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TECHNICAL MEMORANDUM
Utah Coal Regulatory Program

August 16, 2010

TO: James D. Smith, Team Lead JS 24/08/2010

FROM: Priscilla Burton, CPSSc, Environmental Scientist III, Soils. PB by SOS

RE: Wildcat Loadout Expansion, Andalex Resources Inc., Wildcat Loadout, C/007/0033, Task #3593

SUMMARY:

The Division Order, dated December 9, 2004 (2004/Outgoing/0026.pdf), describes the effect of fugitive dust on plants and wildlife and requires that the Permittee make three adjustments to their operations plan in accordance with R645-301-526.220 *et seq* to reduce wind blown deposition of coal fines, as follows:

> To remedy the permit deficiency and effects of coal fine accumulation on undisturbed soils within the permit area, the Division requires that:
>
> 1) The Mining and Reclamation Plan must include design specifications of measures already in place and/or to be put into use to control wind blown coal fine accumulation and coal particles blown from stockpiles, roadways, and other disturbed areas associated with the mine. This information must be provided separately from the Air Quality Approval Order DAQE-005-00 found in Appendix B.
>
> 2) The Mining and Reclamation Plan must describe removal of accumulations of coal fines on undisturbed soils within the permit area after consultation with the Division. Describe the method of coal fine removal to be followed by seeding. Vacuuming is not acceptable.
>
> 3) The Mining and Reclamation Plan must address or include a plan for monitoring of coal fine deposition outside the permit area, specifically east of the permit boundary (since the prevailing winds are from west to east).

In response to item 1, Appendix P describes gravel and magnesium chloride improvements to "the truck haul portion" of road PR-5. (Primary roads are identified on Plate 1A.) Appendix P also describes construction of sediment pond G to retain coal fines within the

permit area. MRP Section R645-301-423.200 describes maintenance of coal stockpile(s) moisture at 6% to reduce fugitive dust.

In response to item 2, Appendix P describes removal of coal fines from 5.43 acres using scraping equipment or by vacuuming (App. P, and Sec. R645-301-423.200, p. 4-10 and R645-301-212, p. 2-4). Vacuuming, followed by seeding, may be acceptable in this instance, on less than two acres, to avoid the greater disturbance that would be caused by the destruction of existing woody vegetation. See deficiency written under R645-301-352 *et al.*

In response to item 3, this amendment describes Appendix P states that the site will be monitored and photographed quarterly.

The application is recommended for approval with the following deficiency or condition:

645-301-423.200, The Permittee has described a quarterly monitoring plan to monitor the wind blown coal fine deposition on adjacent undisturbed soils (Appendix P), however, the MRP should state that the monitoring results will be included in the annual report and that the general approach of monitoring (depth assessment and location on a map) will be stated in the annual reporting.

TECHNICAL ANALYSIS:

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.

Analysis:

Soil Resources are described in Sec. 2 of the MRP. Appendix D contains all Soil Survey information. The coal fines deposition area was surveyed in 2003, under the direction of Mr. James Nyenhuis for Mt. Nebo Scientific in March 2003 (Exhibit 5 of App. P and App. D). The 2003 soil survey includes an Order 1 survey map for the 12 acres east of the coal stockpile. The soils in this location are predominantly Hernandez loam and Haverdad loam, both prime farmland soils, when irrigated. The 2003 soil survey describes as suitable the surface twenty-four inches of soil.

The 1988 SCS soil survey for Carbon County maps the soils of the site as the Hernandez Series (Map Units 52 and 55) and classifies the soils as fine-loamy, mixed, superactive, mesic Ustic Haplocalcid (similar to the Abra loam, described above). Map Unit 52, Hernandez family has 3-8% slopes and is a deep soil that is capable of high production if an adequate amount of water is supplied. Plate 11 reproduces the Carbon County Order III soil survey for the site.

A site survey of the Wildcat soil was first conducted in 1988 by Earl Jensen, soil scientist with the NRCS. (The location for his pit is generally given as the intersection of the Gordon Creek road and Utah Railroad.) He classified the soil as fine loamy mixed mesic Ustollic Calciorthids with a map unit name of Abra loam. He indicated that there was 60 inches of available topsoil. He also indicated that there was a layer of calcium carbonate accumulation from 9 – 12 inches and that adjacent soils did not have this layer of accumulation. The NRCS changed the classification of this series to fine loamy, superactive, mesic, Ustic Haplocalcid (http://wwwsoils.usda.gov). The "superactive" designation pertains to the ratio of the electrical conductivity and the percent clay. There can be a calcic horizon in the soil.

Substitute topsoil was evaluated in four fill slopes through the use of test plots described in Appendix N. These plots were installed in 1989 (Plate 1) and evaluated by Patrick Collins, PhD, of Mt. Nebo Scientific Research & Consulting in 1991. Mr. Collins reported that the plots were dominated by Russian thistle (Salsola iberica) and summer cypress (Kochia scoparia) weeds, with the exception of spoil plot B that contained a sizeable community of Western wheatgrass (Agropyron smithii) and Indian ricegrass (Oryzopsis hymenoides). The plots were last evaluated in 1991 (App. N) and were to be re-evaluated in the summer of 2006. To my knowledge, this re-evaluation was not conducted.

Findings:

The information provided meets the requirements for Environmental Soil Resource information requirements for Coal Processing Plants Not Located Within the Permit Area of a Mine.

OPERATION PLAN

TOPSOIL AND SUBSOIL

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

Analysis:

Topsoil Removal and Storage

The disturbed area will increase from 60.94 acres to 74.46 acres (MRP, Sections 645-301-212 and R645-301-242).

The application is described in Appendix P of the MRP and is illustrated on Plate 1A. The activity will include mechanically removing coal fines and topsoil from the zone of heavy deposition (3.84 acres) and adding the salvaged topsoil (6 in. removal depth) to Topsoil Pile A. (Deposition is shown in App. P, Figure 1.) Areas of lesser coal fine accumulation with have coal fines removed by vacuuming, i.e. north of sediment pond B shown on Plate 1A. Sediment pond B will be replaced with a larger pond, G-1. In addition, a short segment of road PR-5 will be graveled and treated with magnesium chloride and widen the coal storage area and create a 150 ft. drop zone (for coal fines).

The Wildcat site currently has a deficit of 32,000 yd^3 of topsoil to achieve the goal of six inches topsoil replacement depth over the 61 acres (Sec. R645-301-224 and R645-301-240 "Soil Testing and Preparation"). Salvage and protection of six inches of topsoil from the mechanical clean-up area shown on Plate 1-A (the zone of heaviest deposition) will provide 3,000 cu yds towards this deficit (R645-301-212).

The existing topsoil stockpiles are located on the west, south and north perimeters of the disturbed area. Plate 13 illustrates the existing topsoil storage piles (certified by David Hibbs, a Professional Engineer, in 2010). Section R645-301-212 and Plate 13 indicate that there is currently of 17,000 yd^3 stockpiled for reclamation. The prevailing winds are from west to east. Topsoil piles E and B are combined and upwind of the site. Topsoil Pile A is located southeast of the coal stockpile and may be affected by wind blow coal fines. The area of topsoil pile A will increase to 0.83 acres and will hold 3,800 cu yds. A note on Plate 13 states that the expanded pile A will be surveyed to provide an as-built map.

The topsoil stockpile will be roughened and seeded with the interim mix described in App. P, Figure 3. Wood fiber mulch and tackifier will be applied (App. P. Item 4). The interim mix includes Triticale, sterile rye, which acts as a cover crop in the first year and a standing mulch in the second year after seeding. The interim mix includes both warm and cold season grasses and should improve our understanding of species that are successful and should be included in the final mix. The topsoil will be protected by a berm, ditch, and excelsior logs.

The embankment of pond G (see Plate 3G) will be constructed of subsoil. The crest and outer slopes will be seeded with the interim mix.

Historical Information

Topsoil Stockpiles

Topsoil was salvaged from 20 acres of the site in **1984** and placed in the topsoil stockpiles (Plates, 1 and 13). Stockpiles were consolidated in 1994 (due to coal fine accumulation on the stockpiles located on the east side of the coal stockpile) and pile B now contains all of the soil formerly in B, C, and D. Relocated stockpile B was seeded in the fall of 1994 and now contains 285,810 yd^3. Grab samples were taken from stockpiled soil in 1988 (R645-301-212, p 2-2 and Appendix D). This analytical information provides valuable information on the quality of the pre-existing surface soil. Topsoil has not been salvaged from the ASCA areas shown on Plate 2 (Sec. R645-301-212 p. 2-2).

The topsoil was reseeded in 1989 and 1990 (1989 Correspondence folders, memo from Henry Sauer dated April 25, 1989 and January 23, 1990) using a modified interim mix (memo from Lynn Kunzler dated November 17, 1989).

MRP Sec. R645-301-212, p. 2-3 describes transfer of topsoil piles B, C, and D to the west side of Wildcat for protection against wind blown coal fines (in 1994). The transferred topsoil was collectively designated topsoil stockpile B and placed adjacent to existing topsoil stockpile E. The stockpile was seeded in 1994 with an interim seed mix described on page 2-4. The ground exposed by removal of the stockpiles B, C, D was drill seeded with the mixture described on page 2-4. New topsoil pile B was reseeded in December 2002. Topsoil A was recently reseeded in June 2002 (see inspection reports).

Topsoil Substitutes and Supplements

Stipulation UMC 817.22-(1)-(HS) of the 1989 Technical Analysis required the Permittee to establish test plots to determine the suitability of the fill as substitute topsoil. The Permittee established four plots in 1989 for this purpose (Sec. R645-301-212 p 2-6, and Sec. R645-301-224).

Revegetation test plots A, B, C, D, established in 1989 on fill slopes, are located on Plate 1, see deficiency written under R645-301-121.200. The information in the files and the MRP appendices D and N reveals the following:

- Spoil samples from the four plots were analyzed by Utah State University Plant & Water Analysis Lab in December 1988, analyses were received by the Division on February 15, 1989 (Incoming File).
- Spoil plots were ripped to a depth of six inches and 1 Ton/acre alfalfa hay was incorporated to the same depth (MRP Appendices D), this tilling and mulching with straw was confirmed by Division Inspection Reports dated November 2, 1989 and December 19, 1989 (Appendix N).

- Spoil plots may have been left rough with pitting (MRP, Appendix D) and may have been fertilized with 40 lbs K20; 60 lbs P2O5; and 60 lbs N (as Urea: ½ in Fall of 1989 and ½ in Spring of 1990 (MRP, Appendix D).
- Spoil plots were hand broadcast with a **modified** version of the interim seed mix decribed on page 2-4 (December 19, 1989 Inspection Report). The approved modification was to delete Needle and Thread Grass and all shrub species and to include *Elymus cinereus* Basin Wildrye (3 lbs/acre) and *Agropyron trachycaulum* Slender wheatgrass (2.5 lbs/ac) (Lynn Kunzler, Memo to file dated November 17, 1989).
- The MRP describes in Appendices D and N a monitoring program for the spoil plots. The plots were to have been monitored in years 1, 2, 3, 5, 9, and 10.
- Spoil plots were surveyed in 1991, two years after seeding, by Patrick Collins (App. N). The application states that spoil plots will be re-evaluated in 2006.

The 1991 survey report (1991, Appendix N) shows that all the plots were weedy and many of the seeded species were not present. Plot B showed the most positive result with 30% of its 52% cover attributed to the seeded grasses. Plot B is near the substation, east of the railroad tracks. The Division biologist (Jerriann Ernstsen) briefly examined Plot B during a field visit (January 30, 2003) and the plot was still dominated by grasses (species unidentified) and without shrubs. Photographs taken of the test plots on June 23, 2005 are in the photo database.

1988 samples of the spoils that were taken in six inch depth increments shed some light on the success of spoil plot B vegetation. Spoil plot B soils are loam in texture with pH values between 8.0 and 8.3, Electrical Conductivity values between 3.3 mmhos/cm decreasing to 0.9 mmhos/cm in the profile; and Sodium Adsorption Ratio (SAR) values from 1.3 falling to 0.4 within the profile. Spoil Plot B had the most desirable characteristics of the spoils sampled. Although spoil Plot A soils were also low in SAR, they were more sandy and would have had less water holding ability in the drought years after the seeding, described by Mr. Collins 1991 survey. Spoil Plots D and E both are loam texture, but have EC values increasing down the profile to a high value of 4.0 mmhos/cm for spoil D and 3.0 for spoil E. The SAR values for spoil plots D & E are correspondingly high (from 2.8 to 6.6 for spoil D and from 1.6 to 8.5 for spoil E).

In addition to the spoil plots, there four topsoil testplots were established on the new topsoil pile B (adjacent to pile E, see Sec. R645-301-2224 , p. 2-8), as part of the commitment stated on page 2-8 of the original plan to implement test plots if the spoil plots were unsuccessful. These test plots were seeded in the fall of 1994 and evaluated once in 1997 and will not be revisited. Mr. Glasson provided the Division with a copy of the 1997 evaluation of these test plots (incoming folder 3/11/03). The test plots were eliminated in 2000, when the surface of the new topsoil pile B was reseeded. The treatments on these test plots were

- irrigation vs. no irrigation;
- incorporation of 3 to 4 tons alfalfa hay vs 1 ton alfalfa hay;

- 1 ton alfalfa hay incorporated and 1.5 tons straw anchored with netting vs. 1 ton alfalfa hay incorporated and 1.5 tons oat or barley straw anchored with mesh and staples.

According to Mr. Collins in his July 1997 Evaluation of the Test Plots, conducted 2 ½ years after seeding (Division 2003 Incoming Record 0001):

- Excluding forbs which were all weedy, the percent cover ranged from 38.75% to 43.33%.
- Seeded *Kochia prostrata* (prostrate kochia) and *Agropyron cristatum* (Fairway crested wheatgrass) accounted for most of the cover.
- Mulch incorporation at 3 – 4 Tons/ac greatly increased establishment of Kochia prostrata (a woody shrub) at the expense of grasses. This trend was also noted at lower levels of mulch incorporation.
- Irrigated plots favored grasses.
- Fairway crested wheatgrass (an introduced species) did much better than the native grasses and although it did not exclude the natives, may have created competition limiting their establishment.

The plan provides some some parameters to be tested in future plots (page 2-8): native and local seed, different fertilizing techniques (including no fertilizer) and different seedbed preparation. The 1997 Collins analysis suggests that Fairway Crested wheat seed should be eliminated from the interim seed mix in order to encourage greater diversity in the establishment of grasses.

The Division concurs with Mr. Collins recommendation of removing Fairway crested wheatgrass from the interim seed mix and eliminating the incorporation of alfalfa hay and surface straw. The Division would also suggest the following techniques be evaluated in future seeding activity: cover the seed by raking to increase shrub germination, employ wood-fiber hydromulch, eliminate fertilizer, reduce mulch to 1 T/ac, and change the timing of seeding to late summer.

The following information was requested in the deficiencies written for Task 2966 but not received with this Division Order response. In accordance with R645-301-230 and -121.100, the following will be requested during the next mid-term review:

> "Appendix N should include a copy of Lynn Kunzler's memo dated November 17, 1989 which indicates that the seed mix reported in Appendix N, Table 9 was not seeded, but was modified with approval. The mix that was applied to the spoil pile plots had no shrub seed and did not include Stipa comata, but did include Elymeus cinereus (Basin wildrye) and Agropyron trachycaulum (slender wheatgrass). •Section R645-301-224, p. 2-9 states that a second quantitative evaluation of fill slopes will occur in 2006. Please discuss the results and provide the location of the 2006 evaluation. •Appendix N should include the 1997 Topsoil Test plot evaluations conducted by Patrick Collins. If the Permittee can not locate their copy, an electronic copy was filed with the Division as 2003\ Incoming\0001.pdf . • Section R645-301-224 of the application should state that

the 1994 test plots were evaluated in 1997 and should provide a location for the results of the evaluation. Further the plan should state that the test plots were eliminated in 2000, when the surface of the new topsoil pile B was reseeded and the plan should provide the interim mix used in 2000 on the topsoil pile B."

Findings:

The information provided meets the minimum requirements for Coal Processing Plants Not Located Within the Permit Area of a Mine.

SPOIL AND WASTE MATERIALS

Regulatory Reference: 30 CFR Sec. 701.5, 784.19, 784.25, 817.71, 817.72, 817.73, 817.74, 817.81, 817.83, 817.84, 817.87, 817.89; R645-100-200, -301-210, -301-211, -301-212, -301-412, -301-512, -301-513, -301-514, -301-521, -301-526, -301-528, -301-535, -301-536, -301-542, -301-553, -301-745, -301-746, -301-747.

Analysis:

Coal processing waste was used (along with subsoils) to create a foundation for the coal stockpiles (R645-301-212 p 2-2; R645-301-512.230 p 5-7). Appendix C, the 1982 Soil and Foundation Investigation conducted by Rollins, Brown and Gunnell, Inc., states on page 2 that in the vicinity of the truck dump and the coal pile there is between 9 and 12 feet of coal beneath the ground surface. Chapter 5, MRP Section R645-301-512.230 states that 10,000 yd^3 of refuse material has been used as foundation fill.

Refuse Piles

Approximately 44,500 yd^3 of refuse are in the refuse pile (Plate 1 and R645-301-512.230, p 5-8). Refuse (boney) is stored on the west side of the railroad tracks (Plate 1). This refuse was sampled once in 1994 as described in Sec. R645-301-711.100. The leachate analysis results are found in the 1994 Annual Reports.

Section 645-301-512.230 discusses the use of coal mine waste as substitute fill during operations, as well as separate handling and final disposal of the coal mine waste under four feet of subsoil.

Findings:

The information provided meets the minimum requirements for Coal Processing Plants Not Located Within the Permit Area of a Mine.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 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.

Analysis:

General

Acid- and Toxic-Forming Materials and Underground Development Waste

Acid and Toxic Forming Materials sampling information is found on p. 7-5 in Sec. R645-301-711.100. The analysis of the 1994 leachate from coal and refuse by Commercial Testing and Engineering Co. is found in the 1994 Annual Report.

The analysis of the refuse material (soil) by Utah State University Soil Plant and Water Analysis Laboratory is included as Attachment 2 of Appendix J (Probable Hydrologic Consequences). These analyses indicate that there is 0.53% sulfur and 0.8 % CaCo3 in the coal and 1.02% sulfur and 9.5% CaCO3 in the boney. (The methods used were not disclosed and so the following calculations that are based on the relative concentrations of sulfur and carbonate may not accurately reflect the acid base accounting.) Based upon these 1988 reports, the Division calculates that more than 16 Tons of calcium carbonate/1000 tons coal would required to neutralize the total sulfur in the coal. More than 32 tons CaCO3/1000 tons of boney would be required to neutralize the sulfur in the boney. The a base potential of Standard Laboratories, Inc., analyzed a separate sample in 1985 and reported 0.04% pyritic sulfur (found in App. J). Based upon the pyretic sulfur content, only1.25 tons CaCO3 equivalents/1000 tons waste would be required to neutralize the pyretic sulfur in the waste.

Two samples of the refuse material (soil) taken in 2004 were sent to Brigham Young University Soil and Plant Analysis Laboratory is located in Appendix D. These samples indicate there is adequate carbonate in the material to neutralize the potential acidity. The samples also report high values for selenium, this fact should be noted in the selection of vegetation. These sample analyses could not be located in the May 2006 reformatted MRP.

Section 645-301-512.230 discusses the use of coal mine waste as substitute fill during operations, as well as separate handling and final disposal of the coal mine waste in the refuse pile under four feet of subsoil.

Findings:

The information provided meets the minimum requirements for Coal Processing Plants Not Located Within the Permit Area of a Mine.

SUPPORT FACILITIES AND UTILITY INSTALLATIONS

Regulatory Reference: 30 CFR Sec. 784.30, 817.180, 817.181; R645-301-526.

Analysis:

Coal fines or fugitive dust have accumulated to depths greater than three inches on adjacent, undisturbed soils within the permit area (App. P, Figure 1 and Patrick Collins report March 2003 included with submittal AM03A). These coal fines may have been from any one of the six existing coal stockpiles on site at the time.

The Division Order, dated December 9, 2004 (2004/Outgoing/0026.pdf), describes the effect of fugitive dust on plants and wildlife and requires that the Permittee make three adjustments to their operations plan in accordance with R645-301-526.220 *et seq* to reduce wind blown deposition of coal fines, as follows:

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In response to item 1, Appendix P describes gravel and magnesium chloride improvements to "the truck haul portion" of road PR-5. (Primary roads are identified on Plate 1A.) Appendix P also describes construction of sediment pond G to retain coal fines within the

permit area. MRP Section R645-301-423.200 describes maintenance of coal stockpile(s) moisture at 6% to reduce fugitive dust.

In response to item 2, Appendix P describes removal of coal fines from 5.43 acres using scraping equipment or by vacuuming (App. P, and Sec. R645-301-423.200, p. 4-10 and R645-301-212, p. 2-4). Vacuuming has been found to be very disruptive to undisturbed soils and is in itself a disturbance. However, vacuuming, followed by seeding, may be acceptable in this instance, on less than two acres, to avoid the greater disturbance that would be caused by the destruction of existing woody vegetation. See deficiency written under R645-301-352 *et al.*

In response to item 3, this amendment describes Appendix P states that the site will be monitored and photographed quarterly. However, the monitoring commitment should also include the general location for monitoring, the general approach of monitoring (depth assessment and location on a map) and a statement that monitoring results will be included with the annual report.

A copy of the most recent Air Quality approval order DAQE AN113007-04 is found in Appendix A Part 13. Applications of water or chemicals are also required by the December 3, 2004 Approval Order (DAQE-AN0113007-04), General Condition #15. A throughput of up to 5.5 MT annually is approved (item #11), as is a combined total storage pile area of 20 acres (item #19).

Section R645-301-423.200 refers to Appendix B for the fugitive dust control plan. The dust control plan noted in Appendix B is the Air Quality Order referred to above, which relies upon the application of moisture to stockpiles and open disturbed areas as well as a limited haul road length (0.21 miles) and vehicle speed to control fugitive dust. The water sprays must be applied when monitoring indicates greater than 20% opacity. Monitoring is the responsibility of the Permittee.

Findings:

This amendment is recommended for approval with the following understanding: The Permittee has described a quarterly monitoring plan to monitor the wind blown coal fine deposition on adjacent undisturbed soils (Appendix P), however, the MRP should state that the monitoring results will be included in the annual report and that the general approach of monitoring (depth assessment and location on a map) will be stated in the annual reporting.

RECLAMATION PLAN

GENERAL REQUIREMENTS

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR Sec. 784.13, 784.14, 784.15, 784.16, 784.17, 784.18, 784.19, 784.20, 784.21, 784.22, 784.23, 784.24, 784.25, 784.26; R645-301-231, -301-233, -301-322, -301-323, -301-331, -301-333, -301-341, -301-342, -301-411, -301-412, -301-422, -301-512, -301-513, -301-521, -301-522, -301-525, -301-526, -301-527, -301-528, -301-529, -301-531, -301-533, -301-534, -301-536, -301-537, -301-542, -301-623, -301-624, -301-625, -301-626, -301-631, -301-632, -301-731, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-732, -301-733, -301-746, -301-764, -301-830.

Analysis:

Reclamation techniques are being investigated at the site. Substitute topsoil plots have been in existence since 1989. (Appendix N). In 1997 by Patrick Collins of Mt. Nebo Scientific evaluated the topsoil test plots installed on Topsoil Pile B in 1994 (see discussion under Operation Plan Topsoil and Subsoil).

Findings:

The information provided meets the minimum requirements for Coal Processing Plants Not Located Within the Permit Area of a Mine. The Division expects to continue refining the reclamation plan for this site in cooperation with the Permittee.

BACKFILLING AND GRADING

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

Analysis:

General

The plan calls for two phase reclamation (MRP, Section R645-301-240). Phase 1 includes removal of sediment ponds B and E and grading the site to drain to ponds A, C, and D, topsoiling and seeding. Tables II-1 and II-1A provide a cut and fill balance from cross section locations shown on Plate 14. Table II-1 indicates 74,000 cu yds of material will be moved. Phase I reclamation will include removal of ponds G and E. Phase II reclamation involves removal of sediment ponds A, C, D.

Section R645-301-512.230 p. 5-8 states that all refuse used as construction fill will be removed and returned to the waste disposal site. Section R645-301-512.230 also describes the burial of all coal mine waste underneath four feet of soil.

The fill will be compacted (Sec. R645-301-212), but the last few lifts will be left loose for a depth of four feet to eliminate the need for ripping (Sec. R645-301-240).

Findings:

The information provided meets the backfilling and grading requirements for Coal Processing Plants Not Located Within the Permit Area of a Mine.

TOPSOIL AND SUBSOIL

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

Analysis:

Redistribution

The reclamation plan is described in Sections R645-301-240 and R645-301-542.400. Reclamation costs are provided in Appendix B. Within the 100 acre permit area, approximately 75 acres will be disturbed. Of the disturbed acres, 36.1 acres were previously described as pre-SMCRA (Section 4, pg 3-4, incorporated May 17, 2005), although no differentiation was made in the expansion application. The reclamation plan describes replacement of six inches of topsoil over all disturbed areas except ASCA's, areas where topsoil was not removed (topsoil storage areas), the RR tracks, the upper and lower permanent impoundment cells, and diversion UD-1 (Section R645-301-212 and shown on Plate 2A). Acreage to be topsoiled and seeded is 74.46 acres (Section R645-301-212, "Backfilling, Grading, and Soil Replacement and Stabilization" and Section R645-301-240, "Mulching Techniques."

Section R645-301-240 p. 2-23 indicates stockpiled topsoil will be sampled for fertility and amended as recommended by the regulatory authority. R645-301-243 indicates soil nutrients will be applied as needed.

An interim seed mix is provided in Section R645-301-240, which is based upon data observed from the new reference area (App. I Supplement), on the south boundary of the site. The final seed mix table is also provided, however, this mix will be reviewed just prior to reclamation, for correlation with successful species establishment on the spoil and topsoil test plots and topsoil stockpiles (MRP, Section R645-301-240, "Measures to Determine Success."

Topsoil placement will occur in the Fall (R645-301-240). Topsoil will be replaced using dump trucks and graders. As mentioned in Sec. R645-301-240, a loose application of fill should eliminate the requirement for ripping (scarification) of the graded fill prior to topsoil placement. The topsoiled surface will be roughened with gouging. Seed will be applied to all disturbed acres (Section R645-301-240). Plate 9 illustrates the disturbed areas to be seeded, but was not revised with this application.

Findings:

The information provided meets the minimum topsoil and subsoil reclamation requirements for Coal Processing Plants Not Located Within the Permit Area of a Mine.

STABILIZATION OF SURFACE AREAS

Regulatory Reference: 30 CFR Sec. 817.95; R645-301-244.

Analysis:

Reclaimed areas will be gouged as described in Sec. R645-301-240, "Planting and Seeding Methods," then hydroseeded and hydromulched. Gouges are described as 18 in. deep x 2 - 3 ft. wide, spaced 6 – 10 feet apart. Existing Plate 10 illustrates the final slope as 20h: 1v (about 4%). **The effectiveness of surface roughening (gouges) as described in Section R645-301-240 is questionable on such a gentle slope.** The problems with creating gouges in this manner are that the gouges will be deeper than replaced topsoil and the topsoil that is removed from the gouge becomes a mound adjacent to the gouge. The gouge has steep sides that will not retain seed. The gouges are spaced too far apart. **This reviewer would prefer that the operator leave the graded site randomly roughened by ripping along the contour to a depth of 12 inches.**

All seeded areas (illustrated on Plate 9) will be treated with hydromulch (1 Ton/ac) and tackifier to stabilize the regraded soil (Sec.R645-301-240, "Mulching Techniques").

Riprap may be used for soil stability, presumably along drainages (Sec. R645-301-242.320).

Repair of erosion is described in Sec. R645-301-212, "Backfilling, Grading, and Soil Replacement and Stabilization.".

Findings:

The information provided meets the minimum reclamation surface area stabilization requirements for Coal Processing Plants Not Located Within the Permit Area of a Mine.

REQUIREMENTS FOR PERMITS FOR SPECIAL CATEGORIES OF MINING

COAL PREPARATION PLANTS NOT LOCATED WITHIN THE PERMIT AREA OF A MINE

Regulatory Reference: 30 CFR Sec. 785.21, 827; R645-302-260, et seq.

Analysis:

This site falls under the requirements of the Utah Rules for Coal Processing Plants Not Located Within the Permit Area of a Mine, R645-302-260.

Findings:

Improvements to the application are written in the form of deficiencies under each Rule cited in this document.

RECOMMENDATIONS:

The application is recommended for approval with the following deficiency or condition:

645-301-423.200, The Permittee has described a quarterly monitoring plan to monitor the wind blown coal fine deposition on adjacent undisturbed soils (Appendix P), however, the MRP should state that the monitoring results will be included in the annual report and that the general approach of monitoring (depth assessment and location on a map) will be stated in the annual reporting.

In addition, the effectiveness of surface roughening (gouges) as described in Section R645-301-240 is questionable on such a gentle slope. This reviewer would prefer that the operator leave the graded site randomly roughened by ripping along the contour to a depth of 12 inches. This issue might be addressed at a later date.