



0003

STATE OF UTAH
NATURAL RESOURCES
Oil, Gas & Mining

Scott M. Matheson, Governor
Temple A. Reynolds, Executive Director
Dianne R. Nielson, Ph.D., Division Director

4241 State Office Building • Salt Lake City, UT 84114 • 801-533-5771

December 10, 1984

Office of Surface Mining
Western Technical Center
Brooks Towers
1020 Fifteenth Street
Denver, Colorado 80202

Attention: Mr. Mark Humphrey

Ladies and Gentlemen:

RE: Draft Technical Analysis, Utah Power & Light Company,
Des-Bee-Dove Mines, ACT/015/017, #2, Emery County, Utah

Enclosed please find an annotated copy of the Des-Bee-Dove draft Technical Analysis (TA) which has been reviewed by the Division. In addition to those comments annotated in the document, major areas of concern or deficiencies identified during the Division's review are outlined below.

1. There is a general lack of appropriate references to the applicant's Mining and Reclamation Plan (MRP) [Permit Application Package (PAP)].
2. Condition No. 1 under UMC 817.21 must be satisfied prior to permit approval. The information requested in this condition pertains directly to UMC 784.13 and is considered baseline information.
3. There is a general lack of verbage explaining and supporting calculations found in the reclamation portion of the plan from a hydrologic perspective. The reasoning, references and rationale behind the applicant's choice of riprap size, channel size, etc., are unclear.
4. There is no discussion in the TA regarding the sediment disposal area or the major precipitation event that necessitated it.

5. Section 3, Ground Water, is poorly written and should be redone.
6. There is a lack of appropriate discussion under UMC 817.55.
7. The TA does not address support facilities or transportation facilities (UMC 817.180 and 817.181).
8. Section 7 needs to be rewritten and the applicant's proposal must be separated from the evaluation of compliance. As it currently stands, compliance is discussed in with the applicant's proposal and the two cannot be distinctly separated.
9. The applicant is not in compliance with UMC 817.97 until the commitment is made, within the context of the mine plan itself, to mitigate potential adverse impacts to raptor nesting habitat due to subsidence in consultation with the regulatory authority and the U. S. Fish & Wildlife Service (USFWS).
10. The TA states that plans for grading along the contour are in compliance, but fails to describe the plans (Section 8.3).
11. In Section 9.1 of the TA, the proposal states that the applicant has not provided for public notices to be submitted to the affected surface owners. Although most of the land over the mine is owned by Utah Power & Light Company (UP&L) and the U. S. Forest Service (USFS), the TA states that it "appears some privately owned land is in areas adjacent to the mine and could be within the angle of draw of subsidence effects." This should be clarified.

The Apparent Completeness Review (ACR) prepared by Simons, Li & Associates and sent to UP&L October 26, 1983 included the lack of calculations or references utilized to define the angle of draw. The area included as potentially affected by subsidence as part of the permit area should have been submitted by UP&L.

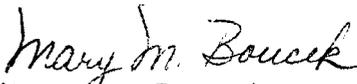
Page 3
Office of Surface Mining
ACT/015/017
December 10, 1984

12. The TA notes, in Section 10, that the applicant proposes nine lbs/ac Pure Live Seed (PLS) seed mix for final revegetation of the desert shrub community, with reference to page 4-10, revised, Volume 2 of the MRP. This page, revised January 27, 1984, commits to a 30 lbs/ac PLS seed mix for restoration of this community. A discrepancy is apparent in this regard.
13. In Section 11 of the TA, the restoration of roads is not described in the applicant's proposal. In addition, the condition in Section 11.3 must be satisfied prior to permit approval.
14. An escalation factor of 6.78 percent per annum must be reflected over five years with regard to bonding.

Other problems or discrepancies within the TA have been so noted by annotating the enclosed copy.

Thank you for the opportunity to review this draft. The Division looks forward to reviewing the improved draft during the near future. Should you have any questions regarding the Division's concerns or comments, please contact Mary Boucek or Tom Munson at your earliest convenience.

Sincerely,


Mary M. Boucek
Permit Supervisor/
Reclamation Biologist

btb
cc: Ron Daniels
Steve Cox
Pam Grubaugh-Littig
Ev Hooper
Tom Munson
Rick Smith
John Whitehead

8813R-31-33

RECEIVED

NOV 05 1984

**DIVISION OF OIL
GAS & MINING**

TECHNICAL ANALYSIS

DES-BEE-DOVE MINE

Prepared for

Office of Surface Mining
Western Technical Center
1020 15th Street
Denver, Colorado 80202

By

Simons, Li & Associates, Inc.
3555 Stanford Road
P.O. Box 1816
Fort Collins, Colorado 80522

Project Number: UT-OSM-04
RDF185/R401

October 1984

TABLE OF CONTENTS

| | <u>Page</u> |
|---|-------------|
| INTRODUCTION | ii |
| I. TOPSOIL | 1.1 |
| II. HYDROLOGIC BALANCE - SURFACE WATER | 2.1 |
| III. HYDROLOGIC BALANCE - GROUNDWATER | 3.1 |
| IV. PROBABLE HYDROLOGIC CONSEQUENCES | 4.1 |
| V. MISCELLANEOUS COMPLIANCE | 5.1 |
| VI. EXPLOSIVES | 6.1 |
| VII. PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES | 7.1 |
| VIII. BACKFILLING AND GRADING | 8.1 |
| IX. SUBSIDENCE CONTROL PLAN | 9.1 |
| X. REVEGETATION | 10.1 |
| XI. ROADS | 11.1 |
| XII. ALLUVIAL VALLEY FLOORS | 12.1 |
| XIII. POSTMINING LAND USE | 13.1 |
| XIV. AIR RESOURCES | 14.1 |
| XV. BONDING | 15.1 |

INTRODUCTION

Utah Power & Light Company of Salt Lake City, Utah, has submitted an underground mining and reclamation permit application for the Des-Bee-Dove Mine complex in Emery County, Utah, in compliance with the Coal Mining and Reclamation Permanent Program (Chapter I) of the State of Utah. The permit area and mining plan area consist of 2,760 acres and will be mined to the year 1998 (life of mine). The term of permit is five years, with right of successive renewal for the rest of the permit area, which is the life of mine. The Des-Bee-Dove Mine is presently operating under an approved mining permit issued by the State of Utah, Division of Oil, Gas and Mining (Act/015/107) issued on May 11, 1978. Approval by the U.S. Geological Survey was never given for the Des-Bee-Dove Mine under CFR 211 due to administrative complications that developed when the Office of Surface Mining assumed primacy.

The Des-Bee-Dove Mine is one of three separate mines owned by Utah Power & Light Company (UP&L). They are located in the area of East Mountain (T17S, R7E), and are largely within the Manti La Sal National Forest. The three mines are the Wilberg, Deer Creek, and Des-Bee-Dove, containing three mineable coal seams: the Hiawatha, Cottonwood, and Blind Canyon. Only two of these seams exist in the Des-Bee-Dove Mine area. These are mined in three main portals: the Deseret, Beehive, and Little Dove. The Hiawatha (lower) seam is mined through the Deseret portal. The Blind Canyon (upper) seam is mined through the Beehive and Little Dove portals. The anticipated life-of-mine production is near 8.3 MM tons. Total in-place reserves within the Des-Bee-Dove Mine boundaries are approximately 17.2 MM tons. The mining plan consists of a system of mains and sub-mains connecting a series of room-and-pillar continuous mining sections. Estimated annual production averages 725,000 tons.

UP&L acquired the Des-Bee-Dove Mine in 1972 from the Deseret Coal Company, a Latter Day Saints (L.D.S.) Church welfare project. The L.D.S. Church and the Castle Valley Fuel Company mined the property from 1938 to 1947, when the church bought the Castle Valley Fuel operation. From 1936 to 1938 the mine workings were operated by two men, Edwards and Broderick. Mining began in the canyon in 1898 as the Griffith Mine.

The Des-Bee-Dove surface facilities are located in three areas: a site in an unnamed wash on the southeastern perimeter of East Mountain; on 86 acres of haul road connecting the Wilberg and Des-Bee-Dove Mines (both owned by UP&L); and a 4.5-acre sediment pond and storage site below the main facilities area. Surface facilities at the main site include the following: earthen structures, coal stockpile, tipple, facility conveyors, parking lot, office-bathhouse, warehouse, underground shop, materials storage areas, access and service roads, mine ventilation fans, power supply and substation, potable water system, sewer treatment system, and drainage systems. There are 17 portals associated with the mine, all of which, with the exception of two ventilation portals, are located at the main facilities area.

Coal Leases

The approximately 2,760 acres contained in the Des-Bee-Dove permit area cover all or part of the following federal coal leases:

| <u>Page</u> | <u>Total Lease Area</u> | <u>Within Permit Area</u> |
|-------------|-------------------------|---------------------------|
| U-02664 | 920 acres | all |
| SL-050133 | 80 acres | all |
| SL-066116 | 520 acres | all |

Other owners of coal to be mined in the Des-Bee-Dove permit area include:

| | | |
|-----------------------------------|-------------|----------|
| The Estate of Malcolm McKinnon | 440 acres | 30 acres |
| UP&L | 1,000 acres | all |

Other lands affected by mining include:

| | | |
|---|-------------|-------|
| State of Utah Special Use Lease Agreement No. 436 | 40 acres | all |
| Forest Service Special Use Permit | 100 acres | all |
| BLM Permit Des-Bee-Dove to Wilberg Mine haul road | 86 acres | all |
| Total | 3,186 acres | 2,776 |

Description of Operations

The Des-Bee-Dove Mine is a multi-seam operation utilizing room and pillar techniques for coal extraction. The mine is located in the Central Utah coal basin and will be operating in an area known as East Mountain. Full extraction is planned in the panel sections where pillars will be pulled. Extensive areas in both seams have been already mined in this operation.

The seams which will be recovered are the Blind Canyon seam and, approximately 100 feet below that, the Hiawatha seam. Mining operations plan to recover the uppermost seam first, then the lower seam. Approximately 390 acres of mineable coal remain in the Hiawatha seam and 558 acres in the Blind Canyon seam that are accessible from the Des-Bee-Dove mines. The minimum seam thickness that can be economically recovered is five feet. This limit defines the horizontal extent of mining in many areas. The thickness of coal in the mine area reaches 16 feet, though 10 feet appears to be about average.

Geologic Setting

The coal seams are located in the lower 150 feet of the Blackhawk Formation. Map 2-4 (PAP, Vol. 4) shows four cross-sections through the mine area. Below the Hiawatha seam is the Starpoint Sandstone which is a marker bed between the Blackhawk and the Mancos Shale. Located approximately 750 feet above the Blind Canyon seam is the Castlegate Sandstone. This massive sandstone is almost 200 feet thick in this area and is a prominent cliff former. Above this formation is the Price River Formation, which is sandstone interbedded

This would be covered

shale and conglomerate and is approximately 350 feet thick. Above this is the North Horn Formation which is interbedded shales and sandstones. This formation forms the cap of East Mountain in the area of Des-Bee-Dove mines. Figure 2-2 (the page after 2-60, PAP Vol. 1) shows the general stratigraphy of the mine area. All of the above noted formations are part of the Mesa Verde Group.

downward

Renewable Resources

Renewable resources exist above the mine, however, no structures exist in the area over the mine except for unimproved access roads. The renewable resources that exist are springs, seeps, grazing land, timber and wildlife habitat. The springs and seeps are shown on Map 2-11 (PAP, Vol. 4). The Ground Water section of this Technical Analysis (Chapter III) provides a detailed description of the hydrologic characteristics of the springs and seeps. In general, the springs emanate from the North Horn Formation on East Mountain. Only two springs emanate from the North Horn Formation within the Des-Bee-Dove permit area and these occur on or near major faults. The Flagstaff Formation, which is the main source of groundwater recharge to springs emanating from the North Horn Formation, does not occur within or adjacent to the permit area.

Land uses above the mine include deer summer range, elk winter range, and raptor habitat (Map 2-19, PAP, Vol. 5). The raptor habitat generally follows the sandstone outcrops in the eastern section of the mine area.

Hydrologic Resources

The natural terrain of the permit area is rocky, dry and very steep, with moderate vegetation. The watershed above the sediment pond has an area of 298 acres, of which 86 acres are located above the facilities area (Figure 1, Appendix VII, PAP, Vol. 3). Water from surface runoff above the facilities area is stored in a series of sumps within the Beehive Mine for use in mining operations. Water is also transferred from the Wilberg Mine to the Little Dove Mine and stored in a sump for use in mining operations.

does not give with acreages found in APPENDIX 349 ACTOT 137 ABOVE FACILITIES

The Des-Bee-Dove mines are not in contact with any significant amount of groundwater, and dewatering activities are infrequent. Contact with meteoric groundwater has occurred on two occasions since UP&L has assumed mining operations. This "dry" condition of the mine has led to the need to import and store water from other sources. The permit area is bounded on the west by the Deer Creek and Bear Creek faults. The Des-Bee-Dove permit area is not overlain by the Flagstaff Formation which is the main recharge area for groundwater on East Mountain. Two springs occur in the permit area, both associated with the Deer Creek and Bear Creek faults. The absence of springs in the permit area and groundwater inflow to the mines is largely for two reasons. First, the lateral flow of groundwater is disrupted by the displacement of the Deer Creek and Bear Creek faults. Second, a recharge area is not present.

Check this area for recharge

Recharge can occur if the Flagstaff is not present!

Field investigations revealed no threatened or endangered species present near any area of disturbance. The Office of Endangered Species, U.S. Fish and Wildlife Service, provided a letter on August 15, 1983, stating that they have found no potential conflict with the proposed action.

Soils

Soils occurring within the proposed permit area are composed of four soil mapping units. These soils are Typic Cryochrepts - Lithic Cryorthents - Rock Outcrop, loamy-skeletal, shallow association, 40 to 60 percent slopes; Pachic Cryoborolls, loamy and loamy skeletal, 10 to 25 percent slopes; Typic Cryoborolls, loamy and loamy skeletal, 25 to 40 percent slopes; and Chipeta - Badlands complex, 10 to 25 percent slopes, eroded.

Due to previous mining operations, little soil remains on disturbed areas. The final graded surface to be used as a seedbed will be composed primarily of cut, fill, and mine-generated spoil materials with some coal wastes included. The pH of selected spoil samples ranged from 7.1 to 8.8 with coal waste samples having values of 7.1, 7.5, and 10.0. Electrical conductivity values for coal wastes and spoil samples taken in 1980 and 1983 were low, ranging from 0.3 to 2.5. Sodium adsorption ratios were relatively low for most materials analyzed in 1980 (≤ 1.0) and somewhat higher for materials analyzed in 1983 (2.76 to 3.28). Nitrogen, phosphorous and potassium levels were generally low for all samples analyzed. Percent saturation values for 1983 fill samples ranged from 20 to 30, indicating coarse spoils with relatively low water-holding capacity. Textures of 1980 fill samples were primarily sandy loam. Textures of 1983 samples were sandy clay loam (two samples) with the remaining sample a sandy loam. Soil sampling information for the Deseret sediment pond and sludge disposal open area does not exist as topsoil was determined by the OSM and UDOGM to be absent (applicant's response to DOA, 1/27/84). Mancos shale was present in the surrounding area associated with a thin layer of poor soil material derived from Mancos shale and Badland parent materials. No soil information was presented for the Des-Bee-Dove Wilberg Junction Road portion of the permit. It can be assumed from the proximity of the road to the sediment pond that soils which had overlain this road are of parallel quality to those associated with the sediment pond.

The soils which are found adjacent to the disturbed area include the Comodore-Beenom Complex (Co-Be), 40 to 60 percent slopes, and the Rock Outcrop - Rubble Land - Sunup Gravelly loam (Ro-R-S), 40 to 70 percent slopes. The Co soil (50 percent of unit) is shallow and well drained and primarily supports mixed conifer vegetation. The Be soil (40 percent of unit) is also shallow and well drained and primarily supports grass vegetation. The Rock Outcrop is from sandstone and shale with Rubbleland boulders from sandstone (75 percent of unit). The S soils (25 percent of unit) are shallow and formed in material derived from sandstone. Permeability is moderately rapid in the soil above the rock.

Fish and Wildlife Resources

Wildlife species inhabiting the mine permit area and vicinity are typical for this region of the Wasatch Plateau and no critical habitats for threatened or endangered wildlife species occur in the areas disturbed or to be disturbed by

mining operations. The bald eagle is a winter visitor to the region but will not be affected by mine activities.

Cliffs in the vicinity of the mine portal and facilities area represent potentially valuable cliff-nesting habitat for several species of raptors (e.g. golden eagle, red-tailed hawk, and prairie falcon). Wooded habitats within the permit area also provide nest sites for tree-nesting species such as northern goshawk, Cooper's hawk, sharp-shinned hawk, red-tailed hawk, American kestrel, and screech owl. A 1982 U.S. Fish and Wildlife raptor survey for cliff-nesting species identified one inactive golden eagle nest (#87) approximately 1,500 feet southeast of the Des-Bee-Dove mine portal area. Map 2-17 (PAP, Vol. 5) gives the location of the nest site. The USFWS has made recommendations concerning protection of raptor nest sites on or in the vicinity of the permit area in its letter dated November 17, 1981.

Mule deer occur within the mine plan area year-round. During the summer they are found predominantly in habitats at the mid to upper elevations in the permit area (e.g., mixed conifer, sagebrush, and grassland). In the winter, habitats (especially pinyon-juniper) at the lower elevations along the benches and slopes of the southern portions of East Mountain in the vicinity of the Des-Bee-Dove mine are designated by the UDWR as high-priority mule deer winter range. Map 2-18 (PAP, Vol. 5) shows the location of mule deer winter range in relation to the mine permit area. A portion of the access/haul road traverses high-priority mule deer winter range. A high priority designation is given by the UDWR to "intensive use areas" for one or more species of wildlife. For mule deer, high-priority range is synonymous with mule deer winter range.

Land Use

Surface ownership of the Des-Bee-Dove portal and facilities area is private (UP&L Co.). The majority of the remaining land within the mine permit area is either privately owned or is part of the Manti-La Sal National Forest. Mineral ownership within the permit area consists of federal and fee coal. No oil or gas wells have been drilled within the permit area, and no gas or oil fields are known for the south end of East Mountain.

Pre-mining land uses in the disturbed areas associated with the Des-Bee-Dove mine were livestock grazing and wildlife habitat. Land use on and adjacent to the permit area consists of recreation, mining, wildlife habitat, and limited livestock grazing. Land use and local land use classifications are shown on Map 2-17 (PAP, Vol. 5). Recreational use of the permit area occurs primarily as hunting and sightseeing on East Mountain.

Coal mining in the vicinity of the Des-Bee-Dove portals began as early as 1898. UP&L Co. has operated the Des-Bee-Dove mine since 1972. No information on production, prior to UP&L Co. ownership, is available.

No farming or commercial forest harvesting has occurred within the permit area. In the vicinity of the mine facilities, steep, rocky terrain, poor soils, and low precipitation preclude any potential for farming. The predominance of rugged terrain and rocky cliffs also limits livestock grazing in the vicinity of the mine portal and facilities. BLM grazing allotments in the

vicinity of the mine portal area are judged in fair condition with a downward trend. Range condition for USFS land on East Mountain above the mine portal area is judged as good, with a static to upward trend. Pinyon-juniper and desert shrub are the only vegetation types that have been disturbed by mining activities. Total forage productivity of pinyon-juniper ranges from 25 to 100 lbs/acre (dry weight) on the steep rocky slopes, to 100 to 324 lbs/acre (dry weight) on the benches, as estimated by the applicant. Desert shrub range productivity is estimated at 100 to 285 lbs/acre (dry weight).

I. TOPSOIL

1.1 Applicant's Proposal

The applicant provided a soil map and corresponding discussion which generally characterized the soils (to subgroup) occurring over the entire permit area (PAP Vol. 1, pp. 2-128 to 2-129). Mapping corresponded basically to an Order III-IV Soil Conservation Service (SCS) survey. With the exception of possible subsidence effects, these soils will not be disturbed by mining operations.

The area to be affected by mining operations at the mine proper (approximately 20 acres) has been disturbed by previous mining activities. no soil exists on the area to be redisturbed. A general survey of cut, fill and immediately adjacent soils was conducted and submitted. In 1980, a sampling program was initiated to characterize fill material which would serve as the planting medium following final grading (Vol. 2, Tables I and II, pp. 4-9 and 4-10). Additional sampling was conducted in 1983 to further evaluate the physical and chemical characteristics of fill material and coal wastes (see Tables I and II as cited above).

The soil overlying the sediment pond, sludge disposal, and access/haul road disturbances was characterized to complex level (Vol. 2, pp. 2-130 and 2-131). Series and mapping unit descriptions were provided for the soil assumed to have overlain the disturbance.

Because the Des-Bee-Dove Mine site is located on a previously disturbed site where no topsoil was salvaged, existing cut-and-fill material will constitute most of the seedbed material following grading. This medium, based on chemical and physical analysis, is considered generally suitable for reclamation given the absence of topsoil materials. Electrical conductivity (EC) and sodium adsorption ratios (SAR) are within acceptable limits. One pH value (8.8) was high, though EC and SAR values for the sample were low. Textures ranged from sandy loam to sandy clay loam. Water-holding capacities are low (Vol. 2, Tables I and II, pp. 4-9 and 4-??).

Soils which had overlain the sediment pond and sludge disposal disturbances were derived from Mancos shale and Badland parent material. The soils are shallow, well drained and alkaline. The soils have a low potential productivity.

The Des-Bee-Dove Wilberg Junction Road is constructed upon the Masuk Tongue of the Mancos shale on layers of terrace debris which, in places, overlies the Mancos shale (Vol. 2, revised p. 2-70). The applicant has not provided the results of soil laboratory analysis for this material. In the absence of this information, and considering the proximity of the road to the sediment pond, it can be assumed for the purposes of this discussion that these soils characteristics roughly parallel the soils associated with the sediment pond disturbance.

Since soil material is lacking for reclamation, the applicant proposes to develop a substitute soil by temporarily reclaiming various existing fill slopes which will not be disturbed during mining operations (see Section X, Revegetation). Surface material of these slopes, through temporary reclama-

*check soil material will be used for reclamation
this first paragraph seems out of place*

*2 to substitute material (#2)
to substitute material (#4) to soil formation (Sand 6) then back to substitute material (#2)
3
4
5
This page does not flow it jumps from soil mapping (para 1) to substitute material (#4) to soil formation (Sand 6) then back to substitute material (#2) in 2nd paragraph.*

tion, will increase in organic matter content and microbial populations thereby providing a planting medium superior to existing fill materials. At the onset of grading, this "topsoil" (cut-and-fill seedbed material) would be stripped from the reclaimed slopes and temporarily stockpiled. As grading is completed, this "topsoil" would be redistributed on newly graded surfaces to a depth of 6 to 12 inches at random locations over the site to enhance reclamation potential.

Fill material stockpiled during construction of the sediment pond will be redistributed during grading and contouring. Grading and recontouring will follow dewatering of the pond (Vol. 2, pp. 4-17 to 4-22).

All seedbed material will be sampled following grading for fertilizer requirements and to detect the presence of localized high EC and SAR concentrations. Fertilizer will be broadcast prior to planting according to soil test results (Vol. 2, p. 4-??).

1.2 Evaluation of Compliance of Proposal

UMC 817.21 Topsoil: General Requirements

The applicant has not provided laboratory analysis data for soil to be used to reclaim the Des-Bee-Dove Wilberg Junction Road disturbance. The ^{reg. authority} ~~OSM~~ believes that because this disturbance includes most of the acreage associated with the proposed application, such data are necessary to determine the potential for revegetation. This information must be supplied for the applicant to be in compliance with this section.

UMC 817.22 Topsoil: Removal

The applicant has complied with the requirements of this section.

UMC 817.23 Topsoil: Storage

The applicant has complied with the requirements of this section.

UMC 817.24 Topsoil: Redistribution

The applicant is in compliance with the requirements of this section.

UMC 817.25 Topsoil: Nutrients and Soil Amendments

The applicant is in compliance with this section.

1.3 Conditions

1. ^{Prior to} Within ~~60 days of~~ permit approval, the applicant must submit the results of laboratory analyses taken on soil samples representing the material to be used as topsoil on the Des-Bee-Dove Wilberg Junction Road. At a minimum, the analyses must include data on soil texture, pH, electrical conductivity, sodium adsorption ratio, N, P and K. A sufficient number of samples must be taken to adequately characterize this material.

→ This should be supplied now, not after permit approval.

DOGMA requires the info before approval and sometimes before DOC. Since large amt of acreage involved shouldn't be

II. HYDROLOGIC BALANCE - SURFACE WATER

2.1 Description of Applicant's Proposal

The Des-Bee-Deve Mine facility is located on a 20-acre site in an unnamed wash on the southern perimeter of East Mountain. The natural terrain is rocky, dry and very steep, with moderate vegetation. The off-mine portions of the facilities include a haul road from the Wilberg Mine to the Des-BeeDove Mine, a waste rock disposal area (used in conjunction with the Wilberg Mine), and the sedimentation pond. The watershed area is 298 acres, with 86 acres of undisturbed area above the mine.

Diversion ditches and a sediment pond are used to protect the surface hydrologic balance. The runoff from the undisturbed area above the mine site is diverted to sump areas within the Bee Hive Mine. Storm runoff from within the mine facilities area is collected in a system of open ditches, bermed roadways and culverts, and discharged to the tributary below the mine facilities. Immediately down-valley of the mine facilities, a sediment pond detains runoff and sediment yield from 212 acres of watershed and 20 acres of disturbed area, respectively. The right of way for the haul road is 86 acres in size, 50 acres of which is disturbed by the roadway. Drainage for the roadway is provided by ditches and culverts.

The upper pad contains the Little Dove and Bee Hive Mine portals. Discharge from the undisturbed area above these mines reaches the pad over the top of the Bee Hive Mine portal. Historically, this inflow has been used to augment the supply of water available for mining operations in the Des-Bee-Dove complex. The applicant proposes to construct a controlled diversion structure that will collect runoff from the undisturbed area and discharge it to the westernmost air intake portal (one of two) for the Bee Hive Mine (see Map 3-11, PAP, Vol. 5). The diversion structure consists of an embankment, spillway and sluice gate. If flow exceeds the peak rate of the 10-year 24-hour storm, the spillway will discharge. The spillway is designed to discharge the peak flow of a 25-year, 24-hour storm with one foot of freeboard remaining at the embankment. Planned operation of the structure is to have the sluice gate remain in the open position, which will allow runoff to be discharged to the sump areas in the Bee Hive Mine. The sumps within the mine have a storage capacity of 11.0 acre-feet (see page 3-53-D, PAP, Vol. 2) compared to an estimated inflow volume of 5.7 acre-feet for the 10-year, 24-hour storm. During rainstorms an operator will be present at the sluice gate and will close the gate if inflow exceeds the sump capacity. Other sumps exist within the mine, and options also exist to open doors along mine corridors that would allow additional water to drain into the mine. After a runoff event these auxiliary sumps would be drained into adjacent abandoned mine workings. Flow depths in the mine corridors leading to the sump will be less than one foot (page 3-53-F, PAP, Vol. 2). Storage of water in auxiliary sump areas will not block the movement of men or equipment in other mine entryways (pages 3-53-D,E PAP, Vol. 2), and personnel will be notified prior to water being stored underground.

The runoff from the mine facilities area is collected by a system of open ditches, bermed roadways and culverts that have a capacity to convey the peak runoff from a 10-year, 24-hour storm. The system is shown on Map 3-8 (PAP,

Continuation?

Vol. 5).

reference
 Because of limited space within the mine facilities area and precipitous landforms surrounding the Des-Bee-Dove Mine complex, the sedimentation pond was located down-valley of the main facilities area and placed at the mouth of the dry wash that drains the mine site. The storage requirement for the pond is 18.0 acre-feet, which includes 14.0 acre-feet of runoff, 2.0 acre-feet of sediment, and 2.0 acre-feet that the applicant refers to as a decanting volume. The total pond capacity is 19.8 acre-feet. The design runoff volume was determined using a rainfall excess of 0.8 inches (corresponding to a SCS curve number of 85 and a rainfall depth of 2.0 inches) for the 10-year, 24-hour storm over 212 acres of the watershed.

The sediment storage volume of 2.0 acre-feet is based on 0.1 acre-foot/acre sediment yield over a disturbed area of 20 acres. The applicant's annual sediment yield reaching the pond to date has been about 1.0 acre-feet. *DISCUSSION OF FLOOD AND SEDIMENT DISPOSAL AREA*

ref
 The Des-Bee-Dove Mine to Wilberg Mine haul road crosses a piece of topography known as Danish Bench. The road is 2.3 miles in length and has numerous culverts that bypass runoff from ephemeral channels on Danish Bench. The culverts have a capacity adequate for the 10-year, 24-hour storm runoff from these channels. *WHERE ARE THE HYDRO CALCS ON ROAD.*

Reclamation of the drainage at the Des-Bee-Dove Mine will consist of removing the temporary drainage system and the diversion, and at the end of the bonding period, the sediment pond. All fills will be removed above the tipple yard, which will result in a permanent channel on the original bedrock material. A riprap-lined channel will be constructed across the tipple yard fill. This channel will discharge down a riprap fan at the end of the fill, returning to the original channel. Two smaller channels will be built to prevent water from flowing onto the fill from the canyon sides and to prevent water from flowing over the steep down-valley face of the fill. All channels are designed to pass the 100-year, 24-hour runoff peak flow. The details of the reclamation drainage plan are shown on Maps 4-1 through 4-3 (PAP, Vol. 5).

A significant feature of the reclamation drainage plan is the bypass channel and riprap fan for conveying flows across the tipple yard fill. The applicant prefers to leave the fill in place. The channel is routed along the north side of the fill, then down the riprap fan located off the fill itself. The channel will be riprap-lined (mean diameter of 1.25 feet) and have a base width of 15 feet with 2H:1V sideslopes. Where the channel crosses fill material, a 6-inch-thick clay liner will be used to prevent seepage from the channel to the fill, followed by 12 inches of filter material consisting of three gradations. On natural ground a 9-inch-thick filter with one gradation will be used. A transition is provided for directing flows into the channel and to the cascading rock fan. Since the channel will occupy the same bench as the mine access road, a grouted riprap road ford is provided at the upstream end of the transition. The fan will be constructed with a riprap size sufficient to provide energy dissipation and stability. An energy dissipation pool is provided at the base of the fan for transitioning flows into the natural channel.

32 The sediment pond will be left in place to control sediment yields during the

bonding period. Maintenance work is proposed in the late summer of each year to stabilize those areas experiencing erosion. After the bonding period is complete and vegetation is satisfactory, the sediment pond will be dried out and backfilled to approximate the original topography.

Reclamation of the haul road will involve removal of all culverts. Material from culvert excavation will be used to cover the remaining road sections. The ephemeral stream channels will be returned to their original condition.

2.2 Evaluation of Compliance

UMC 817.41 Hydrologic Balance: General Requirements

The applicant's compliance with this regulation is discussed in Chapter IV.

UMC 817.42 Hydrologic Balance: Water Quality Standards and Effluent Limitations

All discharge from surface drainage at the Des-Bee-Dove Mines passes through a sedimentation pond, and no water is discharged from the mines. The sediment pond has been assigned NPDES permit UT-0023591. The applicant is in compliance with the requirements of this section.

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow, Shallow Groundwater Flow, and Ephemeral Streams

The drainage basin encompassing the Des-Bee-Dove Mine area is ephemeral, with a total area less than one square mile. The temporary diversions proposed by the applicant meet all the requirements of this section. For permanent reclamation of the channel the applicant meets the requirements of this section; however, UMC 817.72(d) requires that surface runoff be diverted away from a valley fill. The applicant is in compliance with the requirements of section (f) and has shown adequate riprap, filter, and clay liner to safely pass the 100-year, 24-hour runoff peak flow (see Maps 4-1, PAP, Vol. 5). Given the precipitous terrain, the only other option for location of the permanent reclamation channel is to remove the tipple fill entirely. The applicant has therefore requested a variance from the requirements of UMC 817.72(d). Considering that the tipple fill has been shown by the applicant to be geotechnically adequate (Appendix X, PAP, Vol. 3) and the channel design meets the requirements of this UMC 817.43(f), the variance has been granted.

817.44 Hydrologic Balance: Stream Channel Diversions

All streams within the Des-Bee-Dove Mine area are ephemeral with a total drainage area less than one square mile and hence do not fall under the requirements of this section.

817.45 Hydrologic Balance: Sediment Control Measures

The existing drainage system at the Des-Bee-Dove Mine site provides an adequate means of controlling sediment runoff. Undisturbed flow from above the mine site is diverted into the Beehive portal. All disturbed area runoff is directed to a sediment pond using a system of culverts, open ditches, bermed

of 10/22/2012 11:12:27 AM

roadways, and a short stretch of natural channel.

During the bonding period it is expected that some erosion will occur on areas being revegetated. Annual maintenance is planned for these areas and runoff will be routed to the sediment pond. This will provide an adequate means of sediment control during this period. Upon final reclamation and revegetation established the sediment pond will be renewed.

817.46 Hydrologic Balance: Sedimentation Ponds

The sediment pond will completely retain runoff from the 10-year, 24-hour storm. The sediment pond operates with a manual dewatering device. This device can produce a 24-hour detention time required to meet effluent limitations. Two acre-feet of sediment storage is provided below the elevation of the dewatering device. The applicant shows a _____ volume of two acre-feet from the top of the sediment storage elevation to the elevation of the top of the dewatering device.

The applicant provides hydrologic calculations to determine the magnitude of the 25-year, 24-hour event used to design the emergency spillway. A peak flow of 270 cfs was determined. Using this design flow and Appendix VII (Pap, Vol. 3), considering transition losses into the spillway the spillway length and pond elevations were determined. The applicant indicates that the current spillway width of five feet must be enlarged to 20 feet. Modification of the spillway structure is shown in Appendix VIII (PAP, Vol. 3).

All other requirements of this section have been addressed adequately by the applicant.

817.47 Hydrologic Balance: Discharge Structures

The applicant adequately addresses the use of energy dissipators at the outlets of the sediment pond and the permanent diversion and is in compliance with this section.

817.49 Hydrologic Balance: Permanent and Temporary Impoundments

The only impoundment at the Des-Bee-Dove Mine site is the sediment pond addressed under Section UMC 817.46. All additional requirements under this section have been addressed adequately by the applicant.

817.52(b) Hydrologic Balance: Surface Water Monitoring

Discharge from the Des-Bee-Dove sediment pond is monitored in accordance with NPDES requirements. No situation of noncompliance has been reported to date by the applicant. The applicant is in compliance with the requirements of this section.

817.55 Hydrologic Balance: Discharge of Water Into an Underground Mine

The applicant proposes to divert runoff from 85.7 acres above the mine site into the Beehive portal. An evaluation of the operational aspects of diverting this runoff into the portal is discussed under Section UMC 817.43.

17
p2

NO IT ISN'T

The applicant is in compliance with the requirements of this section.

817.56 Hydrologic Balance: Postmining Rehabilitation of Sedimentation Ponds, Impoundments, and Treatment Facilities

Rehabilitation of all temporary diversions and sedimentation ponds at the Des-Bee-Dove Mine have been addressed adequately by the applicant.

817.57 Hydrologic Balance: Stream Buffer Zones

No streams at the Des-Bee-Dove Mine contain a biological community as defined under Paragraph (c) of this section and hence do not fall under its regulations.

2.3 Conditions

None.

III. HYDROLOGIC BALANCE - GROUNDWATER

3.1 Description of Applicant's Proposal

⇒ This section is extremely weak. There is no proposal discussion per

The hydrologic monitoring in the Des-Bee-Dove mines shows the mine workings to be essentially dry. Significant groundwater inflow to the mines has been measured on two occasions (see PAP, Vol. I, page 2-73) and these rapidly diminished. The water-producing areas of the mines are therefore assumed to represent isolated pockets of groundwater.

The dry nature of the Des-Bee-Dove mines contrasts to the wet conditions in the Wilberg and Deer Creek Mines. This is attributed to the fact that the displacement of the Deer Creek fault effectively separates the mine from the source of groundwater on East Mountain.

Data on the piezometric gradient in the Starpoint Formation are presently being collected from within the Deer Creek Mine. The applicant has stated in the 1984 Hydrologic Monitoring Report (page 39) that no piezometric level has been observed for the Starpoint Sandstone, indicating that the piezometric level is below the level penetrated by the drill holes.

As a part of the applicant's hydrologic monitoring overall program for East Mountain, one of two springs within the permit area is monitored. Both springs occur in the Price River formation near the Deer Creek and Bear Creek faults. The remaining area of the permit is without springs or seeps.

reference?

a complete rewrite - 817.50, 52, 53 - no references to MRP. This needs

3.2 Evaluation of Compliance of Proposal

UMC 817.48 Hydrologic Balance: Acid-Forming and Toxic-Forming Materials

The discussion under this section relates to the disposal of underground development waste from the Wilberg and Des-Bee-Dove mines. Please refer to the Wilbert Technical Analysis for this discussion. → Wrong. Needs to be included in the Des-Bee MRP and this TA!!!!

UMC 817.50 Hydrologic Balance: Underground Mine Entry and Access Discharges

The portals of the Des-Bee-Dove mines will not discharge water from the underground workings. The applicant is in compliance with the requirement of this section.

UMC 817.52(a) Hydrologic Balance: Groundwater Monitoring

One spring is monitored within the Des-Bee-Dove permit area. Monitoring of springs in the Wilberg and Deer Creek Mine permit areas is also conducted by the applicant. The applicant's hydrologic monitoring of groundwater for the Des-Bee-Dove Mine permit area is in compliance when considered as part of the applicant's overall hydrologic monitoring program.

UMC 817.53 Hydrologic Balance: Transfer of Wells

No transfer is planned.

no conditions on groundwater?
3.2

UMC 817.55 Hydrologic Balance: Discharge of Water Into an Underground Mine

Inflows to the Des-Bee-Dove Mine from the Wilberg Mine are reported by the applicant on a monthly basis in the hydrologic monitoring report. Data are submitted quarterly.

UMC 817.13-.15 Casing and Sealing of Underground Openings

All surface drilled holes have been reclaimed according to the Geologic Survey's published Drill Hole Plugging Procedure and meets these regulatory requirements.

3.3 Conditions

None.

Out of compliance, including appropriate references to the permit, where's the appropriate references to the permit?

IV. PROBABLE HYDROLOGIC CONSEQUENCES

4.1 Description of Applicant's Proposal

The applicant reports the land surface above the Des-Bee-Dove mines to be generally dry. The mine workings are also dry. Two springs are present in the permit area in an area where both seams of coal have been first mined. Monitoring of one spring has shown no impact to the flow of this spring to date. The applicant concludes that it is highly unlikely that mining will have any effect on the hydrologic regime in the area.

*7
Influence?*

4.2 Evaluation of ComplianceUMC 817.41 Hydrologic Balance: General Requirements

The underground coal mining at the Des-Bee-Dove mines will achieve to the extent possible an even lowering of the surface over the mines. Areas of non-uniform subsidence will occur at barriers within the mine and at mining boundaries. The spring flow within the permit area occurs at the western boundary of mining and in conjunction with faulting, in an area of non-uniform subsidence. The major source of groundwater for these springs is the Flagstaff Formation to the west of the permit area. This formation may be affected by mining activities associated with the Wilberg and Deer Creek mines, but the Des-Bee-Dove mines will not affect recharge of these source areas.

Subsidence at the boundary of the mined area may affect these springs and this should be apparent in the near future as retreat mining is completed by 1987. Monitoring of spring flow and subsidence is conducted by the applicant and provides the necessary information to assess effects on spring flow.

7

is this it? Are they in compliance? What about replacement ^{spring} if impacted adversely; from a grazing/wildlife standpoint the springs may be very important since there are so few sources of water in this area. A discussion of this is herein warranted or, at a minimum, cross reference to discussion under section VII (re 817.97)

V. MISCELLANEOUS COMPLIANCE

The miscellaneous compliances sections of the permit application (UMC 817.11 Signs and Markers, UMC 817.131 - .132 Cessation of Operations: Temporary and Permanent, UMC 817.180 Other Transportation Facilities, and UMC 817.181 Support Facilities and Utility Installations) have been reviewed. Operations at the Des-Bee-Dove Mine are conducted in compliance with the performance standards of these regulations.

The applicant is conducting mining operations so as to maximize the utilization and conservation of coal at the Des-Bee-Dove Mine as stated by the Bureau of Land Management. The applicant is therefore in compliance with UMC 817.59.

→ at least reference where in the MRP these sections are discussed.

VI. EXPLOSIVES

6.1 Applicant's Proposal

Explosives will be used at the Des-Bee-Dove mine site to realign the access road. Approximately 5200 cubic yards of material will be blasted. Due to the use of explosives on the surface, the applicant must meet the requirements of UMC 817.61 to UMC 817.68. The applicant has provided information on blasting requirements in Appendix VI of the PAP.

All blasting will be done under the supervision of a certified blaster and will be conducted to meet the requirements of Utah Permanent Regulatory Program and the requirements of the Mine Safety and Health Administration, Department of Labor. The individuals will be certified as provided by 30 CFR 850 and the State Industrial Commission.

There are no dwellings or buildings located within one-half mile of the mine site that are not owned by the applicant. Exhibit 1 in Appendix VI shows the proposed blasting record.

6.2 Evaluation of ComplianceUMC 817.61 Use of Explosives: General Requirements

The applicant has stated that compliance with all Federal and State laws will be achieved. In addition, blasting will be conducted by a certified blaster. The applicant has stated that this certification will be in accordance with 30 CFR 850 and applicable regulations of the State of Utah Industrial Commission. The applicant is in compliance with this section of the regulations.

UMC 817.62 Use of Explosives: Preblasting Survey

Other than those owned by the applicant, there are no structures located within one-half mile of the permit area. This regulatory requirement does not apply.

UMC 817.65 Use of Explosives: Surface Blasting Requirements

There are no currently existing dwellings or structures within one-half mile of the area potentially affected by surface blasting. Therefore, part (a) of this section does not apply.

The applicant has stated that blasting will occur between sunrise and sunset. The applicant is in compliance with part (b) of this section of the regulations.

Information has been provided concerning the warning and all-clear signals which will be used during blasting operations and measures to be taken to control access to the site,. Therefore, the applicant is in compliance with parts (c) and (d) of this section of the regulations.

Blasting will not occur within 1,000 feet of any dwellings, or within 500 feet of any disposal wells, petroleum or gas-storage facilities, municipal waste

storage facilities, fluid-transmission pipelines, gas or oil collection lines, or water and sewage lines other than those used by the mining operation. The applicant's facilities are located within 500 feet of blasting. However, since blasting will be a very minor operation and it is in the applicant's best interest to protect these structures, blasting within this distance is acceptable. The applicant is in compliance with part (f) of this section of the regulations.

The applicant has provided a statement of compliance with regulations concerning the control of flyrock, airblast, and ground vibrations. The applicant is in compliance with parts (e), and (g) through (l) of this section of the regulations.

UMC 817.67 Use of Explosives: Seismographic Measurements

Since there are no structures within one-half mile of the area except those owned by the applicant, it is not expected that seismographic measurements will be required. When the applicant has committed to using the scaled distance formula for control of ground vibration as required by condition, seismographic measurements will not required.

UMC 817.68 Use of Explosives: Records of Blasting Operations

The applicant has provided a sample blasting record which shows that all information required by this part will be recorded. The applicant is in compliance with this section of the regulations.

→ where's the condition? neither does this appear as a deficiency in the "remaining deficiencies" list received by the Division 11/19/84.

Introduction says "86 acres of haul road". Realizing this is actual disturbance plus ROW, it should be 90, stated to alleviate the appearance of inconsistency

VII. PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES

7.1 Description of Applicant's Proposal

Surface disturbances associated with the Des-Bee-Dove mine total approximately 74.5 acres (haul/access road, main site, and sediment pond). These disturbances will last for the life of the mine and until reclamation is complete. Because of the limited areal extent of surface disturbance, wildlife impacts resulting from loss of habitat will remain relatively minor.

None of the areas affected by the mine represent any critical habitats for threatened or endangered wildlife species (USFWS Endangered Species Office letter of January 10, 1984). The bald eagle is a winter visitor to the region but will not be affected by mining activities. The Des-Bee-Dove mine may have a slight impact on populations of the Colorado squawfish and the humpback chub in the Colorado River, since approximately 137 acres of surface drainage, in the vicinity of the facilities area, will be diverted into the mine rather than being allowed to flow eventually into Cottonwood Creek.

Other mine associated wildlife impacts that may be more significant than direct loss of habitat include (1) human harassment of all wildlife, (2) mule deer road-kills, and (3) the potential effects of subsidence on springs and raptor cliff nesting habitat.

The effects of human harassment on wildlife, either inadvertent or purposeful, should be considered from a cumulative standpoint since at least three other mines are currently operating along the southern end of East Mountain. However, since premining baseline data for wildlife populations in the area is lacking, these effects are extremely difficult to quantify. At a minimum mining activities will likely preclude golden eagle nesting use of the inactive nest site within approximately 1,500 feet of the Des-Bee-Dove mine facilities (Map 2-17, PAP, Vol. 5).

The potential for mule deer road-kills is greatest during the winter months when mule deer congregate in high-priority winter range traversed by the Des-Bee-Dove mine access/haul road and the Des-Bee-Dove/Wilberg Junction road. However, unless a particularly hazardous area is identified by UDWR or applicant monitoring, this impact is not expected to be significant.

Mine-related subsidence could impact springs on East Mountain and raptor cliff nesting habitat in areas where surface fracturing is possible. The effect of subsidence on springs and raptor cliff nesting habitat cannot be fully determined at this time. Future monitoring will be required to provide sufficient information regarding the extent of impacts related to subsidence.

The applicant's plan for protection of fish and wildlife is presented on pages 4-34 to 4-38 (PAP, Vol. 2). The applicant has committed to (1) reporting any golden eagle nesting activity in the vicinity of the mine disturbance areas to the USFWS, (2) consulting with the USFWS if any additional mine related developments are planned in the raptor nesting zone (Map 2-17 PAP, Vol. V), (3) placing deer crossing signs along the haul/access roads within the permit area, (4) reporting the occurrence of deer road-kills and snake dens to the UDWR, and (5) providing a wildlife educational instruction to employees to

This needs a private, thorough evaluation of compliance has been checked into the App's proposal. Referencing MAP where appropriate also needs promotion.

see Division's comment in 81797 Compliance, next page

reduce the potential for harassment of wildlife. The UDWR is currently conducting a deer road-kill monitoring program that includes the Des-Bee-Dove mine access road. If any hazardous areas are identified along the road within the permit area, the applicant will consult with the UDWR for appropriate mitigation measures. → *Where is this commitment?*

The applicant has supplied a map showing the location of golden eagle nests in relation to the mine facilities (PAP, Map 2-17) and has committed to consulting with the USFWS if any additional activities are planned in the raptor nesting zone (page 4-35, PAP, Vol. 2).

The 69 KV line that serves as the power source for the Des-Bee-Dove Mine has been determined to be raptor-safe by the USFWS (letter dated Nov. 10, 1982, to UDOGM). Sufficient phase to phase and phase to ground clearances are provided on this line to preclude electrocution of large raptors.

Following cessation of mining, the applicant will restore the stream channel and revegetate disturbed sites. Plant species selection and planting patterns are designed to restore wildlife habitat as a principal post-mining land use. Details of the revegetation plan are provided on pages 4-17 through 4-22 of the PAP (Vol. 2) and in Section X of the technical analysis.

Because of the importance of springs as a water source for the area's wildlife, as a final commitment, the applicant has stated (pages 4-37 and 4-38, PAP, Vol. 2), that any surface water disturbance resulting from subsidence associated with the Des-Bee-Dove mine will be replaced or repaired as follows:

1. "Streams will be bridged across bedrock fractures by culverts until sediments fill the cracks."
2. "Springs and seeps proven to be lost to subsidence action will be replaced by guzzlers which will be located and designed with prior regulatory authority approval."

7.2 Evaluation of Compliance of Proposal

UMC 817.97 Protection of Fish, Wildlife, and Related Environmental Values

The applicant has complied with the requirements of UMC 817.97.

7.3 Conditions

None.

The applicant is not in compliance until the commitment is made in the MRP to mitigate adverse impacts to raptor nesting habitat (sandstone cliffs), in consultation with USFWS & RA (à la what we're requiring in 1.1.11)

VIII. BACKFILLING AND GRADING

8.1 Description of the Applicant's Proposal

The Des-Bee-Dove mine is located on East Mountain in a tributary of Grimes Wash, a steep-sided drainage. The mine facilities encompass approximately 74.5 acres and are built on benches which have been constructed using cut and fill techniques. The mine facilities are described in the Permit Application Package in the Mine Facilities description starting on page 3-12. All of the described facilities are located in the 74.5-acre disturbance except for a breakout from the Deseret Mine in Section 14 which has been constructed. All other ventilation for the mine is associated with the portals in the facilities area.

A development waste and coal waste disposal site is located below the Wilberg Mine facilities area. This small fill structure has been described and evaluated in the Wilberg Mine Technical Analysis. The fill receives coal waste and development waste from both the Wilberg Mine and the Des-Bee-Dove Mine.

The major earthen structures at the facilities area are shown on Drawing CM-10392-DS. These earthen structures are described in the PAP starting on page 3-44. The major fill is Structure No. 1 and provides 4.1 acres of working space. This fill is constructed of approximately 200,000 cubic yards of waste rock, boney coal and coal fines. The applicant is proposing to reconstruct the fill as shown on Drawing CM-10553-DS. This reconstruction will entail grading of the fill to a 1V:2H slope.

The stability of Structure No. 1 has been evaluated by the applicant. Two exploratory holes were drilled through the pile and information obtained on the density of the material and the type of material. This information along with stability analyses of the fill are provided in Appendix 10 of the PAP. The applicant has determined a minimum safety factor for the fill of 1.4 assuming a friction angle of 32 degrees, cohesion of zero and a density of 71 pounds per cubic foot. The analysis in the appendix was conducted using the Spencer Method. With a cohesion of 100 pounds per square foot, a safety factor of 1.53 was determined. In the applicant's analysis using the Simplified Bishop method, page 3-56 of the PAP, a toe failure was assumed and a safety factor of 1.7 was determined.

The stability of the fill described as Structure No. 2 is described in the PAP in Appendix 11. The remaining fills are described on page 3-49.

Reclamation of the facilities site will entail the removal of all structures, backfilling of the portals, and backfilling of the facilities area to slopes no greater than 1v:2h. The volumes of material to be handled are itemized on the Quantities Summary Sheet following page 4-7 in the PAP. In addition to the quantities of material shown on this table, the applicant will be backfilling 16,296 cubic yards of material to reclaim Structure No.2. Structure No. 1 will remain, but a diversion will be constructed around the fill. The backfilling and grading plan is described in the PAP starting on page 4-1. All material will be backfilled in 18 inch lifts and compacted using a compactor. Stability of the backfilled slopes is discussed in the PAP starting on page 4-6.

worst-case information, and a density of 71 pounds per cubic foot for the coal fines. A cohesion of zero is further substantiated by information found in "Engineering Design Manual Coal Refuse Disposal Facilities", published by the Department of the Interior, Mine Safety and Health Administration, which states a typical cohesion for coal fines is zero. The abutment key fill shown on Drawing CM-10553-DS was assumed to have a cohesion of zero, angle of internal friction of 40 degrees, and a density of 120 pounds per cubic foot. Using the configuration of the slope shown on this drawing, it was determined that the minimum safety factor was 1.26 for a failure surface just above the abutment key. In addition, several other failure planes located further into the pile showed safety factors of 1.4 or less. This is less than the required safety factor of 1.5 and less than the safety factors determined by the applicant.

The difference in the determinations is likely due to the different strength parameters used when compared to the analysis conducted by the applicant using the Spencer Method. Alternatively, the worst-case failure plane may not have been identified by the applicant. This is certainly the case in comparing the applicants evaluation using the Simplified Bishop method where the failure plane was assumed to go through the toe of the fill. Given the nature of the material and the method of placement during construction of the fill, end dumping, which results in a loose, uncompacted fill material, it would appear that the safety factor for this fill is less than the required 1.5. However, it should be noted that this fill has been in place for many years without apparent major failures.

In the letter to the applicant from the Office of Surface Mining dated January 16, 1984, it was stated that the applicant could obtain a variance from the safety factor requirements if certification could be obtained from a Professional Engineer stating that the fill was stable and did not pose a threat of slope failure. In addition, the PE must also address the public health and safety issue if the slope fails. The applicant provided a letter from Rollins, Brown and Gunnel, Inc. (RBG) dated February 17, 1984 stating that in their opinion the safety factor was greater than 1.53. A following letter addressed public health and safety issues, and was certified. The applicant is in compliance with the section of the regulations pertaining to stable post-mining slopes.

Plans have been provided for grading along the contour. The applicant is in compliance with this section of this regulation.

The applicant has provided plans for the closure of the portals which are shown in Figure 1 in Chapter 4 of the PAP. The applicant has provided a suitable backfilling and grading plan for these areas.

what does this mean?

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

The applicant is planning to bury asphalt and concrete, and acid- and toxic-forming material under more than four feet of material in the backfill for Structure No. 2 during final backfilling and grading operations.

The burial of acid or toxic forming materials should explicitly state that this is or is not in proximity to a drainage

Reference?

The Willberg Waste rock disposal site has been referred to in the TA as being described & evaluated in the Willberg TA. An approval letter or a copy of the description of this facility should be included.

Compliance?

Should be discussed here, not under Reveg. So compliance pp 10.4 & 10.5

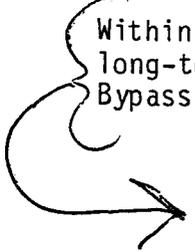
The reader is referred to Chapter X, Revegetation, for further discussion related to this section.

UMC 817.106 Regrading or Stabilizing Rills and Gullies

Plans have been submitted for the repair of rills and gullies in the bond estimate. Based upon the current maintenance program, 24 hours of work per year are needed to repair rills and gullies. The applicant is in compliance with this section.

8.3 Conditions

Within 30 days of permit approval, the applicant must demonstrate that the long-term stability of the cut structure along the Des-Bee-Dove to Wilberg Bypass road meets the 1.3 SSF requirement.



This can and should be demonstrated prior to permit approval.

IX. SUBSIDENCE CONTROL PLAN

9.1 Description of Applicant's Proposal

The applicant's subsidence control plan is to maximize coal extraction, i.e., pillar extraction in panel sections, to achieve an even lowering of the surface to the extent possible. It is anticipated that the pillars which might remain will crush out and minimize the effects of uneven subsidence on the surface. This will have the effect of maintaining an even subsidence trough.

The applicant has stated that full extraction panels have been oriented parallel to the major faults and joints. This alignment with respect to jointing is proposed to prevent the formation of irregular sawtooth subsidence cracks in the overlying surface lands.

The applicant has proposed a subsidence monitoring plan which is described in Appendix 13 of the PAP. In general, the plan consists of a combination of photogrammetry methods tied in with conventional survey methods. The survey will be conducted once a year in mid-summer when the survey can be run in conjunction with the U.S. Forest Service vegetational studies. A ground control survey will be established on a grid system. The applicant has not provided the survey location map showing where the survey monuments will be located. The monuments will provide not only a scale for the photography but also by expanding and monumenting the control survey, a primary grid will be established for measuring both horizontal and vertical displacement.

The applicant has stated that subsidence impacts to roads will be mitigated. The roads will be repaired and regraded to restore them to their pre-subsidence usefulness.

There have been no specific mitigation plans submitted for subsidence impacts such as dewatering of springs or seeps, surface cracking, or slope failures.

The applicant has not provided for public notices to be submitted to the affected surface owners which detail the areas in which mining is to take place, the planned date of the mining activity, and measures to be taken to mitigate subsidence impacts. Most of the land over the mine is owned by UP&L and the U.S. Forest Service. However, it appears that some privately owned land is in areas adjacent to the mine that could be within the angle of draw of subsidence effects.

9.2 Evaluation of ComplianceUMC 817.121 Subsidence Control: General Requirements

A. Description of Subsidence Effects Observed To Date

Monitoring of subsidence to date has included surveys by UP&L using conventional survey methods and photogrammetric methods, and helicopter fly-overs. Data collected through 1982 has been documented in the applicant's annual Subsidence Reports for 1981 and 1982. In addition, monitoring has occurred over the Wilberg and Deer Creek mines which is useful in predicting subsidence in this general area. Though this data was for areas where longwall mining

*Comments - last section of Section 7.1 of this
 TA (see p. 7.2)*

methods were used, the applicant is planning full extraction methods in the room and pillar panels of the Des-Bee-Dove mine which are expected to create similar subsidence impacts.

The USBM has been studying subsidence at the UP&L mines since 1979. The initial study monitored subsidence over two longwall panels developed in the Blind Canyon upper seam between 1979 and 1980. The depth of cover over these panels ranged from 1,600 feet to 1,450 feet. A baseline survey was conducted in October 1978 over the Panels 5 East through 8 East (Deer Creek PAP, Volume 6 Drawing No. CM-10473-DR, Sheet 2, Five Year Mining Plan). These panels run in a east-west direction with Panel 5 East being the northern most. Just north of Panel 5 East is a room and pillar section where the pillars have not been pulled. The first indication of subsidence occurred over Panel 5 East, which was mined first, in September 1979. At a minimum, the face had advanced 460 feet before subsidence occurred. Three inches (0.25 feet) of subsidence was measured at this time. In July 1980 when the next measurements occurred, subsidence had increased to a maximum of 1.6 feet over Panel 5 East. Mining in Panel 6 East immediately adjacent to 5 East had progressed 1,200 feet. Subsidence continued to be recorded, but by November 1980, no additional subsidence occurred over the first 700 feet mined in Panel 5 East. The maximum amount of subsidence measured was 2.7 feet in December 1980 when the analysis in the USBM report ends. This indicates that subsidence due to mining occurs fairly soon after coal extraction. This maximum amount of subsidence occurred near the midpoint of the panel lengths and just north of the chain pillars separating Panels 5 East and 6 East but within Panel 5 East. This shows that the chain pillars crushed out and did not significantly affect the subsidence trough. The barrier pillars and the pillar sections to the north of Panel 5 East did not crush and effectively stopped subsidence except for angle-of-draw effects. The maximum slope of the subsidence trough at this time was 0.06 inches/foot in this area. No surface cracking was evident over the mine with this slope.

Additional data have been supplied by the applicant showing monitoring information through September 1983; this is part of the USBM study. Between 1980 and 1983, mining has continued in Panels 7 East and 8 East in the Blind Canyon seam (upper seam), and Panel 9 Right has been mined in the Hiawatha seam (lower seam) almost directly below Panel 5 East (upper seam) and slightly under the room and pillar section to the north of Panel 5. (See Figure 19, Deer Creek Longwall Subsidence Study, USBM, included in this section.) The maximum amount of subsidence measured to date is almost six feet over Panel 6 East (upper seam). Panels have been completely extracted to the north and south of 6 East. Therefore, it is probable that the maximum amount of subsidence which will occur due to mining in a single seam under the conditions in this area has been observed (over Panel 6 East). However no mining has yet occurred under Panel 6 East and as such the maximum amount of subsidence that might occur due to multiple seam mining in this area has most likely not been observed. The closest longwall mining (to Panel 6 East) which has occurred in the lower (Hiawatha) seam is Panel 9 Right located approximately 300 feet to the north. In addition, a barrier pillar is located in the Hiawatha seam in the area separating mining between Panels 6 East and 9 Right; and the subsidence troughs over these panels do not overlap at the maximum point of subsidence.

Subsidence has continued to occur over Panel 5 East which was the first panel to be extracted in this area, in 1979. A maximum of almost five feet of subsidence has been measured as of September 1983 over 5 East. Though subsidence over Panel 5 East has continued since 1979 (for over four years), this is probably due to the initial extraction in Panel 5 East and later mining in Panel 9 Right. Since mining subsequently occurred in the Hiawatha seam (Panel 9 Right) almost directly below Panel 5 East, subsidence has continued due to multiple seam mining with a minor residual affect from single seam mining. It is expected that subsidence over mined areas within the permit area will not continue more than a few years once all mining in an area is complete.

The subsidence profile continues to show that the chain pillars are crushing out and not creating any significant variation in the profile. The barrier pillars which are located at the ends of the panels to protect the mains from mining in the panels and the pillar section to the north of Panel 5 East do not appear to be crushing at all, and effectively stop subsidence except for angle-of-draw effects. The maximum slope measured at the edge of the subsidence trough as of June 1983 was over Panel 6 East and was 0.09 inches/foot.

Several other subsidence occurrences over the Wilberg, Deer Creek and Des-Bee-Dove mines have been noticed by aerial inspections conducted by the applicant. These disturbances have been recorded in the annual subsidence monitoring reports that have been submitted to the Division of Oil, Gas, and Mining, State of Utah and in an August 3, 1982, letter to the Division of Oil, Gas, and Mining, State of Utah. One area is located in the right fork of Grimes Wash over an area which has been retreat mined in both the Blind Canyon (1980) and Hiawatha seams (1981). The area encompasses about 40 acres of land, 35 of which are located on a steep slope formed by the Castlegate and Blackhawk Formations. Subsidence offsets of up to 12 feet have been measured. The area is currently fenced to protect livestock and the public. The depth of cover in this area is approximately 900 feet to the Blind Canyon seam and 1,050 to the Hiawatha seam. The slope which slid is essentially vertical and 250 feet high. Another area is located over a section of the Deer Creek mine where retreat mining occurred in the Blind Canyon seam under approximately 850 feet of cover. The fractures are located in the Price River formation which outcrops along a steep hillside in this area. The area disturbed is approximately ten acres, and the size of the fractures was not noted by the applicant. The mining in this area occurred in 1977 and the fractures are old as evidenced by the growth of vegetation in the the cracks. A third area is located over the Des-Bee-Dove mine in the Castlegate Sandstone near a steep slope area. The area of disturbance encompasses approximately ten acres and contains several east-west trending fractures. The area overlies retreat mining which took place in October 1981.

Photogrammetry and conventional surveys conducted by the applicant and recorded in the annual Subsidence Reports show subsidence over the Des-Bee-Dove mine of up to 2.5 feet due to mining since 1980. These surveys have shown that even though multiple seam mining has occurred in this area, no surface cracking has been observed in areas overlain by the North Horn formation. Cracking has been observed in the Castlegate and Price River formations. The total amount of subsidence which has occurred is unknown, since monitoring commenced after mining in the upper seam was complete and subsidence had most likely already occurred. Since there were no springs over

these areas, it is not possible to determine the hydrologic impacts of multiple seam mining on East Mountain from mining in this area.

B. Evaluation of Probable Subsidence Effects

B.1 Lowering of the Land Surface in Areas Underlain by the Castlegate and Price River Sandstone

The effects of subsidence on the surface will be modified by the occurrence of the thick layers of the Castlegate Sandstone and the Price River Formation. These effects would tend to mitigate the possibility of surface cracking where the sandstone layers were continuous through the area; i.e., the sandstone had not been eroded forming cliff escarpments. However, it appears that it can still be expected that the land surface will be significantly lowered. The maximum extent of this lowering is not known at this time due to the layout of the monitored mine areas as described above.

The maximum amount of subsidence which would be expected over a single seam maximum extraction area under 1,500 feet of cover has probably been identified in Panel 6 East in the Blind Canyon seam and is almost six feet as shown by data collected for September, 1983. Between June 1983 and September 1983, the surface only dropped an additional 0.08 feet indicating that subsidence has probably stabilized in this area. Depth of cover over this panel is approximately 1,500 feet. As such, the Castlegate Sandstone and the Price River Formation occur over this panel with approximately 100 feet of the North Horn Formation. It would be expected that the sandstone layers would provide a certain amount of bending action over the cave above the underground workings which would tend to reduce the amount of subsidence from what might be expected if only weaker strata existed above the mine.

If the information from Panel 6 East were doubled to reflect mining in two seams, then a lowering of the surface of almost 12 feet might be expected where the cover was approximately 1500 feet and maximum extraction occurred. The applicant has estimated a maximum of ten feet of subsidence where cumulative extraction from the two mineable seams will not exceed 20 feet. The applicant's estimate may be reasonable for areas of the mine where the depth of cover is greater than 1,500 feet given the thickness of the interburden between the Blind Canyon seam and the Hiawatha seam. In areas where the depth of cover is less than 1,500 feet to 1,250 feet which is the top of the Price River Formation, the amount of subsidence may be greater than the projected ten feet.

Even settling of the land surface by complete extraction methods is not the primary concern associated with subsidence at the Des-Bee-Dove mine. The major problem will most likely be associated with areas of uneven subsidence caused by restriction of subsidence by barrier pillars or as retreat mining progresses, an advancing subsidence trough will occur on the surface. In these areas, the ground surface will tilt, causing areas of tension and compression on the surface. In the case of the advancing mine face, these effects are transient and not as pronounced. However, where a barrier pillar remains, the surface tension and compression effects will remain causing horizontal strains. The maximum slope measured to date is in the vicinity of Panel 6 East (Wilberg Mine, Blind Canyon seam), and slopes at 0.09 inches/foot over

1,400 feet of cover. This is a severe slope for structures and would cause severe damage if a structure existed in this region. The slope would be expected to steepen as mining in the Hiawatha seam (lower seam) progressed, increasing the amount of subsidence within the trough. This effect has been observed in the area being monitored where subsidence has increased from 2.7 to almost six feet and the slope has increased from 0.06 inches/foot to 0.09 inches/foot.

The effect of this steepening on the land surface is unknown at this time. Depending upon the thickness of the overlying North Horn Formation which consists of interbedded shales and sandstones, plastic deformation of this strata could occur resulting in no visible effects on the surface. In areas where the depth of cover of the North Horn decreased, and the sandstone layers were close to the surface or exposed at the surface, surface cracking may become evident. During the proposed permit term, monitoring of the surface overlying the Des-Bee-Dove mine will continue. Information on subsidence effects identified to date, have not shown any surface cracking in the areas where the North Horn is exposed, though significant cracking has occurred in the Castlegate and Price River Formations.

In the areas of high strain, steep slopes in the North Horn formation may be susceptible to failure. The North Horn formation consists of a high percentage of clay layers, and given the right moisture conditions, could slump. This has apparently occurred in the past in areas in the North Horn Formation where in 1979, a slump 150 feet long was recorded (see Memo to Coal File, Utah Division of Oil, Gas and Mining, September 6, 1979). This slump was located in an area where no mining had yet occurred in the UP&L operations. To date, no other slumps in the North Horn formation have been recorded even though retreat mining has occurred under steep slopes in this formation. However, given certain conditions, subsidence could potentially trigger slope failures in this formation. It would be difficult to determine if the failure were due to subsidence or if the slope would have failed naturally as was the situation with the 1979 slump.

The above described conditions could be modified somewhat in the Des-Bee-Dove operation. Between the room and pillar extraction panels, the applicant is leaving large barrier pillars which may not crush out as projected for the Wilberg and Deer Creek Mines. The effect of this is to lessen the effective size of the opening in the mine, and maximum subsidence may not occur since the critical width may not be reached or exceeded. However, along the western side of the operation, it appears that the applicant is planning to extract a large continuous opening when retreating the 1st North Mains in the Blind Canyon seam and the 2nd North Mains in the Hiawatha seam. The critical width may be exceeded in this area and maximum subsidence may occur. Continued monitoring over the Des-Bee-Dove mine will clarify the effect of the mine layout on subsidence.

B.2 Lowering of the Land Surface in Areas not Underlain by the Castlegate Sandstone

A few land areas overlying the Des-Bee-Dove operation will be undermined where the strata overlying the operation consists only of the Blackhawk Formation.

As such, the surface protection provided by the thick sandstone layers of the Castlegate and the Price River Formations will not exist.

As mining progresses in these areas of shallow cover; i.e., 150 to 750 feet of cover; surface cracking may occur along barrier pillars or between extraction panels. The applicant has stated that the caving height can range from 35 to 50 times the thickness of the coal seam, therefore, surface fracturing could be expected where the depth of cover ranges from 100 to 350 or 500 feet of cover. As mentioned before, mining under this depth of cover occurs in portions of the mine area. To date, no fracturing of the surface has been observed in areas where the Blackhawk formation outcrops at the surface in the Des-Bee-Dove operation (see the annual Subsidence Reports).

In these areas of shallow cover, subsidence can be expected to be greater than measured to date. Since 60 percent of the seam thickness has not been reflected in subsidence at the surface over Panel 6 East, it would be reasonable to assume that a greater percentage of the seam thickness might be reflected in subsidence at the surface in areas where the Castlegate Sandstone does not exist. Therefore, mining in these areas with shallow cover will cause greater subsidence impacts. Areas with shallow cover above the Des-Bee-Dove mine are relatively inaccessible.

B.3 Disturbance to Springs, Seeps and Ponds

Potential disturbance to springs in the permit area is not well understood at this time. Only two springs exist above the Des-Bee-Dove mine. These are located along the western border of the mine area. To date, only first mining has occurred in this area. Retreat mining is planned in the mid-1980's. Continued monitoring of these springs and springs over other areas of the UP&L operation will be necessary to determine what effect mining may have on spring flow. *Reference to mitigation, as in Section 7.1 of this TA, is reiterated.*

B.4 Disturbance to Escarpments

The applicant will be mining under several areas where the Castlegate Sandstone and the Price River Formation form major escarpments in this area. Mining under these types of escarpments may have a significant impact on their stability. To date, significant fracturing of the Castlegate and Price River formations has occurred over the Des-Bee-Dove mine (see the annual Subsidence Reports, 1981 and 1982). It can be expected that this type of subsidence impact will continue as retreat mining occurs under the escarpments.

Mitigation re: 817.97, Raptor nesting areas! See DOSM Comment p. 7.2 of TA

C. Evaluation of the Proposed Monitoring Plan

As mining progresses and additional information is collected, the impacts associated with subsidence will be more clearly identified. As such, the applicant's monitoring program is crucial, along with interpretation of monitoring results. The proposed program does not show the location of surface grid points to be established over the permit area for photogrammetric and conventional surveys. The applicant must provide a map showing the grid system in this area. The applicant must commit to providing the regulatory authority with annual survey information, interpretation of subsidence occurrences, and development of mitigation plans if appropriate. The survey

Additional damage to springs?

data should provide information correlating the photogrammetry studies with the conventional surveys. With the lack of information on the subsidence monitoring plans, the proposed subsidence control plan is not in compliance with UMC 817.121 (see Condition *1*).

UMC 817.122 Subsidence Control: Public Notice

The applicant has provided for notice to the Forest Service on subsidence effects to the surface that they own above the mine, other lands above the mine are owned by UP&L. The applicant is in compliance with UMC 817.122.

UMC 817.124 Subsidence Control: Surface Owner Protection

reference to MRP?

The applicant has proposed to mitigate impacts to roads affected by the proposed operation. As mining progresses and additional information is obtained on subsidence impacts, additional mitigation measures may be necessary. At this time, it is not possible to determine the effects to springs in the area, the extent of disruption of the surface nor to escarpments. The applicant will be required to monitor these features and evaluate the effect of subsidence on them. If significant impacts to these features occurs, mitigation plans will be developed by the applicant, submitted to the regulatory authority for evaluation and approval and a final mitigation plan implemented by the applicant. These plans will be developed by the applicant on an annual basis and submitted to the regulatory authority within three months of data collection and analysis. With the proposed monitoring condition (*1*) the application will be in compliance with UMC 817.124.

UMC 817.126 Subsidence Control: Buffer Zones

There are no buffer zones required for the proposed operation. The applicant is in compliance with this regulation.

9.3 Conditions

1. Within 60 days of permit approval, the applicant must identify the monuments used for the photogrammetry monitoring. Additionally, the applicant must commit to the submittal of monitoring information on an annual basis within three months of data collection along with plans for mitigation subsidence impacts if appropriate. This plan is required to show compliance with UMC 817.124.

Once again the subsidence sections (p. 9.1 - 9.6) are out of control. The information given on these pages should be reorganized into several (3 or 4) coherent paragraphs that highlight the pertinent information with emphasis on the impacts from Des Bee operations! The above pages have essentially been photocopied and inserted from the Willing & DC THs.

X. REVEGETATION

10.1 Applicant's ProposalInterim Stabilization and Vegetation Plan (Vol. 2, revised pp. 4-8 to 4-16)

The objectives of this plan are to: (1) control erosion on major existing fill slopes, (2) evaluate revegetation methodologies, plant species adaptability, and potential success, and (3) develop an alternate "soil" material to be applied during final grading. The applicant proposes that by establishing vegetation on existing fill slopes, the upper 18 to 24 inches of this fill material will, by virtue of increased organic matter content, increased microbial population, and incorporated seed, serve to increase revegetation potential (Vol. 2, revised pp. 4-11 and 4-12). The "soil" developed by this method will be randomly placed over the final graded surface to a depth of six to 12 inches at random locations. The plan will be initiated the first appropriate season following permit approval to mine.

The surface of each slope to be revegetated shall be cleared of debris. The seed mixture and fertilizer (at rates based on soil test results) will be broadcast. Seeding will be accomplished in the fall. Two tons of alfalfa hay per acre will be spread over the slope surface and the surface will then be raked up-slope to cover the seed and fertilizer. This will also partially incorporate the mulch into the seedbed. The slopes will be covered with "Vexar" netting and the netting will be anchored. The following spring, containerized shrub and tree stock is to be planted in strips with species located randomly in rows. Basins are to be formed around each seedling and a fertilizer tablet placed in the backfill for each plant. A "Vexar" tube will be placed over the seedling as protection from browsing. Each seedling will be watered after planting.

Irrigation will be practiced only if a planting failure occurs after the first year. Slopes will be cultivated for two years to eliminate weeds and rodenticides will be placed by a licensed applicator to reduce rodent populations on these slopes. Plantings will be evaluated in August. Permanent line intercept transects shall be used to record species composition and ground cover. Shrub and tree plantings will be evaluated for species survival rates and vigor. Copies of evaluation reports will be forwarded to UDOGM. Samples will be taken of seedbed material at five-year intervals to record productivity changes. Standard parameters are to be evaluated.

A variety of grass, forb, shrub, and tree species will be evaluated. Most species proposed are considered drought tolerant. Four introduced species are included for planting. These are Artemisia abrotanum, Kochia prostrata, Melilotus officinalis, and Medicago sativa. The majority of species to be evaluated are scheduled for use during final revegetation.

Final Revegetation Plan (Vol. 2, revised pp. 4-17 to 4-22)

Final revegetation will be initiated the first appropriate season following grading. Two vegetative communities will be established. These are the pinyon-juniper and desert shrub communities. The pinyon-juniper community is to be established on the mine proper. The desert shrub community shall be

established on the area disturbed by the sediment pond. Techniques described below may be modified given the results of the Interim Plan.

*What about
steeper slopes?
steep slopes?
more level vs
steep slopes?*

Level areas will be ripped and disked during final grading. Following grading, sampling for fertilizer analysis shall take place. "Soil" developed as a result of "interim" plantings will be randomly spread over the graded surface to a depth of six to 12 inches. The seed mixture and fertilizer (at rates based on soil tests) are to be broadcast onto the seedbed in the fall. On more level slopes, the soil surface shall be turned with a drag to cover the seed and fertilizer. Steeper slopes will be hand-raked to accomplish this objective. Alfalfa hay mulch will then be spread over the seedbed at the rate of approximately two tons per acre. Steep slopes will be covered with "Vexar" netting to anchor the mulch. On more level slopes, mulch anchoring is to be accomplished by crimping. In the following spring, containerized shrub and tree stock shall be planted. Species will be planted in "clumps" to enhance wildlife habitat. Clumps will be randomly spaced over the mine site. A fertilizer tablet shall be placed with the backfill for each seedling during planting. Basins to collect water are to be formed around each seedling. Each seedling will be hand-watered at the time of planting. Seedlings shall be protected by "Vexar" tubes.

Sprinkle irrigation will be employed if initial plantings fail. Slopes are to be cultivated for two years to eliminate weeds. Rodenticides shall be placed on revegetated areas by licensed applicators for rodents, or as required, to control rodent populations.

The sediment pond disturbance will be revegetated at the end of the responsibility period using the techniques cited above. No revegetation plan has been presented for the area disturbed by the disposal of sediment pond sludge.

The applicant has stated that vegetation methodologies to be used at the mine proper will be implemented to revegetate the Des-Bee-Dove Wilberg Junction Road (Vol. 2, revised p. 3-31). *Will the desert shrub & pi community be reestablished or will there be an interspersed?*

The majority of plant species selected for revegetation of the mine area proper and sediment pond are either native to the area or are considered appropriate additions added to increase species diversity. Melilotus officinalis is the sole introduced species currently scheduled for planting.

The seed mixture to be planted to reclaim the Des-Bee-Dove Wilberg Junction Road is contained in the "Special Use Permit" issued by the USFS based on the "Right of Way Grant" from the BLM. *This must be in MRP if it isn't already*

The applicant has identified the means by which parameters for measuring revegetation success will be obtained. These measures are briefly described on pages 4-21 and 4-22 (PAP, Vol. 2) and include methods and statistical limits similar to those used when the reference areas were established.

The applicant has also committed to using a "student's t test" of the sample means to compare sampled parameters for eventual release of bond.

10.2 Evaluation of Compliance of Proposal

The vegetation data collected from reference areas show that these sites are acceptable areas and representative of the floral community which existed prior to mining.

UMC 784.13 Reclamation Plan: General Requirements (Revegetation)

The applicant is in compliance with the majority of the requirements of this section. The proposed revegetation schedule conforms to accepted standards. Revegetation activities will be accomplished during recognized planting seasons. Seeding and planting rates are appropriate with one exception. For the Desert Shrub Community, the applicant proposes to broadcast seed and cover by harrowing a total of nine pounds of seed (PLS) per acre (Vol. 2, revised p. 4-18). Two of these species making up this total are Elymus salinus and Sitanion hystrix. The applicant states that broadcast seeding followed by harrowing is equivalent to seed drilling. While the Regulatory Authority does not necessarily agree with this statement, the main concern is with the species involved. Neither of these species is considered to have a high establishment potential. The establishment potential for S. hystrix is rated as low. The characteristics of E. salinus parallel those of O. hymenoides. (Dittberner, P.L., and M. R. Olsen, 1983. The plant information network (PIN) database: Colorado, Montana, North Dakota, Utah and Wyoming. U.S. Fish and Wildlife Service. FWS/OBS-SO/36. 786 pp.) The Regulatory Authority believes that the seeding rate for the desert shrub community must be modified to provide for an acceptable level of plant establishment and consequent soil stability (see Condition _____).

This population should not be cited. This does not belong under 817.11 below

Review 4-18 (1/27/84) states 30 lbs/acre PLS. There is a discrepancy here.

Mulching techniques proposed are in accordance with standard practices. Irrigation will be used only if initial plantings fail.

The applicant has not submitted a revegetation plan for the area affected by sediment pond sludge disposal. A plan must be submitted to show compliance with the requirements of this section.

UMC 817.111 Revegetation: General Requirements

The applicant has complied with the requirements of this section.

UMC 817.112 Revegetation: Use of Introduced Species

Melilotus officinalis is the single introduced species scheduled for planting. M. officinalis is acceptable based on the UDOGM position that this species has a high potential for establishment, fixes nitrogen, and that commercial seed sources of native forbs are limited.

UMC 817.113 Revegetation: Timing

The applicant has complied with the requirements for this section.

UMC 817.114 Revegetation: Mulching and Other Soil Stabilizing Practices

The applicant has complied with the requirements of this section.

UMC 817.116 and 817.117 Revegetation: Standards for Success and Tree and Shrubs Stocking for Forest Land

The applicant has complied with the requirements of this section.

Reclamation Feasibility

Considering the potential range in average annual precipitation, proposed slopes, and the quality of seedbed materials, revegetation is considered feasible, though difficult. This is particularly true for sites exhibiting steeper slopes and/or Mancos shale parent material. It is likely that several years will be required before vegetative cover approaches assumed pre-mining levels. However, the applicant has proposed to use plant species and employ revegetation techniques which are appropriate (with the exception of the Desert Shrub Community seed mixture - see Condition *2*), given projected post-grading conditions, for attaining revegetation goals. The commitment to irrigate, if initial plantings fail, significantly increases the feasibility of revegetation. Results of test plot studies will aid in determining the potential success of revegetation and, through modifications in the proposed final revegetation plan, increase the feasibility of revegetation.

UMC 817.100 Contemporaneous Reclamation

The applicant will temporarily revegetate fill slopes at the tipple area, bathhouse, and stockpile area, Deseret pond, and Beehive portal areas to prevent erosion. This will take place the first appropriate season following permit approval to mine. Revegetation activities will be in the form of test plots as described on revised pages 4-11 to 4-16 (PAP, Vol. 2). The remaining existing disturbed areas are required for mine operation.

At the conclusion of mining operations, structural removal and backfilling will begin. Revegetation operations will commence the following September on all disturbed areas. The sediment pond will remain in operation through the 10-year responsibility period, after which it will be graded and revegetated.

The applicant is in compliance with the requirements of this section.

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

Underground waste produced during mining will be disposed of in the Waste Rock Storage Site as described in the Wilberg Mine permit application. Laboratory analyses indicate that waste rock with high sodium adsorption ratios and pyrite/marcasite contents would be included in the material to be disposed of. These samples are not indicative of the majority of waste rock to be generated. The applicant has committed to sample and dilute/bury waste exhibiting these characteristics during disposal.

The applicant has proposed to bury all asphalt and gravel base materials under

This is better placed in Section III Backfilling & Grading - not under Revegetation.

PZ

four feet of non-toxic material. In addition, the applicant has committed to bury all toxic- and acid-producing materials as well as coal debris will also be disposed of in this manner. The applicant has not provided information as to how toxic- or acid-forming material will be identified.

This permit needs to be restricted.

Evaluation of Compliance of Proposal

The applicant has committed to bury all toxic- or acid-forming materials found during grading. Methods for identifying such materials have not been included in the permit application. Sample analysis indicates that such materials do not exist on the fill surface (four to 20-inch depth). Sampling to deeper depths has not been accomplished. Given that waste rock can exhibit high sodium adsorption ratio values and pyrite/marcasite contents, the Regulatory Authority is concerned that part fill construction and waste rock deposition on site could have included acid- or toxic-forming materials. The inclusion of such materials in the seedbed could decrease the chances for successful revegetation. Therefore, it is necessary for the applicant to submit a sampling and laboratory analysis plan, to be conducted during grading operations, which would serve to identify acid- and toxic-forming materials and permit efficient burial.

Conditions

10.3 Conditions

1. Within 30 days of permit approval, the applicant must submit plans or a commitment for management of reference areas over the life of mining operations. Management plans must be consistent with BLM and USFS policies for adjacent lands and consistent with the post-mining land use of grazing land/wildlife habitat.
2. Within 30 days of permit approval, the applicant shall revise the desert shrub seed mixture upward to reflect either more lbs PLS/acre of the species listed or additional species or a combination of both.
3. The applicant shall, within 30 days of permit approval, submit a sampling and laboratory analysis plan through which toxic- and acid-forming materials will be identified during grading operations. The plan must identify timing of sampling, sampling methodology, expected sampling depth, expected number of samples, areal extent of sampling, laboratory analyses to be performed, etc. The applicant must also submit appropriate revisions to the bond cost estimates as required by this condition.
4. Within 30 days of permit approval, the applicant must submit a revegetation plan for the area affected by sediment pond sludge disposal. The plan must include techniques for backfilling and grading, recycling, seedbed preparation, fertilization, seeding and planting, mulching, and maintenance.

This condition ~~should be~~ it should be addressed under ~~the~~ section ^{III} rather than paving, along with 817.103 discussion.

see comment p. 10.3

XI. ROADS

11.1 Description of the Applicant's Proposal

There are two facility roads at the Des-Bee-Dove Mine operation, identified as follows: (1) mine access road and haul road, and (2) portal access road.

The mine access and haul road is asphalt-surfaced and extends approximately seven miles along Danish Bench between State Highway 29 and the Des-Bee-Dove Mine office. The road width averages 20 feet. The road gradient is approximately five percent overall to the mine gate and approximately eight percent overall from the mine gate to the mine office. The steepest gradient is approximately 10 percent. Surfacing is four inches thick on standard gravel road base, crowned in the center and gently sloping to the sides. Roadways cut in the steep embankments have guard rails and berms installed at critical locations for safety and runoff control. The mine access and haul road is used daily by mine personnel for access to the mine facilities. The road is also used for coal haulage by semi-trailer trucks. Twice yearly the road is utilized for cattle drives and from East Mountain grazing areas. The road is defined as a Class I road.

The portal access road is approximately 2,500 feet long and winds from the mine offices past Deseret portal and ends near the Beehive portal. The road width averages 20 feet. The gradient averages about 10 percent overall, with one steep section near 30 percent. There is a 500-foot section with a gravel surface. Because of the steep gradients in the portal area, large berms or steel guard rails have been constructed to promote safety. The portal access road is used daily for access by mine labor and service personnel. Like the mine access road, the portal access road is utilized twice annually for cattle drives to and from East Mountain grazing areas. The road is defined as a Class II road.

11.2 Evaluation of Compliance of ProposalUMC 817.150 Roads: Class I: General

The applicant did not provide evidence that a registered professional engineer certified the design and construction of the mine access and haul road as required under part (d) of this section (see Condition *1*). Other requirements of this section are in compliance.

UMC 817.151 Roads: Class I: Location

The applicant has complied with the requirements of this section.

UMC 817.152 Roads: Class I: Design and Construction

All requirements of this section have been met by the applicant.

References

*Evaluation of Roads as
Not done in compliance*

UMC 817.153 Roads: Class I: Drainage

The applicant is in compliance with this section.

UMC 817.154 Roads: Class I: Surfacing

The applicant is in compliance with the requirements of this section.

UMC 817.155 Roads: Class I: Maintenance

The applicant has complied with the requirements of this section.

UMC 817.156 Roads: Class I: Restoration

The applicant meets the requirements of this section.

UMC 817.160 Roads: Class II: General

The applicant has complied with the requirements of this section.

UMC 817.161 Roads: Class II: Location

The applicant has complied with the requirements of this section.

UMC 817.162 Roads: Class II: Design and Construction

A section of the portal access road has a gradient exceeding 15 percent for more than the 300 foot maximum as specified under part (a) of this section. Steep canyon terrain allows no leeway for a more gradual gradient. The applicant states in the proposal that sufficient evidence was provided to OSM and DOGM to make a determination whether a variance should be granted. Based on topographic and other information in the permit application, it appears that major construction of a complying roadway would increase environmental degradation. The applicant is therefore granted a variance under part (a) of this section.

All other requirements of this section have been met by the applicant.

UMC 817.163 Roads: Class II: Drainage

The applicant is in compliance with this section.

UMC 817.164 Roads: Class II: Surfacing

The applicant is in compliance with this section.

UMC 817.165 Roads: Class II: Maintenance

The applicant has complied with the requirements of this section.

UMC 817.166 Roads: Class II: Restoration

The applicant meets the requirements of this section.

UMC 817.170 - 817.176 Roads: Class III

There are no existing or proposed Class III roads at the Des-Bee-Dove main portal area.

11.3 Conditions

1. Within 30 days of permit approval, the applicant must submit evidence that designs and construction of the mine access and haul road were certified by a qualified registered professional engineer.

*before permit approval this is necessary therefore,
no stipulation needed*

XII. ALLUVIAL VALLEY FLOORS

12.1 Description of Applicant's Proposal

reference?

irrigable

The facilities of the Des-Bee-Dove Mine are situated in a narrow canyon with steep side slopes and valley slope. The canyon lacks top soil and does not contain irrigable land that could be used for agricultural purposes. The canyon in which the surface facilities are located contains deposits of mass movements, slope wash, debris erosion, and sheet runoff. The area is classified as an upland and nonirrigation area and, therefore, cannot be considered as an alluvial valley floor. Furthermore, disturbance or interruption of aquifers within the underground mine complex will have no effect on downstream alluvial valley floors, insomuch as the water will eventually reach the downstream portions of the drainage system through one system or another.

this statement leaves a lot to show and there is no proof to back it up

12.2 Evaluation of Compliance of Proposal

UMC 785.19 Underground Coal Mining Activities on Areas or Adjacent to Areas Including Alluvial Valley Floors in the Arid or Semi-arid Areas of Utah

give criteria for their finding!

As there are no alluvial valley floors in or adjacent to the permit area and underground disturbance of aquifers will not affect downstream alluvial valley floors, the applicant is in compliance with this section.

*??
What facts do they base this finding on*

XIII. POSTMINING LAND USE

13.1 Description of Applicant's Proposal

Premining use of the permit area was for livestock grazing and wildlife habitat. At the present time, cattle graze the lower portions of the permit area in the spring and the upper portions (East Mountain) during the summer months. The permit area provides habitat for elk, deer, and raptors during various seasons throughout the year. *Reference?*

The applicant intends to return the disturbed mine areas to their pre-mining land uses of livestock grazing and wildlife habitat. Following cessation of mining, the disturbance areas will be recontoured to blend into the existing topography and be revegetated as described in the Reclamation Plan section (pp. 4-17 through 4-22, PAP, Vol. 2). Vegetation will be re-established to be comparable to species diversity, cover, density, and productivity of the established reference areas.

13.2 Evaluation of Compliance of ProposalUMC 817.133 Post-Mining Land Use

The applicant has complied with the requirements of this section.

13.3 Conditions

None.

XIV. AIR RESOURCES

14.1 Description of the Applicant's Proposal

The applicant is currently using several fugitive-dust control practices at the Des-Bee-Dove Mine. The applicant proposes to continue these practices throughout the life and subsequent reclamation of the mine site.

The main service road and parking lots are asphalt surfaced. Service roads to the mine portals are gravel surfaced. Vehicular traffic on these roads is controlled to minimize contribution of fugitive dust. Service roads are used daily at low speeds for access by service and labor personnel. The steep natural terrain restricts unauthorized travel on other than established roads and limits vehicle speeds on roadways that are established.

Fugitive dust control procedures are implemented in the coal handling process. Little Dove run-of-mine belt conveyor is covered. Belt scrapers are installed on most conveyors to reduce coal dust generation. Coal sizing and handling from stockpile to truck are completely enclosed in the Des-Bee-Dove tippie. A vacuum system in the tippie helps reduce coal dust generation during crushing and screening plus assists in tippie housekeeping. Transfer points in the tippie are enclosed, rubber curtained at inlets and outlets, and are equipped with dust collection hoods.

The high moisture content of the coal at Des-Bee-Dove Mine provides dust control throughout the coal handling process. Analysis of samples taken during processing show an average 8.4 percent inherent and surface moisture content in 775 samples. Coal dust generation is reduced throughout the handling process by the dampening effect of this moisture.

The captive nature of the Des-Bee-Dove Mine product nearly eliminates the possibility of spontaneous combustion conditions developing. Long-term stockpiling within the permit area is unlikely. Maximum stockpile duration is approximately one month. Care is taken to ensure that short-term stockpiles are completely cleared away prior to restockpiling.

14.2 Evaluation of Compliance of ProposalUMC 817.95 Air Resources Protection

The applicant has addressed adequately all major topics of this section, and is in compliance with the regulation.

Reference