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State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
801-538-5340

January 4, 1990

Mr. Richard J. Denning
Permit Coordinator
Consolidation Coal Company
12755 Olive Boulevard
St. Louis, Missouri 63141

Dear Mr. Denning:

Re: Permit Defect, Reverse Osmosis Lagoon, Consolidation Coal Company, Emery Deep Mine, ACT/015/015, Folder #2, Emery County, Utah

The Division has discovered a permit defect in the Emery Deep Mining and Reclamation Plan (MRP) regarding the use of the reverse osmosis lagoon. Attached is a technical memorandum describing the problem and identifying the areas of the MRP that are in error.

To correct this defect, Consolidation Coal Company must submit a certified as-built drawing, a certification statement as required by UMC 817.49(h), and revised text which correctly identifies the continuing use of this impoundment. A commitment to monitor the lagoon quarterly, per the requirements of UMC 817.46(t), must also be included in the MRP. Monitoring should be initiated in the first quarter of 1990. After the as-built drawing has been reviewed, the Division will determine the need for any geotechnical analysis.

Please submit the necessary text and map revisions for incorporation into the approved MRP by February 16, 1990. Please contact me if you have questions.

Sincerely,

Susan C. Linner

Susan C. Linner
Permit Supervisor/
Reclamation Biologist

djh
Attachment
cc: C. Jones, Emery Mine
M. DeWeese, DOGM
D. Haddock, DOGM
BT45/374

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December 22, 1989

TO: Susan Linner, Permit Supervisor

FROM: Daron Haddock, Reclamation Specialist

RE: Reverse Osmosis Lagoon, Emery Deep Mine, Consolidation Coal Company, ACT/015/015, Emery County, Utah

SUMMARY:

A review of Consols Mine Plan indicates that a permit defect exists regarding the reverse osmosis evaporation lagoon.

ANALYSIS:

Enclosed are copies of three pages from Consol's MRP (Operation Plan) which discuss the evaporation lagoon. Section 3.2.3.7 states that the lagoon will be modified as described in Section 3.2.6. Section 3.2.6 proposes to reclaim the lagoon and divert the reverse osmosis waste water to sedimentation Pond #1. Section 3.5.6.1 describes a timetable for the reclamation of the lagoon. Removal of the evaporation lagoon (Pond #4) was to be accomplished during the fourth quarter of 1981. Plate 13-6 in Volume 9 diagrams the proposed alteration.

Alteration of the lagoon is also discussed in Section 13.3.1.

Obviously the R/O lagoon was not reclaimed in 1981. Further the NPDES Permit would not allow for the discharge of brine into Pond #1.

At the present time Consol continues to use the R/O lagoon and plans to continue to use the lagoon.

RECOMMENDATION:

Consolidation Coal Company must update the appropriate sections of the MRP to address the continued use of the R/O evaporation lagoon. As-built certification and designs of the lagoon should also be submitted in accordance with UMC 817.49 (h). A slope stability analysis may be required if slope steepness continues to be a concern.

DH/lap
Enclosures: (3)

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100,000-gallon tank is processed through the reverse osmosis (R/O) at the rate of 24 gallons per minute. The R/O produces two products on a 50% basis--clean water and brine (reject). The clean water is chlorinated and pumped to a 5,000-gallon holding tank and is distributed to the bathhouses and offices. The brine is pumped to a lagoon for evaporation.

The brine, or reject, from the osmosis system is disposed of by evaporation at a structure located outside the mine facilities area. For information regarding the evaporation lagoon, see Section 3.2.3.7.

3.2.3.7 Evaporation Lagoon

Map Code: 1B
Quantity: 1
Approximate Construction Date: 1st Quarter, 1976

The evaporation lagoon is an earthen structure which covers 48,000 square feet of surface area and has a storage capacity of 6.6 acre-feet. The lagoon is built on a circular 8-foot-high berm installed on a 2:1 slope, and is equipped with an overflow at 6 feet.

Waste water, or brine, from the reverse osmosis water purification system is transported to the evaporation lagoon through a 2-inch PVC line. The brine is contained here until it evaporates. Although the lagoon is required to process about 7,000 gallons of brine per day, it is vastly over-designed, since only a small puddle of unevaporated brine has ever collected at the inlet end.

The lagoon was given preliminary written approval by the state health department and has since been verbally approved. There has been no evidence of seepage or leakage from the lagoon since its installation. However, the Division of Oil, Gas and Mining has found fault with the lagoon, so Consol will modify this installation as described in Section 3.2.6.

3.2.3.8 Mine Access Portal

Map Code: 8A
Quantity: 1
Approximate Construction Date: Prior to 1975

The mine access portal is approximately 3,000 feet east of the tipple at the outcrop of the I zone. The portal is equipped with a flood door to hold back possible flood waters and to protect the immediate opening from float rock which might fall from the canyon wall.

The mine access portal serves two purposes: 1) to allow access of rubber-tired vehicles for the transportation of men and supplies into the mine; and 2) to serve as a primary intake airway.

Drainage around this portal is controlled by the approved drainage control system.

This change would involve connecting the two systems via a pipeline at a strategic underground location. A series of automatic valves would be used to direct the mine discharge flow into the fresh water circuit whenever it becomes necessary. A hydrocyclone will be installed in the connecting line to remove most of the particulate matter in the mine discharge flow. Since this change is internal to the overall mine water system, there will be no net change in the quantity or quality of water discharged from the mine. A schematic diagram of the present and proposed mine water system is shown on Plate 3-4.

The regulatory authority have expressed some concerns about the evaporation lagoon, i.e., the slopes are too steep and the lagoon should be vegetated. Rather than incur the expense of rebuilding this structure which is already vastly over-designed, Consol proposes to reclaim the lagoon and divert the reverse osmosis waste water to the mine discharge sedimentation pond (pond no. 1).

It should be noted that the brine from the reverse osmosis (R/O) contains only dissolved solids and should only increase the TDS of the sedimentation pond discharge by 1.9%.

3.2.7 Sewage System

The sewage system constructed in October, 1975 at the Emery Mine consists of a septic tank, pump house, and a leach field, installed to dispose of domestic waste from the offices and bathhouses. The system has a liquid capacity of 13,500 gallons per day. This will allow for over 300 employees at an average water usage of 40 gallons per man per day. The mine now employs only 158 personnel.

The septic tank has a capacity of 13,500 gallons and is designed as a primary settling unit for the raw sewage. The tank must be pumped out periodically to dispose of solid waste accumulations. Liquid flow from the septic tank goes to a covered concrete sump where two pumps rated at 200 gpm are located. The pumps are used to transport liquid waste through a 4-inch PVC pipe to the leach field, a distance of 800 feet. This pipeline is protected where it crosses under the mine road by an outer pipe made of cast iron.

The leach field has 30,000 ft^2 of absorption area, consisting of a 4-inch PVC mainline with 4-inch perforated PVC pipes extending perpendicular from it every 6 feet to the field perimeters. These lines are set 2 feet 2 inches below the surface and centered in 1 foot 5 inches of gravel. The gravel is covered with a straw barrier and 1 foot 7 inches of fill. The maximum percolation rate in the absorption bed was 17.78 minutes per inch; however, the system was designed for a seepage rate of 30 minutes per inch, or .456 gallons per square foot per day. The measured groundwater level in the area is 40 feet below the surface; the anticipated maximum should not exceed 30 feet. A schematic diagram of this system is shown in Figure 3-2.

The sewage system was approved by the Utah state health department on September 22, 1975.

3.5.5.3 Mulching

Straw mulch will be applied to all reclamation areas with erosion problems. The mulch will aid in controlling erosion, promoting germination of seeds, and increasing the moisture retention of the soil. After the mulch is blown onto the disturbed acreages, the mulch will be crimped in with a straight disk crimper. This process will secure the mulch to the soil.

3.5.5.4 Management

The revegetated acreages will be carefully managed for 2 or 3 years after seeding and transplanting to control weeds, etc., and to ensure that the new vegetation is taking hold. Once the liability period starts, however, very little will be done to the areas. Some grazing may be allowed under very careful control.

3.5.5.5 Revegetation Monitoring

The vegetation on the reclaimed sites will be monitored at intervals through the entire liability period. Data will be collected for cover, density and possibly productivity.

3.5.6 Schedule of Reclamation

The reclamation schedule discussed in the following section forecasts the timing of reclamation activities for the existing facilities at the Emery Mine. The schedule is based on the proposition that mining will continue through 2010. Contemporaneous reclamation is scheduled for one facility in 1981.

3.5.6.1 Detailed Timetable for Reclamation

Contemporaneous Reclamation

4th Qtr., 1981	Removal of pond no. 4, regrading of area, and preparation of seedbed.
2nd-4th Qtr., 1989	Reclamation of development waste disposal site after wastes stored on the northwest coal stockpile area are buried.
1990-4th Qtr., 2010	Ongoing reclamation of development waste disposal site as newly generated wastes are disposed.

Revised 3/89-M