentation, and, such embankments will be otherwise stabilized.

Nutrients and soil amendments shall be applied to the initially redistributed material when necessary to establish the vegetative cover.

The Division may require that the B horizon, C horizon, or other underlying strata, or portions thereof, removed and segregated, stockpiled, be redistributed as subsoil in accordance with the requirements of the above if it finds that such subsoil layers are necessary to comply with the revegetation requirements.

Analysis:

Redistribution

It appears from a comparison of Table 8.9-3 and Table 8.9-1 that of the approximately 27 acres to be re-contoured, only 18.32 acres will receive substitute topsoil, the remainder is post-law disturbance where topsoil was salvaged. Table 8.9-3, Substitute Topsoil Summary A, shows that all areas will receive 12 inches of substitute topsoil, except TS-4 (sediment Pond A) and TS-5 (main pad area). TS-4 will receive 10 inches and TS-5 will receive 18 inches of substitute topsoil. (TS designations are identified on Plates 8-5 A-E.)

The Total substitute topsoil available column of Table 8.9-3 is very misleading and should be deleted as the numbers do not reflect the reality that the volumes of soil tallied in the total substitute topsoil column are necessary as backfill to cover the waste and highwalls. The soil is not available as substitute topsoil.

A cover depth of twelve inches over areas TS-3, TS-6, TS-7, and TS-8 (8.77 acres in all) will require 14,449 cubic yards of good quality soil. For TS-5 (8.8 acres) eighteen inches of cover is planned, consequently 21,296 cubic yards of good quality soil is required. For TS-4 (0.75 acres) a ten inch topsoil replacement will require 1,008 cubic yards of good quality soil. The total requirement for good quality substitute topsoil to be applied to the recontoured ground is $14,149 + 21,296 + 1,008 = 36,453$ cubic yards.

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Table 8.9-4, Substitute Topsoil Summary B, tallies the volume of substitute topsoil to be excavated at each location to meet the need outlined in Table 8.9-3. This table has two sub-headings listed under Substitute Topsoil Generated from Cuts (cu. yd): "substitute topsoil" and "substitute topsoil not regraded." The heading of "substitute topsoil not regraded," shows that 2,563 cubic yards of in-place subsoil in reclamation area TS-3 will serve as substitute topsoil. In area TS-5 approximately 4,537 cubic yards of in-place subsoil will become the substitute topsoil.

The Deficit of topsoil will be made up from reclamation areas as discussed in Appendix 3-L and summarized below (see Plate 8-5 A - E for TS designation locations):

TS-3

Sediment Pond B and Scalehouse areas

- Sediment pond B embankment was sampled to a depth of 4 feet.
- The six to 48 inch sample had an EC of 6.24 mmhos/cm (represented by sample site SHP-1 in Appendix 8-E).
- Scalehouse soil samples (sampled to a depth of 5 feet) had higher than average EC and SAR values in the top foot (represented by samples SEDB-1 and SEDB-2 in Appendix 8-E).
- Therefore, based upon 1991 sampling, the top foot should be avoided for use as substitute topsoil in the scalehouse area and the top four feet should be avoided in the area of sediment pond B.
- Table 8.9-4 indicates that 2,080 cubic yards of substitute topsoil will be regraded on the site and 2,562 cubic yards of in-place soils will be prepared as substitute topsoil.

The present submittal states on page 3L-8 that

1. The west embankment will be removed and used as fill for sediment pond B.
2. Additional substitute topsoil will come from soil backfilled over culvert - C10U.

TS-4

Sediment Pond A

- Sediment pond A was sampled to a depth of two feet.
- The material in the top two feet is adequate for substitute topsoil, as the Electrical Conductivity values of 3.67 – 4.23 mmhos/cm were not accompanied by elevated SAR values.

The present submittal states on page 3L-11 that

1. Fill for sediment pond A will come from the embankment.
2. Substitute topsoil (1,008 cubic yards) will also come from the embankment.

TS-5

Tipple and Loadout Area

- Represented by samples CSP1 -3 in Appendix 8-3 (sampled to a depth of 6 – 8 feet).
- The present submittal indicates in Appendix 3-L that
 1. Sixteen inches of substitute topsoil material will be placed over the coal mine waste.
 2. Areas where operational contours (shown on Plate 8-5C) and reclamation contours (shown on Plate 3-2C) match will utilize the surface soil as substitute topsoil and no additional material will be brought to the location for cover (page 3L-13). After matching contour lines, the Division concludes that the west half of the tipple and yard and loadout area will not receive further cover. Please clarify this by providing a map outlining areas of topsoil replacement.
 3. Where cuts created the reclamation contours, the exposed soil will become the substitute topsoil.
 4. Total volume of waste to be buried in location TS-5 is 15,669 cubic yards. This material will be covered with a minimum of sixteen inches of substitute topsoil material (pages 3L-4 and 5).
 5. 12,444 cubic yards of excess soil will be moved from TS -5 for use in TS-7 and TS-8.
 6. According to Table 3L-4, there will be 21,861 cubic yards of cut which will be utilized as substitute topsoil. This soil will come mostly from the eastern side of the pad as stations 1+00, and 4+00 through 9+00.

TS 6

Portal access road

- The portal access road outslope is represented by sample PAR-1 in App 8-3. (sampled down to 7 feet).
- The present submittal indicates in Appendix 3-L, page 3L-29 that
 1. The revegetated outslope shown on cross-sections at station 11+00, 12+00, 15+00 and 16+00 will remain undisturbed through final reclamation. This extremely steep slope is shown as BTCA Area G on Plate 7-1D, Hydrology Map.
 2. 2,553 yards of material will be generated from this area for use in TS-7 and TS-8. The soil to be taken as fill to TS-7 and 8 will come from stations 14+00 and 26+00.

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:

R645-301-234, Areas where operational contours (shown on Plate 8-5C) and reclamation contours (shown on Plate 3-2C) match will utilize the surface soil as

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substitute topsoil and no additional material will be brought to the location for cover (page 3L-13). After matching contour lines, the Division concludes that the slopes on the west half of the tipple and yard and loadout area will be backfilled to cover mine waste, graded, ripped and prepared for seeding and that no further cover in the form of substitute topsoil will be applied to the west half of the tipple yard. Please clarify this by providing a map outlining areas to receive substitute topsoil replacement.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

Minimum Regulatory Requirements:

Hydrologic reclamation plan

The application shall include a plan, with maps and descriptions, indicating how the relevant regulatory requirements will be met. The plan shall be specific to the local hydrologic conditions. It shall contain the steps to be taken during mining and reclamation through bond release to minimize disturbance to the hydrologic balance within the permit and adjacent areas; to prevent material damage outside the permit area; and to meet applicable Federal and State water quality laws and regulations. The plan shall include the measures to be taken to: avoid acid or toxic drainage; prevent, to the extent possible using the best technology currently available, additional contributions of suspended solids to streamflow; provide water treatment facilities when needed; and control drainage. The plan shall specifically address any potential adverse hydrologic consequences identified in the PHC determination and shall include preventive and remedial measures.

Each application shall contain descriptions, including maps and cross sections, of stream channel diversions and other diversions to be constructed within the proposed permit area to achieve compliance with the performance standards for those structures.

Postmining rehabilitation of sedimentation ponds, diversions, impoundments, and treatment facilities

Before abandoning a permit area or seeking bond release, the operator shall ensure that all temporary structures are removed and reclaimed, and that all permanent sedimentation ponds, diversions, impoundments, and treatment facilities meet the requirements of this Chapter for permanent structures, have been maintained properly and meet the requirements of the approved reclamation plan for permanent structures and impoundments. The operator shall renovate such structures if necessary to meet the requirements of this Chapter and to conform to the approved reclamation plan.

Analysis:

Diversions

Undisturbed drainage ditch RC-BP1 is to be added to the plan. RC-BP1 will remain after reclamation and is listed in Table 7.3-2 with the other post-mining drainage ditches.

This ditch is not intended to capture and divert precipitation runoff, but rather to divert water from springs on the steep, undisturbed slope north of the Ball-Park Topsoil Pile. During 2000, flow from the springs on this slope was higher than in the past and the water breached an embankment along an old road that crosses the slope, flowed across and deposited sediment on the Ball-Park Topsoil Pile, eroded the outslope of the Ball-Park Topsoil Pile, and carried

sediment over or through the silt fence and straw bales at the boundary of the permit and disturbed area.

An estimated spring flow of 15 to 20 gpm (0.044 cfs) was used in the ditch design. The design is certified by a licensed professional engineer. Channel flow and cross-section were analyzed using "Flowmaster" channel design software, which uses Manning's formula to determine required depth. Results of the calculations are on pages 7H-124 through 7H-126. Slopes of 0.01 and 0.05 ft/ft were analyzed: the steeper slope produced the greater velocity, 2.03 fps, and the smaller slope produced the greater depth, 0.24 feet. The proposed channel design, tabulated on page 7H-124 and shown in cross-section on page 7H-127, includes an additional foot of freeboard for a depth of 1.24 feet. The predicted maximum velocity indicates riprap will not be required in the channel, according to the table on page 7H-17.

Findings:

The information in this section is sufficient to meet the requirements of the coal mining rules.

MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS

Regulatory Reference: 30 CFR 784.23; R645-301-323, -301-512, -301-521, -301-542, -301-632, -301-731.

Minimum Regulatory Requirements:

Each application shall contain maps, plans, and cross sections which show the reclamation activities to be conducted, the lands to be affected throughout the operation, and any change in a facility or feature to be caused by the proposed operations, if the facility or feature was shown and described as an existing structure.

The permit application must include as part of the reclamation plan information, the following maps, plans and cross sections:

Affected area boundary maps

The boundaries of all areas proposed to be affected over the estimated total life of all mining activities and reclamation activities, with a description of size, sequence, and timing of phased reclamation activities and treatments. All maps and cross sections used for reclamation design purposes shall clearly show the affected and permit area boundaries in reference to the reclamation work being accomplished.

Bonded area map

The permittee shall identify the initial and successive areas or increments for bonding on the permit application map and shall specify the bond amount to be provided for each area or increment. The bond or bonds shall cover the entire permit area, or an identified increment of land within the permit area upon which the operator will initiate and conduct surface coal mining and reclamation operations during the initial term of the permit. As surface coal mining and reclamation operations on succeeding increments are initiated and conducted within the permit area, the permittee shall file with the Division an additional bond or bonds to cover such increments. Independent increments shall be of sufficient size and configuration to provide for efficient reclamation operations should reclamation by the Division become necessary.

Reclamation backfilling and grading maps

Contour maps and cross sections to adequately show detail and design for backfilling and grading operations during reclamation. Where possible, cross sections shall include profiles of the pre-mining, operations, and post-reclamation topography.

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Contour maps shall be at a suitable scale and contour interval so as to adequately detail the final surface configuration. When used in the formulation of mass balance calculations, cross sections shall be at adequate scale and intervals to support the mass balance calculations. Mass balance calculations derived from contour information must demonstrate that map scale and contour accuracy are adequate to support the methods used in such earthwork calculations. Detailed cross sections shall be provided when required to accurately depict reclamation designs which include, but are not limited to: terracing and benching, retained roads, highwall remnants, slopes requiring geotechnical analysis, and embankments of permanent impoundments.

Reclamation facilities maps

Location of each facility that will remain on the proposed permit area as a permanent feature, after the completion of underground mining activities. Location and final disposition of each sedimentation pond, permanent water impoundment, coal processing waste bank, and coal processing water dam and embankment, disposal areas for underground development waste and excess spoil, and water treatment and air pollution control facilities within the proposed permit area to be used in conjunction with phased reclamation activities or to remain as part of reclamation.

Final surface configuration maps

Sufficient slope measurements to adequately delineate the final surface configuration of the area affected by surface operations and facilities, measured and recorded according to the following: each measurement shall 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 disturbed or, where this is impractical, at locations specified by the Division; where the area has been previously mined, the measurements shall extend at least 100 feet beyond the limits of mining disturbances, or any other distance determined by the Division to be representative of the post-reclamation configuration of the land; and, slope measurements shall take into account variations in slope, to provide accurate representation of the range of slopes and reflect geomorphic differences of the area disturbed through reclamation activities.

Reclamation monitoring and sampling location maps

Elevations and locations of test borings and core samplings. Elevations and locations of monitoring stations used to gather data on water quality and quantity, subsidence, fish and wildlife, and air quality, if required, to demonstrate reclamation success.

Reclamation surface and subsurface manmade features maps

The location of all buildings in and within 1,000 feet of the proposed permit area, with identification of the current or proposed use of the buildings at the time of final reclamation. The location of surface and subsurface manmade features within, passing through, or passing over the proposed permit area, including, but not limited to, major electric transmission lines, pipelines, fences, and agricultural drainage tile fields. Each public road located in or within 100 feet of the proposed permit area and all roads within the permit area which are to be left as part of the post-mining land use. Buildings, utility corridors, and facilities to be used in conjunction with reclamation or to remain for final reclamation.

Reclamation treatments maps

The location and boundaries of any proposed areas for reclamation treatments including but not limited to: location, extent and depth of materials used for resoiling; location, extent and types of treatments for revegetation including soil preparation, soil amendments, mulching, seeding, variations in seed mixtures, and other revegetation treatments. Each water diversion, collection, conveyance, treatment, storage and discharge facility to be used during reclamation. Each facility to be used to protect and enhance fish and wildlife related environmental values. Other treatments or applications which are specifically designed or required as part of phased or final reclamation activity.

Certification Requirements.

Cross sections, maps, and plans required to show the design, location, elevation, or horizontal or vertical extent of the land surface or of a structure or facility used to conduct mining and reclamation operations shall be prepared by, or under the direction of, and certified by a qualified, registered, professional engineer, a professional geologist, or in any State which authorizes land surveyors to prepare and certify such cross sections, maps, and plans, a qualified, registered, professional land surveyor, with assistance from experts in related fields such as landscape architecture.

Each detailed design plan for an impounding structure that meets or exceeds the size or other criteria of the Mine Safety and Health Administration, 30 CFR Section 77.216(a) shall: be prepared by, or under the direction of, and certified by a qualified registered professional engineer with assistance from experts in related fields such as geology, land surveying, and landscape architecture; include any geotechnical investigation, design, and construction requirements for the structure; describe the operation and maintenance requirements for each structure; and, describe the timetable and plans to remove each structure, if appropriate.

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Each detailed design plan for an impounding structure that does not meet the size or other criteria of 30 CFR Section 77.216(a) shall: be prepared by, or under the direction of, and certified by a qualified, registered, professional engineer, or in any State which authorizes land surveyors to prepare and certify such plans, a qualified, registered, professional land surveyor, except that all coal processing waste dams and embankments shall be certified by a qualified, registered, professional engineer; include any design and construction requirements for the structure, including any required geotechnical information; describe the operation and maintenance requirements for each structure; and, describe the timetable and plans to remove each structure, if appropriate.

Analysis:

Reclamation Backfilling and Grading Maps

Plate 3-2 and Plate 8-5 show the proposed reclamation contours and the cross sections listed on the plates are shown in Appendix 3-L. The Division reviewed the plates and cross sections and found that they are not consistent. For example:

- Plate 8-5C shows the distance between the disturbed area boundaries to be 58 feet, while the distance between the disturbed area boundaries on cross section TS-6 0+00 is 75 feet.
- Plate 8-5C shows the distance between the disturbed area boundaries to be 25 feet at station TS-6 1+00, the distance shown on cross section TS-6 1+00 is 44 feet.
- Elevation shown on some of the cross sections is not consistent with those shown on the plate.

A professional engineer as required by R645-301-512.130 did not certify the cross section in Appendix 3-L. Some copies of the plate that were submitted, for example Plate 8-5C, not certified as required by R645-301-512.130.

Without accurate maps and cross sections the Division is unable to review backfilling and grading, the approximate original contour requirements and the reclamation cost estimate. Final surface configuration maps

Plate 3-2 and Plate 8-5 show the proposed reclamation contours. The used those plates to determine that the Permittee could meet the AOC requirements.
Reclamation facilities maps

Final surface configuration maps

Plate 3-2A – Post-Mining Topography - has been updated to show undisturbed drainage diversion RC-BP1, which is within the present disturbed area boundary. The map also shows additional silt fence along the toe of the south slope of the Ball Park Topsoil Pile.

Maps 3-2B, 3-2C, 3-2D, 8-5B, 8-5C, and 8-5D have been modified to show the changes in projected top-soil volumes and reclamation topography.

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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:

R645-542.300 Correct the inconsistency between Plate 8-5 and Appendix 3-L with regard to the disturbed area boundary and have the cross-sections in Appendix 3-L and correct the discrepancies between the elevations shown on the cross sections and plates.

R645-301-512.120 and R645-301-542.300 have the cross-sections in Appendix 3-L certified by a registered, professional engineer or land surveyor and make sure that all copies of the plates are also certified.

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

Regulatory Reference: 30 CFR 784.14; R645-301-730.

Minimum Regulatory Requirements:

The Division must provide an assessment of the probable cumulative hydrologic impacts (CHIA) of the proposed operation and all anticipated mining upon surface- and ground-water systems in the cumulative impact area. The CHIA shall be sufficient to determine, for purposes of permit approval, whether the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area. The Division may allow the applicant to submit data and analyses relevant to the CHIA with the permit application. An application for a permit revision shall be reviewed by the Division to determine whether a new or updated CHIA shall be required.

A CHIA was completed for the Wild Horse Ridge significant revision to the Bear Canyon Mine plan. This amendment does not require a revision of the CHIA; the proposed modification is within the existing CIA. This ditch is expected to reduce the probability of impacts to the hydrologic balance, both inside and outside the mine permit area, by diverting undisturbed drainage away from the mine permit area.

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