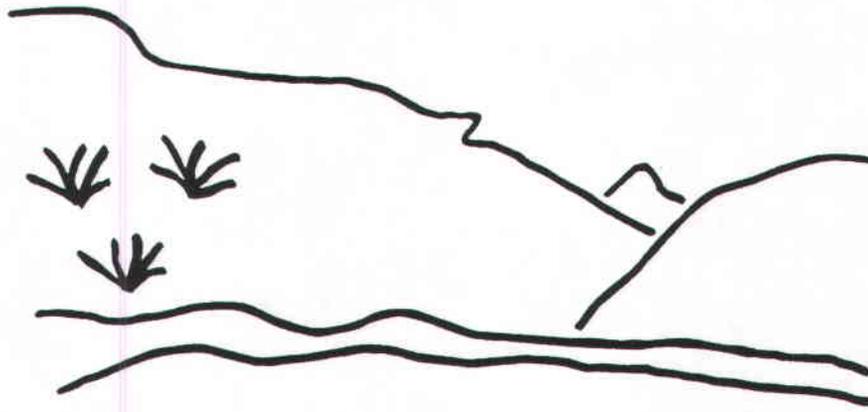


State of Utah



Utah Oil Gas and Mining

Coal Regulatory Program

Des Bee Dove Mine
Phase 2 Reclamation
C/015/017-AM01D
Technical Analysis
January 15, 2002

File in:

Confidential

Shelf

Expandable

Refer to Record No. 0002 Date 01/23/02

In C/015/017, 2002 W. G. King

For additional information



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

COPY

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January 23, 2002

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

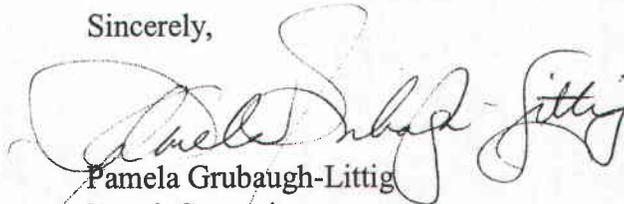
Re: Phase 2 Reclamation, PacifiCorp, Des Bee Dove Mine, C/015/017-AM01D, Outgoing File

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 site. In order for us to continue to process your application, please respond to these deficiencies by March 29, 2002.

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

Sincerely,


Pamela Grubaugh-Littig
Permit Supervisor

sm
Enclosure
cc: Price Field Office
O:\015017.DBD\FINAL\DEF01D.DOC

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INTRODUCTION

TECHNICAL ANALYSIS

INTRODUCTION

The Deseret, Beehive, and Little Dove Mines were temporarily sealed in 1987. Reclamation began with demolition of the structures in 1999. The reclamation plan in the current MRP must be modified because the Tipple pad, which is the main mine pad, has been excavated to recover and market the coal from which this pad was built as well as other modifications.

Proposed amendment C/015/017-AM01D is for the phase 2 reclamation, which is the Deseret Mine portals and pad, the Bathhouse pad, the Tipple pad, the main mine road, and the access roads to the Deseret Mine and Bathhouse pads.

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C/015/017-AM01D
January 15, 2002

INTRODUCTION

SUMMARY OF DEFICIENCIES

SUMMARY OF DEFICIENCIES

The Technical Analysis of the proposed permit changes cannot be completed at this time. Additional information is requested of the permittee to address deficiencies in the proposal. A summary of deficiencies is provided below. Additional comments and concerns may also be found within the analysis and findings made in this Draft Technical Analysis. Upon finalization of this review, any 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**, Drawing 500-2 and Appendix A show cross-sections and profiles of various structures. Drawing 500-2 refers to Drawing 500-1, but Drawing 500-1 does not show where these typical structures are located or are to be built, and it is not always clear from the text which structures are intended for specific uses. Clarify on both Drawing 500-1 and in the text the location of the structures shown on Drawing 500-2 and in Appendix A..... 52
- R645-301-121.200**, Please explain the statement made on page 12 Section 240 that growth media segregated during the valley fill excavation project will be used as the final fill cover (section 240 Reclamation Plan, page 12). Since there was no growth material salvaged during the valley fill excavation project (see N.O.V. 01-7-1-1) the meaning of this statement is unclear..... 20
- R645-301-121.200**, The Permittee must provide an explanation of how to interpret the cut and fill data provided in Appendix C in Section R645-500. The meaning of Appendix D in R645-500 must be clarified..... 8
- R645-301-121.200**, The Permittee must provide an index, C2 form or other way to show how Phase 1 and 2 Reclamation Plan will be placed in the MRP. 8
- R645-301-121.200**, The proposed Phase 2 Reclamation Plan contains information that contradicts information in the approved Mining and Reclamation Plan (MRP) and in the Phase 1 submittal. The Permittee must resolve this contradiction. The MRP must contain references to (1) the newly created appendix in Volume 1 Table of Contents (2) Volume 2, Part 4, Reclamation Plan and (3) in Volume 4 Reclamation of the Mining and Reclamation Plan. The newly created appendix must be numbered. 8

SUMMARY OF DEFICIENCIES

R645-301-122, Please provide to the Division a copy of the soil survey report for the Des Bee Dove Mine site by Dr. A.R. Southard, as referenced in the submittal..... 14

R645-301-130, Information provided in Appendix XIV must include the name and affiliation of the soil scientist who collected the soils data..... 8

R645-301-140, Proposed Drawing #: CS1813E, Surface Yard Area Pre/Post SMCRA Development Map, Sheet No. 500-1, Channel Reclamation, and Sheet No. 500-3, Reclamation Sections Location must all show the same disturbed area boundary..... 16

R645-301-233 and R645-301-121.100, Incorporate the response to AM01C (NOV 01-7-1-1 Abatement information) into the submittal and supply the soils information gathered (field notes and laboratory analysis as well as consultants analysis of the information) from the abatement plan into the submittal. Utilize this information to provide information on volumes of waste, volumes of potential substitute topsoil, locations of substitute topsoil, designated mine waste burial locations, designated topsoil placement locations, and depth of topsoil placement. 20

R645-301-233, Please provide information from the trenching activity conducted during the week of December 3, 2001 and utilize the information to present a coherent plan for substitute topsoil salvage and redistribution. 46

R645-301-244, Please utilize information from the trenching activity conducted during the week of December 3, 2001 to calculate the K-factors for soils on the surface of the slopes..... 58

R645-301-322, the application must provide current information about golden eagle nest 952. 10

R645-301-341.300, The Permittee must demonstrate that revegetation according to the proposed plan will meet the requirements of R645-301-350. At cross section 10+00 a 1.2h:1v cut is shown. The plan must describe how the soil surface will be prepared and vegetated on this steep of a slope..... 57

R645-301-341.300, The Permittee must demonstrate that revegetation according to the proposed plan will meet the requirements of R645-301-350. Providing a map detailing areas of rock fill and providing a percentage cover estimate of the extent of rock fill exposed on the surface may help the demonstration. 57

R645-301-355, the application must describe the surface mulch to be used when broadcast seeding with a hurricane spreader..... 57

R645-301-358, The Operator must commit to the restrictions concerning the eagle protection. 27

R645-301-411, Please add a description of the use of the cattle trail by locals to reenact the settlement of Huntington..... 15

SUMMARY OF DEFICIENCIES

R645-301-411.140, The application must address the potential for this site to be eligible to the National Register of Historic Places 9

R645-301-542, all maps must contain legend. The difference between Map 500-1 and 500-3 must be made obvious or delete one of the maps. 59

R645-301-542, Cross sections 0+00, 1+00, and 2+00 show portions of the reclaimed slope will be outside of the currently established disturbed area perimeter, either the backfilling and grading should be modified or include the areas in the disturbed area map according to the R645 coal rules. 43

R645-301-542, Drawing # 500-2 provides a typical reclamation cross-section for the main access and ancillary access road reclamation projects, (See "Typical Road Section-9/500-1"). The map must be revised to coincide with the slope gradient recommended in the RB & G slope stability analysis..... 59

R645-301-542, Drawing 500-2 and the cross sections on Drawing 500-4 should be labeled to designate what fill areas are to be rock fill and what are to be earth fill. Slope gradients should also be depicted for the specific reclamation areas..... 43

R645-301-542.730, Provide the calculated volume of the waste to be backfilled and buried in the fill as well as the volume of fill required to cover the waste (R645-301-553.252 and 553.300. 23

R645-301-553, The Permittee must also commit to conducting and verifying the compaction of the backfill materials to at least 90% of the maximum laboratory density as determined by ASTM D 1557-91. 33

R645-301-553, The Permittee must clarify what maximum slope gradients will be utilized in the reclamation of the main access and ancillary access roads..... 33

R645-301-553, The Permittee must incorporate into the reclamation plan the information from the trenches dug in the facilities and portal areas the week of December 3. Areas of coal fines, fill and bedrock should be included and incorporated into the engineering analysis. 33

R645-301-553.252, Provide a statement that all coal mine waste will be covered with four feet of non acid/ non toxic material..... 23

R645-301-731.311, Identify burial locations of all acid/toxic forming materials..... 23

R645-301-731.311, Incorporate the results of the trenching soil sampling conducted during the week of December 3, 2001 to ascertain the chemical qualities of the material remaining on site and to identify potential acid/toxic forming materials requiring burial..... 53

SUMMARY OF DEFICIENCIES

- R645-301-733.200, -521.169, -528.400,** There is a temporary embankment or impoundment where the coal was removed from the Tipple pad. This structure is not designed or sized as a sedimentation pond, may not be stable, and might be subject to sudden failure during a large storm event. When and how this structure will be breached and removed needs to be clarified. 53
- R645-301-742.312,** The small drainage at the south end of the Bathhouse pad, which passes beneath the pad in a 30-inch culvert, will be reestablished. The plan does not have an engineered design or indicate the use of riprap in this reclaimed channel. Provide current and reclamation profiles for this culverted-drainage at the south end of the Bathhouse pad and the other small drainages that currently flow onto the Bathhouse pad, and clarify reclamation of these drainages. 53
- R645-301-751, -752,** There is no standard proposed to determine the success of the proposed sediment-control methods. Use RUSLE or a method more suited for the steep slopes at Des-Bee-Dove to provide an estimate of sediment contribution from reclaimed and undisturbed watersheds. 53
- R645-301-761, -730, 742.312, -742.314,** The Procedural Steps of Reclamation Table in Section 540 of the Phase I amendment states that sieve analysis will be done to assure riprap gradation meets design criteria: there is no analogous statement in the Phase 2 amendment. Clarify that sieve analysis will be done during Phase 2 to assure that riprap gradation will meet design criteria. 52
- R645-310-535,** Determine the total volume of fill required to raise the level of the main drainage in the "Valley Fill" location and show sources of fill in Appendix C in Section R645-500 and on the cross-sections of Sheet 500-1 and 500-3 and 500-4. 43

GENERAL CONTENTS

PERMIT APPLICATION FORMAT AND CONTENTS

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

Analysis:

The letter accompanying this submittal states that this amendment is titled Appendix XIV: Phase 2 Reclamation Plan. The cover letter is the only reference given to Appendix XIV with this submittal. It is confusing and unclear how this Phase 2 submittal will incorporate the plans of Phase 1 and if indeed it is Appendix XIV. Some of the information in the Phase 2 submittal contradicts information in the Mining and Reclamation Plan (MRP). These contradictions and confusion must be addressed prior to approval.

The reclamation of the facilities area would be much more understandable and cohesive if Phase 1 and 2 submittals were combined.

Both Phase 1 and Phase 2 are being included as Appendix XIV of the Mining and Reclamation Plan, yet the Table of Contents has been created for each Phase of reclamation, not for the entire Appendix. A table of contents for the entire appendix is required. Also reference to the location of the information in the MRP Table of Contents in Volume 1 is required. Reference to the information in the Appendix should also be made in Volume 2, Part 4, Reclamation Plan portion of the MRP and Volume 4, Reclamation of the MRP.

Without legends maps are not clear and difficult to interpret.

Cut and fill information provided in Appendix C of Section R645-500 was difficult to interpret and was not easily explained by the Permittee during a discussion session on December 18, 2001 at the Energy West office.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of the Permit Application Format and Contents section of the regulations. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-121.200, The proposed Phase 2 Reclamation Plan contains information that contradicts information in the approved Mining and Reclamation Plan (MRP) and in the Phase 1 submittal. The Permittee must resolve this contradiction. The MRP must contain references to (1) the newly created appendix in Volume 1 Table of Contents (2) Volume 2, Part 4, Reclamation Plan and (3) in Volume 4

Reclamation of the Mining and Reclamation Plan. The newly created appendix must be numbered.

R645-301-121.200, The Permittee must provide an index, C2 form or other way to show how Phase 1 and 2 Reclamation Plan will be placed in the MRP.

R645-301-121.200, The Permittee must provide an explanation of how to interpret the cut and fill data provided in Appendix C in Section R645-500. The meaning of Appendix D in R645- 500 must be clarified.

REPORTING OF TECHNICAL DATA

Regulatory Reference: 30 CFR 777.13; R645-301-130.

Analysis:

The Permittee has employed Dan Larsen of Environmental Industrial Services, a qualified soil scientist, to conduct the soils investigations as a basis of forming a reclamation salvage and replacement strategy. All technical data submitted in the permit application will be accompanied by the names of persons or organizations that collected the data.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of Reporting of Technical Data section of the regulations. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-130, Information provided in Appendix XIV must include the name and affiliation of the soil scientist who collected the soils data.

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.

Minimum Regulatory Requirements:

Describe and identify the nature of cultural historic and archeological resources listed or eligible for listing on the National Register of Historic Places and known archeological sites within the proposed permit and adjacent areas. The description shall be based on all available information, including, but not limited to, information from the State Historic Preservation Officer and local archeological, historical, and cultural preservation groups.

Identify and evaluate important historic and archeological resources that may be eligible for listing on the National Register of Historic Places, through the collection of additional information, conduct of field investigations, or other appropriate analyses.

Analysis:

Numerous references are given throughout the application to historic structures and locations. The use of the term historic is thought to just mean old and not significant to the National Historic Register. The use of the word historic has regulatory connotations and probably should not be used except when referring to structures eligible to the historic register.

An archeological and cultural survey was conducted in the area in 1980. Early cultural and historic surveys did not consider structures and facilities on the mine site during the survey. Structures that were not eligible because of age in initial surveys may now be over 50 years old. Recently the Division has been requiring re-survey of mine sites with structures and facilities over 50 years old. The application must address the potential for this site to be eligible to the Nation Register of Historic Places.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of the Historic and Archeological Resource Information section of the regulations. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-411.140, The application must address the potential for this site to be eligible to the National Register of Historic Places

FISH AND WILDLIFE RESOURCE INFORMATION

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

Minimum Regulatory Reference:

The application shall include fish and wildlife resource information for the permit area and adjacent area. The scope and level of detail for such information shall be determined by the Division in consultation with State and Federal agencies with responsibilities for fish and wildlife and shall be sufficient to design the protection and enhancement plan required under the operation and reclamation plan.

Site-specific resource information necessary to address the respective species or habitats shall be required when the permit area or adjacent area is likely to include:

- (1) Listed or proposed endangered or threatened species of plants or animals or their critical habitats listed by the Secretary under the endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.), or those species or habitats protected by similar State statutes;
- (2) Habitats of unusually high value for fish and wildlife such as important streams, wetlands, riparian areas, cliffs supporting raptors, areas offering special shelter or protection, migration routes, or reproduction and wintering areas; or
- (2) Other species or habitats identified through agency consultation as requiring special protection under State or Federal law.

Analysis:

The Phase 1 application contains a map titled Des-Bee-Dove Mines Phase 1 Reclamation Raptor Location Map. The map shows Golden Eagle nest #952 and 937 are both within the half-mile buffer zone radius of the proposed work area. Chris Colt, DWR Biologist, surveyed these nests. Nest 952 is in direct line of site of the mine facilities and less than 1000 feet away. The following data is available for this nest:

2001- Inactive
2000- Active
1999 - N/A
1998 - N/A

Since this nest does have the potential to be impacted the application must contain current information.

Findings:

The information provided in the application does not meet the minimum Fish and Wildlife Resource Information requirements of the regulations. Prior to approval the following information must be provided in accordance with:

R645-301-322, the application must provide current information about golden eagle nest 952.

ENVIRONMENTAL RESOURCE INFORMATION

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.

Minimum Regulatory Requirements:

Provide adequate soil survey information on those portions of the permit area to be affected by surface operations or facilities consisting of a map delineating different soils, soil identification, soil description, and present and potential productivity of existing soils.

Where selected overburden materials are proposed as a supplement or substitute for topsoil, provide results of the analysis, trials and tests required. Results of physical and chemical analyses of overburden and topsoil must be provided to demonstrate that the resulting soil medium is equal to or more suitable for sustaining revegetation than the available topsoil, provided that trials and tests are certified by an approved laboratory. These data may be obtained from any one or a combination of the following sources: U.S. Department of Agriculture Soil Conservation Service published data based on established soil series; U.S. Department of Agriculture Soil Conservation Service Technical Guides; State agricultural agency, university, Tennessee Valley Authority, Bureau of Land Management or U.S. Department of Agriculture Forest Service published data based on soil series properties and behavior; or, results of physical and chemical analyses, field site trials, or greenhouse tests of the topsoil and overburden materials (soil series) from the permit area. If the permittee demonstrates through soil survey or other data that the topsoil and unconsolidated material are insufficient and substitute materials will be used, only the substitute materials must be analyzed.

Analysis:

Elevation is 7,630 feet on a southeast exposure and slopes of 1½ 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
- 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.

Deseret Pad and Tipple Area Soils information

Soil and Refuse sample sites are shown on Map 200-1. The following samples have been taken of the soils adjacent to the Deseret pad and represent undisturbed soil quality: SS8A, collected in 1990 and SS5 and SS10 collected in 2001. Laboratory Data Sheets for these sites are found in Appendix A. The 1990 soil samples were collected by Val Payne in April 1990 and analyzed by ACZ Laboratories in Steamboat Springs, CO. The 2001 samples were collected by Dennis Oakley and Chuck Semborski in March 1990 and analyzed by Inter-Mountain Laboratories in Sheridan, WY.

Sample depths were not reported for the 1990 samples and profile descriptions are not available. Information from the year 2001 indicates that samples were taken from 0 – 6 inches, 6 – 12 inches and 12 – 18 inches of the surface at each sample site. No field notes were taken and it is not known whether a lithic contact was encountered at eighteen inches.

The undisturbed soils of the Deseret Pad are represented by sample sites SS5, SS8A, and SS10 as shown on Map 200-1. Qualities of the undisturbed soils are summarized in the Deseret Pad and Tipple Area Soils Information Summary table below. The Deseret pad soils in the location of SS10 were found to have much less sand (21%) than the other sites with texture bordering on clay loam (28% clay and 51% silt). As expected, this site had the highest saturation percentage.

Disturbed soils in the Deseret pad area are described by samples SS8 and SS9. The characteristics of these sites are also summarized in the Deseret Pad and Tipple Area Soils Information Summary table below.

Refuse quality is represented by sites SS6 and site 1117. Characteristics of the refuse are summarized in the Deseret Pad and Tipple Area Soils Information Summary table below. In some instances, the refuse is unsuitably high in pH, SAR, and EC. In most instances the refuse is too sandy for use in the top four feet of the reclaimed profile. Samples were taken of refuse/soil mixtures during trenching (December 3, 2001) and this combined mix may be more useful than straight refuse.

Deseret Pad and Tipple Area Soils Information Summary

	Undisturbed (sites SS5, SS8A, SS10)	Disturbed (sites SS8 and SS9)	Refuse sites (sites SS6 and 1117)
PH	7.2 – 7.6	7.0 – 7.3	7.0 – 10.0
EC			
mmhos/cm	0.32 – 0.63	0.55 – 3.0	2.1 – 13.3
SAR	0.5 – 0.6	0.81 – 1.76	8.5 – 9.1
NO ₃ – N ppm	0.3 – 1.9	0.78 – 10.3	5.1 – 6.7
P ppm	2		2.46 – 10.1
NP (t/1000t)	180 -350	314 - 421	275
AP (t/1000t)		4	1.25
Texture	sl, ls, l, cl	loam	Sandy loam
%clay			
%sand	21 - 84	35 -55	73
SP (%)	27 - 34	31 - 35	26
Coarse frag %	25 - 40	19 - 43	29 – 34%

ENVIRONMENTAL RESOURCE INFORMATION

Bathroom pad soils information

Bathroom pad soils are represented by sample sites SS2, SS4, #19, and #22 all taken in 2001. Site #19 is also known as DBD 3600, a composite taken from 0 – 18 inches, and site #22 is also known as DBD 3700, a composite taken from 0 – 5 feet. Undisturbed soils in the vicinity of the bathroom pad are represented by SS1, collected in 2000, and SS6A, collected in 1990. Laboratory Data Sheets for these sites are found in Appendix A. The 1990 soil sample was collected by Val Payne in 1990 and analyzed by ACZ Laboratories in Steamboat Springs, CO. The 2001 samples were collected by Dennis Oakley and Chuck Semborski and analyzed by Inter-Mountain Laboratories in Sheridan, WY.

Qualities of the pad soils and adjacent, undisturbed soils are summarized in the Bathroom Pad Soils Information Summary table below. The most significant difference between the pad soils and undisturbed sites was the SAR, percent coarse fragments, and the neutralization potential. Soils in the vicinity of site #20 or DBD3700 with high SAR can be avoided as a source of substitute topsoil.

Bathroom Pad Soils Information Summary

	Undisturbed (sites SS1 and SS6A)	Disturbed (sites SS2, SS4, #19 and #20)
PH	7.2 – 7.4	7.0 – 7.4
EC mmhos/cm	0.71 – 3.1	0.96 – 2.4
SAR	0.3 – 0.96	0.47 – 11.7
NO ₃ – N ppm	0.8 – 7.84	0.74 – 4.8
P ppm	2 – 3.28	1 – 2.48
NP (t/1000t)	277 -308	4.5 – 662
AP (t/1000t)	0 – 5.31	0 – 1.56
TOC (2.6%OM)	2.9 –3.6	1.5 – 5.9
Texture	SL	L - SL
%clay	9 – 16	12 – 20
%sand	54 - 63	40 - 64
SP (%)	27 - 30	23 - 29
Coarse frag %	29	24 - 40

Main access road soils information

Cut slope soils along the main access road are presented by samples SS3 (a 2001 sample) and SS5A (a 1990 sample). The qualities of the soil are shown in the table below entitled Main Access Road Soils.

ENVIRONMENTAL RESOURCE INFORMATION

Main Access Road Soils Information Summary

	Cut slope (sites SS3 and SS5A)
PH	6.8 – 7.3
EC	0.67 – 2.17
mmhos/cm	
SAR	0.22 – 2.17
NO ₃ – N ppm	0.1 – 1.4
P ppm	0.38 - 2
NP (t/1000t)	155
AP (t/1000t)	0 – 5.62
TOC	(4.1%OM) 2.3
Texture	SL to L
%clay	14 – 16
%sand	46 - 57
SP (%)	29 - 30
Coarse frag %	14.8 – 34.5

A soil survey of the Des Bee Dove mine site by Dr. A.R. Southard, Soil Scientist, Utah State University is referred to in this amendment. When used in the application, all referenced materials will either be provided to the Division or be readily available to the Division (R645-301-122). Please provide to the Division a copy of the soil survey report for the Des Bee Dove Mine site by Dr. A.R. Southard.

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:

R645-301-122, Please provide to the Division a copy of the soil survey report for the Des Bee Dove Mine site by Dr. A.R. Southard, as referenced in the submittal.

LAND-USE RESOURCE INFORMATION

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

Minimum Regulatory Requirements:

Provide a statement of the condition; capability, and productivity of the land that will be affected by surface operations and

ENVIRONMENTAL RESOURCE INFORMATION

facilities within the proposed permit area.

Provide a map and supporting narrative of the uses of the land existing at the time of the filing of the application. If the premining use of the land was changed within 5 years before the anticipated date of beginning the proposed operations, the historic use of the land shall also be described.

The narrative of land capability and productivity must include the capability of the land before any mining to support a variety of uses, giving consideration to soil and foundation characteristics, topography, vegetative cover, and the hydrology of the area proposed to be affected by surface operations or facilities.

Describe the productivity of the area proposed to be affected by surface operations and facilities before mining, expressed as average yield of food, fiber, forage, or wood products from such lands obtained under high levels of management. The productivity shall be determined by yield data or estimates for similar sites based on current data from the U.S. Department of Agriculture, State agricultural universities, or appropriate State natural resources or agricultural agencies.

The application must state whether the proposed permit area has been previously mined. If so, provide the following information, if available: the type of mining method used; the coal seams or other mineral strata mined; the extent of coal or other minerals removed; the approximate dates of past mining; and, the uses of the land preceding mining.

The application shall provide a description of the existing land uses and land-use classifications under local law, if any, of the proposed permit and adjacent areas.

Analysis:

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.

A trek in conjunction with a pageant depicting migration of white settlers to the Huntington area use this cattle trail / road to annual reenact the settlement. This use should be added to the application.

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:

R645-301-411, Please add a description of the use of the cattle trail by locals to reenact the settlement of Huntington.

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.

Minimum Regulatory Requirements:

The permit application must include as part of the Resource Information, the following maps, plans and cross sections:

Affected area boundary maps

The boundaries of all areas proposed to be affected over the estimated total life of the underground mining activities, with a description of size, sequence, and timing of the mining of subareas for which it is anticipated that additional permits will be sought.

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. In a letter dated August 29, 2001 to the Permittee the Division allowed the Permittee to not permit this drainage.

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 bathhouse 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 disturbance area marked on the September 30, 1999 aerial photo (Drawing #: CS1813E) and the disturbed area boundary marked on Sheet No. 500-1 and 500-3 are not the same. Sheet No. 500-1 and 500-3 are confusing because they do not contain a legends or other information identifying the various colors.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of the Maps and Plans section of the regulations. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-140, Proposed Drawing #: CS1813E, Surface Yard Area Pre/Post SMCRA Development Map, Sheet No. 500-1, Channel Reclamation, and Sheet No. 500-3, Reclamation Sections Location must all show the same disturbed area boundary.

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AIR POLLUTION CONTROL PLAN

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

For all surface operations associated with mining activities, the application shall contain an air pollution control plan which includes the following: an air quality monitoring program, if required by the Division, to provide sufficient data to evaluate the effectiveness of the fugitive dust control practices to comply with applicable Federal and State air quality standards; and, a plan for fugitive dust control practices such that all exposed surface areas shall be protected and stabilized to effectively control erosion and air pollution attendant to erosion.

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. The permit states that dust will be controlled by reducing the rate of vehicle travel to 10 mph and watering on an as needed basis.

Findings:

The information provided in the application meets the minimum Air Pollution Control Plan requirements of the regulations.

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR 817.22; R645-301-230.

Minimum Regulatory Requirements:

Topsoil removal and storage

All topsoil shall be removed as a separate layer from the area to be disturbed, and segregated. Where the topsoil is of insufficient quantity or of poor quality for sustaining vegetation, the selected overburden materials approved by the Division for use as a substitute or supplement to topsoil shall be removed as a separate layer from the area to be disturbed, and segregated. If topsoil is less than 6 inches thick, the operator may remove the topsoil and the unconsolidated materials immediately below the topsoil and treat the mixture as topsoil.

The Division may choose not to require the removal of topsoil for minor disturbances which occur at the site of small structures, such as power poles, signs, or fence lines; or, will not destroy the existing vegetation and will not cause erosion.

All materials shall be removed after the vegetative cover that would interfere with its salvage is cleared from the area to be disturbed, but before any drilling, blasting, mining, or other surface disturbance takes place.

Selected overburden materials may be substituted for, or used as a supplement to, topsoil if the operator demonstrates to the Division that the resulting soil medium is equal to, or more suitable for sustaining vegetation than, the existing topsoil, and the resulting soil medium is the best available in the permit area to support revegetation.

Materials removed shall be segregated and stockpiled when it is impractical to redistribute such materials promptly on

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regraded areas. Stockpiled materials shall: be selectively placed on a stable site within the permit area; be protected from contaminants and unnecessary compaction that would interfere with revegetation; be protected from wind and water erosion through prompt establishment and maintenance of an effective, quick growing vegetative cover or through other measures approved by the Division; and, not be moved until required for redistribution unless approved by the Division.

Where long-term surface disturbances will result from facilities such as support facilities and preparation plants and where stockpiling of materials would be detrimental to the quality or quantity of those materials, the Division may approve the temporary distribution of the soil materials so removed to an approved site within the permit area to enhance the current use of that site until needed for later reclamation, provided that: such action will not permanently diminish the capability of the topsoil of the host site; and, the material will be retained in a condition more suitable for redistribution than if stockpiled.

The Division may require that the B horizon, C horizon, or other underlying strata, or portions thereof, be removed and segregated, stockpiled, and redistributed as subsoil in accordance with the above requirements if it finds that such subsoil layers are necessary to comply with the revegetation.

Analysis:

Deseret Portal Area

Trenching of the soils during the week of December 3, 2001, as required by NOV 01-7-1-1, revealed that bedrock exists at a depth of about 5 feet below the surface in the pad area. Little suitable substitute topsoil exists in this area (see field report dated December 17, 2001). The Permittee has submitted a plan for trenching of the site in an attempt to designate the most suitable fill as substitute topsoil. This plan must be updated with the results from the trenching investigation conducted in response to N.O.V. 01-7-1-1.

The Deseret Portal area is approximately 1.1 acres. Using existing fill, slopes will be created between 1.25h:1v to 2h:1v (section 240, page 12). During grading of this site an excess of 9, 275 cubic yards of soil will be generated. The excess will be used as fill on the main access road or stored on the bathhouse pad. The R, B, &G Engineering Inc, Slope Stability Report dated September 2001 (Section 500, Appendix D) indicates that slopes of 1.25h:1v will be rockfill slopes. Previous information received from the Permittee in Amendment AM01A-1, Phase I Reclamation, indicated that only isolated pockets of soil would be placed in rockfill slopes.

The Permittee does not indicate the volume of growth material that is needed for the Deseret Portal area, nor does the Permittee indicate the area to be covered by growth material. The Division understands that for stability requirements, all 2h:1v slopes will be composed of suitable growth material in the upper layers. The Division further understands that the rock fill slopes of 1.25h:1v will receive only pockets of soil distributed randomly. The question remaining is how much of the Deseret portal pad area is 1.25h:1v and how much is 2h:1v.

Maps 500-1 through 500-4 have been provided electronically on a CD disc attached to this submittal. Paper copies of all maps have also been supplied except for Map 500-4, Cross-sections. This diagram of cross sections should be redrawn with disturbed area boundaries placed on the cross sections. From these drawings, the Division can determine that on either side of the drainage for a distance of approximately 75 feet (150 feet wide) there will be level or flatter than 2h:1v slopes.

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The cross sections are on 100 foot centers and there are three cross sections in the Deseret pad area (cross sections 16, 15, and 14), representing an area of 200 feet. Therefore, the Division concludes that 200 X 150 feet = 30,000 sq ft or approximately 0.67 acres. Covering this much area with four feet of adequate rooting material would require 4,500 cubic yards of material.

This plan specifically states that growth media segregated during the valley fill excavation project will be used as the final fill cover (section 240 Reclamation Plan, page 12). Since there was no growth material salvaged during the valley fill excavation project (see N.O.V. 01-7-1-1) the meaning of this statement is unclear.

Refuse from this area will be placed along the slopes of the Deseret pad and along the road leading up to the Beehive pad, where the coal seam is exposed. Volume of refuse should be guesstimated based upon the recent trenching activity.

Tipple Area

Trenching of the soils during the week of December 3, 2001, as required by NOV 01-7-1-1, revealed that a source of substitute topsoil exists beneath the access road to the tipple area (see field report dated December 17, 2001). The slopes on the north side of the tipple yard will be scraped clean of coal and bedrock will be exposed. No topsoil is needed on the north slope of the tipple yard. The area to be treated with topsoil and the volume available from the source of colluvial material located underneath the access road should be guesstimated by the Permittee, based upon the trenching activity.

Bathroom Pad Area

Trenching of the soils during the week of December 3, 2001, required by NOV 01-7-1-1, exposed undisturbed ground underneath the pad at a depth of about five feet, not bedrock as described earlier in field report dated December 17, 2001.¹ The trenches also revealed that a source of substitute topsoil exists within the bathroom pad outslope and fill.

Main access road

Trenching of the soils during the week of December 3, 2001, revealed that there may be a source of substitute topsoil buried in the main access road (see field report dated December 17, 2001).

The submittal should utilize the information gained from trenching during the week of December 3, 2001 to provide the Division with information on volumes of waste, volumes of potential substitute topsoil, locations of substitute topsoil, designated mine waste burial locations.

¹ Discussion between Priscilla Burton and Chuck Semborski on December 18, 2001 at the Energy West offices.

Findings:

Information provided in the proposed amendment is not adequate to meet the Operations Topsoil and Subsoil requirements of the Regulations. Prior to approval, the Permittee must provide current information in accordance with:

R645-301-233 and R645-301-121.100, Incorporate the response to AM01C (NOV 01-7-1-1 Abatement information) into the submittal and supply the soils information gathered (field notes and laboratory analysis as well as consultants analysis of the information) from the abatement plan into the submittal. Utilize this information to provide information on volumes of waste, volumes of potential substitute topsoil, locations of substitute topsoil, designated mine waste burial locations, designated topsoil placement locations, and depth of topsoil placement.

R645-301-121.200, Please explain the statement made on page 12 Section 240 that growth media segregated during the valley fill excavation project will be used as the final fill cover (section 240 Reclamation Plan, page 12). Since there was no growth material salvaged during the valley fill excavation project (see N.O.V. 01-7-1-1) the meaning of this statement is unclear.

VEGETATION

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

Minimum Regulatory Requirements:

Each application will contain a plan for protection of vegetation, fish, and wildlife resources throughout the life of the mine. The plan will provide a description of the measures taken to disturb the smallest practicable area at any one time and through prompt establishment and maintenance of vegetation for interim stabilization of disturbed areas to minimize surface erosion. This may include part or all of the plan for final revegetation as described in reclamation plan for revegetation.

For UNDERGROUND COAL MINING AND RECLAMATION ACTIVITIES a description of the anticipated impacts of subsidence on renewable resource lands and how such impact will be mitigated needs to be presented.

A description of how, to the extent possible, using the best technology currently available, the operator will minimize disturbances and adverse impacts. This description will include protective measures that will be used during the active mining phase of operation. Such measures may include the establishment of buffer zones, the selective location and special design of haul roads and powerlines, the monitoring of surface water quality and quantity, and through prompt establishment and maintenance of vegetation for interim stabilization of disturbed areas to minimize surface erosion.

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 fill slopes using a growth medium to be reestablished in reclamation (this does not include the rock

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fill or cut areas). 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 Vegetation requirements of this section.

SPOIL AND WASTE MATERIALS

Regulatory Reference: 30 CFR 701.5, 784.19, 784.25, 817.71, 817.72, 817.73, 817.74, 817.81, 817.83, 817.84, 817.87, 817.89; R645-100-200, -301-210, -301-211, -301-212, -301-412, -301-512, -301-513, -301-514, -301-521, -301-526, -301-528, -301-535, -301-536, -301-542, -301-553, -301-745, -301-746, -301-747.

Minimum Regulatory Requirements:

Disposal of noncoal mine wastes

Noncoal mine wastes including, but not limited to, grease, lubricants, paints, flammable liquids, garbage, abandoned mining machinery, lumber, and other combustible materials generated during mining activities shall be placed and stored in a controlled manner in a designated portion of the permit area. Placement and storage shall ensure that leachate and surface runoff do not degrade surface or ground water, that fires are prevented, and that the area remains stable and suitable for reclamation and revegetation compatible with the natural surroundings.

Final disposal of noncoal mine wastes shall be in a designated disposal site in the permit area or a State-approved solid waste disposal area. Disposal sites in the permit area shall be designed and constructed to ensure that leachate and drainage from the noncoal mine waste area does not degrade surface or underground water. Wastes shall be routinely compacted and covered to prevent combustion and windborne waste. When the disposal is completed, a minimum of 2 feet of soil cover shall be placed over the site, slopes stabilized, and revegetated. Operation of the disposal site shall be conducted in accordance with all local, State, and Federal requirements.

At no time shall any noncoal mine waste be deposited in a refuse pile or impounding structure, nor shall any excavation for a noncoal mine waste disposal site be located within 8 feet of any coal outcrop or coal storage area.

Any noncoal mine waste defined as "hazardous" under Section 3001 of the Resource Conservation and Recovery Act (RCRA) (Pub. L. 94-580, as amended) and 40 CFR Part 261 shall be handled in accordance with the requirements of Subtitle C of RCRA and any implementing regulations.

Coal mine waste

Each plan shall contain descriptions, including appropriate maps and cross-section drawings of the proposed disposal methods and sites for placing underground development waste and excess spoil generated at surface areas affected by surface operations and facilities. Each plan shall describe the geotechnical investigation, design, construction, operation, maintenance, and removal, if appropriate, of the structures.

All coal mine waste shall be placed in new or existing disposal areas within a permit area that are approved by the Division for this purpose. Coal mine waste shall be placed in a controlled manner to:

- 1.) Minimize adverse effects of leachate and surface-water runoff on surface- and ground-water quality and quantity;
- 2.) Ensure mass stability and prevent mass movement during and after construction;
- 3.) Ensure that the final disposal facility is suitable for reclamation and revegetation compatible with the natural surroundings and the approved postmining land use;
- 4.) Not create a public hazard; and
- 5.) Prevent combustion.

Coal mine waste materials from activities located outside a permit area may be disposed of in the permit area only if

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approved by the Division. Approval shall be based upon a showing that such disposal will be in accordance with the standards of this section.

The disposal facility shall be designed using current, prudent engineering practices and shall meet any design criteria established by the Division. A qualified registered professional engineer, experienced in the design of similar earth and waste structures, shall certify the design of the disposal facility. The disposal facility shall be designed to attain a minimum long-term static safety factor of 1.5. The foundation and abutments must be stable under all conditions of construction. Sufficient foundation investigations, as well as any necessary laboratory testing of foundation material, shall be performed in order to determine the design requirements for foundation stability. The analyses of the foundation conditions shall take into consideration the effect of underground mine workings, if any, upon the stability of the disposal facility.

If any examination or inspection discloses that a potential hazard exists, the Division shall be informed promptly of the finding and of the emergency procedures formulated for public protection and remedial action. If adequate procedures cannot be formulated or implemented the Division shall be notified immediately. The Division shall then notify the appropriate agencies that other emergency procedures are required to protect the public.

Analysis:

Disposal of Noncoal Waste

The reclamation of the Des-Bee-Dove site will generate asphalt material which was used for road surfacing and diversion construction on access roads and storage areas. Asphalt generated during the Phase 2 reclamation will be disposed of by hauling it off the permit area to an approved landfill (See page 12, Section 553.100 BACKFILLING AND GRADING. The Permittee will dispose of the waste at the Nielson landfill.

Coal Mine Waste

Coal mine waste must be disposed of in a controlled manner. The application indicates that areas of minor coal spills will be removed and buried in the cuts of the access road and portal pad (Reclamation Plan, Engineering Section 542.730). Burial of the refuse that remains in the Tipple and Deseret pad outslope is not mentioned. Presumably this will form the bulk of the estimated 9,000 cu yds of excess fill that will be hauled to the Bathhouse pad for permanent burial.

A discussion between Division personnel*; Brian McClelland, Geologist with the U.S. Forest Service; Dennis Oakley and Chuck Semborski of Energy West Mining Co. took place at Energy West offices on December 18, 2001. During this meeting Division personnel inquired as to the following:

- Recalculation of the volume of refuse to be moved and buried as a result of the trenching operation.
- Calculation of the volume of material to be excavated from the bathhouse pad to be used as cover or fill.

* Priscilla Burton, Pete Hess, Dana Dean, Susan White, Pam Grubaugh Littig, Jim Smith

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Clean up of all coal waste is the second reclamation procedure to occur as described by Table 1 of Section 500, Engineering. The Division assumes that this process will be ongoing as the reclamation of the Desert pad and the Tipple yard proceeds and pockets of waste and less desirable material are unearthed.

Findings:

Information provided in the proposed amendment is not adequate to meet the Spoil and Waste Materials requirements of the Regulations. Prior to approval, the Permittee must include the following information consistent with the following Regulations:

R645-301-553.252, Provide a statement that all coal mine waste will be covered with four feet of non acid/ non toxic material.

R645-301-731.311, Identify burial locations of all acid/toxic forming materials.

R645-301-542.730, Provide the calculated volume of the waste to be backfilled and buried in the fill as well as the volume of fill required to cover the waste (R645-301-553.252 and 553.300).

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POSTMINING LAND USES

Regulatory Reference: 30 CFR 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.

Minimum Regulatory Requirements:

In general, all disturbed areas shall be restored in a timely manner to conditions that are capable of supporting: the uses they were capable of supporting before any mining; or higher or better uses.

Provide a detailed description of the proposed use, following reclamation, of the land to be affected within the proposed permit area by surface operations or facilities, including a discussion of the utility and capacity of the reclaimed land to support a variety of alternative uses, and the relationship of the proposed use to existing land-use policies and plans. This description shall explain: how the proposed postmining land use is to be achieved and the necessary support activities which may be needed to achieve the proposed land use; where a land use different from the premining land use is proposed, all materials needed for approval of the alternative use; and, the consideration given to making all of the proposed underground mining activities consistent with surface owner plans and applicable State and local land-use plans and programs.

The description shall be accompanied by a copy of the comments concerning the proposed use from the legal or equitable owner of record of the surface areas to be affected by surface operations or facilities within the proposed permit area and the State and local government agencies which would have to initiate, implement, approve, or authorize the proposed use of the land following reclamation.

Determine premining uses of land. The premining uses of land to which the postmining land use is compared shall be those uses which the land previously supported, if the land has not been previously mined and has been properly managed. The postmining land use for land that has been previously mined and not reclaimed shall be judged on the basis of the land use that existed prior to any mining; Provided that, If the land cannot be reclaimed to the land use that existed prior to any mining because of the previously mined condition, the postmining land use shall be judged on the basis of the highest and best use that can be achieved which is compatible with surrounding areas and does not require the disturbance of areas previously unaffected by mining.

Criteria for alternative postmining land uses. Higher or better uses may be approved as alternative postmining land uses after consultation with the landowner or the land management agency having jurisdiction over the lands, if the proposed uses meet the following criteria: there is a reasonable likelihood for achievement of the use; the use does not present any actual or probable hazard to public health and safety, or threat of water diminution or pollution; and, the use will not be impractical or unreasonable, inconsistent with applicable land use policies or plans, involve unreasonable delay in implementation, or cause or contribute to violation of Federal, State, or local law.

Approval of an alternative postmining land use, may be met by requesting approval through the permit revision procedures rather than requesting such approval in the original permit application. The original permit application, however, must demonstrate that the land will be returned to its premining land use capability. An application for a permit revision of this type must be submitted in accordance with the requirements of filing for a Significant Permit Revision and shall constitute a significant alternation from the mining operations contemplated by the original permit, and shall be subject to the requirements for permits, permit processing, and administrative and judicial of decisions on permits under the regulatory program.

Surface coal mining operations may be conducted under a variance from the requirement to restore disturbed areas to their approximate original contour, if the following requirements are satisfied:

- 1.) The Division grants a variance from approximate original contour restoration requirements.
- 2.) The alternative postmining land use requirements are met.
- 3.) All applicable requirements of the act and the regulatory program, other than the requirement to restore disturbed areas to their approximate original contour, are met.
- 4.) After consultation with the appropriate land use planning agencies, if any, the potential use is shown to constitute an equal or better economic or public use.
- 5.) The proposed use is designed and certified by a qualified registered professional engineer in conformance with professional standards established to assure the stability, drainage, and configuration necessary for the intended use of the site.
- 6.) After approval, where required, of the appropriate State environmental agencies, the watershed of the permit and adjacent areas is shown to be improved.

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- 7.) The highwall is completely backfilled with spoil material, in a manner which results in a static factor of safety of at least 1.3, using standard geotechnical analysis.
- 8.) Only the amount of spoil as is necessary to achieve the postmining land use, ensure the stability of spoil retained on the bench, and all spoil not retained on the bench shall be placed in accordance with all other applicable regulatory requirements.
- 9.) The surface landowner of the permit area has knowingly requested, in writing, that a variance be granted, so as to render the land after reclamation, suitable for an industrial, commercial, residential, or public use (including recreational facilities.)
- 10.) Federal, State, and local government agencies with an interest in the proposed land use have an adequate period in which to review and comment on the proposed use.

Analysis:

The landowner for Phase 1 of the reclamation is PacifiCorp, the Permittee. Because the landowner and applicant are the same no requirements for landowner concurrence is required. The landowner for Phase 2 is PacifiCorp and Forest Service. The Forest Service is involved in the reclamation plan and the Division looks for their concurrence prior to approval of the reclamation.

A cattle trail will be established from the county road to access the grazing allotments on East Mountain. The trail will follow the reclaimed haul road to the pre-law waterline and then back to the reclaimed mine access road.

Findings:

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

PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES

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

Minimum Regulatory Requirements:

Where wetlands and habitats of unusually high value for fish and wildlife occur, the operator conducting underground mining activities shall provide a description of the measures taken to avoid disturbances to, enhance where practicable, restore, or replace, wetlands and riparian vegetation along rivers and streams and bordering ponds and lakes. Designs and plans for underground mining activities shall include measures to avoid disturbances to, enhance where practicable, or restore habitats of unusually high value for fish and wildlife.

Where fish and wildlife habitat is to be a postmining land use, the plant species to be used on reclaimed areas shall be selected on the basis of the following criteria:

- 1.) Their proven nutritional value for fish or wildlife.
- 2.) Their use as cover for fish or wildlife.
- 3.) Their ability to support and enhance fish or wildlife habitat after the release of performance bonds. The selected plants shall be grouped and distributed in a manner which optimizes edge effect, cover, and other benefits to fish and wildlife.

Where cropland is to be the postmining land use, and where appropriate for wildlife- and crop-management practices, the operator shall intersperse the fields with trees, hedges, or fence rows throughout the harvested area to break up large blocks of monoculture and to diversify habitat types for birds and other animals.

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Where residential, public service, or industrial uses are to be the postmining land use and where consistent with the approved postmining land use, the operator shall intersperse reclaimed lands with greenbelts utilizing species of grass, shrubs, and trees useful as food and cover for wildlife.

Analysis:

Golden eagle nest #952 is within the half-mile buffer zone suggested by the U. S. Fish and Wildlife Service (USFWS). Restricted dates are February 7 to July 31. The Permittee has not proposed a start date for the work at the mine. If the project is started inside the restricted dates, after on site activities have been idled then no activity will be allowed until after a March 6 survey determines no activity of the birds, birds on the nest, or greenery in the nest. If the nest is active construction can begin after May 30 provided a biologist monitors the nest. If the birds are disrupted by the construction activity construction must end until after the birds have fledged or July 31. Abandonment of a nest with eggs or chicks is a violation of the Migratory Bird Treaty Act and the Utah Coal Mining Rules.

Findings:

The information provided in the application does not meet the minimum Protection of Fish and Wildlife and Related Environmental Resource requirements of the regulations. Prior to approval the following information must be provided in accordance with:

R645-301-358, The Operator must commit to the restrictions concerning the eagle protection.

APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR 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.

Minimum Regulatory Requirements:

Note :The following requirements have been suspended insofar as they authorize any variance from approximate original contour for surface coal mining operations in any area which is not a steep slope area.

Criteria for permits incorporating variances from approximate original contour restoration requirements.

The Division may issue a permit for nonmountaintop removal mining which includes a variance from the backfilling and grading requirements to restore the disturbed areas to their approximate original contour. The permit may contain such a variance only if the Division finds, in writing, that the applicant has demonstrated, on the basis of a complete application, that the following requirements are met:

- 1.) After reclamation, the lands to be affected by the variance within the permit area will be suitable for an industrial, commercial, residential, or public postmining land use (including recreational facilities).
- 2.) The criteria for the proposed post mining land use will be met.
- 3.) The watershed of lands within the proposed permit and adjacent areas will be improved by the operations when compared with the condition of the watershed before mining or with its condition if the approximate original contour were to be restored. The watershed will be deemed improved only if: the amount of total suspended solids or other pollutants discharged to ground or surface water from the permit area will be reduced, so as to

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- improve the public or private uses or the ecology of such water, or flood hazards within the watershed containing the permit area will be reduced by reduction of the peak flow discharge from precipitation events or thaws; the total volume of flow from the proposed permit area, during every season of the year, will not vary in a way that adversely affects the ecology of any surface water or any existing or planned use of surface or ground water; and, the appropriate State environmental agency approves the plan.
- 4.) The owner of the surface of the lands within the permit area has knowingly requested, in writing, as part of the application, that a variance be granted. The request shall be made separately from any surface owner consent given for right-of-entry and shall show an understanding that the variance could not be granted without the surface owner's request.

If a variance is granted, the requirements of the post mining land use criteria shall be included as a specific condition of the permit, and, the permit shall be specifically marked as containing a variance from approximate original contour.

A permit incorporating a variance shall be reviewed by the Division at least every 30 months following the issuance of the permit to evaluate the progress and development of the surface coal mining and reclamation operations to establish that the operator is proceeding in accordance with the terms of the variance. If the permittee demonstrates to the Division that the operations have been, and continue to be, conducted in compliance with the terms and conditions of the permit, the review specified need not be held. The terms and conditions of a permit incorporating a variance may be modified at any time by the Division, if it determines that more stringent measures are necessary to ensure that the operations involved are conducted in compliance with the requirements of the regulatory program. The Division may grant variances only if it has promulgated specific rules to govern the granting of variances in accordance with the provisions of this section and any necessary, more stringent requirements.

Analysis:

Deseret Mine portals

Highwalls, as they relate to underground coal extraction, are defined by regulation as areas whose purpose is to provide "entry to underground mining activities". Drawing # CS1660B, Des-Bee-Dove Mines, Surface Facilities Map Highwall Survey depicts the eight portals and one vertical shaft connection associated with the Deseret Mine.

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. The portals designated as E, F, and G on drawing CS1660B were developed along the access road to the upper Mines (the Little Dove and the Beehive). These cuts and this access road were made prior to the passage of SMCRA, with no consideration being given relative to the reclaim ability of the areas. Mine openings A, B, C, and D exist at the head of the lower canyon, where the coal seam was probably exposed by erosion. The two portals depicted at location "N" were developed on the bench which extends SSE from the head of the lower canyon.

Again, the portals which were developed through the creation of massive contour bank cuts were done without any consideration being made relative to the reclaimability of them. Topsoil, as well as burden, was side cast from the edge of the area to gain access to the coal seam. Page 12 of the Phase 2 Area Reclamation Plan, Section 553.100 Backfilling and Grading indicates that the backfilling and grading process will utilize existing fill with no importation of fill required. The Permittee anticipates that approximately 9,275 yards of material will be required to backfill the 1.1 acres of disturbance in the Deseret Mine portal area. Since no pre-mining surface configuration maps exist for the area, it is impossible to predict the exact volumes needed but with trenching estimates should be close. If excess fill is generated, it will be hauled for utilization in the reclamation of the main access road, or for storage on the bath house pad.

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Without knowledge of the pre-mining surface configuration, an engineering analysis using predicted cross sections is a "best guess" analysis. Although 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 DOGM, a certain amount of uncertainty still exists. This is especially true in consideration of the fact that at least one fill area at this site utilized a large volume of coal fines. Several trenches were dug in the facilities and portal areas the week of December 3. The purpose of these trenches was to identify potential growth material. The trenches also identified areas of coal fines, fill and bedrock. The application for Phase 2 work should include this information and incorporated into the engineering analysis.

As noted above, the three main Deseret portals and vertical connection shaft exist at the head of the lower canyon where the combined flows of Drainages #2 and #3 will converge upon the cliff above them. Initial backfilling of the Deseret portals and associated highwall in the canyon head will utilize four to 6.5 foot diameter boulders which will bar access to the old works as well as serve as energy dissipators for the upstream flows. All Mine openings and exposed coal seams will be covered, as this material will extend "30 feet laterally (from centerline, See drawing 500-2, Detail "A") beyond the limits of the upstream channel flow.....and will be keyed into the underlying bedrock." The proposed reclamation plan indicates that the cliff formations between the upper pad and the Deseret portals will be "stepped" in increments not exceeding twenty-five feet in height to give the appearance of natural drop structures.

The fill material to regrade the highwall areas which are not reclaimed as part of the re-established drainages will be obtained by using a trackhoe to lift the fill from below the pad. Dozers will position and contour the fill to eliminate the associated highwalls and cuts to the greatest practical extent.

Any bank cuts which remain above the Deseret portal areas will exist due to the impossibility of trying to backfill nearly vertical areas with fine materials and have them remain stable. This remaining highwall will be more stable in an unfilled status than it would be if attempts were made to push material to the top of the cut. The Deseret Mine portals will not pose a hazard to public health or safety, or to the environment due to the remoteness of their location (R645-301-553.530).

The restricted site configuration will control the actual extent to which fill can be placed between the drainages.

The Permittee commits to limiting lift thickness to the specifications listed in the Rollins, Brown and Gunnell slope stability analysis, (rockfill lifts not greater than 30 inches in thickness; earthfill lifts shall not exceed one foot in thickness).

Compaction will be achieved with a dozer, trackhoe bucket, or other acceptable means. The RB&G slope stability analysis recommends that rockfills should be compacted using "at

least **four** passes of a D-9 or equivalent dozer". "All minus 4" to 8" granular material should be placed in lifts not exceeding one foot in thickness. The fill should be compacted to an in-place unit weight equal to at least 90% of the maximum laboratory density as determined by ASTM D 1557-91." The compaction requirements specified within the RB&G slope stability are considered to be the necessary "other acceptable means" necessary to ensure that the required long term static safety factor of 1.3 can be achieved and thus meet the minimum regulatory requirement of R645-3-1-553.530. **Thus the Permittee must commit to performing the compaction requirements specified as well as the methods necessary to confirm that those requirements are being met.**

AM01D states that all prepared slopes will be placed on a 1¼ H:1V or flatter in accordance with the RB&G Slope Stability Study.

Tipple Pad Area Reclamation

The tipple pad area consists of 3.4 acres. The Permittee anticipates that 2, 722 cubic yards of fill will be required to backfill the area. Due to the fact that no premining topographic base maps exist, it is difficult to determine an accurate fill amount, but trenching information should help. Lift thickness, material gradation, compaction and finished slope gradients will all be established based upon the recommendations made within the slope stability analysis performed by Rollins, Brown and Gunnell.

Bath House Pad Area Reclamation

The bath house pad area consists of 2.0 acres which will require 20,435 estimated yards of fill to regrade, as determined by the Permittee. As no pre-mining topographic base maps exist, it is impossible to determine an accurate amount, but trenching information should be incorporated into the engineering designs and estimates. Lift thickness, material gradation, compaction and finished slope gradients will all be established based upon the recommendations made within the slope stability analysis performed by Rollins, Brown and Gunnell.

Main Access Road Reclamation

This area consists of 4.0 acres of surface disturbance. Guardrail demolition must occur prior to the initiation of backfilling the road surface. The Permittee does not include an estimate of the volume of fill material necessary to return the road cut to a pre-mining configuration. Lift thickness, material gradation, compaction and finished slope gradients will all be established based upon the recommendations made within the slope stability analysis performed by Rollins, Brown and Gunnell. A typical road (reclamation) section is depicted on Drawing # 500-2, Section 9. It indicates all road reclamation will utilize a maximum slope gradient of 2:1. This conflicts with the recommendation made within the RB& G slope stability report, (i.e., 1 ¼ H:1V or flatter). The words "or flatter" do not conflict, but the 2H:1V "maximum slope" depicted on Section 9 of Drawing 500-2 conflict with the 1 ¼ H:1V RB & G recommendation. As 2H:1V is

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flatter than 1 ¼ H:1V, the drawing should be revised to coincide with the RB & G recommendation.

Ancillary Access Road Reclamation

The various ancillary roads within the site comprise 0.73 acres. Guard rail demolition and culvert removal will occur as the access road is reclaimed on retreat. The backfilling of the road cut will utilize what materials can be recovered from the outslope, based upon the maximum reach of the trackhoe performing the work. Any excess fill which was generated from the reclamation of the Deseret and tippel pad areas will also be used if available. Compaction will be applied as lifts are developed via the tramping back and forth of the dozers being used to position the material. Lifts will not exceed those thicknesses recommended within the RB&G Slope Stability Study. Crawler and bucket compaction are felt to be adequate for the maximum slope gradients recommended within the Rollins, Gunnell and Brown slope stability analysis. The submittal also commits the Permittee to reclaiming the road to a specification having a maximum slope gradient of 1 ¼ H:1V or flatter as specified within the RB&G Slope Stability Study. The area will be contoured and roughened by deep gouging to aid moisture retention and reestablishment of vegetation such that the reclamation work will model the existing surrounding topography.

The comment should be made that if the access road is reclaimed immediately following the reclamation of the Mines and their associated disturbed areas and problems develop with any of that work, then it will be necessary to redisturb the reclaimed road to gain machinery access. Although it may be possible to perform the necessary repair work via other acceptable means, these tend to be cost prohibitive. The Permittee may want to wait a few seasons prior to reclaiming the access road to see if the main facilities reclamation areas have remained stable.

Cattle Trail Restoration

The cattle trail will be retained through the Des-Bee-Dove site to allow livestock access to the East Mountain area. Much of this trail will follow existing portions of established access road. Where that is the case, the road will be reclaimed to a maximum of six feet of width. Other portions of this livestock access will be established using a small dozer or other machinery which is capable of operating safely in this type of steep terrain. The trail will encompass 0.89 acres of reclamation. Primary sediment control will be performed by deep gouging; secondary control will be maintained through the retention of the existing sediment pond.

General Information Relative to All Previously Mentioned Reclamation Areas

Photograph #'s 8, 9, 10, and 11 of Appendix A of Appendix XIV (C/015/017-AM01A) show the upper limits of backfilled material in each photo relative to the Phase 1 portion (Little Dove and Beehive Mines reclamation). 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". The protrusion of numerous sandstone members in this area prevails, and attempting to key in fill to the tops of these and have that material remain stable would be an exercise in futility. However, the reclaimed surfaces in the Phase 2 areas 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.

The requirements for achieving the approximate original contour requirements are included in the backfilling and grading requirements. The Division's Technical Memo 002 contains guidelines to help evaluate compliance with AOC.

The term "**Approximate Original Contour**" means that the final surface configuration achieved by the backfilling and grading of the mined areas, including any terracing or access roads, closely resembles the general surface configuration of the land prior to mining and blends into and complements the drainage pattern of the surrounding terrain. All highwalls, spoil piles, and coal refuse piles having a design approved under the R645 Rules in preparation for abandonment.

The Division does not have any specific requirements relative to how well a site blends into the surrounding terrain. The general requirements are that the slopes of the reclaimed area are of similar length and steepness of the surrounding area and that the reclaimed topography merges into the surrounding area. The Division's staff have looked at the proposed reclamation topography and cross-sections and have determined that the reclaimed site will blend into the surrounding area.

Although highwall retention under some circumstances may provide certain environmental benefits, both Federal and State regulations require the complete elimination of all highwalls. In Utah, the rules indicate that Permittee's must eliminate all highwalls, except in previously or continuously mined areas and when cliffs existed in the highwall area before mining. Under the general requirements and within the meaning of the AOC directive, elimination of highwalls means backfilling, regrading and reshaping highwalls in a manner that meets AOC requirements and the requirements of the postmining land use.

All highwalls at the Des-Bee-Dove mine were developed prior to SMCRA and therefore do not have to be eliminated if the Permittee can demonstrate that 1) the highwall will be compatible with the postmining land use, 2) provide adequate drainage, 3) be stable (safety factor of 1.3), and 4) there is not enough spoil on site to completely reclaim the highwalls. The compatibility issues are discussed in the postmining land use section of the TA. The drainage issues are discussed in the hydrology section of the TA. The slopes in the area have been analyzed and determined that they meet or will meet the minimum long term static safety factor

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of 1.3 provided the requirements of the RG&B specifications are followed during backfilling and grading.

The prevailing reason as to why the highwalls cannot be completely eliminated is due to the restricted site configuration. The Permittee can probably place enough spoil to cover the highwalls, but due to the extreme steepness of this areas canyon, it would have to be placed at an angle that would cause the slope to have a safety factor of less than 1.3. The Division's main concern in the reclamation of this site is the stability of the backfill. The remoteness of the area would not endanger the public or create any serious environmental hazards even if a major slide occurred. No purpose will be served in covering the entire cut to the top of the sandstone escarpments; doing so would actually detract from the aesthetic value of the reclaimed areas, as compared to the adjacent undisturbed lands.

The term highwall has been broadly interpreted to include cut slopes or cut features associated with highwalls, roads, pad facilities and other surface features related to underground coal mining. The permanent program rules have eliminated this broad interpretation of the term. The rules fail, however, to address what specialized grading techniques, if any, should be used to reclaim cut-slopes or roads and pads. In some cases, leaving cut-slopes or conducting other specialized grading practices may yield a superior reclamation plan when all performance standards and requirements for AOC are considered.

There are no spoil or coal refuse piles relative to this site. Hence the requirement to eliminate some is not applicable as to the requirement needing to be met relative to the achievement of approximate original contour.

Findings:

The information provided in the proposed amendment is not considered adequate to meet the requirements of the Approximate Original Contour Restoration section of the regulations. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-553, The Permittee must clarify what maximum slope gradients will be utilized in the reclamation of the main access and ancillary access roads.

R645-301-553, The Permittee must also commit to conducting and verifying the compaction of the backfill materials to at least 90% of the maximum laboratory density as determined by ASTM D 1557-91.

R645-301-553, The Permittee must incorporate into the reclamation plan the information from the trenches dug in the facilities and portal areas the week of December 3. Areas of coal fines, fill and bedrock should be included and incorporated into the engineering analysis.

BACKFILLING AND GRADING

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

Minimum Regulatory Requirements:

General

Disturbed areas shall be backfilled and graded to: achieve the approximate original contour; eliminate all highwalls, spoil piles, and depressions; achieve a postmining slope that does not exceed either the angle of repose or such lesser slope as is necessary to achieve a minimum long term static safety factor of 1.3 and to prevent slides; minimize erosion and water pollution both on and off the site; and, support the approved postmining land use.

The postmining slope may vary from the approximate original contour when approval is obtained from the Division for a variance from approximate original contour requirements, or when incomplete elimination of highwalls in previously mined areas is allowed under the regulatory requirements. Small depressions may be constructed if they are needed to retain moisture, minimize erosion, create and enhance wildlife habitat, or assist revegetation.

If it is determined by the Division that disturbance of the existing spoil or underground development waste would increase environmental harm or adversely affect the health and safety of the public, the Division may allow the existing spoil or underground development waste pile to remain in place. Accordingly, regrading of settled and revegetated fills to achieve approximate original contour at the conclusion of underground mining activities shall not be required if: the settled and revegetated fills are composed of spoil or nonacid- or nontoxic-forming underground development waste; the spoil or underground development waste is not located so as to be detrimental to the environment, to the health and safety of the public, or to the approved postmining land use; stability of the spoil or underground development waste must be demonstrated through standard geotechnical analysis to be consistent with backfilling and grading requirements for material on the solid bench (1.3 static safety factor) or excess spoil requirements for material not placed on a solid bench (1.5 static safety factor); and, the surface of the spoil or underground development waste shall be vegetated in accordance with the revegetation standards for success, and surface runoff shall be controlled in accordance with the regulatory requirements for diversions.

Spoil shall be returned to the mined-out surface area. Spoil and waste materials shall be compacted where advisable to ensure stability or to prevent leaching of toxic materials. Spoil may be placed on the area outside the mined-out surface area in nonsteep slope areas to restore the approximate original contour by blending the spoil into the surrounding terrain if the following requirements are met: all vegetative and organic materials shall be removed from the area; the topsoil on the area shall be removed, segregated, stored, and redistributed in accordance with regulatory requirements; the spoil shall be backfilled and graded on the area in accordance with the general requirements for backfilling and grading.

Disposal of coal processing waste and underground development waste in the mined-out surface area shall be in accordance with the requirements for the disposal of spoil and waste materials except that a long-term static safety factor of 1.3 shall be achieved.

Exposed coal seams, acid- and toxic-forming materials, and combustible materials exposed, used, or produced during mining shall be adequately covered with nontoxic and noncombustible materials, or treated, to control the impact on surface and ground water, to prevent sustained combustion, and to minimize adverse effects on plant growth and the approved postmining land use.

Cut-and-fill terraces may be allowed by the Division where: needed to conserve soil moisture, ensure stability, and control erosion on final-graded slopes, if the terraces are compatible with the approved postmining land use; or, specialized grading, foundation conditions, or roads are required for the approved postmining land use, in which case the final grading may include a terrace of adequate width to ensure the safety, stability, and erosion control necessary to implement the postmining land-use plan.

Preparation of final-graded surfaces shall be conducted in a manner that minimizes erosion and provides a surface for replacement of topsoil that will minimize slippage.

Previously mined areas

Remining operations on previously mined areas that contain a preexisting highwall shall comply with all other reclamation requirements except as provided herein. The requirement that elimination of highwalls shall not apply to remining operations where the volume of all reasonably available spoil is demonstrated in writing to the Division to be insufficient to completely backfill the reaffected or enlarged highwall. The highwall shall be eliminated to the maximum extent technically practical in accordance with the

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following criteria:

- 1.) All spoil generated by the remining operation and any other reasonably available spoil shall be used to backfill the area. Reasonably available spoil in the immediate vicinity of the remining operation shall be included within the permit area.
- 2.) The backfill shall be graded to a slope which is compatible with the approved postmining land use and which provides adequate drainage and long-term stability.
- 3.) Any highwall remnant shall be stable and not pose a hazard to the public health and safety or to the environment. The operator shall demonstrate, to the satisfaction of the Division, that the highwall remnant is stable.
- 4.) Spoil placed on the outslope during previous mining operations shall not be disturbed if such disturbances will cause instability of the remaining spoil or otherwise increase the hazard to the public health and safety or to the environment.

Backfilling and grading on steep slopes

Underground mining activities on steep slopes shall be conducted so as to meet other applicable regulatory requirements and the requirements of this section. The following materials shall not be placed on the downslope: spoil; waste materials of any type; debris, including that from clearing and grubbing; abandoned or disabled equipment; land above the highwall shall not be disturbed unless the Division finds that this disturbance will facilitate compliance with the environmental protection standards and the disturbance is limited to that necessary to facilitate compliance; and, woody materials shall not be buried in the backfilled area unless the Division determines that the proposed method for placing woody material within the backfill will not deteriorate the stable condition of the backfilled area.

Special provisions for steep slope mining

No permit shall be issued for any operations covered by steep slope mining, unless the Division finds, in writing, that in addition to meeting all other regulatory requirements, the operation will be conducted in accordance with the requirements for backfilling and grading on steep slopes. Any application for a permit for surface coal mining and reclamation operations covered by steep slope mining shall contain sufficient information to establish that the operations will be conducted in accordance with the requirements for backfilling and grading on steep slopes.

This section applies to any person who conducts or intends to conduct steep slope surface coal mining and reclamation operations, except: where an operator proposes to conduct surface coal mining and reclamation operations on flat or gently rolling terrain, leaving a plain or predominantly flat area, but on which an occasional steep slope is encountered as the mining operation proceeds; where a person obtains a permit under the provisions for mountaintop removal mining; or, to the extent that a person obtains a permit incorporating a variance from approximate original contour restoration requirements.

Analysis:

General

A discussion between Division personnel* ; Brian McClelland, Geologist with the U.S. Forest Service; Dennis Oakley and Chuck Semborski of Energy West Mining Co. took place at Energy West offices on December 18, 2001. During this meeting the Division inquired about the fill sources that would be used to fill the drainage in the re-mined section of the "valley fill." Fill sources such as the abutment at cross-section 1+00 and material under the access road at the location of the last trench were suggested by Mr. Semborski. The total volume of fill required to raise the level of the drainage was not readily known, although the cross sections of Sheet 500-1 show that thirty feet of fill is required at cross-section 3+00, twenty-eight feet of fill is required at 6+00 and fifteen feet of fill at 7+00. Sources were not evident in Appendix C of Section R645-301-500 or on the cross-sections of Drawing 500-4.

* Priscilla Burton, Pete Hess, Dana Dean, Susan White, Pam Grubaugh Littig, Jim Smith

Division personnel also inquired as to the:

- Location of slopes that would be steeper than 2h:1v, as these steeper slopes will not receive topsoil treatments.

Points made by Energy West Mining Co. during the meeting of December 18, 2001 included the following:

- Vegetation monitoring would drive soil placement on the slopes steeper than 2h:1v.
- Energy West Mining Co. was incorporating all information from the Appendices of the submittal into the Mining and Reclamation Plan and operate according to the recommendations made therein.
- A Geotechnical Engineer from Rollins, Gunnell and Brown (RG&B) would be evaluating the soil material on site and according to the specifications of the material, the slopes might be created steeper than 1.5h:1v. (i.e. The 1.2 H : 1V slope in cross section 10+00 of Plate 500-4 is a final cut slope configuration.)
- The contractor may utilize a grizzly to sort rock material or import rock material that fits the specifications for stability purposes.
- Cuts can be made in undisturbed ground that are steeper than the fill slope requirements for stability.

The proposed Phase 2 reclamation plan makes the commitment to reclaim the Deseret Mine portal areas and the associated access road to approximate original contour. 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 not to require the Permittee to completely eliminate the highwalls in the area, if insufficient spoil exists on site or the safety factor requirements cannot be met.

Page 18 of the Phase 2 submittal indicates that surveys conducted during the summer of 2001 verified that sufficient backfill material was available to reclaim the Mine to meet the requirements of approximate original contour restoration. However, large volumes of coal waste were used as fill material at this site, some of which have only been recently discovered.

The Permittee has submitted a slope stability analysis for the upper portals and their associated reclamation areas. The Phase 2 Reclamation Plan, as submitted on October 15, 2001 contains a study performed by Rollins, Gunnell and Brown (RG&B) at Profile B and longitudinal cross section 3+00, as depicted on drawing # CS1817C. The toe of Profile B intersects Profile A at cross section 3+00. Thus Profile B is for the upper pad area as it is situated between the Beehive portals and the Little Dove portals. The analysis contains two options for the backfilling of Profile B.

Reclamation cross sections have been provided for the Deseret Mine, the bath house pad, the tippel pad area, and the lower Canyon area. Fifteen cross-section locations are depicted on drawing numbers 500-1 and 500-3. Drawing 500-2 depicts a longitudinal profile/channel

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gradient, as well as cross-sections for the reclamation channel design. The channel reclamation cross sections vary in width from fifteen to thirty feet.

Drawing 500-4 depicts what the Permittee intends to do relative to the restoration of approximate original contour in this lower Canyon area. This area is an extremely narrow canyon, with near vertical walls on either side. These cross sections will be evaluated on an individual basis.

Cross Section 0+00

Cross section 0+00 is located at the extreme southern end of the disturbed area, as depicted on Drawing number 500-3. The cross section bisects three areas of the disturbance, those being the extreme southern end of the bathhouse pad area (215 foot width), the reclamation channel (44 foot width), and the primary access road reclamation (64 foot width).

Starting on the left side of 0+00, analysis of the bath house pad reclamation shows that the final configuration of the reclamation will be established to a slope of 1.65 H: 1V. The Permittee intends to reach out approximately sixty-five feet over the outslope to pull material back up to fill the base of the cut bank. This will establish a slope which is in-line with the slope gradient below the pad, and will achieve a postmining slope that does not exceed either the angle of repose or such lesser slope as is necessary to achieve a minimum long-term static safety factor of 1.3 and prevents slides.....(R645-301-553.130). This area is not considered part of a reclamation highwall, as determined by analysis of drawing number CS1660B, Des-Bee-Dove Mines Surface Facilities Map, Highwall Survey.

Where 0+00 crosses the reclamation channel, the section is the channel configuration. There will be no cut or fill required.

Analysis of the horizontal distances versus the elevation differences on the road section reveals that the road will be reclaimed to a final slope configuration of 3.2 H : 1 V.

There is a problem with cross sections 0+00, 1+00, and 2+00. On cross section 0+00, a reclaimed slope is depicted from -300 to -25 (west side of reclamation channel) as well as from +12.5 to +175 (east side of channel). If one compares the disturbed area perimeter depicted on map #500-1 and 500-3, these portions of reclaimed slope will be outside of the currently established disturbed area perimeter. This appears to be an error, unless it is the Permittee's intent to intentionally reclaim what is necessary to be reclaimed according to the R645 coal rules.

Similarly, cross sections 1+00 and 2+00 also show reclamation slope gradients outside of the Permittee's disturbed area acreage and reclamation responsibility.

Cross Section 1+00

Cross section 1+00 crosses the Des-Bee-Dove disturbed area three times; 1) the bath house pad 2) the reclamation channel, and 3) the reclaimed primary access road.

Analysis of the bath house pad area indicates that one cut and two fill areas will be required to obtain a final finished slope configuration of 1.71 H : 1V. It will be necessary to obtain fill to reach this configuration in this area, as the drawing depicts that the cut will only provide about one-half the volume necessary to make the fills to reach the depicted configuration.

The reclamation channel will require some fill on the east side of the channel to reach the depicted configuration.

The reclamation of the primary access road will be achieved by pulling material up from the outslope and reconfiguring it at the base of the cut bank to achieve a final surface configuration of 2.12 H: 1V. This is in agreement with the previous text described on page 16 of the Phase 2 reclamation plan.

Cross Section 2+00

Cross Section 2+00 crosses in and out of the disturbed area seven times. Again, this is not depicted on the section, which depicts reclaimed slopes from -475 to +300. A shift of the cross section location slightly to the North would have avoided this in/out problem.

Analysis of the proposed reclamation slope on the bathhouse pad indicates that both a cut and fill will be performed to give a slightly concave final configuration at a 3.31H : 1V gradient.

An excavation approximately 32 feet in depth will be required to reach the depicted reclamation channel configuration at cross section 2+00. Fill will be generated for use in other areas.

The reclamation of the primary access road will reach a final surface configuration of 2.2H : 1V, which is better than the 2:1 or 1 ¼: 1 discussed on Page 16 of the Phase 2 plan.

Cross Section 3+00

Cross Section 3+00 is the first transect which is fully contained within the disturbed area perimeter.

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The reclamation in the bathhouse pad area is depicted to achieve a final surface configuration of 3.14 H: 1V. Total slope configuration of the west bank will achieve a final configuration of 2.47H:1V.

The reclamation channel will be constructed on approximately thirty feet of fill material.

The reclamation of the primary access road will achieve a finished slope gradient of 1.33 H:1V. This meets the criteria established by the RB&G study of a maximum slope on the primary road of 1 1:4H : 1V or flatter.

Cross Section 4+00

Cross section 4+00 is made up of three segments where reclamation will occur. These are 1) the bath house pad, 2) the reclamation channel and its associated east/west slopes, and 3) the primary access road.

Drawing 500-4 depicts a final surface slope configuration of 2H : 1V. Material on the outslope will be pulled up to help achieve this shape. Fill necessary to achieve this final configuration will have to be placed by hauling and pushing.

The necessary grade for the reclamation channel at this section will be achieved by placing thirty-five feet of fill in the channel bottom. To obtain a portion of this fill, a seventy foot wide cut (horizontal width) will be made on the outslope of the primary access road. This cut will only provide a small percentage of the fill necessary to establish the proposed channel sides. The final surface shape depicted on the west slope is calculated to be 2.16H : 1V. The east slope will achieve a configuration of 2.85H : 1V up to the primary road portion.

The reclamation of the primary access road will fill the base of the cut-bank to achieve a 1.1H : 1V. Although the 1.1:1 slope is steeper than the maximum recommended by the RB & G report, the amount of fill to placed here is small in relationship to other areas within this section. Even if this area failed, it would not present a problem as the area is remote and the volume of material is insufficient to slide the 120 feet into the channel.

Cross Section 5+00

Cross section 5+00 includes the widest portion of the bathhouse reclamation pad, as well as the filled reclamation channel and access road.

At the bathhouse pad, a small amount of material will be pulled back up from the top of the outslope. Although not depicted on drawing 500-4, the possibility of digging an incised area within the bath house pad area to permanently dispose of coal refuse has been discussed by the Permittee with the Division's input. This would also create additional fill material. The final

surface configuration depicted for the bathhouse pad area on cross section 5+00 is calculated to be 2.4H : 1V.

The reclamation channel will achieve its final surface configuration by accepting thirty-eight feet of fill on the slope east of the channel. The access road will receive a fairly large cut in order to reshape the east slope to an aesthetically pleasing slope configuration. The slope from the channel edge to the outslope of the access road will achieve a final slope configuration of 4H : 1V.

The primary access road in cross section 5+00 will be reclaimed by making a fifteen foot cut at the road shoulder and backfilling the base of the cut bank to achieve a final surface configuration of 1.4H : 1V.

Cross Section 6+00

Cross sections 6+00 and 7+00 are also within the bathhouse pad reclamation area, although the width of this area is diminishing. As depicted on cross section 6+00, the pad area will be reclaimed by recovering material from the crest of the outslope, and back filling the two-step cutbank. Fill will need to be hauled into the area to achieve the final surface configuration depicted (1.88 H : 1V).

Section 6+00 depicts only a minor amount of surface reconfiguration to achieve the final shape of both the western and eastern slopes. About twenty-eight feet of fill will be placed to establish the proper grade for the channel's east side. The west slope will parallel the existing the surface; the east slope above the channel fill will achieve a final configuration of 1.36H : 1V.

Cross Section 7+00

Cross section 7+00 will occur at the ancillary road switchback which allows access onto the bath house pad. A large fill will occur here to reconfigure the area to a final surface shape achieving a 1.58H : 1V slope. The overall final surface slope from the head of the reclamation section down to the western edge of the reclamation channel will achieve a final surface slope of 1.72H : 1V. The channel as it currently exists will receive fifteen feet of fill to establish the grade necessary to achieve the flow gradient depicted on drawing 500-2, Profile 10.

The east slope of the reclamation section above the channel will be shaped to achieve a finished slope configuration of 5.3H : 1V on the lower section and 2.12H : 1V on the upper slope section. Both gradients should be adequate to ensure long term slope stability in the area.

Cross Section 8+00

The western reclamation slope of Cross Section 8+00 begins at the western edge of the disturbed area perimeter and extends down until it reaches the west bank of the reclamation

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channel. A cut will be made in the lower third of the slope, with fills in the upper two-thirds to reach the final surface configuration in this section of 1.74H : 1V.

A ten foot cut will be made to reach the determined channel depth necessary. This cut will be extended up the eastern slope for fifty vertical feet. The maximum depth of cut in this area will be approximately 18 feet. Some fill will be used to reshape the base of the eastern cutbank in this area. The final surface configuration in this area will be established to 3.12H : 1V.

Cross Section 9+00

Cross section 9+00 depicts a reclamation slope and a valley fill to achieve the necessary cross section to meet the correct longitudinal flow gradient. A twenty-two foot cut will have to be made to lower the channel to where it needs to be to minimize the flow velocities. Two small fills will be required on the west bank. The remaining cut will establish a final finished surface configuration of 1.76 H : 1V on the western slope. The east slope above the reclamation channel will be established by making a cut approximately 125 feet long and twenty feet deep.

Cross Section 10+00

Cross section 10+00 depicts a reclaimed slope on the western side of the reclamation channel. A cut approximately 100 feet long and a maximum of thirty feet in depth will be made to establish the final surface configuration slope of 1.2H : 1V. The channel bottom will be established by cutting the area to a depth of twenty feet by 175 feet in width.

Cross Section 11+00

The reclaimed slope configuration on the western bank in cross section 11+00 is nearly collinear with the existing configuration. Only minor reshaping will be necessary to reach the projected final surface slope of 1.52 H : 1V.

A cut will be made in the valley floor to establish the cross section for the channel configuration and its eastern slope. This cut will be 175 feet wide and achieve a maximum depth of twenty feet deep (at the channel location).

Cross Section 12+00

Cross section 12+00 will be established by the excavation of a large cut to establish the correct elevation for the channel bottom. The channel bottom will be located one hundred feet east of the cross section center, and will be thirty feet lower than the existing surface configuration. The cut should produce a large amount of usable fill. The reshaped slopes will resemble the existing undisturbed surface slopes by achieving a final surface configuration of 1.37H : 1V on the western slope and 1.97 H : 1V on the eastern slope.

Cross Section 13+00, 14+00 and 15+00

All three of these cross sections will utilize significant cuts in the channel bottom in order to reach the elevation necessary to establish the head of the drainage at the proposed 32% grade (See Drawing #500-2, Profile 10). Section 13+00 depicts a small cut and minor re-shaping of the extreme east end of the disturbance to achieve the depicted final surface configuration. Section 14+00 will require a minor fill at the extreme east end of the disturbed area. The finished gradient of this fill will be 1.6H : 1V.

Although the cuts necessary to establish the proper gradient in the channel bottom are somewhat deep (average cut depth approximately twenty feet), the final surface configuration of the adjacent slopes will closely resemble the existing surface configuration within the area.

Cross Section 16+00 and 16+11.96

The last two cross sections depicted on Drawing 500-4 show two minor fills on the eastern edge of the reclamation channel. The fills will be keyed into the channel bottom and constructed as depicted on Drawing 500-2, Profile 1.

The remaining section of the reclamation channel will very closely resemble that area as it currently exists (1.2 feet of fill will be placed to establish the channel cross section at section 16+00). As the rock fills will be keyed into the channel bottom, there is nowhere for the material to slide. Section 16+00 depicts 1H : 1V east and west channel side slopes.

Analysis of the cross sections depicted on Drawing 500-4 indicates that only two of the numerous reclamation slopes analyzed had final slope configurations steeper than the maximum recommended within the Rollins, Brown and Gunnell slope stability analysis (1.25 H : 1V). The areas that exceeded the 1.25 H : 1V maximum were the final surface configurations for the primary access road in Cross Section 4+00 (at 1H : 1V) and the final surface configuration of the West Slope in Cross Section 10+00 (at 1.2H : 1V).

The fill required in Cross section 4+00 will amount to approximately 700 cubic yards, which is a small amount. The 1.2 H : 1V slope in cross section 10+00 is a final cut slope configuration. The 1.2 : 1 slope does not present a stability problem because a cut must be made to achieve it, but it may present a problem for growth material stability, soil surface erosion control and vegetation establishment..

The slope stability analysis conducted by Rollins, Gunnell and Brown contains specific design criteria which are recommended to ensure the long term static safety factors calculated for the various backfill designs for the upper pad area. This study can be adapted to the lower Canyon area due to similarities of the materials.

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RB & G recommends that, based on the analysis of the available material at hand, that rockfills can be established to slope gradients achieving a 1.25 H : 1V or flatter configuration. Earth fill slopes should not be greater than 2H : 1V. The cross sections on Drawing 500-4 should be labeled to designate what fill areas are to be rock fill and what are to be earth fill for clarification purposes. Slope gradients should also be depicted for the specific reclamation areas. Cuts to final surface configuration need not be addressed.

All drawings are P.E. certified by Mr. David Hansen, who is a Utah registered professional engineer.

Cross sections 0+00, 1+00, and 2+00 are not correct in that they depict reclamation activities outside of the Mine sites disturbed area.

Findings:

Information provided in the application is not considered adequate to meet the minimum Backfilling and Grading requirement of the regulations. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-542, Cross sections 0+00, 1+00, and 2+00 show portions of the reclaimed slope will be outside of the currently established disturbed area perimeter, either the backfilling and grading should be modified or include the areas in the disturbed area map according to the R645 coal rules.

R645-301-542, Drawing 500-2 and the cross sections on Drawing 500-4 should be labeled to designate what fill areas are to be rock fill and what are to be earth fill. Slope gradients should also be depicted for the specific reclamation areas.

R645-310-535, Determine the total volume of fill required to raise the level of the main drainage in the "Valley Fill" location and show sources of fill in Appendix C in Section R645-500 and on the cross-sections of Sheet 500-1 and 500-3 and 500-4.

MINE OPENINGS

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

Minimum Regulatory Requirements:

Each exploration hole, other drillhole or borehole, shaft, well, or other exposed underground opening shall be cased, lined, or otherwise managed as approved by the Division to prevent acid or other toxic drainage from entering ground and surface waters, to minimize disturbance to the prevailing hydrologic balance and to ensure the safety of people, livestock, fish and wildlife, and machinery in the permit area and adjacent area. Each exploration hole, drill hole or borehole or well that is uncovered or exposed by mining activities within the permit area shall be permanently closed, unless approved for water monitoring or otherwise managed in a manner approved by the Division. Use of a drilled hole or monitoring well as a water well must meet the provisions required to

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protect the hydrologic balance. This section does not apply to holes drilled and used for blasting, in the area affected by surface operations.

Each mine entry which is temporarily inactive, but has a further projected useful service under the approved permit application, shall be protected by barricades or other covering devices, fenced, and posted with signs, to prevent access into the entry and to identify the hazardous nature of the opening. These devices shall be periodically inspected and maintained in good operating condition by the person who conducts the underground mining activities.

Each exploration hole, other drill hole or borehole, shaft, well, and other exposed underground opening which has been identified in the approved permit application for use to return underground development waste, coal processing waste or water to underground workings, or to be used to monitor ground water conditions, shall be temporarily sealed until actual use.

When no longer needed for monitoring or other use approved by the Division upon a finding of no adverse environmental or health and safety effects, or unless approved for transfer as a water well, each shaft, drift, adit, tunnel, exploratory hole, entry way or other opening to the surface from underground shall be capped, sealed, backfilled, or otherwise properly managed, as required by the Division and consistent with the requirements of 30 CFR Section 75.1711. Permanent closure measures shall be designed to prevent access to the mine workings by people, livestock, fish and wildlife, machinery and to keep acid or other toxic drainage from entering ground or surface waters.

Analysis:

Mining in the Des-Bee-Dove area predates SMCRA, going back to the late 19th century. Although it is not clear when the Beehive Mine was initially developed, 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. The portals associated with the Deseret Mine 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 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 DOGM 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, it was necessary for the Permittee to provide adequate verification that the eight mine openings associated with the Deseret Mine were permanently sealed. The Permittee submitted a reclamation plan for the Phase 2 area for the lower pad areas associated with the Deseret Mine portals, and the tipple and bath house facilities. That submittal, which has been designated as C/015/017-AM01-D, includes drawing # CS1660B, "Des-Bee-Dove Mines", Surface Facilities Map Highwall Survey, which shows that eight of the nine portals associated with the Deseret Mine were sealed with double block wall seals and backfilled at least twenty-five feet. The drawing also contains a note that "all seals

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were backfilled and constructed to MSHA regulations at least 25' inby opening". The drawing is P.E. certified by Mr. John Christensen, who is Utah registered professional engineer.

Drawing #CS1660B adequately addresses the requirements of R645-301-551 relative to the horizontal Mine openings, there is no verbiage relative to the method used by the Permittee to bar access to the Mine workings through the vertical shaft previously mentioned. There is no access to this shaft from anywhere on the surface, thus no safety hazard exists to wildlife or the general public

Findings:

The information provided in the application meets the minimum Mine Openings section of the regulations.

TOPSOIL AND SUBSOIL

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

Minimum Regulatory Requirements:

Redistribution

Topsoil materials shall be redistributed in a manner that: achieves an approximately uniform, stable thickness consistent with the approved postmining land use, contours, and surface-water drainage systems; prevents excess compaction of the materials; and, protects the materials from wind and water erosion before and after seeding and planting.

Before redistribution of the material, the regarded land shall be treated if necessary to reduce potential slippage of the redistribution material and to promote root penetration. If no harm will be caused to the redistributed material and reestablished vegetation, such treatment may be conducted after such material is replaced.

The Division may choose not to require the redistribution of topsoil or topsoil substitutes on the approved postmining embankments of permanent impoundments or of roads if it determines that placement of topsoil or topsoil substitutes on such embankments is inconsistent with the requirement to use the best technology currently available to prevent sedimentation, and, such embankments will be otherwise stabilized.

Nutrients and soil amendments shall be applied to the initially redistributed material when necessary to establish the vegetative cover.

The Division may require that the B horizon, C horizon, or other underlying strata, or portions thereof, removed and segregated, stockpiled, be redistributed as subsoil in accordance with the requirements of the above if it finds that such subsoil layers are necessary to comply with the revegetation requirements.

Analysis:

Substitute topsoil will likely be found underneath the tippel access road and in the bathhouse pad and underneath the main access road. Plans for salvaging and utilizing this material should be presented based upon the information gained from trenching of the soils during the week of December 3, 2001 (see the field report dated December 17, 2001).

Findings:

Information provided in the proposed amendment is not adequate to meet the Reclamation Plan Topsoil and Subsoil requirements of the Regulations. Prior to approval, the Permittee must include the following information in accordance with:

R645-301-233, Please provide information from the trenching activity conducted during the week of December 3, 2001 and utilize the information to present a coherent plan for substitute topsoil salvage and redistribution.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR 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.

Minimum Regulatory Requirements:

Hydrologic reclamation plan

The application shall include a plan, with maps and descriptions, indicating how the relevant regulatory requirements will be met. The plan shall be specific to the local hydrologic conditions. It shall contain the steps to be taken during mining and reclamation through bond release to minimize disturbance to the hydrologic balance within the permit and adjacent areas; to prevent material damage outside the permit area; and to meet applicable Federal and State water quality laws and regulations. The plan shall include the measures to be taken to: avoid acid or toxic drainage; prevent, to the extent possible using the best technology currently available, additional contributions of suspended solids to streamflow; provide water treatment facilities when needed; and control drainage. The plan shall specifically address any potential adverse hydrologic consequences identified in the PHC determination and shall include preventive and remedial measures.

Each application shall contain descriptions, including maps and cross sections, of stream channel diversions and other diversions to be constructed within the proposed permit area to achieve compliance with the performance standards for those structures.

Postmining rehabilitation of sedimentation ponds, diversions, impoundments, and treatment facilities

Before abandoning a permit area or seeking bond release, the operator shall ensure that all temporary structures are removed and reclaimed, and that all permanent sedimentation ponds, diversions, impoundments, and treatment facilities meet the requirements of this Chapter for permanent structures, have been maintained properly and meet the requirements of the approved reclamation plan for permanent structures and impoundments. The operator shall renovate such structures if necessary to meet the requirements of this Chapter and to conform to the approved reclamation plan.

Analysis:

General

The Des-Bee-Dove Mines are in a small, unnamed canyon that is tributary to Grimes Wash and part of the Cottonwood Canyon Creek drainage. 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.

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No ground-water resources have been documented in the Des-Bee-Dove area, the strata east of the Deer Creek Canyon fault being essentially dry. There are some small springs farther down the canyon that will not be affected by this phase of the reclamation.

The sedimentation pond was designed for total containment of runoff from not only the disturbed area but also from a large undisturbed area around the mines. The pad for the Beehive and Little Dove Mines was built across three small, ephemeral channels at the head of the drainage. Flow from the two northernmost channels was designed to cross the Beehive and Little Dove pad, enter a 48-inch culvert that carries the flow down to the main tipple pad, and from there reports to the sedimentation pond below the mine site. The undisturbed channel at the south end of the Beehive and Little Dove pad has been diverted around the pad by a berm, but a ditch on the Deseret pad was built to capture the flow at that level. Construction of the road to the water tank disrupted another small drainage. Flows from numerous small washes or gullies plus sheet flow from the steep canyon slopes also cross the disturbed area to reach the sedimentation pond.

Drainage from the Deseret and Bathhouse pads and adjacent undisturbed areas was designed to be diverted to the sedimentation pond. Since removal of the coal from the Tipple pad, this drainage has reported to the bottom of the Tipple pad excavation, where it has evaporated or percolated into the soil.

For reclamation of the Des-Bee-Dove area, channel and slope stability are more important than getting the fill all the way to the top of cut-slopes. The channel and the filled slopes should be designed and built so that water cannot get into the fill and destabilize it.

Materials used to construct the channels will be gradational from fine material at bottom to coarse at top, as shown in Drawing CS1819A (Phase I), and on Plate 4 - 1 - sheet 2 of 5 in Volume 4. The engineered channels will be embedded into the fill. Beyond merely separating out boulders, some method will be needed on site to obtain adequately graded materials for filter and riprap. Boulders and coarse materials need 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. Appendix A of proposed amendment C/015/017 AM01D contains analysis results for a number of in-mine samples, which include boron, selenium, pyritic iron, and percent carbonate, but not neutralization potential.

The Division notes that the bathhouse pad materials represented by sample locations 18, 19, and 20 in Appendix A of Chapter 2 had acid/base potentials of greater than 320 Tons/1000 Tons of soil. The valley fill coal fines (most of which have been removed during re-mining) represented by samples #5, #8 and #9 in Appendix A of Chapter 2 was 87 to 92% sand, with a Total Organic Carbon content of 76 to 84% and Total Sulfur Acid Base Potential between 26 and

49 Tons/1000 Tons. A positive acid base potential calculation for the refuse, combined with overburden high in carbonates will not create a reclamation problem due to acidity. The water holding capacity of the waste is more likely to be an issue. Further information will be forthcoming as the results of the trenching conducted during the week of December 3, 2001 are incorporated into this plan.

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

No gravity discharge will occur from the portals. The mines were dry, and water was imported for mine operations: rocks that overlie the coal seams contain low-permeability strata that inhibit vertical movement of ground water, and the surface is generally steep with poorly developed soils so recharge is minimal.

Portals were sealed to MSHA standards in 1987 and backfilled in 1999. The planned reclamation will place additional fill and growth medium over the sealed portals.

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 (Section 750 – Surface Water). Monitoring will continue until removal of the monitoring site is approved by the Division (Section 731.200 – Surface Water). 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 (Section 751). The current monitoring plan in Volume 9 calls for additional monitoring points immediately above and below the sedimentation pond site after the pond is removed.

A monitoring point just outside the upper disturbed area boundary could measure flow and sediment concentrations and other water-quality factors in runoff from the reclaimed areas and could be a means of demonstrating the effectiveness of the sediment control measures. But, because streamflows in this canyon are from summer thundershowers or snowmelt and generally of high-intensity and short duration, the real value of such a monitoring point in achieving this purpose is questionable.

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Diversions

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

Calculations for peak storm discharge and volume used to design the constructed channels are in Appendix A of the Phase I amendment. 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 parameters and method are discussed on pages 20 to 24 and results are summarized in Table 7-1 on page 24.

Calculations for channel design, including filter and riprap sizing, were done using FlowMaster (version 5.13), which is based on Manning's equation. Parameters and calculation methodology for channel design are explained on pages 25 through 30. Channel dimensions, expected flow characteristics, and D_{50} riprap requirements are summarized in Table 7-2 on page 29. Results of channel design by Hansen, Allen & Luce, Inc. are in Appendix A. The design work in Appendix A is not certified, but the same designs are on Drawing 500-2, which is certified by David Hansen, PE.

Channel design has been done for Upper, Intermediate, and Lower Zones. Reclamation will begin at the top and work downstream.

The Upper Zone includes natural sandstone cliffs between the Beehive and Little Dove pad above and Deseret pad below. It is approximately 120 feet long. To dissipate the energy of water flowing from above onto the Deseret pad, boulders and riprap will be used to cover portals, coal seams, and highwalls or faceups. Where drainage from above is not expected, available, ungraded fill will be used and compacted in lifts.

The Intermediate Zone is on rock outcrop. It is approximately 450 feet long. It will approximate the natural, pre-mining channel and involve no riprap or engineered channel design. Large boulders will generally not be placed within the channel because they can obstruct and divert flow, causing erosion of adjacent reclaimed areas. Water will flow over outcrops and energy will be dissipated as natural drop structures develop.

The Lower Zone is the longest, approximately 1,200 feet, extending from the lowest outcrop of the Intermediate Zone to the disturbed area boundary. This zone will be reclaimed through construction of a trapezoidal channel. The channel will be excavated to approximate original contour and then lined with riprap.

The method used to determine riprap and filter gradation requirements is referred to on page 30. Table 7-3 contains the riprap and filter gradations determined for what the Permittee considers two probable slopes in the Lower Zone, 13.1% and 32.3%. These slopes were

determined from current survey and topographic information; however, it is expected that some rock outcrops will be encountered during construction that will necessitate modifications to the design, such as the small drops structures and pools shown in the "alternate riprap channel design" on Drawing 500-2.

Materials for constructing these channels are to be obtained on-site. Riprap sizes must be varied rather than uniform. The Procedural Steps of Reclamation Table in Section 540 of the Phase I amendment states that sieve analysis will be done to assure riprap gradation meets design criteria: there is no analogous statement in the Phase 2 amendment, but the Division expects proper gradation of riprap and fill at all stages of reclamation construction.

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. The Permittee states in the September 15 cover letter to the second Phase I submittal that they do not anticipate a need to crush or break boulders available on site to obtain appropriate angular material because most available boulders are the result of recent weathering and tend to be angular rather than rounded.

Drawing 500-2 shows cross-sections and profiles of various structures. Drawing 500-2 refers to 500-1, but Drawing 500-1 does not show where these typical structures are located or are to be built, and it is not always clear from the text which structures are intended for specific uses. Schematic cross-sections of engineered channels on Drawing CS1819A in the Phase I amendment show that the soil immediately adjacent to the channels will overlap the uppermost riprap and cover the upper edge of the engineered channel to provide a transition from the constructed channel to soil and avoid a visible, hard edge. This transition will not only be visually more like the existing channels, but will promote vegetation growth in the coarser material, which helps anchor it, and eliminate an edge that could facilitate and concentrate erosion parallel to the channel: there is no analogous design in the Phase 2 amendment, but the Division expects similar design and construction criteria to be used at all stages of reclamation construction.

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 a hydrologist or other Division representative present during placement of the filter and riprap. The Permittee has stated, in the cover letter dated September 15, 2001, that they expect division representatives to be at the site as much as possible during construction to facilitate communication, and that they will make every effort to keep the division informed on progress and timing of construction.

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Sediment Control Measures

The sedimentation pond will remain for sediment control.

Contouring, pocking, and vegetation are the methods to be used to keep sediment in place on reclaimed surfaces. Weed-free alfalfa hay will be incorporated into the soil at a rate of 2,000 lbs/acre. (R645-301-341). A soil tackifier will be applied to protect against erosion until vegetation is established (R645-301-244). Hydroseeded areas will receive wood-fiber mulch. Surfaces will be roughened by pocking or deep gouging to retain sediment and moisture and to mix the straw mulch into the upper portion of the soil. Rock litter on the surface will also aid in sediment control, and enhance vegetation establishment, create micro-habitats, and help provide a natural aesthetic appearance (R645-301-244). 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. No method other than examination in the field is proposed to evaluate the success of these sediment control measures.

The small drainage at the south end of the Bathhouse pad, which passes beneath the pad in a 30-inch culvert, will be reestablished. The plan does not have an engineered design or indicate the use of riprap in this channel. There is no profile for this drainage or the other small drainages that currently flow onto the Bathhouse pad.

Siltation Structures

Basins, traps, straw bales, etc. are proposed for sediment control during the construction phase of reclamation. Weed-free alfalfa will be incorporated into the soil. When reclamation is complete, pocking or roughening of the surface and rock litter and boulders will assist in sediment control. Removal of the sedimentation pond is not included in Phase I or Phase 2 reclamation.

There is no standard proposed to determine the success of these proposed sediment-control methods. RUSLE or similar methods can provide an estimate of sediment contribution from reclaimed and undisturbed watersheds (as was done at the nearby Deer Creek Mine); however, there do not appear to be water-quality or sediment load baseline data for this Des-Bee-Dove drainage to allow a similar comparison: this lack of baseline or background data will need to be accounted for in any method used to evaluate the effectiveness of the proposed sediment control measures. Such an evaluation may indicate the proposed measures are not adequate and more robust methods of sediment control are needed for this steep, dry, rocky, exposed site.

Sediment levels above background levels are not expected (R645-301-242.130). Background levels for this site are not known. RUSLE is not intended for calculations of soil loss from steep slopes, but it could provide at least a calculated estimate of the expected sediment levels as a starting point for other evaluation methods.

There is a commitment on page 30 in Section 763 to retain and maintain all temporary sedimentation structures, including the berm along the access road, until completion of sequenced reclamation. Reclaimed areas will continue to report to the sedimentation pond (R645-301-553.100, p. 17). The sedimentation pond will remain until vegetation is established and the Division approves its removal (R645-301-541, page 500-2). Sediment should be controlled before it leaves the reclaimed or disturbed area. Henry Austin of OSM has expressed his opinion that if the sedimentation pond is to be used for sediment control, the entire drainage between the mine-site and the pond needs to be permitted. A letter from Mary Ann Wright, dated August 29, 2001 clarifies the Division's position that there will be no requirement to permit the wash that connects the disturbed area pad to the sediment pond.

Sedimentation Ponds

Energy West is planning on reclaiming the sedimentation pond as the final step in reclamation. Until other sediment control measures are effective in the Phase I and Phase 2 areas, total containment of all runoff in the sedimentation pond will remain the primary sediment control.

Ponds, Impoundments, Banks, Dams, and Embankments

There is a temporary embankment or impoundment where the coal was removed from the Tipple pad. As Phase I reclamation proceeds, additional runoff will report to this structure, which is not designed or sized as a sedimentation pond. When and how this structure will be breached and removed needs to be clarified.

Findings:

R645-301-761, -730, 742.312, -742.314, The Procedural Steps of Reclamation Table in Section 540 of the Phase I amendment states that sieve analysis will be done to assure riprap gradation meets design criteria: there is no analogous statement in the Phase 2 amendment. Clarify that sieve analysis will be done during Phase 2 to assure that riprap gradation will meet design criteria.

R645-301-121.200, Drawing 500-2 and Appendix A show cross-sections and profiles of various structures. Drawing 500-2 refers to Drawing 500-1, but Drawing 500-1 does not show where these typical structures are located or are to be built, and it is not always clear from the text which structures are intended for specific uses. Clarify on both Drawing 500-1 and in the text the location of the structures shown on Drawing 500-2 and in Appendix A.

R645-301-731.311, Incorporate the results of the trenching soil sampling conducted during the week of December 3, 2001 to ascertain the chemical qualities of the

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material remaining on site and to identify potential acid/toxic forming materials requiring burial.

R645-301-742.312, The small drainage at the south end of the Bathhouse pad, which passes beneath the pad in a 30-inch culvert, will be reestablished. The plan does not have an engineered design or indicate the use of riprap in this reclaimed channel. Provide current and reclamation profiles for this culverted-drainage at the south end of the Bathhouse pad and the other small drainages that currently flow onto the Bathhouse pad, and clarify reclamation of these drainages.

R645-301-733.200, -521.169, -528.400, There is a temporary embankment or impoundment where the coal was removed from the Tipple pad. This structure is not designed or sized as a sedimentation pond, may not be stable, and might be subject to sudden failure during a large storm event. When and how this structure will be breached and removed needs to be clarified.

R645-301-751, -752, There is no standard proposed to determine the success of the proposed sediment-control methods. Use RUSLE or a method more suited for the steep slopes at Des-Bee-Dove to provide an estimate of sediment contribution from reclaimed and undisturbed watersheds.

REVEGETATION

Regulatory Reference: 30 CFR 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.

Minimum Regulatory Requirements:

Revegetation: General requirements

The permittee shall establish on regraded areas and on all other disturbed areas except water areas and surface areas of roads that are approved as part of the postmining land use, a vegetative cover that is in accordance with the approved permit and reclamation plan and that is: diverse, effective, and permanent; comprised of species native to the area, or of introduced species where desirable and necessary to achieve the approved postmining land use and approved by the Division; at least equal in extent of cover to the natural vegetation of the area; and, capable of stabilizing the soil surface from erosion.

The reestablished plant species shall: be compatible with the approved postmining land use; have the same seasonal characteristics of growth as the original vegetation; be capable of self-regeneration and plant succession; be compatible with the plant and animal species of the area; and, meet the requirements of applicable State and Federal seed, poisonous and noxious plant, and introduced species laws or regulations.

The Division may grant exception to these requirements when the species are necessary to achieve a quick-growing, temporary, stabilizing cover, and measures to establish permanent vegetation are included in the approved permit and reclamation plan.

When the Division approves a cropland postmining land use, the Division may grant exceptions to the requirements related to the original and native species of the area. Areas identified as prime farmlands must also meet those specific requirements as specified under that section.

Revegetation: Timing

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Disturbed areas shall be planted during the first normal period for favorable planting conditions after replacement of the plant-growth medium. The normal period for favorable planting is that planting time generally accepted locally for the type of plant materials selected.

Revegetation: Mulching and other soil stabilizing practices

Suitable mulch and other soil stabilizing practices shall be used on all areas that have been regraded and covered by topsoil or topsoil substitutes. The Division may waive this requirement if seasonal, soil, or slope factors result in a condition where mulch and other soil stabilizing practices are not necessary to control erosion and to promptly establish an effective vegetative cover.

Revegetation: Standards for success

Success of revegetation shall be judged on the effectiveness of the vegetation for the approved postmining land use, the extent of cover compared to the cover occurring in natural vegetation of the area, and the general requirements for Revegetation. Standards for success and statistically valid sampling techniques for measuring success shall be selected by the Division and included in an approved regulatory program.

Standards for success shall include criteria representative of unmined lands in the area being reclaimed to evaluate the appropriate vegetation parameters of ground cover, production, or stocking. Ground cover, production, or stocking shall be considered equal to the approved success standard when it is not less than 90 percent of the success standard. The sampling techniques for measuring success shall use a 90-percent statistical confidence interval (i.e., a one-sided test with a 0.10 alpha error).

Standards for success shall be applied in accordance with the approved postmining land use and, at a minimum, the following conditions:

- 1.) For areas developed for use as grazing land or pasture land, the ground cover and production of living plants on the revegetated area shall be at least equal to that of a reference area or such other success standards approved by the Division.
- 2.) For areas developed for use as cropland, crop production on the revegetated area shall be at least equal to that of a reference area or such other success standards approved by the Division.
- 3.) For areas to be developed for fish and wildlife habitat, recreation, shelter belts, or forest products, success of vegetation shall be determined on the basis of tree and shrub stocking and vegetative ground cover. Such parameters are described as follows: minimum stocking and planting arrangements shall be specified by the Division on the basis of local and regional conditions and after consultation with and approval by the State agencies responsible for the administration of forestry and wildlife programs. Consultation and approval may occur on either a programwide or a permit-specific basis; trees and shrubs that will be used in determining the success of stocking and the adequacy of the plant arrangement shall have utility for the approved postmining land use. Trees and shrubs counted in determining such success shall be healthy and have been in place for not less than two growing seasons. At the time of bond release, at least 80 percent of the trees and shrubs used to determine such success shall have been in place for 60 percent of the applicable minimum period of responsibility; and, vegetative ground cover shall not be less than that required to achieve the approved postmining land use.

For areas to be developed for industrial, commercial, or residential use less than 2 years after regrading is completed, the vegetative ground cover shall not be less than that required to control erosion.

For areas previously disturbed by mining that were not reclaimed to the requirements of the performance standards and that are remined or otherwise redisturbed by surface coal mining operations, as a minimum, the vegetative ground cover shall be not less than the ground cover existing before redisturbance and shall be adequate to control erosion.

The period of extended responsibility for successful revegetation shall begin after the last year of augmented seeding, fertilizing, irrigation, or other work, excluding husbandry practices that are approved by the Division.

In areas of more than 26.0 inches of annual average precipitation, the period of responsibility shall continue for a period of not less than five full years. Vegetation parameters identified for grazing land or pasture land and cropland shall equal or exceed the approved success standard during the growing seasons of any two years of the responsibility period, except the first year. Areas approved for the other uses shall equal or exceed the applicable success standard during the growing season of the last year of the responsibility period.

In areas of 26.0 inches or less average annual precipitation, the period of responsibility shall continue for a period of not less than 10 full years. Vegetation parameters shall equal or exceed the approved success standard for at least the last 2 consecutive years of the responsibility period.

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The Division may approve selective husbandry practices, excluding augmented seeding, fertilization, or irrigation, provided it obtains prior approval from the Director as a State Program Amendment that the practices are normal husbandry practices, without extending the period of responsibility for revegetation success and bond liability, if such practices can be expected to continue as part of the postmining land use or if discontinuance of the practices after the liability period expires will not reduce the probability of permanent revegetation success. Approved practices shall be normal husbandry practices within the region for unmined lands having land uses similar to the approved postmining land use of the disturbed area, including such practices as disease, pest, and vermin control; and any pruning, reseeding, and transplanting specifically necessitated by such actions.

Analysis:

General Requirements

A total of 22.9 acres will be seeded in Phase 2 reclamation. Sheet No 300-1, Proposed Reseeded Area, shows the area to be seeded. The map is confusing. It is unclear if all areas within the disturbed area boundary will be reseeded or only areas disturbed by the current reclamation will be reseeded. 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 and up to 1¼h:1v. Fill slopes steeper than 2:1 will use a rock fill for engineering stability purposes. Only isolated pockets of topsoil will be placed in the rock fill slopes. If these rock fill slopes are extensive the site may not meet the vegetation success standards. The current pinyon-juniper reference area has 30.4 percent vegetative cover. The entire reclaimed portal and facilities area will be required to average 30.4 percent vegetative cover to qualify for bond release. Interim vegetation analysis indicate that this should be achievable provided adequate growth medium. The vegetation cover requirements for Phase 2I bond release will not be met if rock fill areas are extensive. The Permittee must provide a map detailing areas of rock fill and provide a percentage cover estimate of the extent of rock fill exposed on the surface.

At cross section 10+00 a 1.2h:1v cut is shown. Rock fills are not required on cut slopes. The plan must describe how the soil surface will be prepared and vegetated on this steep of a slope. Unless some type of demonstration can be made that this area can be successfully revegetated this cut can not be made.

The seed mixture (section R645-301-353.120) was designed to establish and provide some erosion control on these steep slopes. Annual reports detailing prevalent species established from interim seeding 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. These transplants will also be important to add to the species diversity.

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

All noxious weeds will be eradicated either chemically or physically if they become established on site (Maintenance and Monitoring (R645-301-357.320 thru R645-301-357.332)). The Weed Web at: <http://extension.usu.edu/coop/ag/crops/weedweb/index.htm> is an excellent resource for current noxious weed lists and control methods.

Timing

The application commits to seeding immediately after the soil is roughened. The exact season is unknown but likely will be through out the year. Early spring and late fall is the normal time for seeding in this area. A summer seeding maybe successful since this area is subject to summer rains. Several seeding attempts maybe necessary for successful germination and establishment. The Operator should be aware that only under limit conditions is reseeding allowed that does not restart the bond liability period.

Mulching and Other Soil Stabilizing Practices

One ton per acre weed free alfalfa hay will be incorporated into the soil during roughening. (Generally noxious weed free alfalfa hay is specified. Weed free hay will be difficult to find.) 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. Care must be taken to not leave the seed in the hydromulcher for longer than 30 minutes. No commitment has been made to mulch the soil surface if the seed is broadcast seeded using a hurricane spreader (Page 5 of R645-301-500 and Page 4 of R645-301-300). Since this area is steep a commitment must be made to mulch or otherwise stabilize all surfaces.

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.

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Findings:

Information provided in the application is not considered adequate to meet the minimum Revegetation requirement of the regulations. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-341.300, The Permittee must demonstrate that revegetation according to the proposed plan will meet the requirements of R645-301-350. Providing a map detailing areas of rock fill and providing a percentage cover estimate of the extent of rock fill exposed on the surface may help the demonstration.

R645-301-341.300, The Permittee must demonstrate that revegetation according to the proposed plan will meet the requirements of R645-301-350. At cross section 10+00 a 1.2h:1v cut is shown. The plan must describe how the soil surface will be prepared and vegetated on this steep of a slope

R645-301-355, the application must describe the surface mulch to be used when broadcast seeding with a hurricane spreader

STABILIZATION OF SURFACE AREAS

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

Minimum Regulatory Requirements:

All exposed surface areas shall be protected and stabilized to effectively control erosion and air pollution attendant to erosion. Rills and gullies which form in areas that have been regraded and topsoiled and which either disrupt the approved postmining land use or the reestablishment of the vegetative cover, or, cause or contribute to a violation of water quality standards for receiving streams, shall be filled, regraded, or otherwise stabilized; topsoil shall be replaced; and the areas shall be reseeded or replanted.

Analysis:

Slopes will be graded to 1¼ h:1v to 2h:1v. Extreme surface roughening will be used on all slopes (R645-301-350 Performance Standards, page 5). The roughening process can occur during topsoil placement or while incorporating organic materials (i.e. hay). Proper roughening is very important for the site stabilization and revegetation. Roughening is described in the technique sheets in the Division's reclamation manual, The Practical Guide to Reclamation in Utah, found at: ftp://dogm.nr.state.ut.us/PUB/MINES/Coal_Related/RecMan/Reclamation_Manual.PDF. The technique sheets are also useful to give to equipment operators to illustrate the degree of roughness required. Large boulders will be used as riprap.

Roughening on slopes steeper than 2:1 will be difficult and the pocking will likely not last very long. Since runoff leaves the site prior to treatment a demonstration or discussion should be presented on how erosion will be controlled until vegetation establishment. The Permittee is having soil samples tested for very fine sand and other parameters with which to calculate the K-factor of the soils on the surface of the slopes.

One ton per acre of certified weed free alfalfa hay will be incorporated into the soil when pocking. A soil tackifier will be applied according to manufacturers specifications. If hydroseeding is used, 1500 lbs/acre of wood fiber mulch and tackifier spread on the soil surface for cover and protection. As required by the deficiency in the Revegetation section of this TA the Permittee needs to describe the surface mulch used in areas that are not hydroseeded.

The area will be monitored annually for rills and gullies. The Permittee commits to filling and seeding any rills and gullies. The Permittee should expect some rills and gullies during the initial site establishment period that may be as long as 5 to 10 years in this arid area.

Findings:

Information provided in the proposed amendment is not adequate to meet the Stabilization of Surface Areas requirements of the Regulations. Prior to approval, the Permittee must include the following information in accordance with:

R645-301-244, Please utilize information from the trenching activity conducted during the week of December 3, 2001 to calculate the K-factors for soils on the surface of the slopes.

MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS

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

Minimum Regulatory Requirements:

Each application shall contain maps, plans, and cross sections which show the reclamation activities to be conducted, the lands to be affected throughout the operation, and any change in a facility or feature to be caused by the proposed operations, if the facility or feature was shown and described as an existing structure.

The permit application must include as part of the reclamation plan information, the following maps, plans and cross sections:

Final surface configuration maps

Sufficient slope measurements to adequately delineate the final surface configuration of the area affected by surface operations and facilities, measured and recorded according to the following: each measurement shall consist of an angle of inclination along the prevailing slope extending 100 linear feet above and below or beyond the coal outcrop or the area disturbed or, where this is impractical, at locations specified by the Division; where the area has been previously mined, the measurements shall extend at least 100 feet beyond the limits of mining disturbances, or any other distance determined by the Division to be

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representative of the post-reclamation configuration of the land; and, slope measurements shall take into account variations in slope, to provide accurate representation of the range of slopes and reflect geomorphic differences of the area disturbed through reclamation activities.

Analysis:

Final Surface Configuration Maps

Phase 2 includes several maps that show a plan view of the reclamation which the permittee intends to implement in the Deseret Mine portal area, the tibble pad area, the bath house pad area, and the main access and ancillary access roads. The Phase 2 reclamation plan includes Drawing # CS1817C, Phase 1 Reclamation Plan View and Cross Sections which depicts two drainage profiles (Drainage 3 and Drainage 2), a cross-section of the backfilled cut bank between these two channels, and four reclamation cross sections (0+00 through 3+00). The Maps section of the Phase 2 submittal contains two plan view maps designated as drawing # 500-1 (Phase 2 Reclamation Channel Reclamation) and # 500-3 (Phase 2 Reclamation / Reclamation Sections Location). The two maps are identical with the exception of their respective title blocks and drawing number designations. Cross sections for the Phase 2 reclamation area are depicted on Drawing #500-4.

The reclamation cross sections depicted as 0+00, 1+00, and 2+00 on Drawing #500-4 are incorrect in that they show reclamation work being conducted outside of the disturbed area perimeter.

Drawing # 500-2 provides a typical reclamation cross-section for the main access and ancillary access road reclamation projects, (See "Typical Road Section-9/500-1"). This should be revised to coincide with the slope gradient recommended in the RB & G slope stability analysis.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of the Maps, Plans and Cross Sections of Reclamation Operations section of the regulations. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-542, all maps must contain legend. The difference between Map 500-1 and 500-3 must be made obvious or delete one of the maps.

R645-301-542, Drawing # 500-2 provides a typical reclamation cross-section for the main access and ancillary access road reclamation projects, (See "Typical Road Section-9/500-1"). The map must be revised to coincide with the slope gradient recommended in the RB & G slope stability analysis.

BONDING AND INSURANCE REQUIREMENTS

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

Minimum Regulatory Requirements:

General

After a permit application has been approved, but before a permit is issued, the applicant shall file with the Division, on a form prescribed and furnished by the Division, a bond or bonds for performance made payable to the Division and conditioned upon the faithful performance of all the requirements of the Act, the regulatory program, the permit, and the reclamation plan.

The bond or bonds shall cover the entire permit area, or an identified increment of land within the permit area upon which the operator will initiate and conduct surface coal mining and reclamation operations during the initial term of the permit. As surface coal mining and reclamation operations on succeeding increments are initiated and conducted within the permit area, the permittee shall file with the Division an additional bond or bonds to cover such increments.

The operator shall identify the initial and successive areas or increments for bonding on the permit application map and shall specify the bond amount to be provided for each area or increment. Independent increments shall be of sufficient size and configuration to provide for efficient reclamation operations should reclamation by the Division become necessary.

An operator shall not disturb any surface areas, succeeding increments, or extend any underground shafts, tunnels, or operations prior to acceptance by the Division of the required performance bond.

The applicant shall file, with the approval of the Division, a bond or bonds under one of the following schemes to cover the bond amounts for the permit area as determined: a performance bond or bonds for the entire permit area; a cumulative bond schedule and the performance bond required for full reclamation of the initial area to be disturbed; or, an incremental-bond schedule and the performance bond required for the first increment in the schedule.

Determination of bond amount

The amount of the bond required for each bonded area shall: be determined by the Division; depend upon the requirements of the approved permit and reclamation plan; reflect the probable difficulty of reclamation, giving consideration to such factors as topography, geology, hydrology, and revegetation potential; and, be based on, but not limited to, the estimated cost submitted by the permit applicant.

The amount of the bond shall be sufficient to assure the completion of the reclamation plan if the work has to be performed by the Division in the event of forfeiture, and in no case shall the total bond initially posted for the entire area under 1 permit be less than \$10,000.

An operator's financial responsibility for repairing material damage resulting from subsidence may be satisfied by the liability insurance policy required in this section.

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 is adequate.

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Findings:

The information provided in the application meets the minimum Bonding and Insurance Requirements section of the regulations.

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