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TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

April 10, 2013

TO: Internal File

THRU: Priscilla Burton, Environmental Scientist III, Soils, Team Lead *PWB km 805*
 Steve Christensen, Task Manager, Permit Supervisor

FROM: Peter Hess, Environmental Scientist III, Engineering Review *PHH km 805*

RE: CHANGE IN MINING SEQUENCE, Alton Coal Development, LLC, Coal Hollow Mine, C/025/0005, Task ID #4323

SUMMARY:

The Coal Hollow Mine permit was issued on November 10, 2010. The first coal was mined from pit # 1 in early February, 2011.

The Permittee is proposing to change the order of recovery of coal during Phase 2 from the approved sequence, which is shown on Drawing 5-10, Coal Recovery Sequence.

The proposal would not change the approved sequential numbering of the coal extraction areas, but would change the timing when the coal recovery would occur, (i.e., in the proposed submittal, overburden removal and coal recovery in pits 9-13 would occur in the Phase 2 mining, at the same time as the overburden removal and coal recovery from pits 28-23). Thus the final mining area (Phase 3) would happen in pits 14-15-16 and 22, 21 and 20 during 2015 and in pits 16, 17 and 18 in 2016. Pit 18 is the last pit to be mined.

The submittal proposes two options post- coal recovery in Phase 3, two of which are nearly identical to those addressed in the Master Technical Analysis dated October 15, 2009. The only change is the location of the pits to be left open. They are:

- 1) Pits 21, 20, 19, 18, 17 and 16 (1480' highwall length) be allowed to remain open until the Permittee can obtain the necessary approvals to permit the Federal coal reserves west of the approved mining area, or
- 2) Pits 21, 20, 19, 18, 17 and 16 are allowed to remain open;

- 3) If Alton Coal Development, LLC cannot obtain the necessary approvals to recover coal from the Federal reserves to the west, all fill in the areas where approximate original contour elevations have been exceeded will be re-handled to initiate filling the Phase 3 coal recovery area.

The Task ID # 4254 application was reviewed and returned to the applicant on March 15, 2013 with eight deficiencies, two of which were relative to engineering and reclamation bond estimation.

The Permittee responded to the Division's eight deficiencies on April 2, 2013 with a complete re-submittal of the application (identified as Task ID # 4323). Task ID # 4323 contains revised reclamation cost estimates using unit costs from the "2012 Cost Mine Coal Cost Guide 2012" and the 2013 R.S. Means Heavy Construction Manual.

This technical memo will address the adequacy of the Permittee's response as it relates to R645-301-521.100, Cross Sections and Maps and R645-301-830.140, Detailed Estimated Cost.

TECHNICAL ANALYSIS:

OPERATION PLAN

COAL RECOVERY

Regulatory Reference : 30 CFR 817.59, R645-301-522

Analysis:

Phase 2

The Task ID # 4254 application contains revised pages 5-38, 5-39 and 5-40 which address the proposed Phase 2 and Phase 3 pit recovery sequences (See section 528, **HANDLING AND DISPOSAL OF COAL, OVERBURDEN, EXCESS SPOIL AND COAL MINE WASTE**, Section 528.200, Overburden). Proposed Phase 2 will extend the private coal recovery from the terminus of Phase 1 proceeding to the East where strip ratios are 13.5 / 1 on the average (too high to economically recover with current machinery). Phase 2 will also initiate overburden removal and coal recovery from Pit 28, proceeding North through Pit 23. Thus, mining will occur in two non-adjacent areas during the Phase 2 activity, by leap-frogging the equipment back and forth.

Overburden from Pit 28 will be truck hauled to the excess spoil pile for temporary storage. "Temporary storage" is meant here meaning that this volume of fill will be needed to backfill the Phase 3 coal recovery area, (i.e., Alton Coal Development, LLC will not be able to obtain the adjacent Federal leases to the West of Pits 16-20). Pits 29 and 30 will not be mined, as is shown on the approved version of Drawing 5-10.

Burden from Pit 27 will be used to backfill Pit 28, but it will have to be temporarily stored so an operating area can be established for coal removal.

Phase 2 will recover 14,168,000 LCY of overburden; 8,326,000 LCY will be used as backfill (59 %). The remaining 41 % will be stored as excess spoil, (5,842,000 LCY). A swell factor of 22 % (figure obtained from a recent Caterpillar Handbook) was used to calculate the overburden backfill volumes.

During Stage 2, pits 1, 2, 4, 6, 7, 8, 28, 27, 26, 25 and 24 will be reclaimed (See Drawing 5-19).

Phase 2 will recover approximately 960,000 tons of coal.

The method utilized for coal recovery will not change from the method used in Phase 1. No augering of any highwalls will occur.

Phase 3

The proposed Phase 3 coal recovery program at the Coal Hollow Mine will uncover and strip pits 21, 20, 19, 16 and 17, with the final coal recovery occurring from Pit 18 (See Drawing 5-19, comparing it with Drawing 5-10).

Back filling of adjacent pits 14 and 15, as well as pits 22 and 21 will occur in Stage 3.

Backfilling and the return to approximate original contour of pits 16, 17, 18, 19 and 20 is dependent on which of three options will occur at the end of the mining of the private coal lease. The two options are:

- 1) Alton Coal Development, LLC will be able to obtain a Federal coal lease to mine the reserves immediately west of pits 16-21, and will use the overburden recovered from the first six pits of the new lease to backfill pits 16-21, or;
- 2) The adjacent Federal coal leases will not be obtained by Alton Coal Development, LLC and pits 16 through 20 will be backfilled using all of the fill which was temporarily stored above the elevations determined to address the requirements of R 645-301-553.110, Achieve Approximate Original Contour. The Permittee's estimate of the volume of fill needed to reclaim pits 16-21 is 6.3 million yards. The balance of the volume required will need to come from the excess spoil area.

All Phase 3 backfilling will be done via a re-handling process using a shovel-truck(s) combination from all spoil areas utilized. A revised reclamation cost estimate for Phase 3 has been submitted with the Task ID # 4323 submittal.

Drawing 5-10, **Coal Removal Sequence**, as submitted with Task ID # 4323 has had **Note 2** returned to the left hand side of the drawing. The note contains the date of issue of the Coal Hollow permit (November 10, 2010), as well as when the first coal was mined at the site (early February 2011).

Findings:

The Task ID# 4254 application meets the requirements of R645-301-522, Coal Recovery.

Drawing 5-10, as submitted with Task ID # 4323 has had Note 2 (which provides information about the date of permit issue and when the first coal was extracted at Coal Hollow) put back on the drawing. Therefore, in accordance with;

R645-301-521.100, Cross Sections and Maps, Drawing 5-10 (Task ID # 4323) meets the requirements of this section.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR 784.24, 817.150;817.151; R645-301-521; -301-527; -301-534; -301-732.

Analysis:

Road Classification System

Task ID # 4323 does not propose to re-classify any of the roads within the Coal Hollow Mine permit area.

Plans and Drawings

Proposed changes to the two primary coal and spoil haul roads are described on page 5-17, page 5-35 (section 527.200, Description of Roads), and page 5-61. The Mine utilizes three primary roads, two of which are primary haul roads used to transport coal or spoil. A description of each change proposed, and the page correlation is listed below:

- 1) Page 5-17; The first proposed change is to lengthen the primary haul road which runs from the coal unloading area to the first series of coal recovery pits on the west side of the permit area. The change is a minor lengthening of 200 feet. This road will be used throughout the Mine's production and reclamation phases (through 2017). The second road specification change is a reduction of the length of the second primary haul road, as well as a change to the final point of destination. The route followed by this road will still begin just south of lower Robinson Creek (off of primary haul road 1) and proceed southeast to the long term topsoil stockpile 2 and subsoil stockpile 1. The approval of Task ID # 4323 will reduce the roadway length specification from 2,500 feet to 1,300 feet (a 1,200 foot reduction).

All of these changes are minor and they should be approved as submitted. There are no changes proposed in the road design specifications, with the exception of the changes in length.

- 2) Page 5-35, section 527.200, Description of Roads duplicates the revised information submitted on Page 5-17.

Performance Standards

The only performance standard stated under R645-301-560, which includes all mine permitting requirements from R645-301-510 through 553 (including all road permitting

requirements (R645-301-534, Road Designs)), states that "all coal mining and reclamation operations will be conducted in accordance with the approved permit".

The Permittee's mining and reclamation plan commits to meeting all requirements relative to the coal recovery process including road design and construction.

Primary Road Certification

The Task ID # 4254 amendment does not propose to change the classification of any of the three classified primary roads within the permit boundary. Ancillary roads within the mine permit boundary will also remain classified as ancillary.

Other Transportation Facilities

The only other transportation facility at the Coal Hollow Mine is the coal stockpile belt reclaim which puts product into highway trucks for shipment to the buyer.

There are no changes proposed to this facility in Task ID #4254.

Findings:

The Task ID # 4323 application meets the minimum regulatory requirements for Roads, R645-301-521, 527 and 534.

SPOIL AND WASTE MATERIALS

Regulatory Reference: 30 CFR Section R645-301-512, 513, 514, 521, 526, 528, 535, 536, 542, 553.

Analysis:

Disposal of Noncoal Mine Wastes

This requirement is addressed in Volume 3, Chapter 5, Section 528.330, Noncoal Mine Waste, page 5-44 of the mining and reclamation plan.

Coal Mine Waste

Page 5-44 of Chapter 5, Volume 3, Section 528.320, Coal Mine Waste briefly discusses that coal waste will not be generated because no processing is conducted at the mine.

Mine development waste which could be generated during the coal removal process, or from possible highwall failures will be segregated from the run-of-mine product and placed within the backfill used in the reclamation of the pits. Coal mine waste will not be placed within the excess spoil storage areas.

Refuse Piles

There are no refuse piles within the Coal Hollow Mine permit area, and none are planned (See Section 528.320, Page 102 of the Coal Hollow Master Technical Analysis).

Impounding Structures

There are no impoundments constructed of coal mine waste at the Coal Hollow Mine.

Burning and Burned Waste Utilization

The requirements of this section are not applicable to the Task ID #4323 application.

Return of Coal Processing Waste to Underground Workings

As of February 25, 2013, there is no coal processing occurring at the Coal Hollow Mine. Neither are there any underground workings associated with this operation.

Excess Spoil

The design and construction requirements for the currently approved excess spoil storage area are discussed in Volume 3, Chapter 5, Section 528.310, beginning on page 5-40 through page 5-44.

“ACD / LLC has added the recommendations from APPENDIX F, EARTHWORK SPECIFICATIONS to Section 528.310, Chapter 5 of the MRP. Appendix F discusses monitoring of design specifications for the cuts and fills associated with the excess spoil pile construction and the sediment pond embankments to confirm that adequate compaction is being performed during the construction processes. Nine procedure recommendations are listed.”

The Applicant described how the excess spoil would be handled in several sections of the PAP, including Sections 526, 528, 535, and 536.

As stated from the Master Technical Analysis prepared by the Division (document date October 15, 2009, pages 104 and 105), *“The pre-topographic maps and the reclamation maps show that the Applicant located the spoil pile in naturally stable areas. Drawing 5-3 and 5-35*

show the areas where excess spoil will be placed. Drawings 5-35 and 5-36 show the design of the fill. Appendix 5-1 is a geotechnical analysis of the sediment impoundments and excess spoil structure prepared by Taylor Geo-Engineering, LLC. The Applicant does not plan on disposing of coal mine waste in the excess spoil pile (521.143).

The excess spoil pile is designed to minimize effects on surface and ground water due to leaching and surface water runoff: design details are in Section 535 (745.100). A spring and seep survey identified no springs or wet weather seeps in the proposed excess spoil area. The location for the excess spoil pile encompasses an area of dry meadow west of County Road 136 (shown on Plate 3-1). This area is identified potentially sub-irrigated (App. 7-7 (p. 10). The soil in the dry meadow area is map unit 6 (Graystone-Cookcan-Jonale Family complex, 1 – 5% slopes) which is described in Chap. 2, page 13 as medium to coarse textured soil with wet conditions. No underdrains are planned for the excess spoil structure. The final surface of the excess spoil pile will be regraded to a contour that will route water from snowmelt and rainfall around the excess spoil (Drawing 5-35). No manmade water courses are present in the excess spoil area (745.100). Although Appendix 5-1, Slope Stability Analysis for Proposed Excess Spoil Structure and Sediment Impoundments states that the eastern 1/3 of the spoil pile can be constructed up to 90 feet in height and up to 120 feet on the western 2/3 portion with 3H:1V slopes, the actual finished design will only climb to a height of 75 to 86 feet on the east end.

Section 535, p. 5-52 states, “Excess spoil will be placed in designated disposal areas within the permit area in a controlled manner. The fill and appurtenant structures will be designed using current, prudent engineering practices and will meet any design criteria established by the Division”.

The Applicant provides a revised geotechnical analysis for sediment pond embankments and excess spoil pile in Appendix 5-1, based on the revised design of the spoil. “The revised design of the excess spoil and fill above approximate original contour provides concave slopes that grade from 5h:1v to 4h:1v to 3h:1v, bottom to top. This change in the slope design has allowed for lowering the compaction specification of the spoil to 85 %.”

Pages 5-38 and 5-39, section 528.200, Overburden of the Task ID # 4323 application discusses the proposed changes in the Stage 2 and Stage 3 coal recovery areas.

The first change is discussed as follows; “material (the overburden volume) from pits 9-15 significantly exceeds the backfill capacity (volume) available from the preceding pits (Pits 1-8).” The Permittee estimates that excess burden material from pits 9-15 and from pit 28 will be temporarily stored at the excess spoil pile facility (excess burden equals 5,800,000 LCY). This extra material from Stage 2 will require an increase in the length of the spoil facility of 2500 feet more toward the east (average storage volume / foot of pile length is 2,320 LCY / foot).

The second change will be that coal pits 29 and 30 will not be recovered and mining will be initiated in pit 28, proceeding north in the same time frame that pits 9-15 are uncovered and mined. The same machinery will be used to strip and recover the coal from both areas, thus leap frogging will occur back and forth as the mining progresses through Stage 2 (west to east in pits 9-14, and south to north in pits 28 through 23).

Findings:

The change in the timing of the coal recovery from pits 9-13 and 28-23 will not affect the volume of backfill generated by the currently approved coal recovery sequence.

The revised information proposed in Task ID # 4254 adequately addresses the requirements of **R645-301-512, 513, 514, 526, 528, 535, 536, 542, and 553.**

BONDING AND INSURANCE REQUIREMENTS

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

Analysis:

General

The Coal Hollow Mine utilizes sequential bonding to meet the requirements of R645-301-890. The reclamation costs for most of the coal recovery areas are included in the cost / ton costs from the adjacent pits. The only pit reclamation costs estimated are those for each final pit of Phases 1, 2, and 3.

Form of Bond

The current reclamation bond posted by Alton Coal Development, LLC with the Division and the U.S. Office of Surface Mining is a surety bond posted with Bond Safeguard / Lexon Insurance Companies. The Lexon Insurance Company has an A.M. Best rating of (A-).

Determination of Bond Amount

The current bond amount posted to ensure the reclamation of Stage 1 is \$ 6,045,000. The reclamation cost of Stage 1, including reclamation of the mine facilities, reclamation of impoundments 1,1B, 2, 3 and 4, and reclamation of pits 1 – 8 has been estimated at \$ 5,882,033.

The Task ID # 4254, **Change in Mining Sequence** application contains reclamation cost estimates for Phase 2 and Phase 3. The submitted estimates were determined as being deficient in the following ways (See Task ID # 4254):

- 1) The unit costs obtained from the "Cost Mine Coal Cost Guide 2009" and utilized in the Phase 2 and Phase 3 reclamation cost estimates are 4 years old. The Permittee has responded with the submittal of the most current cost guide information from the "Coal Mine Coal Cost Guide for 2012". These unit costs meet the Divisions requirement.
- 2) The unit costs utilized from the RS Means Heavy Construction Manual 2009 were out of date. Updated unit cost information from the 2013 R S Means was provided to the Permittee on March 5, 2013. The Permittee re-submitted revised reclamation cost estimates using unit cost data from the 2013 R.S. Means Heavy Construction Manual on April 2, 2013, with revised cost estimate sheets on April 5, 2013.
- 3) An error of at least \$50,000 existed for the total cost for Specialized Reclamation Areas in Phases 2 and 3 of the Task ID # 4254 application. The Permittee's revised reclamation cost estimates for Phase 2 and 3 (as submitted with Task ID # 4323) have corrected this error. The Phase 1 cost for these areas was reported at \$ 162,195. The correct amount is \$ 212,806. This deficiency has been addressed.
- 4) To calculate the indirect costs for Phases 2 and 3, the Permittee only used a 25 % factor to calculate dollar amounts to cover move / de-move, project management and engineering, and contractor profit and overhead. A factor of 26.8 % must be used according to the OSM Handbook for Bond Estimation. The Permittee submitted new cost estimate sheets using a 26.8 % factor to calculate the indirect costs for Phase 2 and 3, Task ID # 4323.
- 5) The Task ID # 4254 application proposes that Phase 2 will initiate coal recovery from pits 9-13 at the approximate same time as coal recovery will be initiated from pits 28 to 23. Overburden removal and coal recovery will occur from two areas of the permit area at approximately the same time. The Permittee must discuss how this will affect the incremental bonding which has been calculated for the Phase 2 and Phase 3 increments of the Coal Hollow Mine.

The Permittee responded in the following way in the re-submittal of Task ID # 4323; *"Bonding for each of the Phases is the worst case scenario for each respective phase. The largest cost is the cost of backfilling the largest open pit(s) during each of the three phases. The bonds (reclamation cost estimate / PHH) represent this in each Phase."* This response adequately addresses the Divisions concern.

- 6) The escalation factor for 2013 is 1.5 %. This number must be used to escalate both of the cost estimates for Phase 2 and Phase 3 through 2017, which is when all coal recovery and reclamation work is projected to be completed (See Drawing 5-38).

The Division re-evaluated the escalation costs for Phases 2 and 3 so that the Permittee would benefit from reduced escalation factors. Phase 2 escalation was calculated by using the 2013 factor times .66 (8 months of the year 2013) times the 2013 factor to the fourth power ($1.015 \times 1.015 \times 1.015 \times 1.015$) for years 2014, 2015, 2016 and 2017 = 1.07187.

The escalation factor for Phase 3 was calculated by using the 2013 factor (1.015×2 years (2016 and 2017) or 1.015 to the second power, $(1.015 \times 1.015) = 1.03022$.

The Permittee has adequately addressed the deficiencies identified in the review of Task ID # 4254 as they related to **R645-301-830.140, Detailed Estimated Cost with Supporting Calculations.**

Several errors were identified in the Phase 1 Reclamation Cost Estimate which was used as a basis for the reclamation bond amount posted to issue the DOGM permit on November 10, 2010. These are identified as follows:

- 1) In the Phase 1 Reclamation Cost Estimate, the Specialized Areas Reclamation cost estimate had a \$ 50,600 error.
- 2) The Facilities Reclamation Cost (\$ 1,395,235) and the Specialized Areas Reclamation Cost (\$ 212,806) (Total Amount = \$ 1,608,041) was not used when the Indirect Costs for Phase 1 were calculated. The amount which should have been used to calculate the Indirect Cost Amount is \$ 4,638,827. The Indirect Cost Amount is calculated to be ($\$ 4,638,827 \times 0.268$) = \$ 1,243,206. Total Cost = \$ 5,882,033.

The Division initiated a mid-term permit review for the Coal Hollow Mine permit on April 2, 2013. That review did not include an evaluation of the reclamation cost estimate and the bond.

The escalation factor for 2013 is 1.015. The escalated dollar amount to ensure adequate bond coverage for the Mine through 2015 (when all reclamation will be completed for Phase 1) is ($\$ 5,882,033 \times (1.015 \text{ to the 3rd power } (1.0456)) = \$ 268,221$). The total escalated reclamation cost estimate is **\$ 6,150,254**.

The amount of bond currently posted for the Coal Hollow Mine, Phase 1 is \$ 6,045,000. The dollar amount difference between the posted bond amount and the escalated reclamation

cost estimate through 2015 is \$ 105,000 or – 1.7 %. As this percentage is less than 5 %, **it is not necessary for the Permittee to post additional bond for Phase 1 at this time.**

The reclamation cost estimate for the Phase 2 mining areas at Coal Hollow is estimated at \$ 10,554,521. The required bond to be posted for Phase 2 is **\$ 10,555,000.**

The reclamation cost estimate for the Phase 3 mining areas at Coal Hollow is estimated at \$ 6,972,221. The required bond amount for Phase 3 is **\$ 6,972,000.**

Terms and Conditions for Liability Insurance

Alton Coal Development, LLC (C/025/005) maintains general liability insurance coverage through the Imperium Insurance Company and American Mining Insurance Company, Inc. Coverage amounts for General Aggregate and Each Occurrence categories are \$ 2,000,000 and \$ 1,000,000, respectively. Coverage for damage incurred from the use of explosives is provided under the general liability category. The notification clause adequately addresses the requirement to notify the Division should cancellation of any of the insured categories occur before the expiration of coverage is adequate.

Findings:

The Task ID # 4323 application meets the requirements of the R645 Coal Mining Rules.

RECOMMENDATION

The Permittee has addressed all of the engineering requirements previously aired in the review of Task ID # 4254.

This review has determined that the currently posted bond amount is 2% short of the estimated reclamation cost estimate for Phase 1. Since this amount is less than 5%, it is not necessary for the Permittee to post additional bond for Phase 1 at this time.

The estimated reclamation cost for Phase 2 is \$10,554,521. The required bond amount which must be posted prior to mining in the Phase 2 areas is **\$10,555,000.**

The estimated reclamation cost for Phase 3 is \$ 6,972,221. The required bond amount which must be posted prior to mining in the Phase 3 areas is **\$6,972,000.**

Task ID # 4323 is recommended for approval.