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State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Michael O. Leavitt
Governor
Kathleen Clarke
Executive Director
Lowell P. Braxton
Division Director

1594 West North Temple, Suite 1210
PO Box 145801
Salt Lake City, Utah 84114-5801
801-538-5340
801-359-3940 (Fax)
801-538-7223 (TDD)

April 20, 2001

Chuck Semborski, Environmental Supervisor
Energy West Mining Company
P.O. Box 310
Huntington, Utah 84528

Re: Upper Pad Reclamation, PacifiCorp, Des Bee Dove Mine, C/015/017-AM01A, Outgoing File

Dear Mr. Semborski:

The above referenced amendment has been reviewed and there are deficiencies that must be adequately addressed prior to approval. A copy of our Technical Analysis is enclosed for your information. The analysis section of the Technical Analysis discusses the deficiencies as well as providing additional comments and concerns the Division has with the reclamation of the upper pad. In order for us to continue to process your application, please respond to these deficiencies by June 15, 2001.

If you have any questions, please call me at (801) 538-5268 or Susan White at (801) 538-5258.

Sincerely,


for Pamela Grubaugh-Littig
Permit Supervisor

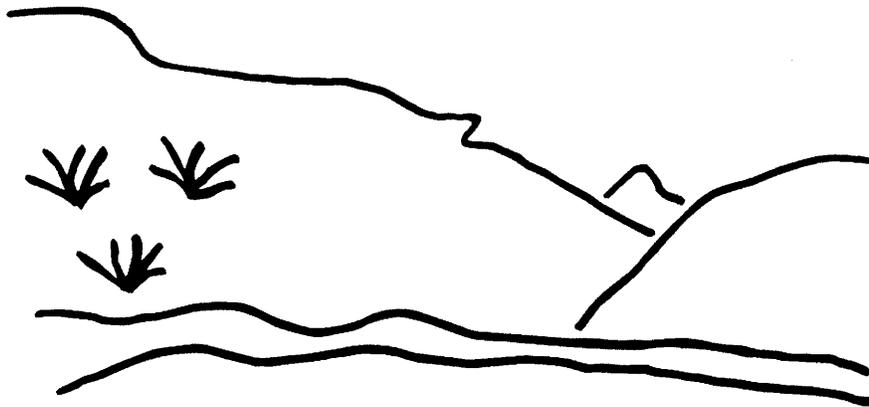
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Enclosure:

cc: Price Field Office

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State of Utah



Utah Oil Gas and Mining

Coal Regulatory Program

Des Dee Dove Mine
PacifiCorp
C/015/017-AM01A
Technical Analysis
April 19, 2001

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INTRODUCTION

TECHNICAL ANALYSIS

INTRODUCTION

The Des-Bee-Dove Mine consists of the Little Dove Mine and the Beehive Mine in the upper coal seam (the Blind Canyon) and the Deseret Mine in the lower (or Hiawatha) coal seam and was developed during the early years of the twentieth century prior to the passage of the Surface Mining Control and Reclamation Act. Overburden was used to expand the pad area for the Little Dove and Beehive Mines and to divert a small drainage at the south end of the pad. In the 1970's, bin walls and large boulders were placed below the pad to stabilize it and protect the Deseret Mine below. A narrow road was developed off the East Mountain Cattle Access Trail to provide access to a substation and water tank.

Immediately after the Wilberg Mine fire in December 1984, the Des-Bee-Dove Mine was reactivated to help alleviate the loss of productivity from Wilberg during that Mine's recovery operation. In 1987, the Des-Bee-Dove Mine portals were temporarily sealed, and the Mines were placed under temporary cessation status from 1987 until 1999. On February 26, 1997, PacifiCorp submitted a Notice of Intent to reclaim the Des-Bee-Dove Mine. In 1999 the portals were backfilled and - except for guardrails, a large drop-inlet structure, and several culverts - the surface facilities were removed.

The Phase I Upper Pad Reclamation amendment was received by the Division on March 30, 2001. This amendment covers the reclamation of 3.85 acres of the Little Dove and Beehive Mine pad, the substation and water storage area and the access road down to the Deseret pad. Reclamation of this Phase I area will involve removal of remaining structures, restoration to approximate original contour (AOC), revegetation of the recontoured surface, and reestablishment of four minor drainages - three at the mine pad and one near the water tank pad.

Most of the deficiencies discussed in this TA include soil replacement, drainage design, and stability of the backfill. All required information to approve this amendment must be provided prior to approval.

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INTRODUCTION

SUMMARY OF OUTSTANDING DEFICIENCIES

SUMMARY OF OUTSTANDING DEFICIENCIES

The Technical Analysis regarding the proposed permit changes is not complete at this time, pending submittal of additional information by the permittee and further review by the Division, to address outstanding deficiencies in the proposal. A summary of those outstanding deficiencies is provided below. Additional comments, concerns and deficiencies may also be found within the analysis and findings made in this Draft Technical Analysis which have not been presented in this summary. Upon finalization of this review, any outstanding deficiencies will be evaluated for compliance with the regulatory requirements. Such deficiencies may be conditioned to the requirements of the permit issued by the Division, result in denial of the proposed permit changes, or may result in other executive or enforcement action as deemed necessary by the Division at that time to achieve compliance with the Utah Coal Regulatory Program.

Accordingly, the permittee must address those deficiencies as found within this Draft Technical Analysis and provide the following, prior to approval, in accordance with the requirements of:

Regulations

- R645-301-121.200** – equation (1) on page 21 should show ‘Q’ on the left side rather than ‘P’.. 31
- R645-301-121.200** - the statement on page 18 in Section 752 - about maintenance of sediment control structures downstream of the Phase 1 area until Phase 2 reclamation in the fall of 2001 - needs to be clarified. 31
- R645-301-121.200** - trapezoidal channel designs results are in Appendix A - it states on page 28 that the designs are in Appendix B – Des-Bee-Dove Phase 1 Reclamation Channel Design, but there is no Appendix B in the submittal nor listed in the Table of Contents. 31
- R645-301-121.200**, The proposed Appendix XIV contains information that contradicts information in the approved Mining and Reclamation Plan (MRP). Information in the Appendix and MRP must be consistent. 7
- R645-301-222.200**, Please remove from the submittal the repetition of general soils information and inaccurate generalized statements (pages 2 & 3) and concentrate on soils information gained by recent sampling. 13
- R645-301-233**, Identify substitute topsoil for salvage during reclamation and outline temporary storage and replacement practices. 26
- R645-301-233.200**, Bury the bermed material represented by soil sample SS7 within the fill... 13

SUMMARY OF OUTSTANDING DEFICIENCIES

R645-301-233.300, List in Appendix A the laboratory and analytical procedures used during analysis of soils and provide pertinent field notes taken during sampling. 13

R645-301-234, include salvage and redistribution of the top eighteen inches of substitute topsoil from the outslope (represented by soil samples SS8 and SS9) in the backfilling plan..... 24

R645-301-322, the raptor nest location map must be provided or the reference to the map deleted. 10

R645-301-420, the plan must describe methods that are effective in controlling fugitive dust... 17

R645-301-521 and R645-301-731, all permit area maps in the MRP must show the disturbed and permit area to include the disturbed area drainage..... 8

R645-301-521 and R645-301-731, the disturbed area and permit area must include the disturbed area drainage. 15

R645-301-536.300 and 553.252, valley fill material must be buried four feet deep within the backfill. 24

R645-301-542, The figure referenced as R645-301-400 must be provided and the text must state that the retained structures are not subject to regulation by the Utah Coal Mining Rules. 9

R645-301-551, and **30 CFR 75.1711-2**, adequate verification in the form of MSHA documentation that that Agency’s sealing plan, as approved by same, has been implemented and meets the requirements of 30 CFR 75.1711-2 and R645-301-551. 25

R645-301-553.530, A determination, with adequate verification that any remaining highwalls will have a minimum long term static safety factor of 1.3 capable of preventing slides, or provide an alternative criterion to establish that the remaining highwall is stable and not pose a hazard to public health and safety, or to the environment. 21

R645-301-742, drainage designs must be certified by a registered professional engineer. 24

R645-301-742.310, -761 – acknowledging that it is the permittee who has the authority to control, direct, and supervise construction of the reclamation channels, the Division would like to have the permittee commit to notify the Division as far in advance as possible of when the filter and riprap will be installed so that a Division hydrologist or other Division representative could schedule a field visit during that part of the construction. 32

R645-301-742.312, -314 – channel designs are based on an average gradient along the length of the designed channel; however, the calculations and designs for channel 3 do not appear to account for the higher velocity and erosive power at the transition from the natural to the head of the constructed channel. The gradient down the face of the sandstone ledge immediately

SUMMARY OF OUTSTANDING DEFICIENCIES

above the head of channel 3 is much greater than that used in the calculations (profile A – Drawing CS1817C), and flow may even form a waterfall with extreme conditions. A transitional structure such as a plunge pool or other method for dissipating the energy of the water flowing off this sandstone ledge is needed. 31

R645-301-742.312, -314 – it is stated several times in the plan that boulders, acquired on-site, will be placed along the channels as erosion protection. Consideration should be given to using the largest boulders to create ledges to break the uniformity of the channel gradient. These should be imbedded into the fill with the filter and riprap placed around them, rather than placing them on top of the filter material, which would allow flow to go under them. Using these large boulders as artificial ledges would require extra attention to the construction of the streambed on the downstream side, and such measures as extra riprap or drop-pools might be needed. 31

R645-301-742.312, -314 – riprap should be angular rather than rounded: boulders that will be excavated on-site may be more rounded than is desirable and a method of breaking them into more angular material may be needed. 31

R645-301-752.210 - Drawing CS1819A shows schematic cross-sections of channels 2 and 3: these cross-sections show the filter and riprap materials placed on top of the fill. The elevation of the earthwork immediately adjacent to the channel should be above the uppermost edge of riprap placement, as shown on Plate 4 - 1 - sheet 2 of 5 in Volume 4 of the current MRP. The channels should be built to the size designed – that is, large enough to hold the design event entirely within the constructed, riprapped channel – then ideally there should be a transition from the constructed channel to soil, rather than a visible, hard edge. This is visually more like the existing channels; promotes vegetation growth in the coarser material, which helps anchor it; and eliminates an edge that could facilitate and concentrate erosion parallel to the channel. From a practical point-of-view, doing the work with large equipment usually will produce such a transition zone without effort as long as there is enough material for ‘spillage’ beyond the edges of the designed channel. 30

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SUMMARY OF OUTSTANDING DEFICIENCIES

GENERAL CONTENTS

GENERAL CONTENTS

PERMIT APPLICATION FORMAT AND CONTENTS

Regulatory Reference: 30 CFR 777.11; R645-301-120.

Analysis:

Appendix XIV, Phase 1 Reclamation Plan, describes the reclamation of the Beehive and Little Dove Mines portal pad and access roads. No revision to other portions of the approved Mining and Reclamation Plan (MRP) are proposed. Some of the information in Appendix XIV contradicts information in the MRP. This is confusing and must be corrected.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirement of this section. Prior to approval, the permittee must provide the following in accordance with:

R645-301-121.200, The proposed Appendix XIV contains information that contradicts information in the approved Mining and Reclamation Plan (MRP). Information in the Appendix and MRP must be consistent.

MAPS AND PLANS

Regulatory Reference: 30 CFR 777.14; R645-301-140.

Analysis:

Drawing #: CS1813E, Surface Yard Area Pre/Post SMCRA Development Map shows aerial photographs from 1977, 1978, and 1999. The photographs are marked to show current disturbance and pre-SMCRA disturbance. Post-SMCRA disturbances are not marked. The only post-SMCRA disturbance is the parking lot extension at the bath house pad. It is difficult to compare one photograph to the next and determine disturbance since the photographs were not taken from the same location but they are sufficient to determine pre and post-SMCRA disturbances.

The photo dated 1999 must show the permit disturbed area to include the entire area of

disturbed area drainage until it passes through the UPDES discharge point.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirement of this section. Prior to approval, the permittee must provide the following in accordance with:

R645-301-521 and R645-301-731, all permit area maps in the MRP must show the disturbed and permit area to include the disturbed area drainage.

ENVIRONMENTAL RESOURCE INFORMATION

ENVIRONMENTAL RESOURCE INFORMATION

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

HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.12; R645-301-411.

Analysis:

The Des Bee Dove Mines operated from the early 1900's until the 1980's. The Beehive Mine was developed in the 1950's and the Little Dove Mine was developed in the mid-1970's. These two separate mines were developed in the Blind Canyon (upper seam) and each mine had three portals.

Section R645-301-411.140 states that historical structures will be retained to document the early development of coal mining in the area. R645-301-400 Figure 1 is referenced to show these structures. Figure 1 could not be located in the submittal. Mr. Semborski stated in a phone conversation on April 5, 2001 that all of these structures are located outside the permit area.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirement of this section. Prior to approval, the permittee must provide the following in accordance with:

R645-301-542, The figure referenced as R645-301-400 must be provided and the text must state that the retained structures are not subject to regulation by the Utah Coal Mining Rules.

CLIMATOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.18; R645-301-724.

Analysis:

The average annual precipitation is 6 – 8 inches (page 2-153, Volume 1).

Findings:

The requirements of this section of the regulations are considered adequate.

FISH AND WILDLIFE RESOURCE INFORMATION

Regulatory Reference: 30 CFR 784.21; R645-301-322.

Analysis:

Section R645-301-310 refers to an updated map of raptor nest locations in Appendix A. No such map could be found. Nest #952 and 937 are both within the half mile buffer zone radius of the proposed work area.

Findings:

Information provided in the application is not considered adequate to satisfy the requirements of this section of the regulations. Prior to approval, the operator must provide the following in accordance with:

R645-301-322, the raptor nest location map must be provided or the reference to the map deleted.

SOILS RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.21; 30 CFR 817.22; 30 CFR 817.200(c); 30 CFR 823; R645-301-220; R645-301-411.

Analysis:

Elevation is 7,800 feet on a south to southeast exposure and slopes of 1 ½ H:1V to 2H:1V. The plant community is Utah juniper and pinyon pine. Plants within this community include Salina wildrye, western wheatgrass, and Indian ricegrass.

Soils have been described in the MRP as either

- Typic Ustochrepts (50%) which are characterized by a 35 cm thick (13 inches) sandy loam surface layer with 25% coarse fragments. Underlying this layer is a stony loam layer 100 cm thick (39 inches) with up to 50% coarse fragments.

or

ENVIRONMENTAL RESOURCE INFORMATION

- Lithic Ustorthents (25%) which are characterized by rock within 50 cm or 19 inches.

Also present are small areas of Mollisols on the north and east facing slopes. In general, Mollisols are deep, well drained, with a well developed A horizon. See the General Soil Map of the Permit Area, Drawing #CE-10502-DS.

In this amendment, Dr. Southard, Soil Scientist, Utah State University is attributed with classifying the soils in the vicinity of the Des-Bee-Dove mine area as I-E-R
E

which is the symbol for Typic Ustochrepts-Lithic Ustorthents-Rock Outcrop Loamy-Skeletal, Shallow 40-60% Slopes. This designation comes from the SCS Order III soil survey which is printed in Volume 1, Part 2 of the MRP.

In section 220 of this submittal, a statement from the MRP is repeated, "Nowhere in the vicinity is there a source of material..." and attributed to Dr. Southard. Several conclusions are also re-stated and attributed to Dr. Southard, "1. Basically, no topsoil exists...to warrant stockpiling (based on undisturbed adjacent areas)." (See Volume 1, Part 2 of the approved MRP).

The Division objects to the repetition of this information for several reasons:

The first statement was found within Volume 1, Part 2 of the MRP (page 2-170), but it was not attributed to Dr. Southard.

None of the conclusions attributed to Dr. Southard and itemized on page 2 of Section 220 of the submittal could be found within the MRP.

Furthermore, the mine operation has cultivated suitable growth material which should be salvaged and utilized.

The Division would prefer that this submittal deal positively with site specific information gained from the soil sampling in the year 2001. A cursory reference could be made to the location of Des Bee Dove soils information within the MRP, but there is no need to repeat the information out of context as has been done on pages 2 & 3 of the submittal. Just dive right into the discussion of recent soil sampling information (page 4 of the submittal).

The approved MRP recognizes the importance of the top eighteen inches of soil from the outslope of the Little Dove/Beehive pad as substitute topsoil. Sampling of this substitute topsoil was conducted in March of 2001. No field notes are available. The site is represented by sample SS8 in Table 3 and on Plate CS1814D. The soil is a loam or sandy loam, with a near neutral pH, saturation of approximately 30%, Electrical Conductivity less than 1.0 and SAR less than 1.0.

Appendix A contains a data file for the soil analysis results (samples taken in 2001). This data file was created by the Permittee. Appendix A does not contain the original laboratory reports or field sampling information. Attaching to this appendix a list of the analytical procedures used would greatly enhance understanding of the numbers. For instance, there is a column for the Exchangeable Sodium and Available Sodium Percent. With the information provided, the Division is at a loss to determine the Exchangeable Sodium Percentage. Usually, Exchangeable Sodium Percentage (ESP) is calculated as a percentage of the cation exchange capacity¹. In this case, the total cation exchange capacity was not reported. Exchangeable Sodium is known and Soluble Sodium is reported. It is unclear how the Available Sodium Percentage has been calculated. It is also unclear what extractant (water? Ammonium acetate?) was used to extract the cations.

The best characterization of a soil can be had by determining the cation exchange capacity in meq/L, the exchangeable sodium in meq/L, the saturation extract soluble sodium in meq/L, and then calculating the exchangeable sodium percentage.

As mentioned in the submittal, seeding of this outslope has been very successful and the resulting growth medium is among the best in the permit area due to its microbial activity, nutrient status and organic matter. If 18 inches were salvaged from this area (150 feet x 150 feet), approximately 1,250 cubic yards of substitute topsoil could be gained.

The Little Dove/Beehive area is 2.13 acres. If the entire 2.13 acres were covered with six inches of substitute topsoil, 1,718 cubic yards would be required.

Other useful soil within the area to be reclaimed is represented by SS9. This soil is also equivalent to the undisturbed native soils in chemistry (Table 3). This soil is not shown as being disturbed during the reclamation, but inevitably will be disturbed when the access road is reclaimed. Therefore, plans must be made for salvage of this topsoil as well.

The Permittee initially wanted to utilize the bermed soil material at sample location SS7 on Plate SC1814D, however this material has a higher sand content and much higher EC and SAR values than the undisturbed soil and the fill slopes (see Table 3, page 8 of the submittal). The Permittee was going to resample the bermed soil at a different location and at deeper intervals. Until the results of that sampling are known, the Division requests that this bermed material is buried within the fill.

Unfortunately, the Little Dove/Beehive pad soils were not sampled. If they are to become the substitute topsoil for the site, then they must be sampled.

¹ United States Salinity Laboratory Staff. 1954. Diagnosis and Improvement of Saline and Alkali Soils. USDA Handbook #60. Method 20a.

ENVIRONMENTAL RESOURCE INFORMATION

Findings:

Information in the proposed amendment is not considered adequate to meet the requirement of this section. Prior to approval, the permittee must provide the following in accordance with:

R645-301-222.200, Please remove from the submittal the repetition of general soils information and inaccurate generalized statements (pages 2 & 3) and concentrate on soils information gained by recent sampling.

R645-301-233.300, List in Appendix A the laboratory and analytical procedures used during analysis of soils and provide pertinent field notes taken during sampling.

R645-301-233.200, Bury the bermed material represented by soil sample SS7 within the fill.

LAND-USE RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.22; R645-301-411.

Analysis:

The statement in section R645-301-410 that all parties concurred with the proposed reclamation activities at an on-site meeting May 19, 2001 with the Forest Service, BLM, Water Rights, and DOGM is only correct to the extent the information was presented. At that time, the detail provided in Appendix XIV was not available. The Division expressed concern with the drainage reclamation, extent of highwall coverage, and lack of identified substitute topsoil.

The postmining land use for the mine site will be the same as the premining land use and that is wildlife and livestock grazing. The East Mountain allotment of the Ferron Ranger District is approximately 21,000 acres and supplies about 2500 animal unit months of grazing. Twice a year local ranchers use the mine access road to drive cattle to and from the East Mountain grazing area.

Findings

The information provided meets the minimum regulatory requirements of this section.

GEOLOGIC RESOURCE INFORMATION

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

Analysis:

Volume 8 of the Des-Bee-Dove MRP covers the geology of these mines in detail, but a brief section (600-Geology) describing the geology of the immediate area is included in Appendix XIV.

The Beehive and Little Dove Mines were developed in the Blind Canyon Seam. Dip of this seam is approximately 2° to the west or west-northwest in the Des-Bee-Dove area. The Des-Bee-Dove Mines lie in an area with complex series of normal faults that strike roughly north-south. The Beehive Mine removed coal between the Stump Flat fault on the east and the Maple Gulch fault on the west, and the Little Dove Mine exploited the coal between the Maple Gulch and Deer Creek Canyon faults: the Deer Creek fault separates the Des-Bee-Dove Mines from the Deer Creek and Wilberg Mines.

Samples collected from mines operated by PacifiCorp in both East and Trail Mountains indicate very low pyritic sulfur and high neutralization potential, so acid-mine drainage will not be a problem: analysis results are tabulated in Appendix A of section 600-Geology of Appendix XIV. Furthermore, because of the dip of the beds, the orientation of the portals and entries, and the dryness of the mines (these mines were dry and water from an outside source was required for dust suppression), post-mining gravity discharge will not occur.

The permittee states on page 7 of section 600 that there has been no exploration drilling within the area of the Des-Bee-Dove Phase I Reclamation.

Findings:

The geologic resource information in Volume 8 of the MRP and in Appendix XIV is considered adequate to meet the requirements of this coal mining rules.

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

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

ENVIRONMENTAL RESOURCE INFORMATION

Analysis:**Affected Area Boundary Maps**

Currently, the mine area disturbed drainage leaves the disturbed area and permit area below the Tipple Valley Fill and then re-enters the permit area and the disturbed area for treatment in the sediment pond. Likely, the first point of water discharge leaving the permit area (below the Tipple Valley Fill) does not always meet the requirements of the Clean Water Act. Extending the permit area and disturbed area to include the disturbed drainage from the mine site area to the sediment pond is required even though this has been over looked by the Permittee and Division for nearly 20 years.

Findings:

Information provided in the application is not considered adequate to satisfy the requirements of this section of the regulations. Prior to approval, the operator must provide the following in accordance with:

R645-301-521 and R645-301-731, the disturbed area and permit area must include the disturbed area drainage.

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ENVIRONMENTAL RESOURCE INFORMATION

OPERATION PLAN

AIR POLLUTION CONTROL PLAN

Regulatory Reference: 30 CFR 784.26, 817.95; R645-301-244.

Analysis:

State air quality regulations at **R307-205-5 Mining Activities** requires mining activities to control fugitive dust by watering, paving, restricting speed, restricting travel, or by other methods. The applicant states that they will meet the requirements of the Clean Air Act. A Division inspection dated March 30, 2001 states:

During this inspection, significant dust was being generated from the transport of coal and coal waste. In areas where the trucks were actively hauling material, several inches of very fine talc like soil was present. With each pass of a truck, dust was disturbed into the air.

The permit states that dust will be controlled by reducing the rate of vehicle travel to 10 mph. Based on the recent inspection reducing traffic speed does not control fugitive dust. The Permittee must describe other actions to control fugitive dust such as watering.

Findings:

Information provided in the application is not considered adequate to satisfy the requirements of this section of the regulations. Prior to approval, the operator must provide the following in accordance with:

R645-301-420, the plan must describe methods that are effective in controlling fugitive dust.

VEGETATION

Regulatory Reference: R645-301-330, -301-331, -301-332.

Analysis:

Fill slopes were vegetated with an interim seed mixture in 1981 through 1988. Given the arid climate the vegetative cover on most of these fill sites was very good after 13 to 20 years of plant establishment. Slopes on these fills are considered very steep and are comparable to the

slopes to be reestablished in reclamation. The active rooting zone of the fill material should be suitable as a growth medium in reclamation.

Findings:

Information provided in the application meets the minimum requirements of this section.

RECLAMATION PLAN

RECLAMATION PLAN

POSTMINING LAND USES

Regulatory Reference: 30 CFR Sec. 784.15, 784.200, 785.16, 817.133; R645-301-412, -301-413, -301-414, -302-270, -302-271, -302-272, -302-273, -302-274, -302-275.

Analysis:

The landowner for Phase I of the reclamation is PacifiCorp, the applicant. Because the landowner and applicant are the same no requirements for landowner concurrence is required.

A cattle trail will be established from the county road to access the grazing allotments on East Mountain. The trail will follow the county road to the pre-law waterline and then to the reclaimed mine access road. Photo 1 and Drawing # CS1818B show the "Forest Development Trail" and the "Proposed East Mountain Access Trail" in two close but separate locations. It is assumed that these two trails are the same thing. This discrepancy will need to be addressed in an as-built map.

Findings:

The information provided meets the minimum regulatory requirements of this section.

PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES

Regulatory Reference: 30 CFR Sec. 817.97; R645-301-333, -301-342, -301-358.

Analysis:

Chris Colt, UDWR biologist, was consulted concerning the location of golden eagle nest #952 and the proposed reclamation construction activities. He stated that if the eagle did nest at #952 then likely it has acclimated to the noise given the activity at the tipple valley fill. Since Phase I construction activity will likely not begin until early May, Mr. Colt stated that if the nest was active the egg should have hatched by then and the eagles are less likely to desert the nest at that time. May raptor monitoring may provide additional information.

Findings:

Information provided in the application meets the minimum requirements of this section.

APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -301-270, -301-271, -301-412, -301-413, -301-512, -301-531, -301-533, -301-553, -301-536, -301-542, -301-731, -301-732, -301-733, -301-764.

The permittee, at the request of the Division, provided information relative to the location of various high walls in a survey conducted during the spring of 1997. High walls, as they relate to underground coal extraction, are defined by regulation (See page 14 of Appendix XIV) as areas whose purpose is to provide "entry to underground mining activities". Information included with the 1997 highwall survey included drawing # CS1660B, Des-Bee-Dove Mines, Surface Facilities Map Highwall Survey which depicts the six portal areas associated with the Little Dove and Beehive Mines.

Although the highwalls are depicted as the immediate area at the opening in the coal seam on drawing # CS1660B, large contour cuts were necessary to access the selected portal areas due to the extreme steepness of the terrain. As these cuts, which are determined to be highwalls, were made prior to the passage of SMCRA, no consideration was given relative to the reclaimability of the areas. Had the selected portal areas been accessible from a perpendicular or near perpendicular approach, the massive bankcuts could have been avoided. The steepness of the terrain prevented this. Thus, **the bankcuts are considered to be highwall areas.**

Topsoil, as well as burden, was side cast from the edge of the area to gain access to the coal seam. Page 15 of the Engineering section of Appendix XIV indicates that it was determined during a site review on March 19, 2001 that sufficient fill existed to reclaim the access road and portal pad area to approximate original contour, however:

- 1) There are no surface configuration maps or photographs available to establish the pre-mining surface configuration in the Little Dove/Beehive portal area.
- 2) Without knowledge of the pre-mining surface configuration, even an engineering analysis using predicted cross sections is a "best guess" analysis. This is more accurate than merely looking at the site, as was done on March 19, 2001 by the various representatives of the USFS, and the UDNR/OGM.
- 3) Other fills at this site utilized large volumes of coal fines. This may or may not be the case in the Little Dove/Beehive terrace pad.

Thus, it is impossible to know if sufficient fill will be available to reclaim the Little Dove/Beehive portal areas and access road until the contractor is actually well into the extraction/placement/compaction process of backfilling the area. Page 13 of the Engineering

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section makes the commitment to obtain additional "suitable fill" from the lower valley fill excavation "if excess fill is not available from the portal area". If it is necessary to do this, the permittee must show that this material is "suitable" not only from a soils perspective, but also from an engineering perspective, (i.e., gradation, angle of repose, compaction, etc.) such that the incorporation of same will not affect the long term static safety factor of the backfilled areas.

Appendix XIV must address the stability requirements of **R645-301-553.530**. The permittee must provide the Division a determination, with adequate verification, that any remaining highwalls will have a minimum long term static safety factor of 1.3 capable of preventing slides, or provide an alternative criterion to establish that the remaining highwall is stable and not pose a hazard to the public health and safety, or to the environment.

The Appendix states that, because of the restricted site configuration, reconstruction of the drainages will dictate the actual extent to which fill can be placed (Section 553.110, page 15). This is a major concern at the Division, especially in drainage #3 (Drawings CS1817C and CS1814D) where the dip of the sandstone ledge above the Beehive portals will naturally divert water towards the placed fill and the drop from the ledge will concentrate erosive power at the base of the ledge. No purpose will be served in covering the entire cut to the top if water from drainage #3, or any drainage, erodes the fill or saturates the fill and causes it to slide.

Photograph #'s 8, 9, 10, and 11 (Appendix A of Appendix XIV) show the upper limits of backfilled material in each photo. The photos provide verification that it is not the permittee's intent to fully backfill the highwalls, but rather to leave the upper portion unfilled. This constitutes a "remaining highwall". However, the reclaimed surface will meet AOC because:

- 1) the postmining topography will closely resemble the premining topography;
- 2) all spoil piles are eliminated;
- 3) all drainage channels are being restored;
- 4) the postmining land use is the same as the premining land use.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirement of this section. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-553.530, A determination, with adequate verification that any remaining highwalls will have a minimum long term static safety factor of 1.3 capable of preventing slides, or provide an alternative criterion to establish that the remaining highwall is stable and not pose a hazard to public health and safety, or to the environment.

BACKFILLING AND GRADING

Regulatory Reference: 30 CFR Sec. 785.15, 817.102, 817.107; R645-301-234, -301-537, -301-552, -301-553, -302-230, -302-231, -302-232, -302-233.

Analysis:

General

Amendment Appendix XIV makes the commitment to reclaim the portal areas and portal terrace and its associated access road to approximate original contour. However, the Des-Bee-Dove Mine meets the criteria of a "continuously mined area, (CMA)", as defined by the R645 coal rules. Thus, R645-301-553.610 gives the Division authorization to not require the permittee to completely eliminate the highwalls in the area. The permittee must provide to the Division a written determination that the complete elimination of the highwall would reduce the stability of the reclaimed backfill areas and drainages.

Appendix XIV is lacking relative to the construction verification methods to be utilized to obtain the necessary pre-requisites to ensure slope stability in the reclaimed areas. Compaction is discussed briefly within the application in several areas. As stated, "Compaction will be applied as lifts of material are placed. Depending upon the location and site configuration, material will be compacted with the dozer, bucket of the track hoe or other acceptable means. Large boulders will be removed to allow compaction in the separate lifts. Lifts are not to exceed 2 feet". What Appendix XIV says seems adequate, but the amendment is lacking in that it does not designate any methods to be utilized in the field to ensure that adequate compaction, or other design criteria are being met. This information is necessary to provide the basis for determining the required long-term static safety factor, as required by the R645 coal rules. The type of compaction being utilized on embankments is not important if an adequate required density is maintained throughout the fill area. Sheep's foot, tamping, and/or rollers of different design are used for this purpose. Hauling equipment can be used to obtain compaction, but the confined areas and surface configurations which will be created to backfill these contour highwalls will prevent the use of wheel compaction (due to a concern for machine stability/safety). Dozers are designed to minimize ground pressure to the greatest extent possible, such that they can operate on soft materials. Thus, the utilization of a dozer to achieve adequate compaction of the backfilled material must be verified by standard engineering methods. Other criteria must be considered in the slope stability determination relative to a 1.3 static safety factor; these include material gradation, moisture content, angle of repose of the material, etc.

Page 4-1 of the currently approved mining and reclamation plan for the Des-Bee-Dove operation (revised 4/8/98) indicates that an 825C compactor will be used to ensure adequate compaction on eighteen inch lifts. At least three passes were to be made with the 825C to ensure adequate compaction. The approved plan indicated that all reclaimed slopes would not exceed

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2H:1V.

Appendix XIV indicates that all reclaimed slopes will be shaped to achieve a maximum slope of 2H:1V to 1½H:1V. These profiles consist of vertical slope angles of approximately 26 degrees 34 minutes to 33 degrees 42 minutes, which by definition classifies them as steep slopes.

The highwall, which exists between drainages #3 and #2, must be reclaimed to the maximum extent possible, based on P.E. certified designs meeting the 1.3 long term static safety factor criteria. The drainages must carry undisturbed flow across the reclaimed area. Effective compaction of the backfilled material is critical, not only where the channel will have to cross fill, but also where the interface area of the fill with the near vertical slope of the highwall exists. The drainages must be designed and installed to prevent percolation of any surface flow into the backfill material beneath the channel on the reclaimed slope. Saturated backfill does have the potential to become unstable, and the potential for at least a portion of the reclaimed slope/channel to slide does exist. Therefore, an analysis of the stability of the design for the backfilled areas must be based on saturated fill.

Detail 1, "Section where channel crosses fill", as shown on Plate 4-1, 2 of 5, of the approved Des-Bee-Dove mining and reclamation plan shows a six inch clay filter underlying three, four-inch layers of filter rock of varying coarseness. This design was to be for the drainage within the lower yard area and was not included as part of the Blind Canyon seam reclamation area. As percolation of surface flow into backfill material will seriously affect the stability of not only the drainage, but the adjacent backfill area, it is recommended that the Detail 1 design, or a similarly effective design be incorporated into the reconstructed drainages #2 and #3, where they need to be installed over fill material. All drainage designs must be certified by a registered professional engineer, (R645-301-742.311).

Based on the aforementioned, Appendix XIV is deficient in that it does not show how the reclaimed slopes will achieve a minimum long-term static safety factor of 1.3. There are no methods discussed as to what standard engineering design criteria will be evaluated to determine if a 1.3 long-term static safety factor is achievable.

Approximately 20,500 cubic yards of fill will be required for the entire 3.85 acre site. A trackhoe will transfer the soil from the outslope to the pad and a dozer will be used to move the material against the cut slopes. Berms will be utilized as fill. In case of a shortfall, this amendment proposes the use of "suitable valley fill" material from the on-going excavation of the coal mine waste beneath the storage yard (Section 200, page 15 and Section 500, page 13 of the submittal). The valley fill was sampled in 2000 and the results of the sampling are included in Appendix A, Soil Analysis 2000. Sample locations are shown on a figure included in the appendix. The main limiting factors of this valley fill are its texture (sand) and organic carbon content (70 – 80%), and elevated SAR values. This material is not suitable for use in the top four feet of the fill.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirement of this section. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-234, include salvage and redistribution of the top eighteen inches of substitute topsoil from the outslope (represented by soil samples SS8 and SS9) in the backfilling plan.

R645-301-536.300 and **553.252**, valley fill material must be buried four feet deep within the backfill.

R645-301-742, drainage designs must be certified by a registered professional engineer.

MINE OPENINGS

Regulatory Reference: 30 CFR Sec. 817.13, 817.14, 817.15; R645-301-513, -301-529, -301-551, -301-631, -301-748, -301-765, -301-748.

Analysis:

Mining in the Des-Bee-Dove area predates SMCRA, going back to the late 19th century. It's not clear when the Beehive Mine was initially developed, but a shaft from the Deseret Mine up to the Beehive was constructed sometime in the 1950's to transport coal from the Beehive Mine to the surface by way of the Deseret Mine. Little Dove was constructed in the mid-1970's. The Beehive and Little Dove Mines each had three portals. The mines were temporarily sealed in 1987. In 1999 the portals were backfilled and the surface facilities removed. The planned reclamation will place additional fill and growth medium over the sealed portals. Water will not drain towards the sealed portals. The Little Dove portals and main entries are aligned almost directly downdip and no portion of the mine is at a higher elevation than the portals. The Beehive Mine portals and main entries are oriented close to strike of the coal seam but have a slight downward slope; most of the mine is at an elevation lower than the portals and there is no direct flowpath from the higher areas to the portals.

On February 26, 1997, PacifiCorp filed a Notice of Intent with the Division to reclaim the

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Mines. The currently approved mining and reclamation plan for the Des-Bee-Dove Mine shows Figure 1, Des-Bee-Dove Coal Mines, Typical Portal Seal, drawing # CM-10319-WB, (See Volume 2, Part 4, Appendix 1) which depicts a keyed double course concrete block seal hitched into the coal ribs and mine floor, with twenty five feet of noncombustible backfill placed and compacted out by the seal. This method was approved as part of C/015/017-98BR, as approved for incorporation into the mining and reclamation plan on September 1, 1998.

As observed on the March 19, 2001 site visit by UDNR/OGM personnel, and as can be seen from Photos #9, #10, and #11 included in Appendix A, "Pre-Reclamation Site Photos", noncombustible fill does exist out to the surface contour of the highwall. In order to meet the requirements of R645-301-551, Casing and Sealing of Underground Openings, and 30 CFR 75.1711-2, Sealing of Slope or Drift Openings, the permittee must provide adequate verification that the six mine openings associated with the Little Dove and Beehive Mines have been permanently sealed. Appendix XIV does not contain any verification that the Mine's access points have been permanently sealed.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirement of this section. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-551, and 30 CFR 75.1711-2, adequate verification in the form of MSHA documentation that that Agency's sealing plan, as approved by same, has been implemented and meets the requirements of 30 CFR 75.1711-2 and R645-301-551.

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-240.

Analysis:

Redistribution

	2.13 acres Little Dove/Beehive	15,000 cy fill
	0.75 acres substation and access road	2,500 cy fill
	<u>0.97</u> acres access road	<u>3,000 cy fill</u>
TOTAL	3.85 acres	20,500 cy fill

Topsoil substitute replacement depth is not mentioned in this submittal. For a cover of 6 inches over the entire site, 3,105 cubic yards would be required. No topsoil has been identified for salvage during the reclamation.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirement of this section. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-233, Identify substitute topsoil for salvage during reclamation and outline temporary storage and replacement practices.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

Analysis:

General

The Beehive and Little Dove Mines are in an unnamed canyon that is tributary to Grimes Wash. Hydrologic resources of the entire East Mountain area, which includes the Cottonwood/Wilberg, Deer Creek, and Des-Bee-Dove Mines, are described in Volume 9 – Hydrologic Section.

No ground-water resources have been documented in the Phase I Reclamation Area, the strata east of the Deer Creek Canyon fault being essentially dry.

The Phase I Reclamation Area is in a small, unnamed drainage that is tributary to Grimes Wash and part of the Cottonwood Canyon Creek drainage. The pad for the Beehive and Little Dove Mines was built across three small, ephemeral channels at the head of this drainage. These drainages normally flow only in response to storm events. The channel at the south end was diverted around the Beehive and Little Dove pad by a berm. Flow from the other two channels crosses the Beehive and Little Dove pad, enters a 48-inch culvert that carries the flow down to the main tipple pad, and from there reports to the sedimentation pond below the minesite. Another small drainage by the water tank was disrupted by construction of the road to the tank pad.

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Rather than placing the engineered channels on top of the fill, as shown on Drawing CS1819A, they should be embedded into the fill, as shown on Plate 4 - 1 - sheet 2 of 5 in Volume 4 of the current MRP.

Channel and slope stability are more important than getting the fill all the way to the top of the cut slope. The channel and the filled slopes should be designed and built so that water cannot get from the channel into the fill and destabilize it. The proposed plan states that, because of the restricted site configuration, reconstruction of the drainages will dictate the actual extent to which fill can be placed (Section 553.110, page 15). This is a major concern at the Division, especially in drainage #3 (Drawings CS1817C and CS1814D) where the dip of the sandstone ledge above the Beehive portals will naturally divert water towards the placed fill and the drop from the ledge will concentrate erosive power at the base of the ledge. No purpose will be served in covering the entire cut to the top if water from drainage #3, or any drainage, erodes the fill or saturates the fill and causes it to slide.

Materials used to construct the channels need to be gradational from fine material at bottom to coarse at top, as shown in Drawing CS1819A and Plate 4 - 1 - sheet 2 of 5 in Volume 4. A grizzly will be needed on site. Coarse material needs to be placed so as to be stable, not just dumped.

Acid and toxic-forming materials

Samples collected from mines operated by PacifiCorp in both East and Trail Mountains indicate very low pyritic sulfur and high neutralization potential. Analysis results are tabulated in Appendix A of section 600-Geology of Appendix XIV.

Discharges into an underground mine

Mine openings are sealed, backfilled, and will be covered with additional material during reclamation. There will be no surface drainage towards the buried portals and no discharge into underground mines.

Gravity discharges

The mines were temporarily sealed in 1987 and in 1999 the portals were backfilled. The planned reclamation will place additional fill and growth medium over the sealed portals. The Little Dove portals and main entries are aligned almost directly downdip and no portion of the mine is at a higher elevation than the portals. The Beehive Mine portals and main entries are oriented close to strike of the coal seam but have a slight downward slope; most of the mine is at an elevation lower than the portals and there is no direct flowpath from the higher areas to the portals. Furthermore, these mines were dry and required outside sources of water for dust control and other mine operations.

Water quality standards and effluent limitations

Monitoring of surface water will continue at the sedimentation pond outfall, UPDES permit UTG040022, which is the only monitoring site in the Des-Bee-Dove permit area. Monitoring will continue until release of the reclamation bond or an earlier appropriate date determined through consultation with the Division, and other local, state, and federal agencies.

The permittee commits that any discharges will be made in compliance with Utah and federal water-quality laws and regulations and with effluent limitations for coal mining promulgated by the EPA, as set forth in 40CFR Part 434.

Diversions

All diversions and drainage control structures constructed for mine operations will be removed. Flows will be returned to reconstructed channels at the approximate locations of the original, natural channels.

Calculations for peak storm discharge and volume used to design these constructed channels are in Appendix A. Calculations were done using the STORM program, which is available through OSMRE's TIPS program. An SCS Upland Curve 7 – ephemeral channel - was used. The rest of the parameters are given in pages 21 to 26 and in Appendix A. Results are summarized in Table 7-1 on page 26.

Calculations for channel design, including filter design and riprap sizing, were done using FlowMaster (version 5.13), based on Manning's equation. Calculation methodology for the filter design and riprap-sizing is explained on pages 26 through 32, and the results of the calculations are in Appendix A. The best combination of water velocity and channel width and depth was sought through an iterative process that tried to balance the costs of constructing narrower but deeper channels against installing additional riprap in shallower but wider channels. Channel dimensions, expected flow characteristics, and D_{50} riprap requirements are summarized in Table 7-2 on page 29, and trapezoidal channel designs results are Appendix A (it states on page 28 that the designs are in Appendix B – Des-Bee-Dove Phase 1 Reclamation Channel Design, but there is no Appendix B in the submittal nor in the Table of Contents.)

Channels 2 and 3 are to be lined with riprap. The equations used for the filter design and riprap-sizing are on page 30, and the results of the calculations are at the end of Appendix A. The Procedural Steps of Reclamation Table in Section 540 states that seive analysis will be done to assure riprap gradation meets design criteria. Materials for constructing these channels are to be obtained on-site. Riprap sizes should be varied rather than uniform. Riprap should be angular rather than rounded: boulders that will be excavated on-site may be more rounded than is desirable and a method of breaking them into more angular material may be needed.

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Drawing CS1819A shows schematic cross-sections of channels 2 and 3: these cross-sections show the filter and riprap materials placed on top of the fill. The elevation of the earthwork immediately adjacent to the channel should be above the uppermost edge of riprap placement, as shown on Plate 4 - 1 - sheet 2 of 5 in Volume 4 of the current MRP. The channels should be built to the size designed – that is, large enough to hold the design event entirely within the constructed, riprapped channel – then there should be a transition from the constructed channel to soil, rather than a visible, hard edge. This is visually more like the existing channels; promotes vegetation growth in the coarser material, which helps anchor it; and eliminates an edge that could facilitate and concentrate erosion parallel to the channel.

It is stated several times in the plan that boulders, acquired on-site, will be placed along the channels as erosion protection. Consideration should be given to using the largest boulders to create ledges to break the uniformity of the channel gradient. These should be imbedded into the fill and the filter and riprap placed around them, rather than placing these large boulders on top of the filter material, which would allow flow to go under them. Using these large boulders as artificial ledges would require extra attention to the construction of the streambed on the downstream side, and such measures as extra riprap or drop-pools might be needed.

Channel designs are based on an average gradient along the length of the designed channel; however, the calculations and designs for channel 3 do not appear to account for the higher velocity and erosive power at the transition from the natural to the head of the constructed channel. The gradient down the face of the sandstone ledge immediately above the head of channel 3 is much greater than that used in the calculations (profile A – Drawing CS1817C), and flow may even form a waterfall with extreme conditions. A transitional structure such as a plunge pool or other method for dissipating the energy of the water flowing off this sandstone ledge is needed.

Experience has shown that channels built on fill are subject to many problems, including failure, if not constructed correctly. Acknowledging that it is the permittee who has the authority to control, direct, and supervise construction of the reclamation channels, the Division would like to have the permittee commit to notifying the Division in time for a Division hydrologist or other Division representative to make a field visit during placement of the filter and riprap.

Sediment control measures

Sediment will be controlled principally by restoring vegetative cover. Tackifier will be used on restored surfaces to temporarily control sediment runoff until vegetation becomes established. Surfaces will be roughened by deep gouging to retain sediment and moisture. Rock litter on the surface will also aid in sediment control. If erosion is identified during routine monitoring or monitoring after precipitation events, silt fence will be installed and, if needed, the surface will be enhanced and reseeded.

The minor drainage near the water tank pad will be reestablished utilizing an

excavator/backhoe. Riprap will not be needed, but boulders acquired on-site will be placed along the channel as erosion protection. The reclaimed area will be blended to resemble the section of the drainage above the access road.

The three drainages at the mine pad will be reestablished using an excavator/backhoe and will be blended to resemble the section of the drainage above the access road. Boulders acquired on-site will be placed along the channels as erosion protection. Channels have been designed to be capable of handling a 100-yr, 6-hour storm: designs are in Appendix A of Appendix XIV. Channels 2 and 3 will require riprap gradation, which is described in Riprap Gradation Calculations for Filter Design in Appendix A.

Siltation structures

All of the reclaimed areas will continue to report to the sedimentation pond below the minesite, which will be retained until the Division approves its removal. There is a commitment on page 33 in Section 763 to retain and maintain all temporary sedimentation structures, including the berm along the access road, until completion of sequenced reclamation beginning at the south end of the pad, proceeding north to the main portal pad area, and finally to the access road. The statement on page 18 in Section 752 - about maintenance of sediment control structures downstream of the Phase 1 area until Phase 2 reclamation in the fall of 2001 - needs to be clarified.

Findings:

The information in this section is not sufficient to meet the requirements of this coal mining rules. Prior to approval, the applicant must respond adequately to the following deficiencies:

R645-301-752.210 - Drawing CS1819A shows schematic cross-sections of channels 2 and 3: these cross-sections show the filter and riprap materials placed on top of the fill. The elevation of the earthwork immediately adjacent to the channel should be above the uppermost edge of riprap placement, as shown on Plate 4 - 1 - sheet 2 of 5 in Volume 4 of the current MRP. The channels should be built to the size designed - that is, large enough to hold the design event entirely within the constructed, riprapped channel - then ideally there should be a transition from the constructed channel to soil, rather than a visible, hard edge. This is visually more like the existing channels; promotes vegetation growth in the coarser material, which helps anchor it; and eliminates an edge that could facilitate and concentrate erosion parallel to the channel. From a practical point-of-view, doing the work with large equipment usually will produce such a transition zone without effort as long as there is enough material for 'spillage' beyond the edges of the designed channel.

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R645-301-121.200 - the statement on page 18 in Section 752 - about maintenance of sediment control structures downstream of the Phase 1 area until Phase 2 reclamation in the fall of 2001 - needs to be clarified.

R645-301-121.200 - trapezoidal channel designs results are in Appendix A - it states on page 28 that the designs are in Appendix B – Des-Bee-Dove Phase 1 Reclamation Channel Design, but there is no Appendix B in the submittal nor listed in the Table of Contents.

R645-301-121.200 – equation (1) on page 21 should show ‘Q’ on the left side rather than ‘P’.

R645-301-742.312, -314 – channel designs are based on an average gradient along the length of the designed channel; however, the calculations and designs for channel 3 do not appear to account for the higher velocity and erosive power at the transition from the natural to the head of the constructed channel. The gradient down the face of the sandstone ledge immediately above the head of channel 3 is much greater than that used in the calculations (profile A – Drawing CS1817C), and flow may even form a waterfall with extreme conditions. A transitional structure such as a plunge pool or other method for dissipating the energy of the water flowing off this sandstone ledge is needed.

R645-301-742.312, -314 – riprap should be angular rather than rounded: boulders that will be excavated on-site may be more rounded than is desirable and a method of breaking them into more angular material may be needed.

R645-301-742.312, -314 – it is stated several times in the plan that boulders, acquired on-site, will be placed along the channels as erosion protection. Consideration should be given to using the largest boulders to create ledges to break the uniformity of the channel gradient. These should be imbedded into the fill with the filter and riprap placed around them, rather than placing them on top of the filter material, which would allow flow to go under them. Using these large boulders as artificial ledges would require extra attention to the construction of the streambed on the downstream side, and such measures as extra riprap or drop-pools might be needed.

R645-301-742.310, -761 – acknowledging that it is the permittee who has the authority to control, direct, and supervise construction of the reclamation channels, the Division would like to have the permittee commit to notify the Division as far in advance as possible of when the filter and riprap will be installed so that a Division hydrologist or other Division representative could schedule a field visit during that part of the construction.

REVEGETATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.111, 817.113, 817.114, 817.116; R645-301-244, -301-353, -301-354, -301-355, -301-356, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

General requirements

A total of 3.85 acres will be seeded in this Phase I reclamation as shown outlined in green on Drawing #CS1818B. This acreage amount may need to be adjusted in an as-built when actual seeding disturbance is known. At that time actual seeding dates can also be added to the map.

The greatest revegetation concern at this site is stabilizing the very steep slopes which are commonly 2h:1v. The seed mixture (section R645-301-353.120) was designed to establish and provide some erosion control on these slopes. Annual reports detailing prevalent species established were reviewed for species seed mix selection. All species in the mixture are native and most are native to this specific area. Unfortunately, Salina wildrye, the dominant grass, is not commercially available for reclamation. The application rate is 61 seeds /ft². This rate is consistent with recommendations for the Utah area. Aggressive species were used because of the concern with soil stabilization. Diversity of the native area is low and the reclaimed vegetative cover should meet the baseline diversity. Transplants will be used to aid in the visual attributes of the area during vegetation establishment.

Seed will be broadcast using a hurricane spreader or applied using a hydroseeder. The seed will be rake to cover the seed if using a hand spreader. Generally raking is not necessary unless the soil has crusted. If the soil has crusted then the seed should be rake even if hydroseeding. Covering the seed with hydromulch does not substitute for soil seed coverage.

Timing

The site will be seeded immediately after the soil is roughened. This likely will be a spring or early summer seeding. A summer seeding maybe successful since this area is subject to summer rains.

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Mulching and Other Soil Stabilizing Practices

One ton per acre noxious weed free alfalfa hay will be incorporated into the soil during roughening. This will provide a slight organic component to the soil and may reduce crusting for seed germination. If a hydroseeder is used on site hydromulch with tackifier will be applied at the rate of 1500 lbs./acre.

Rocks, shrub and tree debris, and other organic on site materials should also be used as a top covering for the seeded surface.

Standards for Success

Vegetation success of the reclaimed Des Bee Dove mine area will be compared to the pinyon-juniper reference area established in 1980. Success will be judged on production, shrub density and cover of the reclaimed site as compared to the reference area. The Operator commits to tree and shrub numbers similar to the reference areas life forms. As the Operator becomes more experienced in reclamation this success standard section should be reviewed.

Findings:

The information provided meet the minimum regulatory requirements of this section.

STABILIZATION OF SURFACE AREAS

Regulatory Reference: 30 CFR Sec. 817.95; R645-301-244.

Analysis:

Slopes will be 1 ½ H: 1V or 2H:1V. Large boulders will be used as riprap. The site will be left extremely rough by deep gouging. One ton per acre of certified weed free alfalfa hay will be incorporated into the soil with pocking. A soil tackifier will be applied according to manufacturers specifications.

If hydroseeding is used, 1500 lbs/acre of wood fiber mulch will be added to the hydroseeder for cover and protection.

The area will be monitored annually for rills and gullies.

Findings:

The information provided is adequate.

MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-323, -301-512, -301-521, -301-542, -301-632, -301-731.

Analysis:

Reclamation backfilling and grading maps

Appendix XIV includes several maps that show the permittee's intent relative to the reclamation of the Beehive/Little Dove portals, the terrace pad, and the associated access road, (Phase 1). Drawing # CS1814D, Des-Bee-Dove Coal Mines 2001 Reclamation Phase 1, shows the operational topography as well as the final reclamation topography for the Blind Canyon seam. The map is P.E. certified by Mr. John Christensen, who is the applicant's resident professional engineer.

Final surface configuration maps

Drawing #CS1817C, Des-Bee-Dove Mine's Phase 1 Reclamation, Plan View and Cross Sections also shows the existing topography and final reclamation topography. Reclamation profiles and cross sections are also depicted, which show the depth of cut/fill being made at each section location to achieve the desired reclamation effect. Most of the fill areas approximate a maximum ten-foot depth. Reclaimed slopes will average twenty to twenty-five degrees from horizontal in the cut areas. Based on the two drawings, a large volume of fill material should be left over to be utilized in the reclamation of the access road. The permittee has not provided mass balance calculations to determine the volume of excess material.

Drawing #CS1817C, Profile A, which is the longitudinal profile for Drainage #3, indicates that the flow reporting from the undisturbed area will drop approximately ten feet onto backfill material. Design calculations submitted for the 100 year six hour event predict a flow of 61 cfs through the Drainage #3 channel, or 27,400 gallons per minute. That volume, dropping ten feet onto fill material, appears to have enough kinetic energy to blow out the channel, creating a compliance situation. It was this potential problem which caused this reviewer to take a closer look at the drainage designs in the reclaim area. Drawing #CS1814D is P.E. certified by Mr. John Christensen.

Findings:

The information provided meets the minimum regulatory requirements of this section.

RECLAMATION PLAN

BONDING AND INSURANCE REQUIREMENTS

Regulatory Reference: 30 CFR Sec. 800; R645-301-800, et seq.

Analysis:

Determination of bond amount

The Des-Bee-Dove Mine site is currently bonded in the amount of \$1, 837,712.00 with the State of Utah through surety bond # 400 JN 6139. This amount was last reviewed prior to the August 2000 permit renewal, and is determined to be adequate.

Appendix XIV briefly discusses bonding on the last page included with the submittal. Included text indicates "upon completion of the reclamation project, PacifiCorp will revise the bond estimation by eliminating items related to the Beehive/Little Dove Mines. Bond reduction will not be requested until Phase 2 is complete (scheduled for the Fall of 2001)." This appears to be adequate.

Findings:

The information provided meets the minimum regulatory requirements of this section.

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RECLAMATION PLAN

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

Regulatory Reference: 30 CFR Sec. 784.14; R645-301-730.

A CHIA for the East Mountain area was updated in 1994. This modification of the Reclamation plan does not require modification or updating of the CHIA.

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CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT
