

TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

OK

July 28, 2004

TO: Internal File

THRU: Joe Helfrich, Team Lead 

FROM: James D. Smith, Environmental Scientist 

RE: South Crandall Lease Revision, Andalex Resources, Inc., Crandall Canyon Mine, C/015/0032, Task # 1945

SUMMARY:

Little Bear Spring in Little Bear Canyon, located adjacent to the South Crandall Canyon Tract, is an important source of water for the Castle Valley Special Services District (CVSSD), supplying 65 percent of the culinary water to the residents of Huntington, Cleveland, and Elmo. It is probably the largest and most consistently flowing spring in the region, and the only water-treatment required before use is chlorination. CVSSD has great concerns about protecting this important water supply from mining related damage. The South Crandall Canyon Coal Lease Tract was deleted from the Mill Fork Tract because of concerns that were raised regarding Little Bear Spring.

The South Crandall Canyon area was reevaluated and was leased to Andalex in June 2003 (lease UTU-78953). Access to the South Crandall Canyon Tract will be through new portals (under construction in 2003) on the south side of Crandall Canyon in fee coal (often referred to as the "Dellenbach" lease) owned by IPA and Andalex. The South Crandall Canyon Tract covers 880 acres.

The proposed amendment should be approved.

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Permittee's Action		DOGM's Action	
Original submittal	09/16/2003		
		ACR Determination	10/07/2003
		Tech Memo – Geology - Task # 1698	11/07/2003
		TA - Task # 1698	11/25/2003
Response to TA - Task # 1698	01/30/2004		
		Tech Memo - Geology - Task # 1826	03/03/2004
		TA - Task # 1826	03/04/2004
Response to TA – Task # 1826	04/05/2004		
		Tech Memo – Geology - Task # 1903	04/30/2004
		TA - Task # 1903	04/30/2004
Response to TA – Task # 1903			
		Tech Memo – Geology - Task # 1945	06/23/2004
		TA - Task # 1945	07/02/2004

TECHNICAL ANALYSIS:

ENVIRONMENTAL RESOURCE INFORMATION

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

GEOLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR 784.22; R645-301-623, -301-724.

Analysis:

There is geologic information for the permit and adjacent areas in the current MRP, including the proposed South Crandall Canyon Tract. Additional geologic information on the South Crandall Canyon Tract has been added. Maps showing geologic information have been updated to include the South Crandall Canyon Tract, including the 40-acre SITLA-PacifiCorp sub lease.

Test borings and coal sampling; coal seams, overburden, and strata

Drill hole and geological information for the South Crandall Canyon Tract has been added on pages 6-5 and 6-5a. HC-4, the only borehole in the South Crandall Canyon tract, provides information on coal seam thicknesses (driller's log in Appendix 6-6).

The lowest coal seam in the Blackhawk Formation is the Hiawatha, characteristically on or just above the Star Point Sandstone. This seam has been mined in the Cottonwood/Wilberg, Deer Creek, Des-Bee-Dove, Huntington #4, and Genwal #1 Mines. The Hiawatha Seam thins to less than 5 feet in the north end of the Cottonwood/Wilberg Mine, but then thickens again to the north. The Hiawatha Seam reaches a thickness of 12 feet in the Crandall Canyon permit area, located mainly north and west of the #1 Mine portal. For the Hiawatha Seam in the South Crandall Canyon Tract, thickness of the coal seam and cover are shown on Plate 5-2 (H), along with the Hiawatha to Blind Canyon interburden thickness. Seam thickness and cover for the Crandall Canyon #1 Mine area are on Plates 6-3 and 6-6.

The Blind Canyon Seam lies approximately 40 to 100 feet above the Hiawatha Seam. The Blind Canyon Seam has been mined in the Deer Creek, Huntington #4, and Des-Bee-Dove Mines, but is too thin to mine economically at the Cottonwood/Wilberg Mines. The Blind Canyon Seam is too thin for economic recovery from the Crandall Canyon #1 Mine, but this seam will be mined in the South Crandall Canyon Tract. For the Blind Canyon Seam in the

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South Crandall Canyon tract, thickness of the coal seam and cover are shown on Plate 5-2 (BC), along with the Hiawatha to Blind Canyon interburden thickness. Plate 5-2 (BC) shows that the seam is just less than 5 feet thick at HC-4 but thickens to the west. Blind Canyon Seam thickness for the Crandall Canyon #1 Mine area is on Plate 6-4.

The Bear Canyon Seam is too thin to mine economically in both the Crandall Canyon #1 Mine and the South Crandall Canyon Tract. Plate 6-5 is the Bear Canyon Seam thickness isopach map for the #1 Mine area. The Bear Canyon Seam is only 2 feet thick in borehole HC-4 (Appendix 6-6), the only borehole in the South Crandall Canyon Tract.

Test Borings and Coal Sampling information (section 6.22.1, pages 6-4 and 6-5) for the Crandall Canyon #1 Mine and South Crandall lease includes coal quality for both the Hiawatha and Blind Canyon Seams. Borehole HC-4 is the source of information for the South Crandall lease. Section 6.22.2 on page 6-5 includes information on coal reserves and on the nature, depth, and thickness of coal seams, rider seams, overburden, and interburden. Appendices 6-1, 6-5, and 6-6 contain additional geologic information.

The Permittee states in the last paragraph on page 6-5a that the thickness of the Blind Canyon Seam is, respectively, 59 and 40 inches at in-mine drill holes DH-1 and DH-2 (these drill holes and coal thicknesses are not shown on Plate 6-4; Plates 5-2 (H) and (BC) indicate a thickness of 56 inches at both drill holes) and 54 and 40 inches in surface drill-holes DH-3 and DH-4. The Permittee has mapped a relatively small area (the text states 60 acres, Plate 6-4 shows approximately 150 acres) where the Blind Canyon Seam has a thickness of 5 feet or more, and indicates the seam is fairly continuous across the property. The Permittee concludes that the Blind Canyon Seam does not contain sufficient coal (approximately 418,000 tons) for economic mining in the vicinity of the #1 Mine. The Blind Canyon Seam will be mined in the South Crandall Canyon Tract, where it is thicker.

Drill-hole locations for the South Crandall Canyon Tract are shown on Plates 5-2 (BC) and 5-2 (H). Reference is made in several places to Plate 5-2, which can be understood to cover 5-2 (H) and 5-2 (BC).

The first paragraph on page 6-6 refers to the State leases only, so the information regarding the coal seams in the State leases is sufficient.

Acid- and toxic-forming materials

For the Crandall Canyon #1 Mine, acid- and toxic-forming characteristics for strata immediately over and under the Hiawatha and Blind Canyon Seams in the #1 Mine area are discussed on pages 6-8 and 6-9. Analysis results for the Hiawatha coal also are discussed on page 6-9. The Permittee has not provided analyses for acid- and toxic-forming characteristics for the Blind Canyon Seam, in either the #1 Mine area or the South Crandall Canyon Tract. The

Permittee states on page 6-9 of the proposed amendment that there is currently no access to unweathered Blind Canyon materials (the cores taken in 1981 at HC-4 are apparently not available for analysis); however, coal and adjacent strata will be analyzed when the rock tunnels reach the Blind Canyon Seam.

Engineering properties - clays and soft rock

According to section 6.24.34 on page 6-9, strata immediately above and below the "seam to be mined" do not contain clays or soft rock. Those statements are based on information in Appendices 6-1 and 6-5 and apply to the Hiawatha Seam only.

The lithology log of HC-4 in Appendix 6-6 shows the thickness of the claystone and shale immediately above and below the Blind Canyon Seam. There is currently no access to unweathered materials for analysis. Engineering properties will be determined after rock tunnels are constructed to the Blind Canyon Seam. The Blind Canyon Seam is not thick enough to allow the leaving of thick layers of coal on the roof and floor, and soft rock in the roof and floor increases the probability that there will be waste rock that will need to be disposed of.

Geologic information pertaining to hydrology (Little Bear Spring in particular)

Little Bear Spring is located adjacent to the South Crandall Canyon Tract, and CVSSD has great concerns about protecting this important water supply from mining related damage. Information on how geology may affect the occurrence, availability, movement, quantity and quality of potentially impacted surface and ground water in the South Crandall Canyon Tract and adjacent areas was studied extensively before the South Crandall Canyon lease was issued. Using these studies, the BLM and the Manti-La Sal National Forest concluded that mining in the South Crandall Canyon Tract has a low potential to disrupt Little Bear Spring, and they signed a FONSI in February 2003. Copies of the reports prepared from these studies are included in the proposed amendment as appendices to Chapter 7, and the appendices number and title are listed on page 6-7a.

Findings:

Geologic Resource Information is sufficient to meet the requirements of the Coal Mining Rules.

HYDROLOGIC RESOURCE INFORMATION

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Analysis:

Baseline Cumulative Impact Area Information

The Division is updating the East Mountain CHIA to incorporate the expansion of the Crandall Canyon Mine into the South Crandall Canyon Lease Tract.

Findings:

Geologic baseline cumulative impact information is sufficient to meet the requirements of the Coal Mining Rules.

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

Analysis:

Coal Resource and Geologic Information Maps

The Hiawatha Seam thickness isopach (Plate 6-3), Blind Canyon Seam thickness isopach (Plate 6-4), Bear Canyon Seam thickness isopach (Plate 6-5), Hiawatha Seam overburden thickness isopach (Plate 6-6), and structure contour map of the top of the Hiawatha Seam (Plate 6-7) do not include the South Crandall Canyon Tract.

Hiawatha and Blind Canyon Seam thickness isopachs for the South Crandall Canyon Tract are on Plates 5-2 (H) and 5-2 (BC), and information on interburden is also listed on these maps. Overburden thickness is shown on Plates 5-2 (H) and 5-2 (BC). Taking into consideration the inherent inaccuracy in the large contour interval needed to map the overburden thickness because of the steep topography, the difference between the Hiawatha and Bear Canyon overburden thicknesses is not significant, so overburden thickness contours are the same on Plates 5-2 (BC) and 5-2 (H).

Subsidence projections for the South Crandall Canyon Tract are on Plates 5-2 (H) and 5-2 (BC). The outcrop and strike and dip of the coal seams in the South Crandall lease are also on these plates. Appendix 6-7 contains a generalized geologic cross-section that parallels the strike of the Mill Fork graben and goes from Rilda Canyon and Mill Fork through the Huntington #4 Mine and Little Bear Spring to Huntington Canyon.

Monitoring and Sampling Location Maps

Drill-hole locations are shown on Plates 5-2 (BC) and 5-2 (H). There are no new water-monitoring points in the South Crandall lease, but the location of Little Bear Spring is on several maps.

Findings:

Maps, plans, and cross sections of resource information are sufficient to meet the requirements of the Coal Mining Rules.

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

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

Analysis:

The Division is updating the East Mountain CHIA to incorporate the expansion of the Crandall Canyon Mine into the South Crandall Canyon Lease Tract.

Findings:

The submittal contains sufficient geologic information for the Division to incorporate the expansion of the Crandall Canyon Mine into the South Crandall Canyon Lease Tract into the East Mountain CHIA.

RECOMMENDATIONS:

The proposed amendment should be approved.