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# State of Utah

DEPARTMENT OF NATURAL RESOURCES  
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October 17, 1997

TO: File

THRU: Daron Haddock, Permit Supervisor *DAR H*

FROM: James D. Smith, Reclamation Specialist *JDS*

RE: Response to Technical Analysis dated May 30, 1997 - Tank Seam Lease Addition Amendment, Co-Op Mining Company, Bear Canyon Mine, ACT/015/025 97-1, File #2, Emery County, Utah

## SUMMARY

The only change to the text in Chapter 6 - Geology in the proposed Tank Seam amendment is the removal of the "Upper Beds" from the list of coal beds in Table 6-2. The drill-hole log for TS-14 has been added to Appendix 6A. All plates for Chapter 6 have been updated with information from additional drill holes. Available information from drill-holes and wells, such as logs and water levels, has been added to the MRP. What was previously referred to as the Bear Canyon coal seam is now referred to fairly consistently throughout the text and on maps as the Blind Canyon coal seam.

All water monitoring locations appear to be on Plate 7-4, and locations for baseline and other historical monitoring stations are also shown on maps.

## TECHNICAL ANALYSIS

## **ENVIRONMENTAL RESOURCE INFORMATION**

## **GEOLOGIC RESOURCE INFORMATION**

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

### **Analysis:**

The current MRP includes geologic information to assist in determining the probable hydrologic consequences of the operation upon the quality and quantity of surface and ground

water in the permit and adjacent areas. The only change to the text in Chapter 6 - Geology in the proposed Tank Seam amendment is removal of the "Upper Beds" from the list of coal beds in Table 6-2 on page 6-17. What was previously referred to as the Bear Canyon coal seam is now referred to fairly consistently throughout the text and on maps as the Blind Canyon coal seam.

All plates for Chapter 6 have been updated with information from additional drill holes. Well completion diagrams for drill-holes SDH-1, SDH-2, and SDH-3 have been added to Appendix 7-A and the drill-hole log for TS-14 is added to Appendix 6A. Water levels and stratigraphy for SDH-1 and SDH-2 are shown on Plates 7J-1 and 7J-2, and water levels are tabulated on page 7-27.

Figures 7.1-2 and 7.1-3, generalized cross sections, are being removed from the plan but Plates 7J-1 and 7J-2 are detailed cross sections that have been added as part of the Tank Seam amendment. Figure 7.1-4, which is a generalized stratigraphic section, has been removed from the body of the MRP and is now Table 2-4 in Appendix 7-J. Figure 7.1-5 was a stratigraphic section based on interpretation of a geophysical well-log from bore-hole T-5; the information has been incorporated into Plate 7-9, a stratigraphic correlation diagram or cross section, but with less detail.

Water levels for Los Angeles Department of Water and Power (LADWP) wells MW-116 and MW-117 are discussed in the proposed Tank Seam amendment. Collar elevations and water elevations are in Table 7.1-4. Plate 7J-2 shows the water levels in these wells and the relationship of the potentiometric surfaces on each side of the Bear Canyon fault and formation contacts. Figures 7A-17 and 7A-18 show general stratigraphy and well completion details for these two wells. Lithologic characteristics and water levels are also shown on Plate 7-9, where these wells are labeled M91-16 and M91-17. Locations are shown on Plate 7-4.

Information on 20 in-mine drill holes is listed in Table 7.1-5. Most of these were drilled upward, and all but 2 were dry. Locations of 8 of the bore-holes, TS-6 through TS-10 and TS-12 through TS-14, are on Plate 6-11. Locations of the other 12 bore-holes are not known, but drillhole logs are in Appendix 7A. Drillhole logs for TS-6 through TS-10 and TS-14 are in Appendix 6-2. Logs are not available for TS-12 and TS-13. There is no information on TS-11 and it may be that it was not drilled, but this is not stated explicitly in the MRP. Water quality data from bore-hole WM-C is included in Table 7.1-1.

Locations, isopach thicknesses, and coal seam elevations for bore-holes T-1, T-2, T-4, and T-5 are on Plate 6-2 through 6-12. Lithologic characteristics and ground-water elevations are shown on Plate 7-9.

Plates 6-2 through 6-12 also show locations for WHR-1, WHR-2, WHR-3, WHR-5, and WHR-8. These five drill-holes are outside the proposed permit areas but fall within the adjacent area and within the Cumulative Impact Area (CIA). Co-Op Mining Company has no

hydrology information for these bore-holes.

There is no new information on potentially acid- or toxic-forming strata. Mining proposed in the area covered by the Tank Seam amendment should not require a change to the current reclamation plan. Plates 6-2 through 6-12 have been updated and the information can be used to upgrade the subsidence control plan, if necessary.

Appendix 7-N contains a detailed hydrologic evaluation of the Starpoint aquifers.

**Findings:**

Information provided in the proposed Tank Seam amendment is considered adequate to meet the requirements of the Geologic Resources section.

## **HYDROLOGIC RESOURCE INFORMATION**

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

**Analysis:**

**Baseline cumulative impact area information.**

The current MRP and the proposed Tank Seam amendment contain geologic information to assess the probable cumulative hydrologic impacts of the proposed operation and all anticipated mining on surface- and ground-water systems for the cumulative impact area.

**Modeling.**

No modeling techniques, interpolation, or statistical techniques have been used in preparation of the proposed Tank Seam amendment.

**Findings:**

Information provided in the proposed Tank Seam amendment is considered adequate to meet the requirements of the Hydrologic Resources section.

## **MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION**

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

### **Analysis:**

#### **Coal Resource and Geologic Information Maps**

Plates 6-2 through 6-12 show the nature, depth, and thickness of the coal seams to be mined, thickness of interburden, and thickness of overburden. Coal crop lines and the strike and dip of the coal to be mined within the proposed permit area are shown on these maps and other maps, including Plate 6-1.

#### **Mine Workings Maps**

A revised Plate 3-4C has been submitted in the proposed Tank Seam amendment to show location and extent of known workings of active, inactive, or abandoned underground mines in the Tank Seam. It also shows projected mining for the area covered by the proposed Tank Seam amendment. There are no mine openings to the surface within the proposed permit and adjacent areas from this seam.

#### **Monitoring and Sampling Location Maps**

In-mine drill holes TS-1 through TS-10, TS-12, TS-13, and TS-14 are listed in Table 7.1-5 and locations are shown on submitted maps. Water sampling point WM-C and eleven other in-mine drill-holes are listed in Table 7.1-5 but could not be located on any submitted maps; Co-Op Mining Company has indicated in the Tank Seam amendment (Table 7.1-5) that the locations for these bore-holes are not known. Drill holes DH-1A, DH-2, DH-3, and DH-4; SDH-1, SDH-2, and SDH-3; and MW-116 and MW-117 are listed in Table 7.1-4 and locations are on Plate 7-4.

Maps showing elevations and locations of monitoring stations used to gather data on fish and wildlife and air quality were not revised for the proposed Tank Seam amendment.

#### **Permit Area Boundary Maps**

Maps have been updated to show the expansion of the permit area into federal lease U-024316. The proposed amendment is for mining in the Tank Seam only.

### **Surface and Subsurface Ownership Maps**

Coal ownership and mines in the permit and contiguous areas are shown on Plate 2-3. Surface ownership is shown on Plate 2-2.

### **Well Maps**

There are no known oil or gas wells in the permit area.

### **Certification**

Cross sections, maps, and plans included in this proposed Tank Seam amendment have been prepared by, or under the direction of, and certified by a qualified, registered, professional engineer.

### **Findings:**

Information provided in the proposed Tank Seam amendment is considered adequate to meet the requirements of the Maps, Plans, and Cross-Sections Resource Information section.

### **RECOMMENDATION**

The deficiencies in the sections on Geology and in Hydrology that were identified in my May 30, 1997 TA have been addressed satisfactorily. The Tank Seam amendment is adequate to meet the requirements concerning geology and ground-water hydrology.