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United States Department of the Interior  
OFFICE OF SURFACE MINING  
Reclamation and Enforcement  
BROOKS TOWERS  
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DENVER, COLORADO 80202

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DIVISION OF OIL  
GAS & MINING

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Dr. Dianne Nielson, Director  
Division of Oil, Gas and Mining  
4241 State Office Building  
Salt Lake City, Utah 84114

JIM

APR 19 1984

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Dear Dr. Nielson:

The Office of Surface Mining (OSM) has completed a review of the draft technical analysis (TA) for the Huntington Canyon No. 4 mine submitted by your office on January 24, 1984. A virtually identical draft version of this review was hand-delivered to Ms. Boucek of your office in February.

As in previous repermitting draft TA's, this document was prepared essentially as a "deficiency" document to alert the applicant to remaining technical deficiencies in the permit application package (PAP). As such, the remaining deficiencies are worded as remaining stipulations; forty-eight (48) such stipulations have been cited in the document. Most of these will require additional information from the applicant prior to a permit decision. Beaver Creek's responses should be carefully reviewed by Division staff before incorporation into a draft final TA, so that additional delays caused by technical deficiency problems can be limited.

Our December 22, 1983, letter to you concerning the draft TA for the Convulsion Canyon mine can be applied in a general sense to the draft TA for the Huntington Canyon No. 4 mine. Specific OSM comments are offered in the enclosure. Many of our comments may be due to a difference in the materials on file; therefore, we encourage your staff to discuss these comments with Walt Swain or Mark Humphrey to resolve any differences.

Sincerely,

*Richard E. Dawes*  
for Allen D. Klein  
Administrator  
Western Technical Center

Enclosure

cc: Jim Smith, UDOGM  
Mary Boucek, UDOGM

## OSM COMMENTS

For

### UDOGM's Draft Huntington Canyon No. 4 Decision Document

#### Mine Plan Information Sheet

1. The "mining method" should be indicated as "Underground mining - Room and Pillar" instead of "UG-Continuous miner."

#### Findings

2. Findings No. 2, 7, 9, 12, and 15 reference the permit application as the mining and reclamation plan (MRP). MRP should be changed to "Permit Application Package (PAP)," as used in Finding No. 6. Use of MRP also occurs throughout the TA and should be changed to be consistent.
3. Finding No. 2 [UMC 786.19(b)]. According to section UMC 817.101, "Backfilling and Grading" (TA, page 29), compaction of backfilled material is anticipated which can affect the feasibility of the reclamation plan by limiting rooting depths. This should be discussed in Finding No. 2.
4. Finding No. 3 should be reworded to reflect the following: The assessment of the probable cumulative impacts of all anticipated coal mining in the general area on the hydrologic balance has been made by the regulatory authority. The mining operation proposed under the application has been designed to prevent material damage to the hydrologic balance outside the permit area for the anticipated life of the mine [UMC 786.19 (c) and UCA 40-10-11(2)(c)]. (See Cumulative Hydrologic Impact Analysis (CHIA) section, attached to this document.)
5. Finding No. 8 should indicate whether Abandoned Mine Reclamation Fund fees are paid in full for all mines controlled by Beaver Creek Coal Company and Atlantic Richfield Company. Such information can be obtained from John Sender of the OSM Albuquerque Field Office.
6. Finding No. 10 states that the proposed Rilda Canyon mine is situated south of the No. 4 mine. This is misleading; UP&L's Federal leases (No.'s U-02437 and U-06039) lie immediately south of the No. 4 mine and immediately north of Rilda Canyon mine site.
7. The basis for each finding should be referenced (i.e. TA page number, PAP page, section or map, letter, etc.)

## Draft Technical Analysis

### Introduction

8. The name of the mine, "Huntington No. 4," is inconsistent with the permit application. According to Beaver Creek Coal Company, the official name is "Huntington Canyon No. 4." Any abbreviation of the official name should be addressed in the introduction to the TA.
9. The third paragraph on page 1 (TA) is misleading, because it infers that the existing disturbed area will be increased from 12.5 acres to 78 acres. This issue should be clarified.
10. Mill Fork Canyon is referred to (TA, second paragraph, page 2) as "dry" in areas during "baseflow." Baseflow by definition means that there is flow and cannot possibly be dry during baseflow. This issue should be clarified. Also, there are no quantitative estimates of decreased flow to Little Bear Springs.
11. The third paragraph on page 2 (TA) states that the south face is "more hydrologically responsive." It should be stated in what way the south face is more responsive, such as higher peakflow discharges.
12. The fourth paragraph on page 2 (TA) should discuss the effects of discontinuous channel sandstones and adjacent shale strata occurrence. Also, the Star Point Sandstone intertongued with the Blackhawk Formation should be mentioned.
13. The sixth paragraph on page 2 (TA) should discuss the faults as a probable main source of recharge to the Star Point aquifer.

### UMC 817.21-.25 Topsoil

14. The conclusion found in the "Topsoil" section of the TA (page 4) states that sidcast soil material is a suitable plant growth medium. The applicant's conclusions should be referenced to the PAF, and the regulatory authority's conclusions should be in the compliance sections of the TA.
15. The third paragraph on page 4 (TA) indicates that the disturbed area is approximately 15 acres rather than the 12.5 acres as stated in the Introduction of the TA.

UMC 817.41 Hydrologic Balance: General Requirements

16. The first paragraph on page 6 should state that the Star Point Sandstone consists of three main sandstone members. These three members are the main water-bearing strata and are separated by much less permeable strata. Recharge to the Star Point Sandstone members is primarily via the geologic structure (fractures and faults). According to the geologic map in the PAP, there is significant faulting in the permit area which is most likely the local source of recharge to the Star Point as well as the source of recharge to the fluvial channel sandstones of the Blackhawk Formation.

The Little Bear Springs, an important municipal water supply, occurs in the Star Point Sandstone, which is stratigraphically located (according to Plate 6-8 of the PAP) in the Panther Sandstone, the bottom sandstone tongue of the Star Point. Even though there is approximately 346 feet of interburden recharging these springs between the lowest coal seam to be mined and the aquifer (the Panther Sandstone member), there is a very good chance that the flow to these springs will be decreased. Water that would normally recharge via the fractures and faults in the Panther sandstone will most likely be intercepted during the mining operation. The amount of decrease in flow to the Little Bear Springs cannot be estimated without further information.

17. The second paragraph on page 6 (TA) concludes that water will not be "encountered" or "impact an aquifer." This conclusion cannot be derived from only one well; however, combined with other monitoring information, a conclusion could possibly be reached. This should be discussed in the Compliance section.

UMC 817.42 Hydrologic Balance: Water Quality Standards and Effluent Limitations

18. The Compliance section states that the volume of mine water discharged is "unknown." A reasonable worst-case estimate should be provided in order to evaluate the situation.

UMC 817.46 Hydrologic Balance: Sediment Ponds

19. The second to the last paragraph on page 12 uses the words "proposed structures." According to the Introduction (TA), there are no structures proposed in the PAP.

UMC 817.52 Hydrologic Balance: Surface and Ground-water Monitoring

20. To be consistent with the other repermitting decisions presently under joint OSM/UDOGM review, surface- and ground-water monitoring programs will be required as a condition to the permit and reported on a quarterly basis. The ground-water monitoring plan should be as effective as the one outlined on the next page.

### In-mine flows

The quarterly report will include a map of all points and/or areas, if there is defined measurable flow (greater than 1 gpm), as well as an indication of the geologic source of the flow (channel sand, fault, fracture, jointing, etc.). The map will also show the location of sumps used to collect water. In addition to the in-mine monitoring, an attempt must be made to account for all ground-water consumption (evaporation and other losses) and transfers of water in and out of the mine.

When new areas of measurable flow are first encountered, flow rate and field-water-quality parameters (pH, temperature, electrical conductance, and calculated TDS) will be measured.

Monthly, flow rate and field-water-quality parameters will be measured.

Quarterly, an abbreviated water-quality analytical schedule for the water will be made. The abbreviated schedule (at a minimum) will consist of the laboratory measurements for sodium, potassium, calcium, magnesium, iron, chloride, bicarbonate, sulfate, carbonate, pH, and TDS, with a mass balance table of the major cations and anions in milliequivalents per liter for each analysis.

Biannually, a comprehensive analytical schedule of laboratory water-quality parameters will be analyzed according to those parameters recommended in the UDOGM guidelines for establishment of surface- and ground-water-monitoring programs.

### Springs

Springs and seeps with measurable flows (greater than 1 gpm) will be monitored according to the following schedule:

Monthly, when accessible, flow rate and field-water-quality parameters will be measured. Inaccessibility must be reported to the regulatory authority immediately by phone.

As soon as accessible after snowmelt, a biweekly schedule of flow rate and field water quality parameters will be made for the period May, June, and July.

Quarterly, when accessible, the abbreviated water-quality analytical schedule must be completed for each site; biannually, the comprehensive schedule must be completed at the same time each year.

Inaccessibility must be reported to the regulatory authority immediately by phone.

### Wells

Monthly, when accessible, water levels and field-water-quality parameters will be measured.

Quarterly, when accessible, water levels and the abbreviated water-quality schedule must be completed.

Biannually, water levels and the comprehensive water-quality analytical schedule must be followed.

Inaccessibility must be reported to the regulatory authority immediately by phone.

#### General Comments on the Hydrology Portions of the PAP

21. In section 7.1.2 (page 7-4), the units of specific yields (which are dimensionless units) correspond to unconfined aquifer conditions (.2 to .7).
22. In section 7.1.2.1 (page 7-7), the unit inches per year are not appropriate units. The watershed size should be given so these units can be converted into usable ones.
23. Section 7.1.5 (page 7-21) provides a discussion of the potentiometric head in the Star Point. From the exploration drill hole information, there are a number of inconsistencies that reduce the creditability of this section. These inconsistencies include:
  - a. The drill hole is identified as MC-4-1, and located T 16 S., R. 7 E, Sec. 16, NW1/4, SW1/4. Hole MC-4-1 is not located on Plate 6-1 (drill hole location map); however, the given location is for hole DH-12. Furthermore, this location is nowhere near the location shown in the index map of Plate 6-2.
  - b. The depth to the top of the Star Point (Ksp) is given as 99.5 feet. Upon examination of the cross section (Plate 6-2), this depth is measured as 110 feet.
  - c. The hole is also reported to be drilled 100 feet into the Ksp, with a total depth of 151 feet. Plate 6-2 shows approximately 45 feet into the Ksp and 110 feet above.
  - d. If the well is 151 feet deep and drilled 100 feet into the Ksp, then how can the depth to the Ksp be 99.5 feet? ( $100' + 99.5'$  does not equal  $151'$ .)
  - e. The cross section (Plate 6-2) shows a fault just to the west of HCD-2 which is not shown on the geologic map (Plate 6-1) as are the other faults in the permit area.
  - f. Plate 6-8 (the Ksp stratigraphic columns) does not correlate with Plate 6-1 (geologic map). If the stratigraphic location of Little Bear Springs is at the top of the Panther Member at 7455' elevation and there is 346'

between the base of the Hiawatha coal seam and the top of the Panther, then the base of the Hiawatha would be at 7840' elevation ( $7455' + 346' = 7801'$ ). Plate 6-1 shows the elevation of the Hiawatha to be approximately 7760', an error of some 41' in elevation. Which one is correct?

Of main interest is the borehole completion. The strata of interest is the upper Ksp sandstone member, the Spring Canyon Sandstone tongue. Page 7-16 in the PAP states that occasional damp and wet floor conditions are encountered in the mine which indicates that the Spring Canyon Sandstone has a high enough head in certain areas to flow or seep. If the borehole is open through 100 feet of Ksp, then the water level represents two stratas of different permeabilities: the Spring Canyon and the low permeable interbed between the Spring Canyon and the Storrs member. If only the Spring Canyon strata were screened or open, then the water levels would indicate potential for flow through the mine floor.

Without more complete completion data and as a result of the numerous inconsistencies with this section, this water level data cannot be considered valid.

24. On page 7-22 (continuing paragraph), a statement is provided concerning Vaughn Hansen's conclusion that Crandall Canyon north of the lease block serves as a major interceptor drain dewatering the Star Point. This is misleading and out of context. Crandall Canyon is not going to dewater the Star Point in the Huntington Canyon #4 permit area.

The applicant states in the second paragraph, last sentence (page 7-22, PAP), that "Flows could increase as well as decrease but the net water yield should remain unchanged." This is unclear as to meaning as related to subsidence.

25. In-mine flows must be required to be monitored as a stipulation of approval (page 7-55, PAP).
26. Little Bear Springs is said to receive recharge from areas west and north only. Due to its location, it is unlikely that it will be impacted by mining (page 7-55, PAP). This statement appears to be incorrect. The recharge to the springs is likely to be primarily from the south via the faults that cross the permit area. Not only are the springs located on the north side of the hill, but ground-water flows are most likely in this direction due to the structure. The discharge rates are also high enough to indicate that they are located in the fault zone and not just flowing from the sandstone. The representative transmissivities are similar to those of other springs and wells completed in fault zones of the Star Point in the northern Wasatch Plateau.

Mining in and adjacent to the faults will most likely intercept some of the recharge to the Little Bear Springs and result in a decrease in flow rate. An in-mine monitoring program must be implemented as a condition to better understanding the ground-water flow in this area.

27. The springs survey (page 7-57 & 58, PAP) does not have adequate discharge measurements. A better springs-monitoring plan must be implemented.

#### UMC 817.89 Disposal of Noncoal Waste

28. The TA states on page 24 that noncoal waste is hauled to the county landfill; it references "Section 3.3" of the PAP. Section 3.3 (page 3-II, dated 6/6/83) states that "noncoal waste is disposed of in underground gob." First there is an inconsistency between the PAP and the TA that should be corrected. Secondly, if noncoal waste is disposed underground, then contamination of ground water and potential combustibles should be considered in the Compliance section of the TA [UMC 817.89 (a)].

#### UMC 817.95 Air Resource Protection

29. The Compliance section fails to determine if an air-quality-monitoring program is required to evaluate the effectiveness of the applicant's fugitive dust control practices.

#### UMC 817.97 Fish, Wildlife, and Other Related Environmental Values

30. Existing Environment and Applicant's Proposal section identifies numerous significant issues that are not discussed in the Compliance section. These issues include the following:
- a. Species of "high State" interest
  - b. Species of "high Federal" interest
  - c. Habitat having "high priority" (DWR)
  - d. "High priority summer range and crucial-critical winter range" for deer and elk
  - e. Potential presence of "American peregrine falcon, arctic peregrine falcon, and bald eagle" and
  - f. Threatened and endangered species' "active nest" and "nest trees."

The Compliance section should discuss the adequacy of mitigation of the issues listed above, or define any noncompliance issues and deal with them.

31. Page 25 in the TA states that there are "no active" nests for a list of Federal high-interest migratory birds including the golden eagle. Stipulation No. 4 (page 27, TA) requires the applicant to protect golden eagle nests in the cliffs from subsidence. This discrepancy should be corrected.

32. The Compliance section should address the lack of specific information provided for the restoration and enhancement of wildlife habitat, based on the lack of a permanent seed mix and tree and shrub plant plans for final reclamation. (See Revegetation section of these comments.)
33. According to Stipulation No. 2, there may be deer and/or elk migration routes that cross the coal transportation route that the haul trucks follow. All migration routes should be identified at a minimum in the PAP and the Existing Environment and Applicant's Proposal section (EEAP) of the TA.

#### UMC 817.101 Backfilling and Grading: General Requirements

34. Under the EEAP section, subsections "e." and "f." are repetitive. Also, this information should be referenced to the PAP.
35. Retention of highwalls is mentioned in the EEAP; however, there is no mention as to whether the criteria outlined under UMC 817.101 (b) (8) has been met.

#### UMC 817.103 Backfilling and Grading: Covering Coal and Acid and Toxic-forming Materials

36. The PAP fails to mention (or discuss) potential acid- or toxic-forming materials, buried depths, or stabilization of backfilled materials. This should be included in the PAP and the TA.

#### UMC 817.106 Regrading or Stabilizing Rills and Gullies

37. Information in this section should be referenced to the PAP.

#### UMC 817.111-.117 Revegetation

38. The PAP indicates, on page 3-65, that a permanent seed mix has not been provided for the final reclamation plan. A finding of compliance cannot be determined without the final reclamation permanent seed mix for the following Utah underground mining codes: 784.13; 786.19 (b), (k), & (n); 817.97 (d)(4) & (5); 817.111; 817.112; 817.116; 817.117 and 817.133. The applicant must provide a permanent seed mix and planting list in order to comply with the aforementioned codes. This problem must be resolved prior to completion of the final draft TA.
39. The applicant has not committed to specific type of mulch or to mulching, in general. Instead, the applicant states, on page 3-66 (PAP), that a "Natural fiber mulch such as straw or wood, in addition to various other organic mulches, may be utilized." (emphasis added). The applicant has not committed to anything specific that can support the required finding [UMC 786.19(b)] on which a finding of compliance can be determined for UMC 817.114. While the specific mulching technique may not be of importance, the need to mulch is. This problem should be resolved prior to the draft final TA.

40. The applicant references the "UDOGM guidelines" for sampling methods and sampling adequacy. However, the applicant fails to discuss reclamation success standards, as well as specific methods for determining success pursuant to UMC 817.116 and 817.117.

UMC 817.121-126 Subsidence Control

41. This section of the TA fails to discuss the Blackhawk aquifer, as well as potential impacts associated with mining operations.
42. The final TA should include an analysis of the PAP based on UDOGM's February 15, 1984 "Policy on the Permit Area of Underground Mines Relative to the Angle of Draw."

UMC 805.11 Determination of Bond

43. Several important reclamation tasks have been identified as inadequate in stipulations throughout the draft TA. Without this information, there is insufficient information to determine the appropriate bond estimate. On page 2 in the Findings section of UDOGM's document, the author indicates that a final bond amount has been established, however, the PAP has not provided sufficient information to determine final bond (as indicated by the stipulations), or compliance with UMC 786.19(k) and 805.11. This issue should be corrected in the final draft decision document.