

# TECHNICAL MEMORANDUM

## Utah Coal Regulatory Program

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July 21, 2005

TO: Internal File

THRU: D. Wayne Hedberg, Permit Supervisor

THRU: Wayne Western, Team Lead

FROM: Dana Dean, P.E., Senior Reclamation Hydrologist

RE: North Lease Subsidence Mining, Canyon Fuel Company, LLC, Skyline Mine, C/007/0005, Task ID #2324

### **SUMMARY:**

Canyon Fuel Company originally submitted plans to amend their Mining and Reclamation Plan (MRP) to allow for longwall mining in the North Lease Area in July 2004. The Division and the US Forest Service (much of the surface is owned by the Forest) found that application deficient and asked Canyon Fuel Company for further information in early 2005. Canyon Fuel Company responded with further information in May of 2005.

This technical memorandum discusses the hydrology related issues pertaining to the amendment.

The application meets the minimum requirements of the relevant hydrology regulations. The Division may approve it and incorporate it into the MRP.

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**TECHNICAL ANALYSIS:**

**ENVIRONMENTAL RESOURCE INFORMATION**

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

**HYDROLOGIC RESOURCE INFORMATION**

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

**Analysis:**

**Sampling and Analysis**

The Permittee has met the requirements of R645-301-723 by collecting and analyzing all water samples according to the methods in either "Standard Methods for the Examination of Water and Wastewater" or the methodology in 40 CFR Parts 136 and 434. Though consultants have collected data in some instances, the Permittee has overseen all sampling and analysis since mining operations began, including baseline for additional lease areas.

**Baseline Information**

*Ground-water information*

The Permittee has met the requirements of R645-724.100 by providing the following information as it pertains to the permit and adjacent areas:

- The location and ownership of existing wells, springs, and other groundwater resources.
- Seasonal quality and quantity of groundwater. and
- Data to show seasonal variation and usage.

The Permittee discusses groundwater resources in Sec. 2.3 of the MRP. They depict the locations of wells and springs, with ground water rights (ownership) designation on Plate 2.3.5.2-1. A seep and spring survey, including map, for the North Lease is located in a separate report titled "Winter Quarters Canyon 1993 Seep and Spring Survey."

Volume 4 of the MRP (two binders) lists all water right information for the permit and adjacent area, including approved usage.

The Permittee lists all baseline groundwater data in Appendix. A-1, and Volume 4. The Division also houses all water monitoring data on its Electronic Water Database, which the public may access at <http://linux1.ogm.utah.gov/cgi-bin/appx-ogm.cgi>.

#### *Surface-water information*

The Permittee has met the requirements of R645-724.200 by providing the following information as it pertains to the permit and adjacent areas:

- The name, location, ownership, and description of all streams, lakes, and impoundments in the permit and adjacent areas.
- The location of any discharge into any surface water body in the permit area.
- Seasonal quality and quantity of surface water.
- Data to show seasonal variation and usage.

The Permittee discusses surface water resources in Sec. 2.4 of the MRP. They depict the locations of streams, and mine-water discharge points on Plate 2.3.6-1 and water rights (ownership) on Plate 2.3.5.1-1. The north-western portion of Electric Lake falls within the permit area, and Scofield Reservoir lies approximately 3 miles to the east of the North Lease portion of the permit area. There are some stock-watering ponds in the North Lease area, and sedimentation ponds associated with the mine. The Permittee discharges water from the main portal area into Eccles Creek (flows to Scofield Reservoir), and from pumps located in James Canyon directly into Electric Lake.

Volume 4 of the MRP lists all water right information for the permit and adjacent area, including approved usage.

The Permittee lists all baseline surface water data in Appendix. A-1, and Volume 4. The Division also houses all water monitoring data on its Electronic Water Database, which the public may access at <http://linux1.ogm.utah.gov/cgi-bin/appx-ogm.cgi>.

The baseline data includes the major watersheds within, and adjacent to the permit area, which are: Eccles Creek, Mud Creek, Winter Quarters Creek, and Woods Creek.

#### **Baseline Cumulative Impact Area Information**

The Skyline Mine belongs to the “Mud Creek Basin and Upper Huntington Creek Basin” CHIA. The addition of the North Lease will not change the CHIA boundaries since they were included in the previous CHIA. There will be no mining operations in hydrologic basins other than those approved in the current permit, therefore the Division does not require additional cumulative impact area information.

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Sufficient information is available in the MRP and from Federal and State agencies to update the CHIA.

### **Probable Hydrologic Consequences Determination**

The Permittee has already met the requirements of R645-301-728 and sub-sections in the MRP. The PHC does not need to be updated any further. Therefore there are no changes at this time. The Permittee expects the impacts to Woods and Winter Quarters Canyons to be similar to those in Burnout Canyon.

### **Groundwater Monitoring Plan**

The Permittee has met the requirements of R645-301-731.211 and 212 by including a ground-water monitoring plan based upon the PHC determination and the analysis of all baseline hydrologic, geologic, and other information in the permit application (Section 2.3.7 of the MRP). The plan provides for the monitoring of parameters that relate to the suitability of the ground water for current and approved postmining land uses, and to the objectives for protection of the hydrologic balance. The Permittee outlines the quantity and quality parameters they will monitor, the sampling frequency, and site locations on Tables 2.3.7-1, 2.3.7-2, and 2.3.7-2A. The plan describes how the data will be used to determine the impacts of the operation upon the hydrologic balance. In addition to other parameters, the Permittee will sample for total dissolved solids, specific conductance, pH, total iron, total manganese, and water flows at all springs. At most of the wells, the Permittee just monitors levels. The Permittee submits ground water monitoring data to the Division every 3 months for each monitoring location, through the electronic data input (EDI) portion of the Division's Electronic Water Database. At this time, the Division does not require additional monitoring to that listed in Table 2.3.7-1 through 2.3.7-2A.

### **Surface-Water Monitoring Plan**

The Permittee has met the requirements of R645-301-731.221, 222, and 223 by including a surface-water monitoring plan based upon the PHC determination required under R645-301-728 and the analysis of all baseline hydrologic, geologic and other information in the permit application (Section 2.4.4 of the MRP). The plan provides for the monitoring of parameters that relate to the suitability of the surface water for current and approved postmining land uses, and to the objectives for protection of the hydrologic balance, as well as the effluent limitations found in R645-301-751. The plan identifies the surface water quantity and quality parameters to be monitored, sampling frequency and site locations on Tables 2.3.7-1 through 2.3.7-2A. It describes how these data will be used to determine the impacts of the operation upon the hydrologic balance. In addition to other parameters, the Permittee will sample for total dissolved solids, specific conductance, total suspended solids, pH, total iron, total manganese and flow at all surface monitoring locations. For point-source discharges, the Permittee will monitor in accordance with their Utah Pollutant Discharge Elimination System (UPDES) permits. The Permittee submits surface water monitoring

data to the Division every 3 months for each monitoring location, through the electronic data input (EDI) portion of the Division's Electronic Water Database. Monitoring submittals include analytical results from each sample taken during the approved reporting period.

**Findings:**

The Permittee has met the minimum requirements of the Hydrologic Resource Information sections of the Regulations.

**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:**

**Monitoring and Sampling Location Maps**

The Permittee has met the requirements of R645-301-731.730, and 722.300 by including a map showing the locations and elevations of each station used to gather baseline data on water quality and quantity, and each station to be used for water monitoring during coal mining and reclamation operations (See Plate 2.3.6-1). The Permittee prepared and certified the map according to R645-301-512.

**Findings:**

The Permittee has met the minimum requirements of the Maps, Plans, and Cross Sections of Resource Information sections of the Regulations.

**OPERATION PLAN**

**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**

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The Permittee presents much of the required hydrologic information in Sections 2.3 (groundwater), 2.4 (surface water), 2.5 (hydrologic impacts of mining activities), Exhibit "A" (PHC), and the 2-volume addendum to the PHC.

The Permittee has met the requirements of R645-301-731 by presenting a plan that includes maps and descriptions, indicating how they will meet the relevant hydrology requirements. Their plan is specific to the local hydrologic conditions, and contains the steps the Permittee will take during coal mining and reclamation operations, through bond release, to:

- Minimize disturbance to the hydrologic balance within the permit and adjacent areas.
- Prevent material damage outside the permit area.
- Support approved post mining land use in accordance with the terms and conditions of the approved permit and performance standards of R645-301-750.
- Comply with the Clean Water Act (33 U.S.C. 1251 et seq.)
- Meet applicable federal and Utah water quality laws and regulations.

The plan also includes the measures the Permittee will take to:

- Avoid acid or toxic drainage.
- Prevent, to the extent possible (using the best technology currently available) additional contributions of suspended solids to stream flows.
- Provide water treatment facilities when needed.
- Control drainage.

The plan specifically addresses any potential adverse hydrologic consequences identified in the PHC, and includes preventative and remedial measures.

The Division has required additional monitoring measures to assure that material damage to the hydrologic balance outside the permit area is prevented, those are now part of the plan.

The following sections of this technical memo discuss the specific ways in which the Permittee has met the regulations, as they pertain to the amendment.

### **Groundwater Monitoring**

The Permittee has met the requirements of R645-301-731.211 and 212 by including a ground-water monitoring plan based upon the PHC determination and the analysis of all baseline hydrologic, geologic, and other information in the permit application (Section 2.3.7 of the MRP). The plan provides for the monitoring of parameters that relate to the suitability of the ground water for current and approved postmining land uses, and to the objectives for protection of the hydrologic balance. The Permittee outlines the quantity and quality parameters they will monitor, the sampling frequency, and site locations on Tables 2.3.7-1, 2.3.7-2, and 2.3.7-2A.

The plan describes how the data will be used to determine the impacts of the operation upon the hydrologic balance. In addition to other parameters, the Permittee will sample for total dissolved solids, specific conductance, pH, total iron, total manganese, and water flows at all springs. At most of the wells, the Permittee just monitors levels. The Permittee submits ground water monitoring data to the Division every 3 months for each monitoring location, through the electronic data input (EDI) portion of the Division's Electronic Water Database. At this time, the Division does not require additional monitoring to that listed in Table 2.3.7-1 through 2.3.7-2A.

In accordance with R645-301-731.214, the Permittee will continue to monitor groundwater throughout the life of the mine, and during reclamation until bond release.

### **Surface Water Monitoring**

The Permittee has met the requirements of R645-301-731.221, 222, and 223 by including a surface-water monitoring plan based upon the PHC determination required under R645-301-728 and the analysis of all baseline hydrologic, geologic and other information in the permit application (Section 2.4.4 of the MRP). The plan provides for the monitoring of parameters that relate to the suitability of the surface water for current and approved postmining land uses, and to the objectives for protection of the hydrologic balance, as well as the effluent limitations found in R645-301-751. The plan identifies the surface water quantity and quality parameters to be monitored, sampling frequency and site locations on Tables 2.3.7-1 through 2.3.7-2A. It describes how these data will be used to determine the impacts of the operation upon the hydrologic balance. In addition to other parameters, the Permittee will sample for total dissolved solids, specific conductance, total suspended solids, pH, total iron, total manganese and flow at all surface monitoring locations. For point-source discharges, the Permittee will monitor in accordance with their Utah Pollutant Discharge Elimination System (UPDES) permits. The Permittee submits surface water monitoring data to the Division every 3 months for each monitoring location, through the electronic data input (EDI) portion of the Division's Electronic Water Database. Monitoring submittals include analytical results from each sample taken during the approved reporting period.

In accordance with R645-301-731.224, the Permittee will continue to monitor surface water throughout the life of the mine, and during reclamation until bond release.

### **RECOMMENDATIONS:**

The application meets the minimum requirements of the relevant hydrology regulations. The Division may approve it and incorporate it into the MRP.