

TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

July 26, 2004

TO: Internal File

FROM: Gregg A. Galecki, Reclamation Specialist III- Hydrology - Team Lead 

RE: Mathis / Summit Creek IBC, Andalex Resources Inc., Centennial Project / Tower Mine, C/007/0019, Task # 1979

SUMMARY:

On May 7, 2004 the Division of Oil, Gas, & Mining (Division) received an application for an Incidental Boundary Change (IBC) for the Centennial Project / Tower Mine. The application was returned to the Mine with deficiencies on June 18, 2004, and resubmitted to the Division on July 2, 2004. The IBC is located in the Mathis tract (20 acres) and Summit Creek Lease areas (72.32 acres), respectively. The leases are located on the Deadman Canyon quadrangle in Township 12 South Ranges 10 and 11 East, Sections 31 and 36. The following review addresses only geologic hydrologic regulations germane to the proposed modifications to the currently approved Mine Reclamation Plan (MRP). The proposed change is for underground mining only, which will take place beneath 2,600 to 3,000 feet of cover; no additional surface facilities are proposed. Surface effects such as subsidence and effects to the hydrologic regime are anticipated to be negligible. Deficiencies cited earlier have been adequately addressed. Incorporation into the currently approved MRP is recommended.

TECHNICAL MEMO

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:

The information provided in the currently approved Mine Plan adequately addresses the geology in the proposed Mathis / Summit Creek IBC. The IBC areas are all within the Flagstaff Formation. Strike and dip information previously missing from Plate 21 has been provided.

Findings:

The information provided adequately addresses the minimum requirements of the Environmental Resource Information - Geologic Resource Information section of the regulations.

HYDROLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-724.

Analysis:

Probable Hydrologic Consequences Determination

A separate Probable Hydrologic Consequences Determination (PHC) was prepared by Petersen Hydrologic (Inc.) for Adalex Resources, Inc. specifically addressing the Summit Creek and North Mathis tracts. The current IBC addresses only a small fraction of those two tracts. The determination is consistent with other findings along the Book Cliffs escarpment and Wasatch Plateau. Adverse impacts to the hydrologic balance in the area are extremely unlikely based on the combination of the following: 1) extensive cover (2,600 – 3,000 ft.); 2) extensive barrier walls between panels; 3) shallow groundwater systems and surface-water flows responding rapidly to climate and season; and 4) deep groundwater systems that are not in hydraulic communication with shallow recharge sources or shallow groundwater systems. The Division agrees with this assessment.

Using local streams and springs the PHC illustrates the shallow groundwater systems and surface-water flows respond rapidly to climate conditions and season. Specific R645-301 regulations that were addressed in the PHC include -728.200 (water quality and quantity), -728.310 (adverse impacts to hydrologic balance), -728.310 (acid- or toxic-forming materials), -728.331 (sediment yields), -728.333 (stream flow alteration), -728.334 (groundwater and surface-water availability), and -728.350 (affects to State-appropriated water).

To address concerns cited in the 18Jun04 Technical Analysis, Andalex commits to replace any State-appropriated water should it become contaminated, diminished, or interrupted in section 728.350 of the PHC (Appendix L). To aid in the monitoring of State-appropriated water, pond site 31-1, which has an associated water right was added to the water-monitoring program. The pond will be monitored on a quarterly basis documenting the presence or lack of water. This will include and estimate of the quantity of water in the pond and measurements of the rate of inflow to the pond and the rate of outflow from the pond. The commitment and addition of monitoring the pond adequately addresses concerns cited earlier.

Findings:

The information provided adequately addresses the minimum requirements of the Hydrologic Resources Information section of the State regulations.

OPERATION PLAN

SUBSIDENCE CONTROL PLAN

Regulatory Reference: 30 CFR 784.20, 817.121, 817.122; R645-301-521, -301-525, -301-724.

Analysis:

Subsidence Control Plan

In 2003 the Division fielded a complaint by a local landowner that their spring had dried up due to mining in the area. The Division's finding of no surface impacts due to mining was based, in part, on the Subsidence Control monitoring stations located in the area. However, subsidence control stations are not always ideally located. Information useful for evaluating surface subsidence would be to combine the Subsidence Monitoring Stations map with the longwall mining plan information.

Plate 25 – Subsidence Monitoring Stations, has been modified to make the topography legible and include both the current mining and mining projections of longwalls in the Aberdeen seam (information found on Plate 29). The combination of having subsidence monitoring

TECHNICAL MEMO

stations, topography, and the location of longwall panels on one map will provide a useful tool to ground-truth any potential areas of subsidence.

Findings:

The information provided adequately addresses the minimum requirements of the Operation Plan – Subsidence Control Plan section of the State regulations.

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:

Groundwater Monitoring

No springs or seeps were sampled during the 2001 and 2003 surveys, which illustrates the dry conditions currently being experienced in the region. This is indicative of the shallow groundwater systems and surface-water flows responding rapidly to climate and season. During wet climatic conditions, groundwater naturally discharges from the Flagstaff and North Horn Formation in the area, although in small quantities for short periods of time. Seeps and springs in the area show rapid response to both season and climate, suggesting short flow paths and shallow circulation depths. This is illustrated by the lack of data for the majority of water monitoring sites in the area. Due to dry conditions, the little moisture that is received is critical to livestock and wildlife. Numerous water rights exist on stock ponds that are fed by springs or streams. It may be prudent to include documentation to whether any of the ponds retain water in the event subsidence does occur in the area.

A total of two (2) additional springs are proposed for monitoring as part of the current amendment. Spring B261 has a total of five (5) samples collected from 1996 through 2001. Spring B362 has only one (1) sample (May 2001) collected from 1997 through 2002. The existing water quality information for springs B261 and B362 will need to be submitted electronically to the Division database.

Table 3 of the Peterson Hydrologic report, that was previously absent, has been provided.

Surface Water Monitoring

During sampling in both 2001 and 2003 no springs, seeps, or streams were found to be flowing, likely demonstrating the current drought conditions and the ephemeral nature of the streams in the area. Of the four (4) proposed additional surface water monitoring sites, two (AC-1 and SC-1) are new sites with no baseline data provided. It will be a few years before these two sites provide any useful information. Stream site B263 has been monitored since 1996 and has a total of 10 samples collected from 5/96 – 10/02. The existing data from site B263 has been input into the Division electronic database as requested. Pond 31-1 has an associated water right. The pond will be monitored for the presence or absence of water and also document any inflow or outflow from the pond.

Water-Quality Standards And Effluent Limitations

Page 7-2 of the proposal has been modified to accurately reflect the number of UPDES sites under the permit as four (4). Figure IV-II has also been modified to reflect the correct information. This adequately addresses earlier deficiencies.

Findings:

The information provided adequately addresses the minimum requirements of the Operation Plan – Hydrologic Information section of the State regulations.

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

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

Analysis:

Monitoring and Sampling Location Maps

On Plate 21 – Surface Geology, has been modified to include the strike and dip numbers on the map.

Figure 5 - Surface and Ground Water Rights of the Vaughn Hansen Associates report has been modified to reflect the proper naming convention 'Water Rights Number'.

Figure IV-11 has been modified to include the following: 1) the IBC has been correctly identified as the Mathis/Summit Creek IBC; 2) the symbol designation of streams and springs/wells has included; and 3) all four (4) UPDES sites have been identified. This adequately addresses earlier deficiencies.

TECHNICAL MEMO

Findings:

The information provided adequately addresses the minimum requirements of the Operation Plan – Maps, Plans, and Cross Sections of Mining Operations section of the State regulations.

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

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

Analysis:

The Division has evaluated the PHC provided by the Mine Operator and determined that the addition of the Mathis/Summit Creek IBC will not have an adverse affect on the cumulative hydrologic regime in the area based on the information provided and the analysis articulated above. The Cumulative Hydrologic Impact Assessment (CHIA), produced by the Division, will be updated in the future – likely when the entire Summit lease is submitted.

Findings:

The information provided adequately addresses the minimum requirements of the Cumulative Hydrologic Impact Assessment section of the State regulations.

RECOMMENDATIONS:

The proposed amendment is considered deficient and should not be incorporated into the current MRP until the above-cited modifications are addressed.