

TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

March 24, 2010

TO: Internal File

THRU: James D. Smith, Team Lead *DS 06 Apr 2010*

FROM: Priscilla Burton, Environmental Scientist III, Soils. *PWB by SR5*

RE: Lila Canyon Design Changes, Utah American Energy Inc., Horse Canyon Mine, C/007/0013, Task #3498

SUMMARY:

Design changes were received on March 2, 2010 in response to a bullet list issued attached to an abatement extension request signed by John Baza on February 4, 2010 (2010 Outgoing document 0005.pdf). Design changes were previously reviewed as Tasks 3017 and 3351. Construction began at the site in December 2008 and has been a hybrid of that described in the MRP and that described in the July 2008 amendment. Inspection Report #2019 describes the progress of construction as of May 2009. N10045 was issued September 2009 for topsoil/subsoil handling issues.

The new designs are described in Appendix 5-4 and 5-7 of the amendment and call for increasing disturbed area from 25.3 acres to 34 acres and a 50% reduction in the islands of undisturbed land within the disturbed acres from 17.3 acres down to 8.7. The Permittee has opted to preserve 8.7 acres of undisturbed landscape within the disturbed area perimeter and accepts responsibility for protection of the topsoil resource that lies within the disturbed area boundary, but which is not salvaged.

The expansion will accommodate a larger coal stockpile as shown on Plate 5-8. The design changes call for soil salvage from only 2.65 additional acres (Available Soil Resources Table, Chap 2. pg. 9), although the disturbed area will increase by 8.6 acres. The topsoil salvaged will increase to 66,000 loose cubic yards.

Based on my review of the soils information provided, the application is recommended for approval pending the following:

A calculation of the number of acres remaining to be salvaged in phase 2 construction was requested for abatement of N10045 and could be tallied from Plate 1-1 of the Topsoil and Movement Construction Record and to be provided with the annual report.

The topsoil stockpile will be hydroseeded and cryptogams applied with hydromulch prior to April 14, 2010.

Information received from the 10/28/2009 analysis appears incomplete. It is missing the % sulfur and the calculated acid potential in Tons CaCO₃.

TECHNICAL ANALYSIS:

ENVIRONMENTAL RESOURCE INFORMATION

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

PERMIT AREA

Regulatory Requirements: 30 CFR 783.12; R645-301-521.

Analysis:

The 42.6 acre disturbed area perimeter boundary is stated on page 13, Chapter 1 and outlined on Plate 5-2. This entire perimeter of the disturbed area has been bonded (Section 521.163 and Ex. B Reclamation Agreement), but new designs call for the disturbance of only 33.9 acres within that perimeter (an increase of 8.6 acres from the previous design). The new design reduces by 50% the acreage of undisturbed land within the perimeter boundary from 17.3 acres down to 8.7. This undisturbed land is on the southern perimeter boundary to the east, south and west of the coal stockpile, which is to be enlarged from 27,000 tons to 200,000 tons of open storage (Chap 5, pg. 13).

Findings:

The information provided meets the requirements for permit area.

OPERATION PLAN

TOPSOIL AND SUBSOIL

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

Analysis:

This design change amendment (Task 3498) replaces the text of Chapter 2, but only makes changes to pages 14, 16, 17, & 18. Plates 2-1 and 2-3 show a slight change in permit boundary. Plate 2-4 was deleted. Plate 2-3 illustrates the new mine site configuration and illustrates the coal mine waste storage location. The new configuration increases the disturbed acreage and results in increased topsoil salvage and greater volume in the topsoil stockpile, as described below.

The disturbed area perimeter encloses 42.6 acres (Section 232.100, Section 411.110, Section 542.200, Appendix 5-8). The 42.6 acre permit area is outlined on Plate 5-2. The entire permit area is described in bonding documents (Section 521.163), however, only 33.9 acres will be disturbed, leaving 8.7 acres of undisturbed islands within the disturbed area boundary, down from 17.3 acres previously described as undisturbed. The remaining undisturbed land is shown on Plate 5-2 on the southern perimeter boundary to the east, south and west of the coal stockpile, which is to be enlarged from 27,000 tons to 200,000 tons of open coal storage (Chap 5, pg. 13).

[NOTE: The Available Soil Resources Table (Section 232.100) indicates that there are potentially 48.23 acres of surface disturbance. This table was taken from the soil survey and does not accurately reflect UEI's intention to include 42.6 acres of disturbance within the permit area boundary.]

Plate 5-2 presents the final site development plan, but does not reflect the present interim site conditions. There will be two phases of topsoil removal (Section R645-301-232.600). The first phase was completed in 2009. The "Topsoil and Movement and Construction Record" for December 2008 – February 2009 was attached to this amendment. The report indicates that as of Feb 2009, 40,000 cubic yards had been placed in the topsoil stockpile. The report also provides a figure dated February 2010 showing the projected and current disturbed area boundary. Areas of Phase 2 topsoil and subsoil salvage will occur within the are between the projected and current disturbed area boundaries and includes areas around the truck loop, the bathhouse and office, the warehouse storage yard and coal stockpiles. A calculation of the number of acres remaining to be salvaged in Phase 2 construction could be tallied from Plate 1-1 of the Topsoil and Movement Construction Record and provided to the Division with the annual report.

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For the purposes of removal, Section 231.100 of the MRP- PART B defines topsoil as all soil from the surface down to eighteen inches. Plate 2-3 Soil Salvage and Replacement provides guidance for the topsoil removal, illustrating removal of eighteen inches of topsoil from the central and northwest portion of the disturbed area; twelve to eight inches being removed from the roadway; twelve to eighteen inches removed from the sediment pond location; and eight to eighteen inches removed from beneath the coal stockpile and coal storage bin.

Since, vegetation and soils of undisturbed lands will likely be subject to impacts from fugitive dust and coal fines blowing from the increased coal stockpile acreage, and since the soil type to be impacted is DSH and XBS, that has 18 and 12 inches of salvageable soils, respectively, the Division advised topsoil salvage from all acreage within the disturbed area boundary. However, the Permittee has chosen to preserve the landscape unless coal fine deposition occurs. UEI accepts responsibility for protection of the topsoil resource within the disturbed area boundary, but which is not salvaged. The undisturbed islands will be monitored as described on page 16, Chap. 2. Undisturbed Islands will be marked with signs (Section 231.100) and protected with rock barriers and incidental rock distribution (Plate 5-2).

The Available Soil Resources Table in Section 232.100 lists 27.95 acres of topsoil salvage. The difference between the area disturbed (33.9 acres) and the area of soil salvage (27.95 acres) is 5.95 acres, which represents the acreage of rocky slopes beneath the portal bench that are inaccessible to soil salvage (Section 232.710). However, subsoil from these slopes was salvaged and placed against the warehouse pad outslopes in September 2009 (see photographs and Inspection Report #2152).

Soils will be removed from all disturbed areas including stony areas to a depth of eighteen inches or to shale (Sections 232.100 and 232.300) with the following exceptions (Section 232.700):

- The RBL and RBT soils on steep rocky slopes within the disturbed area below and between the conveyor and coal storage pile (completed in late fall 2009).
- The two bents to be constructed for the conveyor (completed in late fall 2009).
- The area of topsoil storage (topsoil will be removed from the access road to and around the topsoil pile, but not from beneath the topsoil pile (Section 232.100).

UEI will install an enclosed conveyor (Section 232.710) in an attempt to keep the native soils (beneath the conveyor) free of coal accumulations. Installation of jersey barriers will protect the slope from encroachment by the coal stockpile. UEI will monitor the undisturbed soils quarterly for coal fine deposition (Section 234.220 MRP – Part B, see also discussion under Support Facilities in this TA).

Soils to be salvaged are estimated to be 56,000 **bank** CY (Table of Available Soil Resources in Section 232.100). The table divides salvageable soil by map unit type. Soils will

be removed from the 27.95 acres to be disturbed with a crawler-tractor, grader, front-end loader, and/or trackhoe.

To protect the soil resource, UEI has committed to handling the soils at an optimum moisture content, when the soils are loose and friable (Section 231.100), adding moisture or allowing the soils to dry as needed.

There will be a qualified soil scientist to oversee the soil salvage, construction of subsoil storage site, and reclamation of the site (Sections 231.100 and 232.100). UEI further commits in Section 232.500 to maintain records of materials removed and placement of materials either in the topsoil storage pile or in the fill. Soil pedestals will be left to verify soil removal depths (Section 232.500).

Storage of the approximately 66,000 **loose** cubic yards of topsoil (loose cubic yards is equal to 56,000 bank cubic yards multiplied by the swell factor of 1.18) will be in a stockpile (Section 232.100 Available Soil Resources Table) with the approximate dimensions 31 ft high X 350 ft long X 250 ft wide (Section 232.100), with 2h:1v side slopes. Figure 1 and Plate 5-2 provide information on proposed construction of the topsoil stockpile.

Topsoil stockpile will be an Alternate Sediment Control Area (ASCA) protected from upstream flow by drainage ditches (design shown in Appendix 7-4). The stockpile will be loosely piled with a rough, irregular, pitted surface retain moisture and reduce erosion (Sections 231.100 and 231.400). The Division notes that this practice is described in the Practical Guide to Reclamation (DOGM, 2000), available at <http://dogm.nr.state.ut.us>.

The topsoil will be retained in place with the use of berm/ditches or silt fences surrounding the pile. In accordance with the extension to the abatement plan (2010 Outgoing document 0011.pdf), fresh cryptogams will be collected and the stockpile will be mulched and seeded on or before April 14, 2010 using the mix in Table 3-4 (Section 231.400). Table 3-4 is a mix of native grasses, forbs and shrubs. Section 231.100 and Section 231.400 indicate that if seeding does not immediately follow topsoil pile construction, the pile will be roughened again immediately prior to seeding. According the Mr. Marshall the north side of the topsoil stockpile is at its final configuration, and further additions to the pile will occur to the south end of the pile. The north side of the topsoil pile was roughened in the spring of 2009.

Subsoils

The Division received comments on the need for soil-borrow areas. There appeared to be no need to develop a soil borrow area at the time of initial permitting, because the average replacement depth of topsoil was 15 inches and the Order 1 Soil Survey suggested subsoils were also suitable for plant growth down to a depth of 48 inches (Appendix 2-3).

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This amendment increases the disturbed area from 25 to 34 acres. Consequently, the replacement topsoil depth will be reduced to one foot. (56,000 bank cubic yards/ 34 acres). Subsoils may be recovered from beneath the office pad parking area to increase the rooting depth at reclamation. These subsoils are to be protected during operations by asphalt, concrete, or gravel over an impervious membrane (Section 232.500). Section 241 of the MRP describes sampling and testing of graded subsoil materials prior to final topsoil application. Section 232.500 further B indicates that upon reclamation, subsoils found to be contaminated with oil, grease, or salts through visual evaluation will be hauled to a landfill site.

Findings:

The information provided meets the requirements of the soil handling regulations. A calculation of the number of acres remaining to be salvaged in Phase 2 construction could be tallied from Plate 1-1 of the Topsoil and Movement Construction Record and provided to the Division with the annual report. The topsoil stockpile will be hydroseeded and cryptogams applied with hydromulch prior to April 14, 2010.

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:

Disposal Of Noncoal Mine Wastes

The PAP indicates in Section 542.640 that a minimum of two feet of cover will be placed over sand and gravel road surfacing materials and asphalt will be disposed off-site. Concrete will be buried by four feet of cover (Section 542.741) in the location shown on Plate 5-6.

Refuse Piles

Two rock slope tunnels will be constructed (Section 520). The permanent location of the mine waste from rock slope development and the location for the temporary storage of mine development waste is shown on Plate 5-2. Section 520 and 528.300 indicate that "a few hundred tons" of underground development waste, may be stored on site to be blended with product.

The warehouse and coal stockpile pads were mapped as XBS (Strych extremely bouldery, sandy loam 10 – 45% slopes) on Plate 2-3. This map unit has approximately 60+ inches of subsoil available, as represented by the pedon description of sample site LC3 in App.

2-3. This subsoil at the base of the material storage and the coal storage pads will not be re-exposed during final reclamation.

Cut Fill estimates dated November 2007 were provided with the application. These estimates describe using excess cut from the haul road to construct the warehouse pad base (Sheets 7& 8). Appendix 5-7 describes the placement of 28,000 cubic yards of excavated rock material in 24 inch lifts to be compacted to form a portion of the warehouse pad. Appendix 5-5 provides the reclaimed slope profile and documentation of slope stability for the refuse pad construction. The revision of Appendix 5-7 retains the requirement for covering the coal mine waste/refuse/rock slope material with four feet of combined subsoil and topsoil, under the heading "Spreading and Compaction."

On September 9, 2009, Mr. Marshall indicated that the coal pad was contains sandstone from the rock slopes and shale recovered from the pond. The warehouse pad contains sandstone and mudstone. The chemical analysis of the rock slope material is provided in Appendix 6-2 for the following sampling dates: 4/24/2009, 7/20/2009, 10/28/2009, 1/15/2010. (Information received from the 10/28/2009 analysis appears incomplete. It is missing the % sulfur and the calculated acid potential in Tons CaCO₃.)

Findings:

New information provided in Appendix 5-5 was requested for abatement of N10045. A Division engineer should review this reclaimed profile and stability information for adequacy.

Information received from the 10/28/2009 analysis appears incomplete. It is missing the % sulfur and the calculated acid potential in Tons CaCO₃.

RECOMMENDATIONS:

New information provided in Appendix 5-5 was requested for abatement of N10045. A Division engineer should review this reclaimed profile and stability information for adequacy.