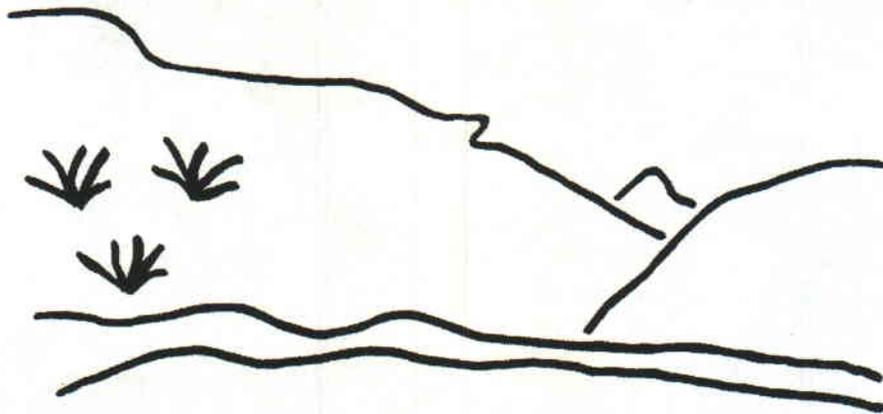


# State of Utah



## Utah Oil Gas and Mining

### Coal Regulatory Program

Deer Creek Mine  
PacifiCorp  
Technical Analysis  
December 11, 2007

- Confidential
- Shelf
- Expandable

Refer to Record No 0054 Date 12/11/2007  
in 0150018, 2007, Outgoing  
for additional information

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## **TECHNICAL ANALYSIS DESCRIPTION**

The Division ensures that coal mining and reclamation operations in the State of Utah are consistent with the Coal Mining Reclamation Act of 1979 (Utah Code Annotated 40-10) and the Surface Mining Control and Reclamation Act of 1977 (Public Law 95-87). The Utah R645 Coal Mining Rules are the procedures to implement the Act. The Division reviews each permit or application for permit change, renewal, transfer, assignment, or sale of permit right for conformance to the R645-Coal Mining Rules. The Applicant/Permittee must comply with all the minimum regulatory requirements as established by the R645 Coal Mining Rules.

The regulatory requirements for obtaining a Utah Coal Mining Permit are included in the section headings of the Technical Analysis (TA) for reference. A complete and current copy of the coal rules can be found at <http://ogm.utah.gov>

The Division writes a TA as part of the review process. The TA is organized into section headings following the organization of the R645-Coal Mining Rules. The Division analyzes each section and writes findings to indicate whether or not the application is in compliance with the requirements of that section of the R645-Coal Mining Rules.

**TECHNICAL ANALYSIS DESCRIPTION**

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## GENERAL CONTENTS

The following permit condition was recommended May 1, 2007, after review of the substitute soil analyses (see documents associated with tasks 2590 and 2748):

**R645-301-233 and R645-301-132**, One hundred twenty days prior to permit renewal in January 2012, the Permittee will provide the results of soil analysis and testing that is described in the MRP Section R645-301-233 Topsoil Substitutes and Supplements.

In 1999, the Mill Fork Tract added 5,562 .82 acres to the Deer Creek Mine permit. The Rilda Canyon facilities, added to the permit in 2005, cover approximately 12.1 acres: 9.0 acres at the portal area and 3.1 acres for soil storage further down the canyon. Mill Fork West lease UTU-84285 added 213.75 acres in 2006, bringing total acreage to approximately 19,727.52. [11092006]

Mining expansion into the North Rilda and Mill Fork tracts Area was anticipated early in the permitting process, and because of this, the North Rilda and Mill Fork Areas were included in many of the baseline studies and on many of the mine permit maps prior to the incorporation of these two areas into the MRP. Because of its location and size, the Mill Fork West Extension was also covered by most of these studies. [11092006]

Except for Maps MFU1837D – Coal Ownership and MFS1838D – Surface Ownership, all legal and financial information for the Mill Fork Lease was moved from Volume 12 to Volume 1 of the Deer Creek Mine MRP, effective March 5, 2003. Legal and financial information was subsequently incorporated in the Legal and Financial Volume, which contains information for all four of PacifiCorp's Utah mines, on April 20, 2004. (MFS1838D and MFU1837D, which show ownership information for the Mill Fork and Rilda Canyon areas only, remain in Volume 12). [03292005]

## IDENTIFICATION OF INTERESTS

Regulatory Reference: 30 CFR 773.22; 30 CFR 778.13; R645-301-112

### Analysis:

Effective October 11, 2006, an amendment updating Identification of Interests information was incorporated into the Legal and Financial Volume of the MRP. This volume, which is common to PacifiCorp's four Utah mines, contains ownership and control information, names of officers and directors, the name, address and telephone number of the Permittee and operator, Employer I.D. Numbers, and MSHA numbers, together with dates of issuance for coal mining and reclamation operations owned or controlled by the Permittee. The Officer and

## GENERAL CONTENTS

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Director List in Appendix A of the Legal and Financial Volume was up-to-date as of to June 16, 2006. [12032007]

The Permittee is PacifiCorp, an Oregon corporation. PacifiCorp's Utah office has a new address: 1407 West North Temple, Ste 310; SLC, UT 84116. The new telephone number is (801) 220-4140.

Effective Mar 21, 2006, MidAmerican Energy Holdings Company (MEHC), a majority-owned subsidiary of Berkshire Hathaway, Inc., acquired PacifiCorp from ScottishPower. PPW Holdings LLC, a wholly owned subsidiary of MEHC, owns all stock of PacifiCorp. Energy West Mining Company, a wholly owned subsidiary of PacifiCorp, is the operator. [12032007]

Information on pp. 1-1 through 1-12 in the Legal and Financial Volume has been updated to clarify that PacifiCorp is the Permittee and owner of the coal leases, rather than Utah Power and Light. Centralia Mining LLC is no longer listed as a PacifiCorp coal-mining interest. [04192005]

Appendix B of the Legal and Financial Volume has information on Miscellaneous Licenses, Permits, and Approvals, which includes rights-of-way and Special Use Permits. Surface ownership and subsurface coal rights for the Deer Creek Mine are shown, respectively, on maps 1-2 (CE-10521-DR) and 1-1 (CE-10522-DR) in Volume 4 of the Deer Creek Mine MRP. The only lease interests in the permit area besides coal are oil and gas leases and grazing permits (Section 112.800). [04192005]}

### **Findings:**

Information provided in the plan meets the Identification of Interests requirements of the regulations.

## **VIOLATION INFORMATION**

Regulatory Reference: 30 CFR 773.15(b); 30 CFR 773.23; 30 CFR 778.14; R645-300-132; R645-301-113

### **Analysis:**

MidAmerican Energy Holdings Company announced the purchase of PacifiCorp from ScottishPower on Mar 21, 2006. An amendment updating Violation Information is being prepared but has not been submitted to the Division yet. [04282006]

*{NOV Information is in Appendix D of the Legal and Financial Volume. The Permittee has provided a list of all violation notices received by any coal mining and reclamation operation owned or controlled by either the Permittee or by any person who owns or controls the*

**GENERAL CONTENTS**

December 11, 2007

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*Permittee. NOV information in Appendix D covers the three-year period preceding April 12, 2005. [04192005]}*

**Findings:**

Information provided in the plan meets the Violation Information requirements of the regulations. [04192005]

**RIGHT OF ENTRY**

Regulatory Reference: 30 CFR 778.15; R645-301-114

**Analysis:**

Right-of-Entry information is in the Legal and Financial Volume of the MRP. The table on page 1-6 shows that the Permittee has right of entry to 19,737.34 acres: 13, 194.52 acres in federal leases, 1,020.00 acres in private leases, and 5,522.82 acres in State leases. These acreages include rights-of-way and special use permits, which are detailed on page 1-11. The permit area covers 19,936.88 acres: the 199.54-acre difference between right-of-entry and permit acres is due to relinquished leases still inside the permit area boundary (Dennis Oakley, personal communication, November 29, 2007. [12032007]

The table titled Deer Creek Mine – Underground Right-of-Entry Information with Cited Surface and Subsurface Ownership in Appendix C of the Legal and Financial Volume provides the required information on surface and subsurface ownership for coal leased or owned by the Permittee in and adjacent to the Deer Creek Mine permit area. Section R645-301-112.600 lists the name and address of each owner of record of surface and subsurface property contiguous to the permit area. Maps 1-1 (CE-10522-DR) and 1-2 (CE-10521-DR) in Volume 4 of the Deer Creek Mine MRP show surface and subsurface ownership in and adjacent to the permit area. Surface right-of-entry information is tabulated in Section R645-301-114 (Surface). [04192005]

Copies of BLM lease relinquishment Decision Documents, with descriptions of the lands and rights being relinquished, are in the Supplemental Volume 1, Phase I, II, and III Lease Relinquishment Information, which is a confidential volume shared by the MRPs of the Deer Creek, Cottonwood/Wilberg, and Des Bee Dove Mines. [04192005]

**Findings:**

Information provided in the plan meets the Right of Entry requirements of the regulations.

## **LEGAL DESCRIPTION AND STATUS OF UNSUITABILITY CLAIMS**

Regulatory Reference: 30 CFR 778.16; 30 CFR 779.12(a); 30 CFR 779.24(a)(b)(c); R645-300-121.120; R645-301-112.800; R645-300-141; R645-301-115.

### **Analysis:**

Permit Boundary Descriptions in Appendix G of the Legal and Financial Volume have been updated to incorporate the BLM lease relinquishments. [04192005]

Surface ownership and subsurface coal rights for the Deer Creek Mine are shown, respectively, on maps 1-2 (CE-10521-DR) and 1-1 (CE-10522-DR) in Volume 4 of the Deer Creek Mine (larger scale maps MFS1838D and MFU1837D in Volume 12 show this same information for the Mill Fork and Rilda Canyon areas). Legal descriptions are found in Appendix C of the Legal and Financial Volume. [03292005]

The Legal and Financial Volume, Section R645-302-115, contains a statement that no lands within or adjacent to the permit area have been identified as qualifying under R645-103-300 as areas unsuitable for surface effects of underground mining. [07012005]

### **Findings:**

Information provided in the plan meets the Legal Description and Status of Unsuitability Claims requirements of the regulations.

## **PERMIT TERM**

Regulatory References: 30 CFR 778.17; R645-301-116.

### **Analysis:**

Deer Creek Mine permit was renewed effective February 7, 2006 and will be up for renewal again on February 7, 2011. [03292005, 04182006]

Drawings MFU1840D and MFU1841D in Volume 12 and CM 10899-DR and CM-10900-DR in Volume 5 identify the lands subject to coal mining over the life of the operation, including the size, sequence, and timing of the mining anticipated and permit boundaries with yearly projections of mining through 2021. [03292005]

See the following section for information on the public notice.

## GENERAL CONTENTS

December 11, 2007

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### **Findings:**

Information provided in the plan meets the Permit Term requirements of the regulations.

## **PUBLIC NOTICE AND COMMENT**

Regulatory References: 30 CFR 778.21; 30 CFR 773.13; R645-300-120; R645-301-117.200.

### **Analysis:**

Appendix F of the Legal and Financial Volume contains copies of the Affidavits of Publication for the permit renewals of the four PacifiCorp mines. The Public Notices contained:

1. Name and business address of Permittee
2. Map or description of the permit area
3. Location of where permit application is available for public review
4. Name and address of Division for comments. [03292005]

### **Findings:**

Information provided in the plan meets the Public Notice and Comment requirements of the regulations.

## **FILING FEE**

Regulatory Reference: 30 CFR 777.17; R645-301-118.

### **Analysis:**

The filing fee was paid with the initial permit. [07012005]

### **Findings:**

Information provided in the plan meets the Filing Fee requirements of the regulations.

## **PERMIT APPLICATION FORMAT AND CONTENTS**

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

**Analysis:**

Some baseline hydrologic data are included in Volume 12, and additional data are in Annual and Quarterly reports.

The Table of Contents of Volume 9 has been updated to show the removal of Map HM-11. The information from HM-11 is now included on the revised Map HM-10. The only reference to HM-11 in Volume 9 has been removed. [03292005]

The Mine and Reclamation Plan (MRP) meets R645-301-121.100 and R645-301-121.200 for the Biology and Land Use chapters because the Permittee presents current, clear, and concise information.

**Findings:**

Information provided in the plan meets the Permit Application Format and Contents requirements of the regulations.

**REPORTING OF TECHNICAL DATA**

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

**Analysis:**

References cited are listed at the end of the Table of Contents for the Geology section and at the end of the Hydrology section. [03292005]

The MRP meets R645-301-130 because qualified professionals conducted or directed the surveys and analysis for the supporting biological and archeological related documents. The MRP meets R645-300-124.330 because the historic resource documents for the Rilda portal project are in the Confidential File (Division PIC room).

The methods and descriptions of the soil surveys and analytical work are in the reports provided by the Professional soil scientists who conducted the soil surveys of Rilda Canyon (Volume 11 Appendix – Soils A and B).

**Findings:**

Information provided in the plan meets the Reporting of Technical Data requirements of the regulations.

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**GENERAL CONTENTS**

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**MAPS AND PLANS**

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

**Analysis:**

Maps submitted are in the formats required by the Division. [03292005]

**Findings:**

Information provided in the plan meets the Maps and Plans requirements of the regulations.

**COMPLETENESS**

Regulatory Reference: 30 CFR 777.15; R645-301-150.

**Analysis:**

The Division determined the Mill Fork Lease Extension significant revision administratively complete on December 18, 2001. On February 1, 2005 the Division notified the Permittee that the proposed Replacement of Volume 11 (RILDA Canyon Facilities), Task ID #2093, was administratively complete. The amendment refers to data in Annual Reports and other sources for some information required for adequate and complete baseline water-quantity and water-quality data. [03292005]

**Findings:**

Information provided in the plan meets the Completeness requirements of the regulations.

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## **ENVIRONMENTAL RESOURCE INFORMATION**

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

### **GENERAL**

Regulatory Reference: 30 CFR 783.12; R645-301-411, -301-521, -301-721.

#### **Analysis:**

The Permittee provides environmental resource information in Volumes 1-3 and 8-12, with maps and plans in Volumes 4-7. All proposed mining activity is underground, but new portals being proposed to be built in Rilda Canyon will provide ventilation and faster and safer access to the working face: these portals will not be used for coal transportation. [03292005]

The Deer Creek Mine is in East Mountain, part of the Wasatch Plateau. Its extent is shown on several maps in the MRP. Map 1-2 (CE-10521-DR) shows the permit area in relationship to surface ownership and map 1-1 (CE-10522-DR) identifies the owners of adjacent coal. The Deer Creek Mine lies between Huntington Canyon on the east and Joes Valley, a Graben valley, on the west. Genwal Resources, Inc. controls leases to the north associated with the Crandall Canyon Mine. The Huntington #4 Mine, now reclaimed, lies east of the southeastern section of the Deer Creek Mine. Coal is mined from the Hiawatha (lower) and Blind Canyon (upper) coal seams. The extracted coal is transported through mains to the Deer Creek Mine surface facilities in Deer Creek Canyon. [03292005]

The topographic features are presented on several maps and overburden Isopach maps. Rilda Canyon, Mill Fork Canyon and Little Bear Canyon intersect the permit area on the east, two tributary canyons to Crandall Canyon intersect from the north, and at least five small canyons intersect the lease on the west. The canyons are steep. The East Mountain ridgeline runs north to south down the western third of the property. [03292005]

Numerous springs occur on the permit area. The majority of springs appear above the Castlegate Sandstone. Little Bear Spring, an important source of drinking water, emanates east of the lease area. Tracer dye studies indicate that water from the Mill Fork drainage flows through fractures associated with the Mill Fork Graben to supply much, perhaps all, of the flow at Little Bear Spring. [03292005]

The Permittee accesses the Mill Fork leases through mains from the Deer Creek Mine, and the entries cross the Mill Fork Graben. The plans for developing entries from the Deer Creek Mine to the Mill Fork Lease were submitted and reviewed as a separate permit

amendment that added 65.7 acres to the permit (approved October 2, 2002). The Permittee addressed concerns related to ground-water interception and subsidence under that permit amendment. [11092006]

**Findings:**

Information provided in the plan meets the General Environmental Resource Information requirements of the regulations.

**PERMIT AREA**

Regulatory Requirements: 30 CFR 783.12; R645-301-521.

**Analysis:**

Maps 1-2 (CE-10521-DR) and 1-1 (CE-10522-DR) identify the permit boundary, which is also identified as the lease area. The Mill Fork leases are accessed from the Deer Creek Mine through a 65.7-acre modification to lease U-06039. [03292005]

Drawing MFS1866D in Volume 12 shows that subsidence from mining in the Mill Fork Extension might occur outside the permit boundary but be confined to the Genwal #1 Mine area. The Division is allowing subsidence to occur outside the permit boundary in this case because all subsidence will be confined to permitted lands. [03292005]

The disturbed area at the North Rilda Canyon Portal Facilities contains:

- Mine facilities 9.0 acres.
- Topsoil disturbed area 1.1 acres.
- Subsoil/construction soil disturbed area 3.0 acres.

**Total of 13.1 acres of new disturbance.**

The existing Rilda fan portals occupy 2.33 acres (v 1, chap 1, appendix E). The proposed North Rilda facilities will add 13.1 acres, bringing the total disturbed area for Rilda Canyon to 15.43 acres and for the Deer Creek Mine to 97.44 acres (Supplemental Volume, Appendix G).

Supplement Volume, Legal and Financial Information Appendix C (incorporated 4/21/2005) provides the following information for the Deer Creek Mine:

Total Federal Lease Acres	12,980.95
Total Private Fee Acres	1,020.00
Total State Lease Acres	<u>5,522.82</u>
Total	19,523.77

These numbers do not include the 213.75-acre Mill Fork West extension, which brings total federal acres to 13,194.70 and total acres to 19,737.52. [11092006]

**Findings:**

Information provided in the plan meets the Permit Area requirements of the regulations.

**HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION**

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

**Analysis:**

The MRP meets R645-301-411 regulations pertaining to historic resources. The MRP (Confidential Files) includes evaluations of historic resources that focus on the permit area. It also includes narratives and maps, which describe and show locations within or adjacent to specific projects, of historic resources that may be included in or eligible for inclusion in the National Register. There is proof of coordination efforts and clearances from the SHPO. [06292005]

There are no cemeteries, parks, trails designated by National Systems of Trails, or rivers designated as Wild and Scenic Rivers. There are old mine developments within the lease area that include the Tip Top, Old Leamaster, Johnson, Comfort, Rominger, and Helco mines. There is also an old gas field southwest of the lease area that was developed in the 1950's. [06292005]

The MRP includes two historical resource documents that cover the Rilda Canyon area. The Division, in consultation with SHPO, supports a finding of "no effect" to historic resources within or adjacent to the facilities area. [06292005]

It is important that employees avoid all historic properties during the life of the project. In the event that construction or operations uncover historic properties, Section 106 of the National Historic Preservation Act and 36 CFR 800.13 require that the Permittee stop all work in the vicinity and notify the Division. The Permittee, Division, and other appropriate parties will develop a strategy to avoid the site or mitigate the impacts at that time.

**Findings:**

Information provided in the plan meets the Environmental -Historic and Archeological Resource Information requirements of the regulations.

## **CLIMATOLOGICAL RESOURCE INFORMATION**

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

### **Analysis:**

Information on precipitation, winds, and temperature is discussed in Section R645-301-724.400. Baseline climatological information is in Volume 9. The Annual Reports contain updated information from weather stations at the Hunter and Huntington power plants, Electric Lake, and East Mountain. Additional data have not been deemed necessary to ensure compliance with other regulatory requirements. [03292005]

### **Findings:**

Information provided in the plan meets the Climatological Resource Information requirements of the regulations.

## **VEGETATION RESOURCE INFORMATION**

Regulatory Reference: 30 CFR 783.19; R645-301-320.

### **Analysis:**

The biology section of the application uses resource information taken from the Data Adequacy document and the EA.

The MRP meets R645-301-321 because there is adequate discussion of plant communities observed within the permit area. Vegetation surveys and maps for the permit area are in different volumes of the MRP. Volume 11, Sec. 300, App. A provides vegetation surveys of the Rilda portal and adjacent areas. Volume 11, Maps 300-1 and 300-2 and Vol. 11, Sec. 300, App. A provide the vegetation and reference area maps for the Rilda portal project. [06292005]

The MRP describes the permit area as having a diversified topography with conifer, aspen, transitional, and pinyon-juniper ecosystems. The major plant communities within the permit area include white fir/aspen, sagebrush/grass, and pinyon juniper/mountain brush. Drawing #: MFS1821B illustrates vegetation types in the Mill Fork lease area.

The MRP describes the transitional ecosystem as various vegetation types that resulted after a fire about 25 years ago. The fire covered a large portion of the Mill Fork area. This area probably experienced cyclic fires prior to human intervention. Transitional ecosystem instead of climax communities, therefore, defines the area.

The MRP defines the community types for the Rilda Canyon area as mixed coniferous forests, pinyon-juniper woodlands, mountain brush lands, and riparian areas. The USFS-derived vegetation map (300-1) illustrates these community types with the riparian area as a narrow strip near the facilities area. This map also illustrates aspen forestlands to the west and north of the facilities area. The MRP includes NRCS evaluations for the Rilda facilities and reference areas. [06292005]

**Findings:**

Information provided in the plan meets the Environmental - Vegetation Resource Information requirements of the regulations.

**FISH AND WILDLIFE RESOURCE INFORMATION**

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

**Analysis:**

GENERAL WILDLIFE

The MRP meets R645-301-322 because there is adequate discussion, supporting documentation, and maps on fish and wildlife resource for the permit and adjacent areas. [06292005]

The Division, in consultation with DWR and USFWS, considers that the Rilda mining operations will likely impact elk and deer habitat. The Permittee provides a list of commitments that may help offset the impact to elk and other wildlife (see discussion in Operations of the TA). In addition, the Permittee will conduct monitoring surveys for aquatics and raptors throughout the life of operations in Mill Fork lease area and Rilda Canyon. [06292005]

*Ungulates and other large mammals*

A large portion of the permit area contains deer and elk habitat. Deer and elk are shown to have summer range and high value winter range within the permit area (MFS1849Band MSF1822B). Population numbers and trends of deer and elk herd unit 16B can be derived from DWR annual reports dating from 1998 ([www.wildlife.utah.gov/hunting/biggame.html](http://www.wildlife.utah.gov/hunting/biggame.html)). Herd unit 16B, however, covers an area from about Scofield to Ferron and does not focus on the Mill Fork Lease expansion area. DWR cautions against using projections from the herd unit 16B population numbers and trends for such a large area to the smaller area of the Mill Fork Lease. The Manti-LaSal National Forest requested that this information be put in the MRP knowing that

only regional numbers are available. The intent is to look at trends for the area and the trend for deer is a decreasing population.

Bats

Richard Sherwin, Dr. Duke Rogers, and Carl Johansson conducted (1997; Vol. 12, App. A) a bat survey for the spotted bat and Townsend's big-eared bat within Huntington, Straight, and Cottonwood canyons. Results showed no Townsend's big-eared bats. Observations of spotted bats were solitary and evenly spaced over foraging habitat (lower elevations off the lease area). There are roosting sites in suitable cliffs within lease area and throughout the Huntington drainage. The surveyors hypothesized that, because of the number of individuals, current mining operations or cliff failure did not seem to have long-term impacts to the spotted bat population. These surveyors recommended further surveys to verify their hypothesis (Vol. 12, App. A, p. 11).

The coal lease is stipulated that SITLA in cooperation with the USFS may impose mitigation on the loss of spotted bats. The mitigation may include avoidance during specific times and /or the prevention of bat occupancy during periods of subsidence, such as by netting or screening (Stipulation #20).

Joel and Gabrielle Diamond conducted (October 2004; Vol. 11, Sec. 300, App. G) acoustic, capture, and habitat bat surveys with the focus on the portal facilities project in Rilda Canyon. Their results showed no observations of individual bats, but supported comments from previous surveys that Rilda and Huntington Canyon areas have watering, foraging, and roosting bat habitat. The negative results for individuals were most likely due to the lateness of the season. [06292005]

The Diamonds warned that further disturbances in the area, including road improvements for the Rilda portal project, could impact these habitats and reduce the possibility of mitigation. The Diamonds recommended maintaining the quality of alternative habitats within the area where displaced bats may relocate.

The 2004 results showed the reclaimed mine adit up slope from the "powder house" provides a large cavern for bat habitat. The Diamonds described this cavern as the largest in the area and recommend maintaining this site in good condition for bat use.

Bats use echolocating for hunting and each species may echolocate at different frequencies. The MPR provides engineering specs that include frequency ranges for the exhaust and intake fans in Rilda Canyon. Some of the bats that inhabit this area of Utah echolocate within the same frequency range as the fans. The Division, in consultation with DWR, considers that the fans may not have a significant impact to some of the bat species, but may impact noise-sensitive species. These species may relocate to alternative sites. [06292005]

Macroinvertebrates and fish

The Mill Fork area contains portions of Crandall Creek and is a watershed for Little Bear, Mill Fork, and Right Fork of Rilda Creek. These are all tributaries to Huntington Creek. The western portion of the area is a watershed to Indian Creek. All of these creeks are important fisheries. Macroinvertebrate data may be used to determine water quality for fish.

The Permittee provides a copy of a report on aquatics- USGS Open-File 81-539 (see Incoming folder, dated February 13, 2003). The report was the result of a collaborative effort among staff from USGS, Utah Department of Natural Resources, and the Division. Data was collected from years 1977 (Oct.), 1978 (July and Oct.), and 1979 (Oct.). The Permittee plans to use the data in this report for the macroinvertebrate baseline data for the Mill Fork Creek below the confluence of the Left and Right Forks.

The Permittee summarizes the report and states that the results show significant differences between seasons. The macroinvertebrates were at "maximum numbers" for the July sample, but were "not present in any of the October samples" (p. 3-8). The Shannon-Weiner diversity index for Crandall and Mill Fork canyons were 2.38 and 2.09, respectively.

The Permittee will use 2004 and 2005 macroinvertebrate surveys for baseline for the Rilda 2005 portal project. The Permittee will also use the same 20-year-old USGS report (USGS Open-File Report 81-539) as supplemental historic information on macroinvertebrate. [06292005]

The Division, USFS, and DWR support conducting macroinvertebrate surveys during the life of the mine. The Permittee will conduct spring and fall surveys for two consecutive years as the protocol for obtaining aquatic baseline data for the Rilda portal project (Vol. 11, p. 300-11). The Permittee will conduct the spring and fall aquatic post-disturbance surveys the first spring and fall after construction begins for the Rilda facilities site. The Permittee will conduct macroinvertebrate post-disturbance monitoring surveys in the spring every three years following construction. (Vol. 11, Sec. 330, p. 19). [06292005]

The Division considers that macroinvertebrate monitoring surveys should provide enough information to track changes to Rilda Creek. The Division may require a protection, enhancement, or mitigation plan if the post-disturbance or monitoring surveys indicate negative impacts to the macroinvertebrates or fish adjacent to the Rilda portal project. [06292005]

DWR will conduct fish surveys in the Huntington drainage as part of their annual monitoring, starting in 2004, and will most likely include Rilda Creek as part of their wildlife management plan. [06292005]

All surveyors must use the same protocol and sampling locations for macroinvertebrate and fish surveys as those provided in the 2004 Walker document. The Permittee must include the baseline and post-disturbance survey commitments in section R645-301-322 and incorporate all reports and follow-up analysis into Volume 11 Appendix Volume upon compilation. [06292005]

The Permittee addresses the Colorado River cutthroat trout and its habitat within or adjacent to the Rilda Canyon permit area. The 2004 fish surveys reported observations of cutthroat, but DWR considers that the observed fish were most likely Yellowstone cutthroat. [06292005]

*Migratory and Game Birds, and Raptors*

The Permittee will conduct yearly raptor fly-over surveys of the permit area. The Permittee will provide the results in their Annual Reports (see Confidential Files). [06292005]

There are three golden eagle nests within the Mill Fork lease area. Two red tail hawk nests and several eagle nests are adjacent to the lease area but not within the subsidence zone. The Permittee will undermine nest 1210 and 1211.

The Division, in consultation with DWR and USFWS, requires the Permittee to survey the western side of the lease area along the Joes Valley Fault prior to longwall mining. The presubsidence survey map (MFS1839D) shows outcrops in the first long wall panel that could potentially provide raptor habitat. The 2003 and 2004 raptor survey results show no sitings of nests within this area.

There is an active raptor nest within the 0.5-buffer zone to one of the topsoil stockpiles for the Rilda portal project (USFS, 2005). The Permittee will adhere to exclusionary periods (Vol. 11, p. 300-10) when birds are tending or nesting at this nest site. [06292005]

The Permittee provides information concerning migratory and other sensitive bird species within the Rilda portal project area. Table 300-4 (Vol. 11) provides species-specific habitat and specifies whether the habitat is within the Rilda Canyon area. [06292005]

**THREATENED, ENDANGERED, AND SENSITIVE (TES) ANIMAL/PLANT SPECIES**

The MRP meets R645-301-322 because there is adequate discussion, supporting documentation, and maps on TES species that could occur within or adjacent to the permit area. The Division, in consultation with USFWS, support that mining operations will likely have no impact on TES species or their habitat. [06292005]

The MRP includes current TES lists and an overview of habitat and occurrence data for all the TE species in Emery County, the Manti-Lasal National Forest sensitive species, and other state listed sensitive species (Vol. 11, Sec. 300, App. C, and Tabs. 300-1 through 300-4). Of the TE species listed for the area, the only TE species that may be present is the Mexican spotted owl (although recognized as highly unlikely). The Utah Conservation Data Center (DWR) has no record of occurrence for federally listed TE species within the Rilda project area. [06292005]

### **Plants**

The MRP states that no threatened or endangered plant (or animal) species inhabit the Mill Fork or Rilda Canyon areas. There are, however, sensitive species within the permit area. The MRP discusses the potential presence of Monti's milkvetch, Canyon sweetvetch, Peterson catchfly, and Link trail columbine. A query to the Utah Natural Heritage program identified Carrington daisy, USFS sensitive species, occurring in the permit area. The MRP describes the potential of this species occurring primarily within the southern region of the mine permit area. USFS considers that subsidence will not impact this species. The Utah Natural Heritage program identified the Link Canyon columbine and Canyon sweetvetch, both USFS sensitive species, occurring adjacent to the permit area in Little Bear Canyon.

### **Mexican Spotted Owl**

The Permittee discusses the habitat requirements for the Mexican spotted owl (MSO) and provides a summary of research (Dr. Howe (UDWR); Dr. Willey (U of M) on potential habitat within the permit area and the adjacent lands. Dr. Willey modeled the Mill Fork least tract area for MSO foraging and nesting habitat.

Figure 1 (MRP, p. 3-12) shows potential nesting habitat is not within the Mill Fork permit area, but exists north and east of the permit area. This map does not include a distance scale; therefore, it is difficult to determine distances between permit area and the modeled nesting habitat sites. Figure 1 also shows discrete parcels of foraging habitat located in the far southwestern corner, and along the mid-eastern and northeastern boundaries of the permit area.

The MRP addresses the presence or absence of four habitat factors within the Mill Fork Lease permit area. The Permittee states that there is no potential MSO habitat within the lease area, including the 1.6 acres of potential foraging habitat near the far southwestern corner, that could be impacted by subsidence (Fig. 2; p. 3-13). USFWS states that Rod Player supports the Willey-Spotskey model predicting "no potential MSO nesting habitat within the Mill Fork permit area". Furthermore, USFWS supports there "will be negligible impact from mining subsidence to 1.6 of 182 acres of predicted potential foraging habitat within this expansion". USFWS agrees with the Division that because there is no nesting habitat for the MSO and mining operation will be below ground, mining operations are "not likely to adversely affect" the MSO (letter, February 11, 2003).

Mel Coonrod (October 2004) evaluated the Willey 1997 and 2000 models and conducted a ground-truthing survey for the Rilda facilities project (Vol. 11, Sec. 300, App. F). The results of the ground-truthing survey supported the Willey models that there is suitable habitat within Rilda Canyon or adjacent areas. Mr. Coonrod, however, stated that previous calling survey results from other locations within the Manti-Lasal Forest were negative, and considered that the MSO habitat in this area is marginal. He, therefore, concluded that the project does not warrant a MSO calling survey. The Division, in consultation with DWR and USFWS, support that the Rilda mining operations will likely have no impact on MSO species or MSO habitat. [06292005]

**Findings:**

Information provided in the plan meets the Environmental - Fish and Wildlife Resource Information requirements of the regulations.

**SOILS RESOURCE INFORMATION**

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

**Analysis:**

The MRP meets the requirements of R645-301-200 because baseline soils information has been documented.

**Exploration/Sampling Program - Substitute Topsoil**

The Deer Creek Mine was developed prior to enactment of the Surface Mining Control and Reclamation Act (SMRCA), and topsoil was not salvaged or stockpiled during construction and mine development activities. The Permittee intends to use construction fills within the disturbance area as substitute topsoil. Much of this fill material came from the terraced area on the south side of Deer Creek Canyon.

In 1999, eighteen samples were taken from the terraces from which much of the fill originated, and these were analyzed for the parameters in the Division's soils guidelines. Sample locations are shown on DS-1810-D and results are in Appendix R645-301-200-C. There is no information about the depth of sampling or whether these samples were composites. Clay percentages are high (averaging 32% in the upper two terraces) and textures are listed mostly as clay loam. The pH is just above neutral. The Electrical Conductivity is less than 0.7 mmhos/cm.

Most of the samples from 1980 and 1983 show few problems with EC or SAR values; however, two samples from the parking lot fill slope had EC values of 9.0 (assumed to be mmhos·cm<sup>-1</sup>). This could be a result of using salt as discussed above, and the problem may have

grown progressively worse to where some of these soils are now unusable. Fill materials, which have been seeded for 15 to 20 years, may also be a source of cover material to be used a cover over the site (pg 5-7).  
[03072003]

To evaluate the fill and refuse quality, a commitment was included in the MRP, Volume 2, Section R645-301-233, for a soils sampling program. The areas to be sampled were identified as accessible sites between 9+00 - 15+00 and 24+00 - 30+00 shown on map DS-1782-D (Appendix R645-301-200-A). These samples were taken in October 2002. Sample locations are shown on Map DS1810D. These analyses are found in the MRP Volume 2, R645-310-200 Appendix A. [05092007]

The October 2002 soils analysis indicates that most proposed substitute topsoil locations are unsuitable due the salt content (as measured by Electrical Conductivity (EC) & SAR values. In 2002, the 0 – 3 ft. surface soil SAR values ranged from 101 to 40 at sites 3, 4, and 12. At the remaining substitute topsoil site #11, the surface SAR value was 7.56 with an EC value of 4.00. Site #11 represents the only suitable substitute topsoil material available as of this date. [The NRCS recognizes that a Sodium Adsorption Ratio (SAR) value of 30 or greater inhibits root development (63 FR 208). The Division sets an unacceptable SAR value at 15 for cover/substitute topsoil use.] [05092007]

With limited options for providing surface cover for reclamation, the soil above the Deer Creek undisturbed drainage culvert is still considered by the Permittee as the best available in the permit area. The Permittee has stated that the excess salt will either be leached out of the profile or be amended during reclamation to provide a suitable substitute topsoil medium. [Depth information from the samples does indicate that the salt is leaching into the profile.] With this in mind, the need for further soil testing has been discussed with the Permittee (Inspection Report #1280). The Permittee has agreed to another round of testing to provide further indication of the extent of salt loading in the surface 0-3 feet along the roadway and/or to show that the salt is leaching out of the surface 3 feet over time (MRP, Vol 2, Section R645-301-233). I met with Dennis Oakley to discuss the strategy for sampling locations, depths and required parameters. Locations were marked on Plate DS18108D for Mr. Oakley's future use. [05092007]

#### Exploration/Sampling Program - Refuse Piles

Within Chapter 3 of the current mining and reclamation plan, page 3-65, Table 7, Deer Creek Mine - Waste Rock Analysis, several problems are identified associated with materials taken from roof and floor materials. Data is incomplete since no determinations were made for selenium or for acid base potential. One of the samples had a paste pH value of 5.87, which indicates there could be acid forming potential. One Blind Canyon floor sample apparently had a very high SAR value, which indicates that although some areas may meet the Division's criteria, there are probably isolated problem areas. The Division lacks confidence in the data in Table 7

because some of the SAR values do not correlate with the reported calcium, magnesium, and sodium values.

Tables I and II in Chapter 4 also show some chemical analyses of coal waste and one sample of slag. The slag sample had a very high pH (10.9), but otherwise, no problems were found in the refuse or slag samples. However, these samples were not tested for several parameters listed in the Division's Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mine. In fact this sampling took place prior to implementation of the 1988 guidelines for topsoil and overburden. Information in Tables I and II has been placed in Appendix A of the submittal and will be supplemented by additional information (p 2-3).

Appendix R645-301-200-A contains recent analyses (2001) of two core samples from the refuse piles, one from Deer Creek Canyon (site #1) and one from Elk Canyon (site #6). Sample locations are shown on Drawing DS-1810-D. Sites #1 and #6 were sampled to depths of 25 feet. The texture of the material at site #1 was a sandy loam with a clay loam layer between 6 and 7.5 feet. At site #6, the texture was a sandy loam with a higher clay content at 3 feet creating a loam texture. Acid base accounting information is positive for sample sites #1 and #6, however the refuse will require 4 feet of cover based upon the following information from the 2001 sampling:

- Extreme sodicity was found to a depth of 7.5 feet at site #1;
- SAR values were 30.7 and 42. This could be because the sample site was near storage docks where salt may have been used. The refuse in Elk Canyon, site 6, is also sodic, but not to the extreme noted at site #1. However an SAR value of 11.5 is combined with an extreme pH of 9.0 in the top 1.5 feet.
- Total Organic Carbon at site #1 was reported to be 22% in the top 2 feet and dropped to below 5% at 15 feet depth. In addition, at site #6, the Total Organic Carbon content was 36% in the top 2 feet and remained above 21% for the entire depth of sampling, exceeding 50% at the 9- to 10-foot depth increments.
- At all depths, at both sites, selenium content exceeded the recommended limits in the Division guidelines.

All soil and refuse sampling will be conducted according to R645-301-130: which is to say that names of individual collectors and dates and locations of collection will be reported (page 2-4). Qualified professionals will conduct technical analyses as per R645-301-132. [03072003]

Sampling to determine the extent of the sodic material in the fill was conducted in 2002 (R645-301-200, page 2-4 and Appendix A). MRP Vol. 2, Section R645-301-233 indicates that sample points were to be placed randomly in the refuse areas, and samples would be taken at 3-foot depth intervals to a point 4 feet below the grade of the proposed final surface configuration. Sampling at 3-foot intervals was only possible only in a few locations where a track hoe had access. Most of the 2002 samples were air drilled and depth intervals were irregular, based upon

subsurface conditions (boulders, air pockets etc.) The Elk Cyn Coal Bin sites 1 and 2 were sampled in 8, 5, 10, and 6 ft increments. These samples did not have elevated selenium or boron or extreme SAR values. These analyses combined with the existing vegetation growing on the Elk Canyon waste pile indicate that the waste is not toxic or acid forming. (See photographs of the rabbit brush, serviceberry, red-twig dogwood vegetation dated 4/24/07.) [05092007]

October 2002 sample sites 5, 6, and 7 were located on the operations pad storage area. The outslope of the pad is weathered waste rock and is vegetated with penstamen and grasses (photographs dated 4/24/07). Sample site 5 and 7 were drilled vertically. The last 4 feet sampled at Sites 5 and 7 (12- 16 ft) represent the surface 4 feet at final reclamation. All samples had elevated SAR values, however, these values were 10 times less than values for the proposed substitute topsoils, represented by sites 3 and 4. Covering the coal mine waste represented by sites 5, 6, and 7 with more sodic material is not acceptable. [05092007]

Sample site 6 was drilled at a 45 degree angle to parallel the reclamation contour at a depth 4 ft below the final contour. At sample site 6, the first 20 feet sampled had an SAR value within suitability range for the surface soil. From 20 – 40 ft below the surface, at the bottom of the canyon, the soil was unsuitable for surface use due to salt content. But again, utilizing the proposed substitute topsoil as cover, would be placing more sodic material on the surface. [05092007]

### Rilda Canyon

MRP Volume 11, section R645-301-220 provides a summary of all existing soil survey information. The 2003 soil survey of the Rilda sediment pond area is found in Volume 11 Appendix Volume – Soils Appendix A. The 2004 Order I soil survey for the North Rilda portal facilities and soil storage areas is found in Volume 11 Appendix Volume – Soils Appendix B. Both appendices include soils maps (scaled: 1 inch = 100 ft). The Rilda surveys build upon earlier investigations of Rilda Canyon found in Volume 1 Part 2 Environmental Resources, pp 2-181.1 through 2-181.39 and a 1990 soil survey of the “Rilda Canyon Lease Tract Extension Area,” shown on Map 2-16 of Volume 4. A chart itemizing disturbed acreage by soil type for the North Rilda Facilities is found in Section R645-301-222.200.

North Rilda site development will occur north of the county road, between the Star Point sandstone outcrop to the north and the alluvial soils of Rilda Creek to the south, at an elevation of 7,600 to 7,730 ft. MSL. Approximately seven acres of North Rilda facilities development will occur on the south facing slope, in Map Unit E, named “colluvial toeslopes; bench.” These soils are described as “Cryoborolls” with a brown, mollic surface layer (A horizon, 9 – 16 inches). An accumulation of calcium carbonate is coincident with the change in color of the soil to yellow brown at a depth of 20 –38 inches. 2003/2004 laboratory analyses of three map unit E soil pedons are found in Volume 11 Appendix Volume – Soils Appendix B. The soil calcium carbonate equivalent percentage increases with depth to 18% at location RC1 (20 –40 inches)

and is constant at about 32% in pedons RC3 and RC4 from the surface to two ft in depth. These carbonate contents constitute baseline information and are considered the norm for the area. All other parameters (texture, pH, EC, SAR, etc.) indicate good suitability for salvage. The planned salvage depth is 24 inches. The existing vegetation is of the pinyon/juniper and grass/shrub types (see Environmental Resource - Vegetation section for more detail).

Topsoil will be stored south of the creek on 0.41 acres of map unit A and 0.69 acres of disturbed ground (map unit D) associated with the reclaimed Helco Mine site [information derived from that provided in Addendum 1 of Appendix B Soils Appendix Vol. 11 (hereafter referred to as Addendum 1) and Section R645-301-222.200-300]. The alluvial soils are Bryan stony very fine sandy loam, on a 5% slope at 7,500 ft. The pedon description of sample site RC7 indicates an 18-inch mollic epipedon over C horizons extending to a depth greater than 72 inches. The existing vegetation is conifers, shrubs, aspen and grasses. The disturbed soils are described in the next paragraph.

About 3.5 acres of reclaimed/disturbed soils (map unit D) will be the site of the Rilda facilities sediment pond, topsoil stockpile and the subsoil storage area. The reclaimed sites have approximately 12 inches of topsoil, designated as AC horizon with 5 – 6% organic matter accumulation over a mixture of soil, coal fines and cobbles. A buried C horizon is underneath 3 – 12 inches of coal (Volume 11 Appendix Volume – Soils Appendices A, sample sites S1, S2, S3, S8 and Appendix B, sample sites RC 5 and RC 8). Due to the variable nature of the reclaimed site, the depth of soil to be salvaged for the sediment pond construction will be determined as material is handled (R645-301-231.100). The soils report indicates a salvage depth of 12 inches is possible (Addendum 1).

The subsoil storage area will also affect 1.3 acres of steep, rocky slopes in Map Unit B. The soil survey for this area was conducted in December 2004 (Volume 11 Appendix Volume – Soils Appendix B Addendum 1). These soils lie on a 60% slope and are described as very stony (20% in the surface layer) sandy loams, categorized as being in the Great Group Haplustepts or Ustorthents. The representative soil sample site RC 6 on an east facing slope had an A horizon four inches deep (Addendum 1). The C horizon (also with 20 – 25% stones) extended to lithic contact at 34 inches. This soil overlies the Starpoint sandstone.  
[06302005]

#### Mill Fork Lease

Order III soil survey information is provided in Vol. 12 for the lease area. The Permittee will ventilate the Hiawatha seam within the Mill Fork lease with a breakout within the existing Genwal Mine permit area (Vol 12. Sec. R645-301-230). This breakout will be approximately 75 ft. west of the Genwal intake portal on the south side of the stream (personal communication with Chuck Semborski, 12/16/2005). The Right-of-Way Easement for this proposed breakout

was negotiated in June 2004 and was reviewed and incorporated into the MRP on April 21, 2005 (Legal & Financial Vol.). [05042006]

Prior to surface disturbance in Crandall Canyon, Order I level soils information will be required, in accordance with R645-301-200. [12162005]

**Findings:**

The information provided indicates that current the Deer Creek Mine does not have a source of substitute topsoil cover for the mine facilities area. The requirement to find the best available material in the permit area suggests that further testing of the substitute topsoil locations be conducted to further our understanding of the severity and location of sodium contamination. The following permit condition is recommended:

**R645-301-233 and R645-301-132,** The Permittee has stated that the sodium within the proposed substitute topsoil will either be leached out or be amended during reclamation to provide a suitable substitute topsoil medium. With this in mind, prior to the next permit renewal in January 2012, an individual, qualified to conduct soil sampling, will undertake the following sampling, providing field notes and GPS mapped locations of sampling:

- 1) Disturbed soils to provide a baseline for comparison of salt values. The native soils will be sampled by horizon down to lithic contact. The surface 0 – 12 inches of the storage pad outslope to determine suitability of these soils as substitute topsoil.
- 2) Resample the proposed substitute topsoil locations above the buried culvert to provide an indication of the extent of salt loading in the surface 0-3 feet along the roadway and/or to show that the salt is leaching out of the surface 3 feet over time. The Permittee will find a site accessible by backhoe at one of these locations, such that the qualified individual can resample to greater depth at 3-foot increments.
- 3) Direct the laboratory that if, in any of the above samples, the Sodium Adsorption Ratio (SAR) values are greater than 15, an analysis of total Cation Exchange Capacity (CEC) and Exchangeable Sodium Percentage (ESP), will be required, such that a calculation of the gypsum requirement can be made.
- 4) Soils found unacceptable due to sodium content, will be buried in the fill or reclaimed through the use of amendments prior to placement on the surface of the reclamation site.
- 5) Engage a professional, qualified in soil science to formulate the soil amendment and fertilization plan for reclamation.

Commit to resample the substitute topsoil above the buried culvert and analyze for Electrical Conductivity and SAR values (and, if necessary, based on item 4 above, analyze for CEC and ESP) once within each permit term. [05092007]

## **LAND-USE RESOURCE INFORMATION**

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

### **Analysis:**

The MRP meets R645-301-411.100 because the narrative describes the land uses and capability of the land, and maps illustrate the land uses. Vol. 4, Map 1-2 shows the surface ownership information. [06292005]

The MRP meets R645-301-411.200 because the narrative describes previous mining operations. [06292005]

The land uses for the permit area are primarily grazing, wildlife, and recreation. Other uses in the area include gas production. Currently (2005), there is one producing well and plans for future gas development. Effective August 12, 2005, PacifiCorp and Merit Energy Company established a working relationship to maximize recovery of both the coal and oil and gas estates, which would allow PacifiCorp to mine within the 15° angle-of-draw subsidence zone around the well. A copy of the agreement between PacifiCorp and Merit was provided to the Division. [042006]

A pipeline for the one gas well follows Forest Road 244 off the permit area. Utah Power and light has a ROW for a 345 KV power transmission line and another line for the Genwal, Crandall Canyon Mine. The Flat Canyon road enters and leaves the southwest portion of the permit area.

Another land use for the area is a USFS trail near the Rilda portal project. The Permittee will construct a new trailhead and parking pad at the east end of the facilities site. The trail will run east west and extend past the facilities site. [06292005]

The USFS classifies sites within the permit area as winter range (critical/high priority) and summer range (high priority) for elk and summer range (high priority) for mule deer, mining and mineral development, and general timber and grazing rangeland (Vol. 11, p. 400-1). Volume 4, Map 2-19 shows mule deer and elk habitat of the permit area. Volume 11, Map 3-1 shows the vegetation communities of the permit and adjacent area. Volume 4, Map 2-16 is a general soils map that also shows the permit and adjacent area. [06292005]

One of the surface owners of the Rilda permit area is the USFS. USFS will evaluate timber values prior to development on their lands. The Permittee will compensate the USFS for the value of timber loss within the permit area. [06292005]

**Findings:**

Information provided in the plan meets the Land Use Resource Information requirements of the regulations.

**ALLUVIAL VALLEY FLOORS**

Regulatory Reference: 30 CFR 785.19; 30 CFR 822; R645-302-320.

**Analysis:**

**Alluvial Valley Floor Determination**

Volume 11 Section R645-301-720 provides a detailed discussion of the characteristics of the ground-water flow and alluvial aquifer in Rilda Canyon. The discussion includes quantitative and qualitative description of the water collected by the North Emery Water Users Special Services District (NEWUSSD, formerly known as North Emery Water Users Association or NEWUA). In addition, Section R645-301-720 outlines the monitoring program for Rilda Creek and the NEWSSD springs.

The information presented in Section R645-301-720 is supported by reports and maps found in Volume 9 of the MRP and by the geotechnical, soils, and vegetation surveys in Volume 11 Appendices. A synopsis is reiterated below.

Geotechnical investigations of Rilda Canyon in the vicinity of the proposed North Rilda facilities construction indicate that a bench of unconsolidated colluvial material grades into a thick deposit of fine-grained alluvium (Volume 11 – Appendix Volume – Engineering Appendix F). The alluvial floor is composed of moderately compacted sandy gravel with boulders along with varying proportions of silt and clay, to depths greater than 50 ft (2004 AMEC Report in Appendix F, p. 11). North Rilda site ground-water levels are projected to be 25 ft or more below the surface, becoming shallower nearer to the creek (p. 23). The 2004 AMEC study included pit 12 located 25 ft horizontally from the channel and vertically at an elevation 11 ft above the creek. Although the soil was moist, no standing ground water was recorded in the pit at depth of 10 ft.

Soils on the south side of Rilda Creek (Soils Map 200-1, Unit A) were described as alluvial bottom land soils, having a periodic high water table at a depth of 18 – 30 inches, as evidenced by soil mottling. (Volume 11 Appendix Volume – Soils Appendix A appendix 6-4 and Appendix B pp 5,7). Brycan soils are dominant in Map Unit A. Schupert soils occupy the drainage channel bottom (Furst. 1991 soil survey of the Rilda fan portal area). A 1998 Energy West Mining Company ground stability analysis discusses the sub-surface hydrologic alluvial

system and associated surface riparian vegetation zone (Volume 11 – Appendix Volume-Engineering Appendix A). For the most part, the proposed North Rilda Development will not affect these soils, except for the stockpiling of topsoil in the vicinity of the Helco Mine. Section R645-301-230 of the plan indicates that the topsoil stockpile will not affect the subsurface flow beneath the stockpile, because Well P4 (refer to Map 500-3) indicates the depth to saturation is 20 ft below the ground surface.

The above statements are supported by the April 2004, AMEC Earth and Environmental, Inc. geotechnical investigation of Rilda Canyon (Volume 11 – Appendix Volume - Engineering Appendix F), wherein AMEC described a channel 6 - 8 ft deep X 10 -15 ft wide incised through the bottomland sediments (p. 10) and near the NEWUSSD site, depth of alluvium exceeds 15 ft. (p. 11).

In addition to the above information provided in the MRP, the Division received a copy of the Vaughn Hansen Associates, Inc report titled, "Impact Analysis – NEWUA Rilda Canyon Springs," dated March 1983 (Incoming 2005 date folder 3/31/05). This document provides historical water quality information and a discussion of the nature of the ground water flow. In 1982, the report states that the ground water level was 11 ft below the creek above the north and south springs and was fed by the creek through a gravel drain. In the vicinity of the springs, the gravel drain is disrupted and the ground water flow is at the level of the creek. Downstream of the springs, the ground-water flow dipped below stream level again. Plate 3, Piezometric Contour Map indicates that the piezometric surface in the vicinity of monitoring wells R-4 and R-5 was 7,552 ft. in 1983. That was 8 to 28 ft below the surface elevation of 7560 to 7580 ft., in the location of the North Rilda facilities topsoil stockpile.

The 1983 Vaughn Hansen Assoc. report concludes that as long as surface protection zones are maintained around the north spring, there should be no impacts from surface disturbance south of the springs. The protection zones are described in Section 6.3.4 of the State of Utah Public Drinking Water Regulations as all land (of equal or higher elevation) within 1,500 horizontal feet of the spring source and all land of lower elevation within 100 feet of the spring source.

[06302005]

### **Rilda Canyon Alluvial Valley Floor Determination**

Rilda Canyon is the site of a small alluvial valley as evidenced by the water collection system installed by the North Emery Water Users. The alluvium in Rilda Canyon is outlined on Drawing 200-1. Most of the operation in Rilda Canyon will be above the level of the alluvium, however the topsoil storage area is situated in the alluvial bottomlands.

[06302005]

### **Rilda Canyon Applicability of Statutory Exclusions**

None

#### **Findings:**

Based on information provided in the application, the Division finds that there is an alluvial valley holding Rilda Creek in the bottomlands of Rilda Canyon. The extent of the alluvial valley floor is shown on Drawing 200-1 as map unit A. There are streamlaid deposits in the bottomlands that have historically been the source of irrigation and culinary water in Emery County. Precautions are being taken to limit activity near the spring collection system, to monitor quality and flow in the canyon and to provide a buffer zone between facilities and the creek.

### **PRIME FARMLAND**

Regulatory Reference: 30 CFR 785.16, 823; R645-301-221, -302-270.

#### **Analysis:**

Previous non- prime farmland determinations made by the Soil Conservation Service for Rilda Canyon above the left and right forks of Rilda Canyon are found in Vol. 1 Part 2, pp 2-218.1 – 2-218.3. For the north Rilda facilities area, the non-prime farmland correspondence is found in Vol. 11 – Appendix Volume Soils Appendix C.

The Division to consulted with the Natural Resources Conservation Service (NRCS) concerning the potential for prime farmland in Rilda Canyon. The matter was discussed with Leland Sasser of the NRCS Price Field Office in October 2004. The Division is in agreement with the NRCS that there are no prime farmlands in Rilda Canyon due to slope and rockiness of the soils. [06302005]

#### **Findings:**

The Division concurs with NRCS in finding that there are no prime farmlands in the permit area.

### **GEOLOGIC RESOURCE INFORMATION**

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

**Analysis:**

Geologic information in the Volumes 8, 9, 11, and 12 is sufficient to assist in determining the probable hydrologic consequences of the proposed North Rilda Canyon Portal Facilities operation upon the quality and quantity of surface and ground water in the permit and adjacent areas, including the extent to which surface- and ground-water monitoring is necessary. It is also sufficient for determining all potentially acid- or toxic-forming strata down to and including the stratum immediately below the coal seam to be mined; determining whether reclamation can be accomplished and whether the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area; and preparing the subsidence control plan. Geologic information includes a description of the geology of the proposed permit and adjacent areas down to and including the stratum immediately below the lowest coal seam to be mined. [07012005]

A description of the regional geology is presented in Volume 8, with additional information for the Rilda Canyon facilities in Volume 11 and for the Mill Fork Extension in Volume 12. Geophysical studies and consultant's reports are in Volume 9. The geologic description includes stratigraphy and structural geology of the permit and adjacent areas and how these may affect the occurrence, availability, movement, quantity, and quality of potentially impacted surface and ground water. The description is based on maps and plans provided as resource information for the mine plan. There is site-specific information. [07012005]

At this time, the Division has not determined it necessary to require the collection, analysis, and description of additional geologic information to protect the hydrologic balance, to minimize or prevent subsidence, or to meet the performance standards. [07012005]

The Permittee has not requested that the Division waive requirements for borehole information or analysis. Several maps, including HM-1 in Volume 9 – Hydrology and Drawing MFU-48258 in Volume 12, identify the locations of boreholes from which geologic information and sampling was conducted. Chapter 6 and Appendix B of Chapter 6 list the exploration holes drilled within the permit area. As exploration drilling is done almost yearly, updated location information is shown on maps in the Annual Reports. Volume 11 Geology Appendix A lists Existing Exploration Drillhole Completion Details for the North Rilda Permit Area. Volume 12 – Geology Appendix B tabulates basic information for boreholes for the Mill Fork Extension: one representative lithologic log is included. Several additional logs are in Volume 8 – Geology, and all logs are available at the Energy West office in Huntington, Utah. [07012005. 04282006]

Analysis results for samples of Star Point Sandstone from boreholes drilled from the 2<sup>nd</sup> Right development entries at crosscuts #6 and #10 are in Volume 11, Appendix Volume - Geology Appendix B. Volume 12 - Geology Appendix A lists average values for proximate analysis, fusion temperatures, and ash analyses for Hiawatha and Blind Canyon coal. Appendix

C of the Geology Section of Volume 12 contains a table of results of chemical analyses of roof and floor for the Blind Canyon and Hiawatha Seams up to 1999 and analysis results for the 2001 drilling program. Additional analyses results are in Volume 8 - Geology. [07012005]

The Permittee discussed subsidence and subsidence control measures under Section R645-301-525, Volume 12 submittal. Pre-mining resources for the Mill Fork lease are identified on Drawing MFS 1839D. The Permittee also addresses the potential of impacts to the resources. Subsidence monitoring results are in the Annual Reports. (03/29/2005)

Information on thickness and engineering properties of clays or soft rock in the stratum immediately above and below each coal seam to be mined is not in the MRP. Rock mechanics and roof control studies by the Permittee, its contractors, and the former Bureau of Mines have been extensive. Rock strength, entry stress distribution, abutment loads, and roof support design are consistently evaluated. All data are continually processed for efficient layout and design of the Deer Creek Mine (MRP – Part 3, Section R645-301-511.200). [07012005]

#### **Findings:**

Information provided in the plan meets the Geologic Resource Information requirements of the regulations.

### **HYDROLOGIC RESOURCE INFORMATION**

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

#### **Analysis:**

##### *Water Replacement*

The probability of subsidence causing such impacts or adverse affects in and adjacent to the Mill Fork Lease is small according to the Permittee (Volume 12, Section R645-301-728, E.; and R645-301-728, I. 2.), but because a possibility exists, the water replacement rules apply.

State-appropriated water supplies in and adjacent to the Mill Fork Lease, identified in R645-301-600, Appendix C of Volume 12, are covered by the water replacement regulations. Replacement of State-appropriated water supplies is discussed briefly in Section 731.530 in Volume 12, which refers to Table MFHT-2. Information in Table MFHT-2 constitutes a plan sufficient to satisfy the water replacement requirements in the Coal Mining Rules. [07012005]

#### **Sampling and Analysis**

Water-quality sampling and analyses of samples will be done according to the "Standard Methods for the Examination of Water and Wastewater" (Volume 9, Section 723). Volume 9, Appendix A describes sampling parameters, sampling locations, sampling frequency, and analytical methods and detection limits. [07012005]

### **Baseline Information**

#### *Ground-Water Information*

Data on water quality and quantity, sufficient to demonstrate seasonal variation and water usage, are in Volume 9, Volume 12, Annual Reports, and the Division's database. Volume 9, Section R645-301-721.A contains a description of the ownership of existing wells, springs, and other ground-water resources, including seasonal quality and quantity of ground water and usage. Tables in Volume 9 summarize water rights, mode of occurrence, and water quality for ground water. Locations are on map HM-1 in Volume 9. Ground-water resources in and adjacent to Rilda Canyon, including water rights and water use, are further documented and discussed in Volume 11. For the Mill Fork Lease area, locations of known seeps and springs and water rights are shown on Drawings MFS1832D (Hydrology Section) and MFS1839D (Engineering Section) in Volume 12, and ground-water rights are described in some detail at R645-301-721, A. 15 and in Appendix C of Volume 12.

A potentiometric surface can be mapped in the Spring Canyon Member of the Star Point Sandstone in the Mill Fork tract (Volume 12, Figure MFHF-6). Seasonal variations for two in-mine piezometers are mapped on Figures HF-5A and HF-5B of Volume 9.

The connection between Genwal's baseline 1994, 1995, and 1996 spring and seep survey in the Mill Fork LBA tract is briefly explained in Section R645-301-721, A. 4 of Volume 12. These data, along with other data from 1980, 1981, 1982, 1991, 1992, and 1993 are presented in Appendix C (Historical Data tab) and Table MFHT-2 of Volume 12. The Permittee initiated a re-evaluation of ground-water resources in 2000; new baseline data were collected in 2000 through 2002 and correlated with the older data where possible. Criteria used to select springs for monitoring are in Section R645-301-731.200 A.1 of Volume 12. Baseline and operational parameters are in Appendix A of Volume 9.

The Permittee states that extensive research has established that the surface- and ground-water systems are not hydraulically connected, so no impacts to surface waters are anticipated from dewatering of perched systems in the coal seams and adjacent strata (Volume 12, Section R645-301-624). This research is summarized in *Surface-water and ground-water investigation of the Mill Fork Lease area, Emery County, Utah*, by Mayo and Associates, October 24, 2001 (Volume 12, Section R645-301-700, Appendix B).

In the Mill Fork West Extension LBA, spring UJV 213 is situated near both the end of a longwall panel and within the projected limit of subsidence, an area where the potential for surface cracking is greatest (Drawing MFS1825D). The Permittee has added UJV 213 to the water-monitoring plan. Mining near this spring isn't projected to begin until 2011 (MFU1840D) and planned monitoring should establish sufficient baseline before mining begins [01192007].

### **Little Bear Spring**

The Permittee has not collected baseline data at Little Bear Spring, but CVSSD has measured flow since 1982 and documented quality for a number of years. Baseline water-quality and -quantity data from CVSSD for Little Bear Spring have been included in Volume 12 Appendix C (Little Bear Data tab), and Little Bear Spring has been added to the monitoring plan.

### **Joes Valley Fault**

Three samples of water associated with the fault were collected in the Crandall Canyon Mine, and radiocarbon age and tritium content were measured (Volume 12, Section R645-301-700, Appendix B). A stipulation in the coal lease does not allow full extraction mining within a 22 degree angle-of-draw of the fault (Volume 12, Section R645-301-728, I. 4. a).

### *Surface Water Information*

Surface-water resources are described in Volume 9, Section R645-301-721, B and also in Volume 12. Quality and quantity data sufficient to demonstrate seasonal variation and water usage are in Volume 9, the Annual Reports, and the Division's database. Locations for Deer Creek Mine UPDES discharge points are shown on HM-1 in Volume 9; there is no UPDES discharge at either portal facility in Rilda Canyon, nor anywhere in the Mill Fork tract.

Names and locations of surface water bodies within the Mill Fork Lease permit and adjacent areas are shown on several maps in Volume 12, including Plate 1 by Mayo and Assoc. and Drawing MFS1830D – Hydrologic Map in the Hydrology Section and Drawing MFS1839D - Pre-subsidence Survey Map in the Engineering Section. There are no known water-supply intakes for current users of surface waters flowing into, out of, and within the Mill Fork hydrologic area. The water supply system in Rilda Canyon is shown on Map 700-1 in Volume 12 and HM-8 in Volume 9.

### **Crandall Creek**

Crandall Creek has been monitored for a number of years by Genwal Resources. The Permittee will not monitor this stream unless Genwal terminates monitoring (Volume 12, Section R645-301-721, B. 1. b. 1. (b)).

### **Rilda Canyon**

Baseline quality analysis monitoring was done in 1989-1990, and is to be repeated every five years (Volumes 9 and 12, Section R645-301-721, B. 1. b. 1. (d)). Streamflow in Little Bear Canyon is not monitored, but Little Bear Spring is closely monitored by CVSSD. This spring has been added to the monitoring plan in Appendix A of Volume 9.

### **Mill Fork**

Baseline and operational data have been collected since 1997 at MFA01 and MFB02 in Mill Fork. Based on a request from the USFS, an additional monitoring site, MFU-03, was added upstream of the Mill Fork Graben in 2002. Locations are shown on Volume 12, Map MFS1851D – Hydrologic Monitoring Map. Laboratory reports for 1997 through 2001 are in Appendix C of Volume 12.

### **Indian Creek**

Indian Creek was monitored for baseline parameters in 2000 and 2001 (Volume 12, Section R645-301-721, B. 1. b. 2. (b)). Monitoring sites are marked on Map MFS1851D. Water-quality data for October 2000 through 2002 are in Appendix C of Section R645-301-600 of Volume 12 (Water-Quality Data a2000-2002 and Field Data 2000-2002 tabs). Genwal has been monitoring flow and water-quality at ICF since 1996, and the data have been incorporated into the Permittee's hydrologic database. The Permittee will continue with operational water-quality monitoring during base-flow only (October or November) at ICA, ICB, and ICD (Volume 9, Appendix A, Section II.B.1.c), but will collect field parameters only at ICF (Section II.B.1.c). Information from ICA, ICB, and ICD in Volume 12, when combined with data from ICF, is sufficient to demonstrate seasonal variations of flow and water quality.

#### *Supplemental information*

A complete discussion related to the geomorphology characteristics of Rilda Creek is in to Volume 11, Hydrology Appendix C. UDWR is to conduct pre- and post-disturbance evaluations of macroinvertebrate populations and identify resident fish populations in Rilda Creek. The "Preliminary Report on Surveys Conducted to Determine Potential Impacts of Rilda Surface Facility Development in Rilda Canyon During 2004" in Volume 11, Biology Appendix C marks the completion of the predisturbance work. When the final report is completed, a copy will be added to the MRP. [07012005]

### **Baseline Cumulative Impact Area Information**

The Division prepared a CHIA for East Mountain in 1994, and it has been updated as needed. The Division has obtained hydrologic and geologic information for the cumulative

impact area from federal or state agencies. Additional information has been included with the Deer Creek Mine Volumes 9 and 12. The Crandall Canyon Mine has provided other information. Supplemental information on biological organisms and habitat and stream geomorphology will be included in information used to update the East Mountain CHIA. [07012005]

### **Modeling**

Modeling has not been done for the Deer Creek Mine MRP. [07012005]

### **Probable Hydrologic Consequences Determination**

For the Mill Fork Extension, the PHC determination compiled by Mayo and Associates is in Volume 12, Hydrology Appendix B. This PHC includes the Mill Fork West lease area. A discussion of the PHC is in Volume 12, Section R645-728. The geologic information presented in Volume 12 is sufficient to establish the hydrologic activities and functions for a probable hydrologic consequence determination.

Section 728 of the Hydrology section of Volume 11 contains the PHC Determination for the Rilda Canyon portal facilities and adjacent areas. This PHC Determination section is based on hydrologic, geologic, geomorphologic, biologic, and other information collected for initial permitting and during subsequent operation of the Deer Creek Mine, and the PHC section restates much of this information. The required PHC findings are addressed, although the statements may be scattered through the text, often outside the PHC determination. The PHC determination in Volume 11 for the Rilda Canyon portal facilities meets the requirements of the R645 Coal Rules.

The plan, including monitoring, to discharge water from the Rilda Canyon portal facilities to the abandoned mine workings and the alternative plan are in Volume 11, Section 728, Hydrologic Balance-Groundwater, F. RUNOFF AND GRAY WATER DISPOSAL - ABANDON MINE WORKINGS). The plan to minimize potential impacts to Rilda Creek is in Section 728, Hydrologic Balance-Surface Water System, B. INCREASED SEDIMENT PRODUCTION TO RILDA CREEK). [11092006]

### **Groundwater Monitoring Plan**

The detailed Hydrologic Monitoring Program in Volume 9 identifies monitoring locations, the monitoring schedule, and water-quality analysis parameters. [07012005]

### **Surface-Water Monitoring Plan**

The detailed Hydrologic Monitoring Program in Volume 9 identifies monitoring locations, the monitoring schedule, and water-quality analysis parameters. [07012005]

**Findings:**

Information provided in the plan meets the Hydrologic Resource Information requirements of the regulations.

**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.

**Analysis:**

Applicable cross sections and maps included in or referenced in Volume 12 have been prepared by, or under the direction of, and certified by a qualified, registered, professional engineer or land surveyor, with assistance from experts in related fields such as hydrology, geology, and biology (Volume 12, Section R645-301-513, p. 5-2).

**Affected Area Boundary Maps**

The affected area is usually considered by the Division to be the same as the total life of mine area. Because the total life of mine area is often difficult to predict, the Division usually allows the Permittee to give a best guess estimate.

The Mill Fork lease northern boundary is the Crandall Canyon mine so northern expansion is unlikely. The western boundary is near the Joes Valley Fault so western expansion is also unlikely. To the south is the existing Deer Creek mine. To the east is the South Crandall tract. Therefore, the Division will consider the permit area for the Mill Fork lease to be the same as the affected area.

When the Mill Fork lease was originally outlined by the BLM, the west boundary was based on the location of the Joes Valley Fault as it was projected by the USFS in 1997. In 2005, PacifiCorp made a new determination of the location of the Joes Valley Fault based on topography, aerial photography, resistivity and IP surveys, and in-mine horizontal drilling information. The revised location for the fault was several hundred feet west of the one originally used to define the Mill Fork lease. It became evident that a considerable volume of federal coal between the fault and the west boundary of the Mill Fork lease would become isolated and unrecoverable if the Deer Creek Mine plan were not modified to include recovery of this coal. The BLM granted an exploration license for the Mill Fork West Extension LBA area with the intent of allowing the Permittee to build gate roads, bleeders, and longwall set-up rooms

in the federal coal. However, longwall mining and sale of the coal could not be done until the coal was leased and the lease area added to the state permit. The Mill Fork West Extension LBA added 214 acres to the Deer Creek Mine permit, increasing the permitted area by 9.6 %. This was a change to the underground operations only, and it will not involve any new surface disturbance. All maps have been updated to show that the permit boundary includes the Mill Fork West Extension. [11132006]

### **Archeological Site Maps**

The MRP meets R645-301-411.141 because there are archeological maps showing known resource locations within the permit area. These maps are in the Confidential Binder (Division PIC). [06292005]

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

The Permittee has submitted maps and tables identifying the local geologic and hydrologic features. Map MFU-1823D in Volume 12 shows the locations and elevations on the surface of all exploration drill holes and test wells within the Mill Fork lease area and the coal crop lines for the Hiawatha and Blind Canyon Seams. Map 600-1 (Drawing DS1882D) in Volume 11 shows the surficial geology of Rilda Canyon and includes a general cross section. [03292005]

Strike and dip of the coal seams are shown by structural contours on the Hiawatha and Blind Canyon Seams, Maps MFU 1827D and MFU 1828D in the Geology section of Volume 12. The strike of the coal seams varies as the coal beds and surrounding strata are folded by the different structures. The dip of the coal beds in this area is usually gentle, with dips rarely exceeding 4 or 5 degrees. Additional coal resource maps and mine workings maps are in Volume 8. [03292005]

### **Cultural Resource Maps**

The MRP meets R645-301-411.141 because there are cultural maps showing known resource locations within the permit area. These maps are in the Confidential Binder (Division PIC). [06292005]

### **Existing Structures and Facilities Maps**

No surface structures exist or currently planned for the Mill Fork Lease area. However, the Permittee did make a statement that they are evaluating the possibility of new portals located at Crandall Canyon. This would require a separate permitting action and will not be approved under the C/015/018-PM011 (Mill Fork Lease).

### **Existing Surface Configuration Maps**

Several maps show the existing surface configuration of the Mill Fork lease area, such as Drawing MFS1839D, Deer Creek Mine Mill Fork Lease ML-48258 Pre-Subsidence Survey Map. The map is at a scale of 1 inch = 1,000 ft and has 100-ft contours.

Existing surface configuration is portrayed in the Geologic Cross-sections, MFU-1829D and Geologic Formations Map, MFU-1823D. The characteristics of the drainage pattern are a result of the surface configuration on the plateau.

Map 500-1, Deer Creek Mine Rilda Canyon Pre-Disturbance Topography, shows the location of the existing facilities in Rilda Canyon. The map shows the location of surface features, public roads within 100 ft of the permit area and the location of coal waste. Large parts of the area in and around portal facilities were disturbed. AML reclaimed some of the areas disturbed by coal mining. The Permittee shows areas of mining and reclamation on Map 500-1 Sheet 1-3.

Map 500-1 Sheet 1 of 3 is at a scale of 1 inch equal 300 ft and shows the Emery County road to Highway 31. Map 500-1 Sheet 2 of 3 is an aerial photography of the area at a scale of 1 inch equals 100 ft. Map 500-1 Sheet 3 of 3 is a topography map of the area at a scale of 1 inch equals 100 ft. [06302005]

### **Mine Workings Maps**

There has been some historic mining in the canyons east of the lease tract, but no mining has occurred within the Mill Fork Lease boundary. The Permittee has submitted maps showing the underground mine working associated with the Mill Fork Lease. The maps show active, inactive and abandoned underground mine workings of Genwal Coal Company, Skeen Mine, Helco Mine, Huntington #4 Mine, and the Deer Creek Mine.

The Permittee has given mine projection for the Blind Canyon and Hiawatha coal seam in the Mill Fork Lease. Map MFU-1840D gives the mining sequence for 2002 - 2021 in the Hiawatha Seam. These maps are projections and can change in the future due to ground condition, roof control, coal quality, mineable reserves and coal market.

There has been some historic mining in the canyons east of the lease tract, but no mining has occurred within the Mill Fork Lease boundary. The Permittee has submitted maps showing the underground mine working associated with the Mill Fork Lease. The maps show active, inactive and abandoned underground mine workings of Genwal Coal Company, Skeen Mine, Helco Mine, Huntington #4 Mine, and the Deer Creek Mine.

The Permittee has given mine projection for the Blind Canyon and Hiawatha coal seam in the Mill Fork Lease. Map MFU-1840D gives the mining sequence for nineteen years in the Hiawatha Seam. These maps are projections and can change in the future due to ground condition, roof control, coal quality, mineable reserves and coal market. [06302005]

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

HM-1, the Water Monitoring Location Map, is in Volume 9 - Hydrologic Section. Several maps, including Geologic Formations Map MFU-1823D, identify the locations of boreholes from which geologic information and sampling was conducted. [03292005]

The MRP meets R645-301-323.200 because the Permittee provides maps showing locations for vegetation analysis, macroinvertebrate and fish monitoring, and prime bat-watering spots (Vol. 11, Sec. 300). [06292005]

### **Permit Area Boundary Maps**

The permit area boundary is identified on several maps including maps MFU-1823D, MFU-1824D, MFU-1825D, MFU-1826D, MFU-1827D and MFU-1828D and MFU-1824D.

### **Subsurface Water Resource Maps**

Water intercepted in the Deer Creek and Cottonwood/Wilberg Mine workings is usually perched water from tabular or stream-channel sandstones that have moderate porosity but low permeability and poor interconnectivity. Water is also encountered in open joint-systems in these rocks, in some fault zones - mainly the Roan Canyon fault zone, and the Straight Canyon Syncline (Volume 12, Section R645-301-624). The North Horn and Price River Formations also contain localized, perched aquifers or saturated zones (Volume 12, Section R645-301-624). [03292005]

Areal and vertical distribution of the formations that contain these perched waters are shown on Drawings MFU1823D and MFU1829D in the Geology section of Volume 12. There are no maps or cross-sections of individual aquifers, and the Division does not routinely require such detailed description or mapping of these localized, discontinuous perched ground-water zones. Seasonal differences of head for the Star Point Sandstone for two small areas of the Deer Creek Mine are plotted on Figures HFA-5A and HFA-5B in Volume 9. [03292005]

Map 700-1 shows the locations of the water-supply intakes for the NEWUSSD. Detailed information on the alluvial aquifer is in Volume 9 - Hydrologic Section of the Deer Creek Mine MRP, along with drawings of the NEWUSSD collection system. [03292005]

### **Surface and Subsurface Manmade Features Maps**

The Permittee has identified surface and subsurface man made features within, passing through, or passing over the permit area. For the Mill Fork lease see pp. 5-20 and 5-21 and Map MFS1839D of Volume 12. [03292005]

Map MFU1840D shows that Genwal mine facilities are within 1,000 ft of the permit area. The Permittee has identified the buildings that are in or within 1,000 ft of the permit area. The buildings are the Genwal mine facility and are shown on Figure R645-301-500a of Volume 12.

The Permittee has shown two gas wells in the Mill Fork lease, one of which is proposed. This is illustrated on several of the mine maps, including Drawings MFU1840D and MFU1841D and the Pre-subsidence Survey Map, Drawing MFS1839D. Effective August 12, 2005, PacifiCorp and Merit Energy Company established a working relationship to maximize recovery of both the coal and oil and gas estates. This allows PacifiCorp to mine within what was formerly a 15° angle-of-draw subsidence buffer zone around Merit's East Mountain Unit 32-23 gas well in Section 23, T. 16 S., R. 6 E. A copy of the agreement between PacifiCorp and Merit was provided to the Division. Longwall mining between the years 2012-2016 will undermine the proposed gas well in Section 14. See map MFU1840D in Volume 12. [03292005, 04282006 JDS]

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

Maps 1-1 (CE-10522-DR) and 1-2 (CE-10521-DR) show surface and subsurface ownership for the Deer Creek Mine permit area and adjacent areas. Maps 1-1 and 1-2 have been updated to show the 1995 AND 2004 BLM lease relinquishments. [04192005]

### **Surface Water Resource Maps**

There are no known water-supply intakes for current users of surface waters flowing into, out of, and within the Deer Creek Mine hydrologic area. The water supply system in Rilda Canyon is shown on several maps and drawings in the MRP, particularly in Volumes 9 and 11. No surface waters will receive discharges from affected areas in the Mill Fork lease. Locations for Deer Creek Mine UPDES discharge points are shown on Map HM-1 in Volume 9. [03292005]

Locations of surface water bodies within the Mill Fork lease and adjacent areas are shown on Plate 1 and Drawings MFS1830D and MFS1839D in Volume 12 and HM-1 in Volume 9. [03292005]

### **Vegetation Reference Area Maps**

The MRP meets R645-301-323.100 because vegetation maps illustrate community types within disturbed and reference areas, as well as illustrate the location of reference areas. For vegetation maps, refer to the Collins 2003/2004 report (Vol. 11, Sec. 300, App. A), Maps 300-1 and 300-2 (Vol. 11), and Drawing # MFS1821D. Vegetation map, Drawing #: MFS1821D, designates the vegetation types within the Mill Fork Lease and adjacent area. The Manti-La Sal National Forest provided the vegetation mapping for the Mill Fork Lease area. [06292005]

### **Well Maps**

Locations of the Merit Energy Company East Mountain Unit 32-23 gas well in Section 23, T. 16 S., R. 6 E. and a proposed gas well in Section 14 are shown on several maps, including Drawings MFU1840D, MFU1841D, and Drawing MFS1839D in Volume 12. The Permittee, however, removed the buffer zone associated for this gas well from the vegetation, elk, moose, and deer maps. Water monitoring wells at the NEWUSSD system are shown on maps in Volume 9. [03292005, 04282006 JDS]

### *Contour Maps*

Several maps show the existing contours of the Mill Fork Lease area, such as Drawing MFS1839D, Deer Creek Mine Mill Fork Lease ML-48258 Pre-Subsidence Survey Map in Volume 12. The map is at a scale of 1 inch = 1,000 ft and has 100-ft contours. [03292005]

### **Findings:**

Information provided in the plan meets the Maps, Plans, and Cross Sections of Resource Information requirements of the regulations.

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## OPERATION PLAN

### MINING OPERATIONS AND FACILITIES

Regulatory Reference: 30 CFR 784.2, 784.11; R645-301-231, -301-526, -301-528.

#### Analysis:

##### *General*

The Permittee plans to conduct only underground mining within the Mill Fork leases. [11092006]. All coal will be shipped out of the mine by conveyor belt to the existing Deer Creek coal handling facilities. Men and some of the material will enter then mine through these facilities, and some of the equipment and material will enter the Deer Creek mine by the portal at Rilda Canyon. The Permittee has mentioned in the proposal that surface facilities may be constructed at Crandall Canyon. This would be a separate action and is not considered in this review.

The Permittee has submitted a local and regional description of the geology, including stratigraphy and structure. Chapter 6 and Appendix B of Chapter 6 list the exploration holes drilled within the permit area. As exploration drilling is done almost yearly, updated location information is shown on maps in the Annual Reports. One representative lithologic log is presented in Appendix B. The Permittee submitted a generalized cross-sectional map, MFU 1829D, showing a cross-section of strata from north to south and east to west, but no detailed information is shown, like fence diagrams identifying changes in the stratigraphic column or location of ground-water bearing zones between drill sites. The drawing shows the Mill Fork Graben cutting the Blackhawk Formation on the geologic map, but not the Star Point Sandstone and Mancos Shale in the Cross-section. [04282006]

The Mill Fork leases encompass an area of East Mountain. Their extent is shown on several maps in the MRP. Drawing MFU 48258 shows the leases in relationship to surface ownership. They lie between Huntington Canyon and Joes Valley. Genwal Resources, Inc. controls leases to the north associated with the Crandall Canyon Mine, and Energy West control leases to the south associated with the Deer Creek Mine. All planned mining activities in the Mill Fork leases are underground. Coal extraction will take place in the Hiawatha (lower) and Blind Canyon (upper) coal seams. The extracted coal will be transported through mains to the Deer Creek Mine surface facilities. [11092006]

##### *Type and Method of Mining Operations*

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The Permittee will use continuous miners for development of longwall panels and main entry development. Longwall mining will be used to extract the majority of the coal from the Mill Fork Lease (Drawings MFU-1824D through MFU-1828D). This method yields high coal recovery and is safer than other mining methods for heavy ground cover. This is the same method being used at the Deer Creek mine today.

Most of the mining in the Blind Canyon seam will take place in the northwest half of the lease. Drawing MFU-1824D identifies the thickness of the overburden above the Blind Canyon coal seam. Overburden thickness in the area of mining ranges from 0 to 2,600 ft. Most of the overburden thickness is over 1,000 ft. The thinner overburden is in the northeast corner of the lease near a side canyon of Crandall Canyon. Overburden Isopach maps MFU-18245D and MFU-1825D show only a portal access in that area. No full extraction mining will occur in that area. The greater overburden depth should minimize surface impacts.

### *Facilities and Structures*

The Permittee has not proposed any new surface facilities on the Mill Fork leases. [11092006]

The Permittee adequately addressed the general requirements of R645-301-526 and R645-301-528 by providing a narrative of the type of structures and facilities at the North Rilda surface facility. In addition, the Permittee also described the handling of coal and coal mine waste at the site. [06302005]

### **Findings:**

Information provided in the plan meets the Mining Operations and Facilities requirements of the regulations.

### **EXISTING STRUCTURES:**

Regulatory Reference: 30 CFR 784.12; R645-301-526.

### **Analysis:**

The Permittee listed the existing structures in Volume 12 on pp. 5-20 and 5-21. The structures listed include one operating gas well and two gas pipelines, two power transmission lines, one radio repeater station and two roads. Additional structures in the Mill Fork Lease area include the USFS road #244 and transmission lines in the southwest corner of the lease.

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## OPERATION PLAN

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The information listed in Section R645-301-526 of Volume 12 is for surface structures in existing disturbed areas. The reader is instructed to refer to Volume 5, maps 3-9 and 3-9a for information about other existing structures in the permit area.

The Permittee addressed how they will use the existing structures in connection with the North Rilda Portal Facilities site. The existing structures within the disturbed area boundary that will be used are:

- The 25 KV powerline.
- Emery County Road #306.

The Division addressed the requirements for the use and realignment of the County Road 306 in the Relocations or Use of a Public Road section of the TA. The Permittee addressed how they will modify the existing 25 KV powerline in connection with North Rilda Portal Facilities in Section R645-301-521.180 of the MRP. [06302005]

### **Findings:**

Information provided in the plan meets the Existing Structures requirements of the regulations.

## **PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES**

Regulatory Reference: 30 CFR784.17; R645-301-411.

### **Analysis:**

The MRP meets R645-301-411.144 because the Permittee provides past and current historic resource survey reports. [06292005]

During mining construction, the Permittee will construct a new trailhead and parking pad at the east end of the Rilda facilities site. Reclamation will include removal of this trail and pad as well as restoring the existing road to the original location. [06292005]

### **Findings:**

Information provided in the plan meets the Protection of Public Parks and Historic Places requirements of the regulations.

## **RELOCATION OR USE OF PUBLIC ROADS**

Regulatory Reference: 30 CFR 784.18; R645-301-521, -301-526.

### **Analysis:**

PacifiCorp has two agreements for either relocating a public road or conducting mining within 100 ft of a public road. The agreements are as follows:

- Agreement #1 is with ECSSD and allowed the Permittee to reconstruct, realign, widen and surface County Road #306. The County agreed to the modifications for increases in speed and traffic.
- Agreement #2 will allow a portion of County Road #306 to be temporarily restricted to public use. See Section R645-301-526.116.1. Figure R645-301-500c shows the location of the road and a typical road section. ECSSD has not signed the agreement. [06302005]

### **Findings:**

Information provided in the plan meets the Relocation or Use of Public Roads requirements of the regulations.

## **AIR POLLUTION CONTROL PLAN**

Regulatory Reference: 30 CFR 784.26, 817.95; R645-301-244, -301-420.

### **Analysis:**

The Deer Creek Mine operates under Air Quality Approval Order DAQE-AN0239002-02, issued on June 14, 2002. The Permittee committed to have an air quality approval order that would allow the Permittee to conduct mining operations at the North Rilda Canyon Portal Facilities before construction and operations.

The Division conducts monthly inspections of the Deer Creek Mine. As part of those inspections, the Division checks to see if the air quality orders are current. If the Permittee does not have a current air quality order, the Division will take enforcement action or refer the matter to the Division of Air Quality.

Dust suppression at Rilda Canyon will be controlled with asphalt surfaces for major roadways and limited travel on unpaved service roads.

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All disturbed surfaces and regraded areas will be seeded.  
[06302005]

**Findings:**

Information provided in the plan meets the Air Protection Control Plan requirements of the regulations.

**COAL RECOVERY**

Regulatory Reference: 30 CFR 817.59; R645-301-522.

**Analysis:**

The Permittee will be using longwall mining for the main extraction of coal in the Mill Fork leases. Continuous miners will be used for development of longwall panels and main entries. This is the current method of mining at the Deer Creek and in Carbon and Emery Counties. This method of mining yields the highest safety and coal recovery possible for underground coal mining.

The Division relies on SITLA and BLM to evaluate the coal recovery plan. Both agencies have reviewed the coal recovery plan and found that the maximum amount of economically recoverable coal will be produced. The Division has reviewed the mine plan and concurs with the findings.

The BLM revised the R2P2 in connection with the North Rilda Canyon Portal Facilities and Mill Fork West extension. The BLM found that the mine plan would maximize the economic coal recover.

The Division relies heavy upon the R2P2 to determine if the mine plan will achieve maximum economic coal recover. After reviewing the plan the Division conclude that maximum economic coal recovery would occur. [11092006]

Effective August 12, 2005, PacifiCorp and Merit Energy Company established a working relationship to maximize recovery of both the coal and oil and gas estates. This allows PacifiCorp to mine within what was formerly a 15° angle-of-draw subsidence buffer zone around Merit's East Mountain Unit 32-23 gas well in Section 23, T. 16 S., R. 6 E. A copy of the agreement between PacifiCorp and Merit was provided to the Division.

**Findings:**

Information provided in the plan meets the Coal Recovery requirements of the regulations.

**SUBSIDENCE CONTROL PLAN**

Regulatory Reference: 30 CFR 784.20, 817.121, 817.122; R645-301-521, -301-525, -301-724.

**Analysis:**

**Renewable Resources Survey**

The Permittee has identified manmade features and renewable resources in the Mill Fork lease area. The manmade features in the area include unimproved roads, trails, a gas well and pipelines and power transmission lines. However, no non-commercial buildings or occupied residential dwellings and related structures were shown to exist in the area. The renewable resources include springs, water seeps, grazing land, timber and wildlife. State appropriated water rights are part of the renewable resources in the area.

R645-301-525.130 requires that the Permittee to conduct a survey of the quantity and quality of all State-appropriated water supplies that could be contaminated, diminished, or interrupted by subsidence within the permit and adjacent areas. The Permittee conducted the survey by assessing the State of Utah Water Rights database.

In the tables in hydrology section of the MRP, the Permittee list the water rights and owners within the affected area. A detailed print out of water rights is located in Appendix C of the MRP. Unless otherwise stated the Division will assume that the quality and quantity of water associated with each water right is that listed in the printout from Water Rights in Appendix C of the MRP.

The subsidence survey conducted by the Permittee shows renewable resources exists within the Mill Fork affected area. Therefore, the Permittee must provide the Division with a subsidence control plan.

**Subsidence Control Plan**

The subsidence control plan must address each of the following elements:

- A description of the method of coal removal. The Permittee will use longwall mining exclusively for production mining. The size of the panels, sequence, and timing are

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shown on Drawing MFU1840D (Hiawatha Mine Plan) and Drawing MFU1841D (Blind Canyon Mine Plan.) Development mining in the Hiawatha Seam is scheduled to occur in 2003 and terminate in 2021. Development mining in the Blind Canyon seam should begin in 2006 with rock slopes from the Hiawatha seam to the Blind Canyon seam and terminate in 2017. Panel lengths will vary from 600 ft to 1,000 ft.

- A map of underground workings that describes the location and extent of areas in which planned-subsidence mining methods will be used and which includes all areas where measures will be taken to prevent or minimize subsidence and subsidence related damage and where appropriate, to correct subsidence-related material damage. Drawing MFS1866D shows the areas where planned subsidence will occur. The drawing shows two areas, one based on a 15 degree angle-of-draw and the other based on a 0 degree angle-of-draw. The drawing only shows the mine workings for the Hiawatha Seam. See Drawing MFU1841D for the Blind Canyon Mine Plan. The main areas that are protected from subsidence are the rock slopes between the seams. [04282006]

In Section 522 of the MRP, the Permittee states that the western extent of subsidence will be governed by a 22 degree angle-of-draw because of the Joes Valley Fault. This is a USFS requirement. In general, the Division assumes that a 15-degree angle-of-draw is adequate for most underground mines.

If the Permittee uses a 15-degree angle-of-draw the only subsidence that is scheduled to occur outside the permit boundary will be along the northern border next to the Genwal mine. The Genwal mine is also conducting longwall mining in the area and the Genwal mine could cause some subsidence in the Mill Fork area. Because all subsidence would be confined to permitted areas the Division will allow each mine to subside outside of their respective permit boundaries.

Effective August 12, 2005, PacifiCorp and Merit Energy Company established a working relationship to maximize recovery of both the coal and oil and gas estates. This allows PacifiCorp to mine within what was formerly a 15° angle-of-draw subsidence buffer zone around Merit's East Mountain Unit 32-23 gas well in Section 23, T. 16 S., R. 6 E. A copy of the agreement between PacifiCorp and Merit was provided to the Division.

The Permittee believes that no subsidence will occur outside the permit boundary because the angle-of-draw will be much less than 15 degrees. The Permittee makes these claims based on annual subsidence surveys.

- A description of the physical conditions, such as depth of cover, seam thickness, and lithology, which affect the likelihood or extent of subsidence and subsidence-related damage. That information was given in the geology section of the MRP and is considered adequate.

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- A description of monitoring, if any, needed to determine the commencement and degree of subsidence so that, when appropriate, other measures can be taken to prevent, reduce, or correct material damage. The Permittee committed to monitor subsidence with aerial photography. This method has been effective in the past and is currently being used by the Permittee.
- A detailed description of the subsidence control measures that will be taken to prevent or minimize subsidence and subsidence-related damage, including, but not limited to: backstowing or backfilling of voids; leaving support pillars of coal; leaving areas in which no coal is removed, including a description of the overlying area to be protected by leaving the coal in place; and, taking measures on the surface to prevent material damage or lessening of the value or reasonably foreseeable use of the surface. The main concerns with subsidence damage are the Joes Valley Fault, the gas well and the escarpments. The Joes Valley Fault will be protected with a 22 degree angle-of-draw and the rock tunnels will be protected with a 15-degree angle-of-draw. The panels will be laid out to minimize damage to the escarpments. In addition, the Permittee will leave a 400-ft barrier between the most northern panel and the permit boundary. This should minimize any adverse effects on the Genwal mine.
- A description of the anticipated effects of planned subsidence, if any. On Figure R645-301-500d the Permittee shows the anticipated subsidence trough. The maximum amount of subsidence is expected to be five ft. Drawing MFS1866D shows the areas where subsidence should occur.
- A description of the measures to be taken to mitigate or remedy any subsidence-related material damage to, or diminution in value or reasonably foreseeable use of the land, or structures or facilities to the extent required under State law. In order to restore any land affected by operations to a condition capable of supporting the current and postmining land uses stated herein, the Permittee will replace water (including State Appropriated Water Supplies) determined to have been lost or adversely affected as a result of the Permittee's mining operations if such a loss or adverse impact occurs prior to final bond release. The water will be replaced from an alternative source in sufficient quantity and quality to maintain the current and postmining land uses as stated herein.

In Table MRHT-2 Mill Fork Spring and Seep Survey 2000-2002, the Permittee lists the surface and ground-water rights. In addition the Permittee lists the mitigation alternatives for ground water as: A) Rehabilitate spring source utilizing BTCA, B) Transfer water rights to adjacent ground-water sources, C) establish permanent ground-water collection and distribution system and D) in the case of disturbance to Little Bear Spring the Permittee will follow a negotiated mitigation agreement. The Permittee reserves the right to use any of the first three methods to replace all ground-water sources. The fourth method will only be used in connection

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with Little Bear Spring. For mitigation of surface water rights the Permittee proposes the following: A) Rehabilitate stream utilizing BTCA, B) Transfer Water Rights to adjacent ground-water sources and C) Establish permanent ground-water collection and distribution systems.

*United States Forest Service Comments*

The Division reviewed the USFS comments about subsidence issues for the Mill Fork lease. Those issues can be divided into two groups: protecting structures and commitments to repair damage. The USFS wants the Permittee to take action to protect the power line and gas well in the Mill Fork lease.

Protected areas are outlined in R645-301-525.200 of the Coal Mining Rules. Protected areas include:

- Public buildings and facilities.
- Churches, schools and hospitals.
- Impoundments with 20 acre-ft or more capacity.
- Aquifer or body of waters that is a significant source of a public water supply.

The power line and gas well are not considered protected structures. The Division cannot prohibit subsiding under those structures. The Permittee has shortened one longwall panel to reduce the possibility of impinging on the power line. Effective August 12, 2005, PacifiCorp and Merit Energy Company established a working relationship to maximize recovery of both the coal and oil and gas estates. This allows PacifiCorp to mine within what was formerly a 15° angle-of-draw subsidence buffer zone around Merit's East Mountain Unit 32-23 gas well in Section 23, T. 16 S., R. 6 E. A copy of the agreement between PacifiCorp and Merit was provided to the Division. The Permittee commits to coordinating mining activities with Merit and to giving six-months notification prior to conducting mining in or adjacent to the well. [04282006]

The USFS wants the Permittee to make specific commitments to repair or replace damages to structures. The requirements for repair of subsidence related damage to a structure are in R645-301-525.500. The requirements are that if subsidence causes damage the Permittee will repair the damage. Specific commitments for specific structures are not needed to meet the requirements of the Coal Mining Rules.

**Performance Standards For Subsidence Control**

The basic performance standard for subsidence control is that the Permittee shall comply with all provisions of the approved subsidence control plan. The Division will monitor the Permittee to insure that all mining is conducted in accordance with the MRP. If subsidence causes material damage the Division will take steps to insure that the land is restored to a

## **OPERATION PLAN**

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condition capable of maintaining the value and reasonably foreseeable uses that it was capable of supporting before subsidence. Repair of damage includes rehabilitation, restoration, or replacement of damaged structures or resources.

### **Notification**

At least 6 months prior to mining, or within that period if approved by the Division, the underground mine operator shall mail a notification to all owners and occupants of surface property and structures above the underground workings. The notification shall include, at a minimum, identification of specific areas in which mining will take place, dates that specific areas will be undermined, and the location or locations where the operator's subsidence control plan may be examined. The Division will monitor the Permittee with respect to notification.

### **Findings:**

Information provided in the plan meets the Subsidence Control requirements of the regulations.

## **SLIDES AND OTHER DAMAGE**

Regulatory Reference: 30 CFR Sec. 817.99; R645-301-515.

### **Analysis:**

There should be no slides occurring in the Mill Fork lease area because all mining activities are underground. If slides would occur, it would most likely be caused by subsidence. The area where slides would most likely occur is along the escarpments. The remedy for these slides would fall under the subsidence mitigation plan.

The Permittee has a plan in place to notify the Division should a slide occur and what action is needed to protect the public.

### **Findings:**

Information provided in the plan meets the Slides and Other Damage requirements of the regulations.

## **FISH AND WILDLIFE INFORMATION**

Regulatory Reference: 30 CFR Sec. 784.21, 817.97; R645-301-322, -301-333, -301-342, -301-358.

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**Analysis:**

GENERAL WILDLIFE

The MRP meets R645-301-333, R645-301-342, and R645-301-358 because there is sufficient information for the protection or enhancement plan. [06292005]

The Permittee will protect or enhance the site during operations and reclamation, in part, by the following: (See MRP Sec. 330 for details.) [06292005 JAE]

- Utilize pre-disturbed sites for the Rilda expansion facilities.
- Revegetate previously disturbed areas to standards relative to the nondisturbed reference areas.
- Acquire a right-of-way within the existing Genwal Mine disturbed area for a future breakout.
- Monitor vegetation using infrared technology.
- Conduct construction outside of wildlife exclusionary periods.
- Reduce speed limit for the Rilda mine access road.
- Monitor macroinvertebrates in Rilda Creek.
- Monitor raptors.
- Protect escarpments on the Joes Valley side from subsidence.
- Install a "stay-out" sign near a large cavern.
- Enhance riparian corridor along the Rilda Creek.
- Install raptor safe electric power lines.
- Install a fence around a rat midden in Rilda Canyon.
- Design the surface drainage so water flows to a ditch north of Rilda Creek.
- Install barriers along the southern edge of the Rilda facilities area.
- Seed topsoil and subsoil piles.
- Comply with other regulating agencies such as Department of Environmental Quality. [06292005]

**Protection and Enhancement Plan**

The Permittee plans to conduct second mining under the Castlegate Sandstone escarpments on the east side of the permit area. This mining operation has caused cliff failure and rock falls in other areas mined within the Deer Creek permit area. The Pre-Subsidence Survey Map (MFS-1839D) shows the Castlegate Sandstone out crops. There is a fault within the area; therefore, the area is protected by an undermining buffer zone. This zone, will not only protect hydrological resources, it will also protect future raptor nests. Currently, there are no sightings of raptor nests in these escarpments. [06292005 JH]

The application includes an operation plan located in volume 11 chapter three, pp.16 through 19. Within that plan the Permittee has included "methods, devices, and procedures to

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protect fish, wildlife and stream degradation during construction and operation activities". With regard to the first method, (Reduced disturbed footprint), Map 500-1 has been revised to reflect the locations and acreages of the 4.4 acres of pre disturbed areas. As noted in this section of the application the pre disturbed areas were reclaimed in 1988. The areas were topsoiled, re-contoured and seeded. Because the vegetation is established and the areas are considered critical winter habitat for deer and elk there would not be a reduction in the disturbed area footprint. However 4.4 acres or 33.6% of the proposed disturbed 13.1 acres would be considered pre disturbed reclaimed land. As noted in the previous review, this method would not qualify as a procedure to protect fish, wildlife and stream degradation during construction and operation activities. [06292005 JH]

Additional protection procedures for Big Game species include #5. "Buffer Zone markers placed along the south disturbed border to make construction workers aware of the location of the stream. #6. Reduced speed limit on the mine access road." # 11. Indicates that the facilities will be located below the stream crossing at the forks of Rilda Canyon to allow Big Game access from one fork of Rilda Canyon to the other. #12. "Material haulage to the existing Rilda Canyon Fan will be discontinued". #14 Reclamation activities will not take place between December 1<sup>st</sup> and April 15<sup>th</sup>. This measure also includes construction activities. [06292005 JH]

Additional wildlife mitigation commitments for Big Game species are provided for in table 300-5, they include; [06292005 JH]

1. For the Leroy mine area; buried coal removal and landscape enhancement. The site was reclaimed by the Abandoned Mine Lands section of the Division of Oil Gas and Mining in 1988. The removal of the additional buried coal outside the disturbed area will be enhanced for wintering big game species throughout the life of the facility. These areas will be enhanced during the construction of the surface facilities.
2. For the AML areas outside the proposed disturbed area. The Permittee proposes to cooperate with the AML and Forest Service to reclaim and enhance the Leroy Mine area. The project will include DOGM and the USFS as overseeing agencies with implementation and completion to be accomplished within two years.
3. For the aspen regeneration in Meetinghouse Canyon, the Permittee has proposed to cooperate with the Division of Wildlife Resources, (DWR), in a timber harvest and aspen regeneration on 200 acres of private land. The project will include DWR as the overseeing agency with implementation and completion to be accomplished within two years. DOGM and the USFS will be appraised of the progress of the project.
4. For the 4,440 acres of privately owned lands on East Mountain the application indicates that the land will be managed for multiple use and protected through out the life of the mine. There

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is an area where the conifers have been subject to beetle kill. The Permittee plans to enhance this area in cooperation with the Forest Service by removing the beetle-killed trees.

For protection of Big Game species the Permittee also commits to conducting construction activities during months that would minimize impacts to breeding and birthing activities. The plan should also specify that construction activities would not interfere with the activities of deer and elk during periods of high stress, such as when the animals are utilizing the same area from early winter through late spring. Exclusionary periods for elk and deer should specify that the wintering period is from December 1 through April 15, and calving period is from May 15 through July 5.07/12/05 [06292005 JH]

The MRP states (p. 3-14) that experience from the existing PacifiCorp permit areas has shown that the effects of subsidence on grazing and grazing lands, timber resources (not identified as a land use) or access to timber resources, and wildlife resources are minimal. Bob Thompson (Forest Botanist, USFS) and Rod Player (USFS) opinions are that subsidence impacts will be negligible to vegetation and wildlife within the Mill Fork Lease (p. 3-19; 4<sup>th</sup> ¶). The MRP states that infrared color photographs will be used to record vegetation data changes until permit area reduction. When the Division has asked for vegetation information prior to permit area reduction, PacifiCorp has refused to provide such data and again states that their experience indicates no effects. The MRP contains a commitment to continue to analyze vegetation changes every five years using infrared technology. The mine operator will cease analysis once the Division approves a permit area reduction (p. 3-19; 4<sup>th</sup> ¶). In a letter to the Division (December 4, 2002; RE: Response to the deficiencies to the Mill For Lease Application Round 2...), the mine operator agrees to provide the annual reports on vegetation changes at the time of permit reduction (letter, p. 9). [06292005 JH]

In addition to the protection or enhancement measures that the MRP lists, the Permittee will conduct several mitigation projects for the Rilda portal disturbance. These projects are intended to help offset some of the impacts related to mining operations (see MRP Sec. 330 for details). The mitigation projects include: [06292005 JAE]

- Remove buried coal from predisturbed area.
- Reclaim predisturbed areas that are adjacent to the Rilda disturbed area.
- Cooperate with the DWR in a select timber harvest and aspen regeneration project.
- Provide funding to DWR to develop and analyze raptor data collected over the past twenty-five years.
- Participate with the Division, USFS, UDWR, and private property landowners (CW Mining and PacifiCorp) to rehabilitate Rilda Creek below Rilda Canyon Springs.
- Provide funding to either USFWS or DWR to develop a tracking system of mitigation projects within Huntington Canyon Drainage. [06292005]

*Ungulates and other large mammals*

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The Permittee will make efforts to protect wildlife, in part, by conducting construction and reclamation outside of elk and deer wintering exclusionary periods (Vol. 11, p. 300-10). For elk and deer, the wintering period is from December 1 through April 15, and calving period is from May 15 through July 5. The Division, in consultation with DWR, considers that the elk will move up the mountain for calving, therefore, the Permittee is not restricted by the calving period for the Rilda portal project at this time. The Division and DWR also consider that the Permittee is not restricted by the fawning period because deer are not as sensitive as elk to human disturbance. [06292005]

*Bats and other small mammals*

There is at least one known rat midden within the permit area. The Permittee will protect this midden with a 6-ft fence around the base. [06292005]

The Permittee has conducted bat surveys within certain sites of the permit area. A 1997 survey concentrated on Huntington, Straight, and Cottonwood canyons, while a 2004 survey (Diamonds) concentrated on Rilda Canyon. The 2004 survey provided a thorough assessment of bat habitat, but the survey was conducted too late in the season to observe individuals. [06292005]

The Diamonds (2004) describe the opening for a mine adit as the largest in the area and recommend maintaining this site in good condition for bat use. The Permittee will provide a sign for construction workers to avoid areas beyond markers for the subsoil pile. [06292005]

*Macroinvertebrates and fish*

The Permittee will conduct macroinvertebrate-monitoring surveys the first year in the spring and fall following construction and every three years in the spring. The Division may require a protection, enhancement, or mitigation plan if the post-disturbance or monitoring surveys indicate negative impacts to the macroinvertebrates or fish adjacent to the Rilda portal project. [06292005]

DWR will conduct fish surveys in the Huntington drainage as part of their annual monitoring and will most likely include Rilda Creek as part of their wildlife management plan. [06292005]

*Migratory and Game Birds, and Raptors*

The Permittee will conduct yearly fly-over raptor surveys of the permit area.

The Permittee provides information concerning migratory and other sensitive bird species. Table 300-4 lists six species that may inhabit certain areas of the permit area. The Permittee will enhance the riparian corridor along the Rilda Creek, which should improve the habitat for these six species. [06292005]

The MRP includes a protection plan for electrical wire and power pole (Vol. 11, Sec. 300, App. H). It is important to note that West Ridge mine, developed in the Book Cliffs coalfield in 1998, located all power lines underground. The Division suggests the same best technology for the Rilda portal project. [06292005]

### **Endangered and Threatened Species**

The MRP includes an overview of habitat and occurrence data for all the TE species in Emery County, the Manti-Lasal National Forest sensitive species, and any other state listed sensitive species. [06292005]

#### *Mexican Spotted Owl*

The only threatened or endangered species possibly present in the permit area is the Mexican spotted owl (although recognized as highly unlikely). The MRP states the potential surface impacts due to second mining have shown land surface disturbance is minimal to non-existent (p. 3-9).

The Permittee conducted a MSO ground-truthing survey for the Rilda portal project. The Division will not require a calling survey for individuals at this time. [06292005]

#### *Colorado River Fish*

The MRP includes derivations and values of consumption and addition of water to the Colorado River at the time of the Mill Fork lease extension review. The Permittee estimated the total water balance as an annual net gain of 2,453 acre-ft. The Division, in consultation with the USFWS, considered that mining operations were "not likely to adversely affect" the endangered fishes of the Colorado River Basin because there was no indication of depleting water from the Basin. [06292005]

The Permittee must update all equations and justifications with supporting documentation leading to the overall sum of water depletions or additions when projects would significantly change the current estimated value. The Permittee provided values during the review of the Mill Fork lease. The Permittee does not expect that the Rilda portal project will significantly change the current value. [06292005]

### **Bald and Golden Eagles**

The Permittee will conduct yearly raptor fly-over surveys of the permit area. These surveys should include monitoring the eagle nest located in cliffs, where escarpment failure could occur. The Division may require a protection, enhancement, or mitigation plan if it is probable that current mining operations will impact individuals or their habitat. PacifiCorp should recognize that it is the Division's and not their responsibility to consult with DWR and USFWS. [06292005]

### **Wetlands and Habitats of Unusually High Value for Fish and Wildlife**

The Permittee will protect and enhance the riparian area along Rilda Creek. The Permittee will monitor macroinvertebrates, which is an USFS indicator species for changes in water quality. All surface runoff from the Rilda facilities will flow to a ditch north of Rilda Creek. Barriers along the southern edge of the facilities area will provide additional protection to prevent runoff from entering the creek. The Permittee will also participate in an enhancement project of Rilda Creek. [06292005]

### **Findings:**

Information provided in the plan meets the Operations - Fish and Wildlife Information requirements of the regulations.

## **TOPSOIL AND SUBSOIL**

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

### **Analysis:**

#### **Topsoil Removal and Storage**

The plan describes removing the A and B horizon (to a maximum depth of 24 inches) in one step and salvaging this material as topsoil (Section R645-301-233). The Permittee will have a qualified person (familiar with the soil survey and salvage plan) on site to monitor the soil salvage operations (Section R645-301-231.100).

Map 200-1 illustrates the area of topsoil salvage and shows the 1.1-acre stockpile site. A three-ft diameter culvert UC12 will be placed on the existing soil surface (Volume 11-Appendix Volume- Hydrology Appendix B Table 8, and Map 700-2). Marker fabric will be used on 10 ft centers to denote the native soil beneath the stockpile. The topsoil stockpile is designed to hold approximately 25,000 cu yds with an average stockpile depth of 20 ft and slopes of 2h:1v (Map

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500-4 Sheet 3 of 5, Section R645-301-231.100 and Section R645-301-234). As described in Section R645-301-234, the topsoil stockpile will be protected from erosion by surface roughness, a layer of grubbed brush, and with the sagebrush/grass seed mix described in Table 300-4 of R645-301-341. Silt fence will be installed at the toe of the stockpile and a fence will surround the stockpile to protect the vegetation from grazing animals (Section R645-301-231.400. After construction, the stockpile will be surveyed and the volume of topsoil stockpiled will be documented (Section R645-301-232).

Section R645-301-232 indicates 3,200 cu yds of buried A and B horizon could be encountered at the LeRoy Mine AML site beneath the coal mine waste buried in the location of the proposed sediment pond. These soils will be used to reclaim the sediment pond site and will be stored in the subsoil or topsoil stockpiles at the discretion of the qualified soil scientist (Section Plan for Experimental Practice. In. Section R645-302-218).

Construction of the facilities pad will require removal of subsoil to a depth of 35 ft (Map 500-4, Sections R645-301-234 and R645-301-521.150). The excess spoil will be stored as shown on Map 500-3 in a stockpile with dimensions 550 ft x 250 ft, having 2h:1v slopes and maximum heights of 70 ft (averaging 40 ft, Map 500-4 Sheet 4 of 5 provides the stockpile cross-sections). The subsoil storage area will occupy 3.0 acres, some of which is previously disturbed (Rominger Mine). The capacity of the subsoil storage area is 107,000 cu yds. Topsoil will not be salvaged from beneath the storage area. Stockpiling the surplus cut soils on topsoil is an Experimental Practice discussed under R645-302-210.  
[06302005]

**Findings:**

Information provided in the plan meets the Topsoil Salvage requirements of the regulations.

**VEGETATION**

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

**Analysis:**

Specific information concerning the effects of underground coal mining operations on rare and sensitive plant species if found under the Fish and Wildlife Information section.

In order to mitigate any impacts to vegetation from subsidence the impacts must be located, measured and quantified. The Permittee will conduct infrared color photography to record vegetation changes every five years. The Permittee will provide the results in Annual

Reports at the time of permit reduction and cease analysis once the Division approves a permit area reduction.

The MRP states that 33.6% of the area for the Rilda portal project was previously disturbed by historic mining operations. The Permittee will revegetate this previously disturbed area to standards relative to the nondisturbed reference areas. [06292005]

**Findings:**

Information provided in the plan meets the Operations - Vegetation requirements of the regulations.

**ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES**

Regulatory Reference: 30 CFR Sec. 784.24, 817.150, 817.151; R645-301-521, -301-527, -301-534, -301-732.

**Analysis:**

**Road Classification System**

No roads will be built for the Mill Fork lease. All access to the Mill Fork Lease will be from underground. Ventilation portals may be built in Crandall Canyon but that would be handled by a separate amendment. [03292005]

The only road that is constructed for the North Rilda Portal Access area is in the main mine area. The Division and the Permittee classified the road as primary. See Section 645-301-527.100. [06302005]

**Plans and Drawings**

The plans and maps for the North Rilda Portal Facility primary road are in Section R645-301-527.100, Road Classification and on Map 500-3. The road was designed to accommodate supply trucks and mining related activities. [06302005]

**Performance Standards**

Design requirements include:

- Map 500-3 shows the location of the road and a typical cross section.
- Because of the diversion ditches, there are no intermittent or perennial streams in the pad area.

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- The Permittee will not use any temporary routes to ford streams.
- The Permittee will not alter any nature streams in connection with road construction.
- There are not low water crossings.
- The Permittee will remove and then reconstruct the road so it will be part of Emery County Road 306.

Performance standards for the road include:

- The Permittee paved the road to control erosion, and air pollution.
- See the biology sections for information about how the Permittee constructed the road/main mine area to control damage to fish and wildlife.
- See the hydrology sections for information about how the Permittee constructed the road/mine area to hydrologic impacts.
- The Permittee used native soils/materials to construct the sub base. See the soil sections for information about acid and toxic forming materials.
- The Permittee must maintain the road according to the regulations.

Primary design standards include:

- The Permittee certified the road design on Map 500-3.
- The Permittee stated that because the road was in the flat area of the pad and that the road did not have an embankment the 1.3 safety factor can be disregarded. While the Division cannot disregard the 1.3 safety factor requirement, the Division can agree that because the road is on a level surface that the safety factor can be assumed to be much greater than 1.3.
- The portal facility design took into account ways to minimize erosion.
- There are not fords.
- See the hydrology sections for culvert design.
- The Permittee pave the road with four inches of asphalt. The Division considers that adequate. [06302005]

### Primary Road Certification

The primary road for the North Rilda Portal Facility was certified by a licensed professional engineer. [06302005]

### Other Transportation Facilities

There are no other transportation facilities are the North Rilda Portal Facility. [06302005]

**Findings:**

Information provided in the plan meets the Road Systems and Other Transportation Facilities requirements of the regulations.

**SPOIL AND WASTE MATERIALS**

Regulatory Reference: 30 CFR Sec. 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.

**Analysis:**

**Disposal Of Noncoal Mine Wastes**

Disposal of noncoal waste will not change because there will be no breakout in the Mill Fork Lease. Noncoal waste materials will be removed either from the Deer Creek's mine portals or from the Rilda Canyon portal.

**Coal Mine Waste**

Coal mine waste will be re-mined from a 0.7-acre previously reclaimed site (the LeRoy Mine AML site). The volume of this coal mine waste is estimated at 3,600 tons based on an average depth of 4 ft and a particle density of 60 lbs/ft<sup>3</sup> (Section R645-301-528). A sample of the LeRoy coal mine waste was analyzed (Volume 11 Appendix Soils Volume – Appendix 6.2 of Appendix A, Sample ID RIL 1003). This sample indicates that the waste does not have acid forming potential or high SAR value.

Small quantities of coal mine waste will be brought to the surface from the Rilda facilities portal development and stored in locations shown on Map 500 – 2, Vol 11. Final disposal of coal mine waste will be at the Deer Creek Waste Rock Site. Representative samples of the mine development waste are found in Volume 11 Appendix –Geology Appendix B, samples from cross cuts #6 and #10.

Volume 11, Sec. R645-301-536, describes waste handling plan in Rilda Canyon as follows:

- The coal mine waste will be temporarily stored in concrete bunker.
- The concrete bunker was a capacity of 125 yyd<sup>3</sup>.
- The coal mine waste will be shipped to the refuse pile whenever the bunker becomes full.

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[06302005]

**Refuse Piles**

No new refuse piles will be associated with the Mill Fork Lease.

**Impounding Structures**

No additional impoundment structures will be associated with the Mill Fork Lease.

No new refuse piles will be associated with the Rilda Canyon Portal Facility. See Volume 10 of the MRP for details of the refuse pile. [06302005]

**Burning And Burned Waste Utilization**

**Return of Coal Processing Waste to Abandoned Underground Workings**

The Permittee has no plans to return coal processing waste underground. [06302005]

**Excess Spoil:**

No excess spoil will be generated from mining activities. Underground development waste generated from the Mill Fork lease will not be classified as excess spoil.

**Findings:**

Information provided in the plan meets the Spoil and Waste Materials requirements of the regulations.

**HYDROLOGIC INFORMATION**

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

**Analysis:**

Because they will be reclaimed, all sediment control structures at this site are considered temporary under the Coal Mining Rules. [07012005]

### **General**

The Permittee has submitted a plan to minimize disturbance to the hydrologic balance, to prevent material damage, and to support approved post-mining land use (Volume 11, Section 731). The Rilda Canyon portal facilities monitoring plan is summarized in Volume 11, Section 731.200. Appendix A of Volume 9 contains the complete water-monitoring plan for the Permittee's mines. Water quality of Rilda Creek will be protected from potential impacts associated with the Rilda Canyon Portal Facilities through a combination sediment control structures and revegetation (Volume 11, Section 731.600. [07012005]

### **Groundwater Monitoring**

Equipment and structures used in conjunction with monitoring the quality and quantity of ground water on- and off-site will be properly installed, maintained, operated, and will be removed by the Permittee when approved by the Division. Data will be submitted in an electronic format to the Division's Coal Water-Quality Database quarterly for each monitoring location. Monitoring submittals will include analytical results from each sample taken during the quarter. When the analysis of any ground-water sample indicates noncompliance with the permit conditions, the Permittee will promptly notify the Division and immediately take actions provided for in R645-300-145 and R645-301-731. Monitoring of the described ground-water resources will proceed through mining and continue during reclamation until bond release. (Volume 11, Section 731.200 Groundwater). [07012005]

### **Surface Water Monitoring**

Equipment and structures used in conjunction with monitoring the quality and quantity of surface water on- and off-site will be properly installed, maintained, operated, and will be removed by the Permittee when approved by the Division. Surface water-monitoring stations will continue to be monitored quarterly (one sample at low flow and high flow) during the first or second week of the quarter. Data will be submitted in an electronic format to the Division's Coal Water-Quality Database quarterly for each monitoring location. Monitoring submittals will include analytical results from each sample taken during the quarter. When the analysis of any surface water sample indicates noncompliance with the permit conditions, the Permittee will promptly notify the Division and immediately take actions provided for in R645-300-145 and R645-301-731. For point source discharges, monitoring will be conducted in accordance with 40 CRF Parts 122 and 123, R645-301-751 and as required by the Utah Division of Environmental Health for NPDES permit (Volume 11, Section 731.200 Surface Water).

Monitoring will continue until the release of the reclamation bond or until an earlier date to be determined after appropriate consultation with local, state, and federal agencies (Volume 9, Section 728, G - Surface Monitoring Plan). [07012005]

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**Acid- and Toxic-Forming Materials and Underground Development Waste**

Chemical analyses for the Blind Canyon and Hiawatha coal seams within the permit area are available from drill cores from Energy West drill holes and run-of-mine coal sampling (Volume 8 - Geology and Volume 12 – Geology Appendix A). Data on sulfur for the Blind Canyon and Hiawatha Seams are available from drill cores and run-of-mine coal samples (Volume 8 and Volume 12 Section 624.230).

Volume 12 – Geology Appendix C contains a table of analyses for acid- and toxic-forming or alkalinity-producing materials above and below the coal seams to be mined. Volume 11, Geology Appendix B includes analyses of acid- and toxic-forming or alkalinity-producing materials related to the Upper Member of the Star Point Sandstone, which is representative of the underground development waste that will be generated during construction of the Rilda Canyon rock slopes. [07012005]

**Transfer of Wells**

In Volume 11, Section R645-301-731.400, the Permittee commits that before final release of bond, exploratory or monitoring wells will be sealed in a safe and environmentally sound manner in accordance with 8645-301-631, R645-301-738, and R645-301-765. Wells will be transferred to another party for further use only with the prior approval of the Division, and the conditions of such transfer will comply with Utah and local laws. The Permittee will remain responsible for the proper management of the well until bond release in accordance with R645-301-529 R645-301-551, R645-301-631, R645-301-738, and R645-301-765. [07012005]]

**Discharges Into An Underground Mine**

Discharges into an underground mine are discussed in Section 731.500 of Volume 11. Quantity of water discharged to the abandoned mine workings will be monitored and reported quarterly. If changes to the hydrologic balance are detected, the Permittee will immediately eliminate discharge to the abandoned workings and institute the alternative plan (Volume 11, Section 728, Hydrologic Balance-Groundwater, F. RUNOFF AND GRAY WATER DISPOSAL - ABANDON MINE WORKINGS).

Discharges of water from areas disturbed by coal mining and reclamation operations will be made in compliance with all Utah and federal water quality laws and regulations and with effluent limitations for coal mining (Section R645-301-751, Water Quality Standards and Effluent Limitations): MSHA approval, which is required before the Permittee can pump into the mine, has not been obtained. The Permittee states that when MSHA approval is obtained, documentation will be in Volume 11, Engineering Appendix B. If necessary, discharge from the Rilda Canyon portal facilities sediment pond will be routed through the principal and emergency spillways (Volume 11 Appendix Volume - Hydrology: Appendix B). [07012005]

### **Gravity Discharges From Underground Mines**

There are no mine openings in the Mill Fork Lease. For the Rilda Canyon portal facilities, gravity discharge from the underground mines is addressed under Section 645-301-731.520 of Volume 11. [07012005]

### **Water-Quality Standards And Effluent Limitations**

Gray water and most runoff from the Rilda Canyon portal facilities will be collected and pumped underground into abandoned areas of the mine. If the initial collection and pumping system fails, the sedimentation pond is designed to fully contain runoff from a 10-year, 24-hour storm event (Volume 11, Section 731.500). Runoff from the topsoil piles and outslopes of the road and sedimentation pond will be treated by alternate sediment control methods (Volume 11, Hydrology Appendix B, Section 2.11; Plate 700-1).

Section F in the Rilda Canyon portal facilities PHC (Volume 11, Section R635-301-728) states that quantity of water discharged into the abandoned workings will be monitored and reported quarterly. . If changes are detected to the hydrologic balance, PacifiCorp will immediately eliminate discharge to the abandon mine workings and institute the alternative plan. The alternative plan will include disposing of the collected runoff and gray water through the established mine dewatering system and discharging the water at the approved UPDES discharge location in Deer Creek Canyon (Volume 11, Section R645-301-728, Hydrologic Balance-Groundwater, F). [07272005]

A copy of the Deer Creek Mine UPDES permit is in Appendix B of Volume 9. Because of the antidegradation rules of the Division of Water Quality (R317-2-3.2, -12.1), there can typically be no UPDES point-source discharge within USFS boundaries; however, the Deer Creek Mine UPDES permit allows discharge within the USFS boundary in Deer Creek Canyon (R317-2-12.2). The Rilda Canyon portal facilities are within USFS boundaries. The Rilda sedimentation pond is designed for total containment of the 10-year, 24-hour event, but has both a principal and an emergency spillway. Flow from these spillways will go into undisturbed diversion ditch UD-9, which empties into Rilda Creek at a point inside the USFS boundary (Volume 11, Hydrology Appendix B, Sections 3-1 b and 3.4 g; Maps 700-1 and 700-3). If the site receives a storm greater than the capacity of the collection tank and pumping system and sediment pond decanting system, discharge from the sediment pond will be routed through the principal and emergency spillways (Volume 11 Appendix Volume - Hydrology: Appendix B). The Permittee states such a discharge from the sediment pond would constitute an emergency situation and comply with Utah DWQ storm water regulations (Section R645-301-751, Water Quality Standards and Effluent Limitations). [07272005]

As currently designed, it does not appear there will be any non-point source discharge at the Rilda Canyon portal facilities, with all drainage being pumped into the mine or reporting to

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the sedimentation pond. The alternative plan will include disposing of the collected runoff and gray water through the established mine dewatering system and discharging the water at the approved UPDES discharge location in Deer Creek Canyon (Volume 11, Section R645-301-728, Hydrologic Balance-Groundwater, F). Discharges of water from areas disturbed by coal mining and reclamation operations will be made in compliance with all Utah and federal water quality laws and regulations and with effluent limitations for coal mining promulgated by the U.S. Environmental Protection Agency set forth in 40 CFR Part 434 (Section R645-301-751 in both Volume 11 and Volume 12.). [07272005]

**Diversions: General**

In Volume 11, Section R645-301-732.300, the Permittee commits that construction and maintenance of all diversions at the Rilda Canyon portal facilities will comply with the requirements of R645-301-742.100 and R645-301-742.300. Calculations of runoff volumes and designs for ditches, culverts, or other diversions are in Volume 11, Hydrology Appendix B. Diversions are designed to safely pass a 10-year, 24-hour design event rather than the smaller 2-year, 6-hour event required by the Coal Mining Rules for temporary diversion of miscellaneous flows (Volume 11, Hydrology Appendix B, 2.1). No diversions are planned for coal mining operations in the Mill Fork lease. Coal mining operations in the Mill Fork lease should have no impact on existing diversions in the Deer Creek Mine permit area or adjacent areas. [07012005]

**Diversions: Perennial and Intermittent Streams**

The creek in Rilda Canyon is intermittent above the NEWUSSD ground-water capture system and perennial below. The proposal does not include any culverting or other diversion of the Rilda Canyon stream.

Separate drainage systems will be provided at the Rilda Canyon Portal Facility for undisturbed and disturbed collection systems. (Section R645-301-742.230). [07012005]

**Diversions: Miscellaneous Flows**

Small, ephemeral, undisturbed drainages at the Rilda Canyon portal facilities, on the south-facing slope of North Rilda Ridge, will report to Rilda Creek through a series of culverts passing beneath the facility (Volume 11, Section R645-301-742.330). Watershed runoff calculations and culvert and ditch design calculations are in Appendix B. Precipitation Frequency Estimates are discussed in Volume 11, Appendix B, Section 2.1, Precipitation. Ditches and culverts have been sized to pass the 10-yr, 24-hour event rather than the smaller 2-yr, 6-hr event required by the R645 Rules for temporary diversion of miscellaneous flows. Culvert and ditch sizing information for the undisturbed drainages is summarized in Tables 1 through 8 of Appendix B.

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By using the 10-yr, 24-hr event, the Permittee's designs exceed not only the 2-yr, 6-hr requirement for temporary diversions of miscellaneous flows, but also the 10-yr, 6-hr requirement for permanent diversions of miscellaneous flows. These diversions should be adequate to safely pass peak runoff from events much larger than those anticipated by the Coal Mining Rules.

Trash racks will be installed over culvert inlets to keep out debris, racks will be ramped to facilitate debris being swept away from the inlet, and will be cleared on a routine schedule and after storm events (Section 2.9, Culverts). [07012005]

### **Stream Buffer Zones**

No land within 100 ft of a perennial stream or an intermittent stream will be disturbed by coal mining and reclamation operations unless the Division specifically authorizes coal mining and reclamation operations closer to or through such a stream. Signs will mark the area not to be disturbed (Volume 11, Section 645-301-731.600).

Mine construction and operations at the Rilda Canyon portal facilities will be within 100 ft of Rilda Creek, a perennial stream, but there is no plan to divert it. Signs will be installed to indicate the area beyond which no disturbance shall take place. Water quality of Rilda Creek will be protected from potential impacts associated with the Rilda Canyon Portal Facilities through a combination of sediment control structures and revegetation. Interim revegetation is described in section Volume 11, R645-301-300 and the drainage and sediment control plan is in Volume 11, Hydrology Appendix B.

Prior to any construction, temporary sediment control will be established to protect Rilda Creek from additional contributions of sediment (Volume 11, R645-301-322, -521.180). Disturbance will be held to the minimum required to allow construction of the Rilda Canyon portal facilities, and all disturbed surfaces will be revegetated immediately after completion of the construction phase (Volume 11, Section R645-301-728, B). [07272005]

A stream buffer zone was established to protect the alluvial/colluvial system of the Right Fork of Rilda Canyon. It was based on the extent of the riparian zone and the angle of draw from the Hiawatha Seam, the lowest seam to be mined (Section 645-301-731.600).

Wellhead protection for the NEWUSSD springs is covered in Volume 11, Section R645-301-728, Hydrologic Balance-Groundwater, B and in Volume 9. [07012005]

### **Sediment Control Measures**

Sediment control measures will be located, maintained, constructed and reclaimed according to plans and designs given under R645-301-732, R645-301-742 and R645-301-760

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(Section R645-301-752). Sediment control facilities at the Deer Creek Mine are discussed in Volume 2, Part 3 of the Deer Creek MRP. No surface facilities, sediment control, or other disturbance is planned in the Mill Fork Lease area. Drainage and sediment control for the Rilda Canyon Portal Facilities has been designed to conform to the recommendations of the USFS, NEWUSSD, and the Utah Coal Mining Rules (Volume 11, Hydrology Appendix B Section 1 - Introduction). Prior to any construction, temporary sediment control will be established to protect Rilda Canyon creek from additional contributions of sediment (Volume 11, R645-301-322, -521.180). Volume 11, Hydrology Appendix B contains designs for construction and maintenance of the sediment controls for the Rilda Canyon Portal Facilities. Silt fences at ASCAs will be removed after vegetation is established and approved by the Division (Volume 11, Hydrology Appendix B, Section 2.11). [07272005]

**Siltation Structures: General**

No siltation structures are planned for coal mining operations the Mill Fork Lease. Coal mining operations in the Mill Fork Lease should not impact existing siltation structures in the permit and adjacent areas.

Siltation structures at the Rilda Canyon portal facilities will be constructed and maintained to comply with R645-301-742.214. Any siltation structure that impounds water will be constructed and maintained to comply with R645-301-512.240, R645-301-514.300, R645-301-515.200, R645-301-533.100 through R645-301-533.600, 8645-301-733.220 through R645-301-733.224, and R645-301-743 (Volume 11, Section 732.100). Siltation structures for an area will be constructed before beginning any coal mining and reclamation operations in that area and, upon construction, will be certified by a qualified registered professional engineer to have been constructed as designed and as approved in the reclamation plan (Volume 11, Section 742.212). Details concerning design, construction and maintenance of sediment control measures, siltation structures, sedimentation pond, and impoundments for the Rilda Canyon portal facilities are in Volume 11, Hydrology Appendix B: Drainage and Sediment Control Plan. [07012005]

**Siltation Structures: Sedimentation Ponds**

No sedimentation pond is planned for coal mining operations the Mill Fork Lease Coal mining operations in the Mill Fork Lease should not impact existing sedimentation ponds in the permit and adjacent areas.

The Permittee has met the minimum requirements of the R645 Coal Rules by supplying designs for the siltation catch basin (sediment trap) at the Deer Creek sediment pond. See Deer Creek Mine design called "Dumpable Sediment Box/Retaining Wall". [06102005, SJD]

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A temporary sediment pond will be constructed below the proposed Rilda Canyon portal facilities surface facilities. It will be designed to contain runoff from a 10-year, 24-hour event and with principal and emergency spillways that each will safely discharge runoff from a 25-year, 6-hour event (Volume 11, Hydrology Appendix B, 3.4). Sedimentation pond designs will be in compliance with the requirements of R645-301-356.300, -356.400, 513.200, 742.200 through 742.240, and -763 (Volume 11, Section R645-301-732.200) and will comply with -742.220 and qualifying criteria of the MSHA, 30 CFR 77.216(a) (Volume 11, Section R645-301-742.222). Analyses utilized to determine the size and hydraulics related to the construction and operation of the sedimentation pond are in Volume 11, Hydrology Appendix B: Drainage and Sediment Control Plan.

Discharge from the sediment pond will be routed through the principal and emergency spillways (Volume 11 Appendix Volume - Hydrology: Appendix B). The Permittee states such a discharge from the sediment pond would constitute an emergency situation and comply with Utah DWQ storm water regulations (Section R645-301-751, Water Quality Standards and Effluent Limitations).

No permanent structures - including sediment ponds - are planned for the Rilda Canyon Portal Facilities (Volume 11, Sections 732.200, 733, and 743).

Although all of these requirements do not apply to a full-containment pond, the Permittee commits that the Rilda Canyon portal facilities pond will comply with the requirements of R645-301-732.221.1 through 731.221.2 (Volume 11, Sections 732.221.2 through 732.221.39. [07012005]

### **Siltation Structures: Other Treatment Facilities**

No other treatment facilities are planned for coal mining operations the Mill Fork Lease Coal mining operations in the Mill Fork Lease should have no impact on existing treatment structures in the permit and adjacent areas. [03292005]

There is no Other Treatment Facility planned for the Rilda Canyon portals. Domestic waste or black water will be held on site in a holding tank then transported to a treatment facility (Volume 11, Section 742.230).

### **Siltation Structures: Exemptions**

The Permittee does not identify any areas for exemption to the requirements of R645-301-742.200 and -763. No siltation structures are planned for coal mining operations the Mill Fork Lease Coal mining operations in the Mill Fork Lease should have no impact on existing siltation structures in the permit and adjacent areas. All disturbed areas at the Rilda Canyon facilities that do not report to the sedimentation pond will be treated with ASCAs. [07012005]

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### **Discharge Structures**

No discharge structures are planned for coal mining operations the Mill Fork Lease Coal mining operations in the Mill Fork Lease should have no impact on existing discharge structures in the permit and adjacent areas.

Discharge from the Rilda Canyon portal facilities sedimentation pond, temporary impoundments, and diversions will be controlled by energy dissipators, riprap channels, and - where necessary - other devices (Volume 11, Section R645-301-744). Discharge structures will be designed according to standard engineering design procedures. Discharge structures will be located, maintained, constructed and reclaimed to comply with R645-301-733, -734, -743, -745 and -760 (Volume 11, Section 753). Riprap or other protection such as culverts or concrete will be placed at all sedimentation pond inlets and outlets to prevent scouring (Volume 11, Hydrology Appendix B Sections 3.1 f) and 3.4 i)). Figure 11 shows culvert outlet design. [07012005]

### **Impoundments**

No impoundments are planned for the Mill Fork Lease area. Coal mining operations in the Mill Fork Lease should have no impact on existing structures in the permit and adjacent areas.

Impoundments at the Rilda Canyon portal facilities will be located, maintained, constructed, and reclaimed to comply with R645-301-733 -734, -743, -745 and -760 (Volume 11, Section 753). Design and construction specifications for the Rilda Canyon portal facilities sedimentation pond are discussed in Volume 11, Hydrology Appendix B, Sections 3.1 and 3.4; Figures 6-9; Tables 15-18; and on Plate 700-3. Reclamation of the clay liner for the Rilda Canyon portal facilities sedimentation pond is discussed in Volume 11, Section 553. Construction and reclamation of the clay liner is also discussed in Volume 11, Hydrology Appendix B, Section 4.4. Volume 11, Section R645-301-521.180 discusses the tank that will provide primary sediment control for the Rilda Canyon portal facilities. [07012005]

### **Ponds, Impoundments, Banks, Dams, and Embankments**

No ponds, impoundments, banks, dams, or embankments are planned for the Mill Fork Lease area. Coal mining operations in the Mill Fork Lease should have no impact on existing structures in the permit and adjacent areas.

No permanent structures are planned for the Rilda Canyon Portal Facilities. There will be no banks, dams, or embankments. Temporary impoundments for the Rilda Canyon portal facilities will be located, maintained, constructed, and reclaimed to comply with R645-301-733 -734, -743, -745 and -760 (Volume 11, Section 753). Design and construction specifications for

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the Rilda Canyon portal facilities sedimentation pond are provided in Volume 11, Hydrology Appendix B and on Plate 700-3. Volume 11, Sections 521.180, 532, 728, and 731.500 discuss the 26,000-gallon runoff-collection tank that will provide sediment control for the Rilda Canyon portal facilities. [07012005]

### *Water Replacement*

The Permittee commits to promptly replace any State-appropriated water supply that is contaminated, diminished or interrupted by Underground Coal Mining And Reclamation Activities conducted after October 24, 1992, if the affected water supply was in existence before the date the Division received the permit application for the activities causing the loss, contamination or interruption. The baseline hydrologic and geologic information required in R645-301-700 will be used to determine the impact of mining activities upon the water supply (Section 731.530). (03/29/2005)

In 1993, the Permittee and NEWUSSD agreed upon mitigation plan that included construction of a slow sand water treatment plant with a 0.5 million-gallon storage reservoir. Construction of the plant and reservoir was completed and the plant brought on-line in November 1994. (Volume 9, Appendix D). [07012005]

### *Casing and Sealing of Wells*

Each coal exploration borehole will be plugged by filling it from total depth to the surface with type II Portland cement, or if that is not feasible, with bentonite chips to within five ft of the surface with cement plug in the top of the hole. A brass marker with the hole number and year will be placed on top of the cement, two ft below surface grade. This method has been approved by the BLM and the Division and has been used in the past to prevent acid and toxic drainage from entering water resources, minimize disturbance to fish, livestock, and wildlife, machinery in the permit and adjacent area. If an exploration borehole is converted to a water-monitoring well, Utah water well regulations and the provisions of R645-301-731 of the Coal Mining Rules will be followed (Volume 12, sections R645-301-631 and -642, p. 6-23 and 6-24, 6-25 and 6-26).

### **Findings:**

Information provided in the plan meets the Operational Hydrologic Information requirements of the regulations.

## **SUPPORT FACILITIES AND UTILITY INSTALLATIONS**

Regulatory Reference: 30 CFR Sec. 784.30, 817.180, 817.181; R645-301-526.

**Analysis:**

No new surface support facilities or utility installations will occur because of the Mill Fork lease.

The Division discussed the support facilities in the mining and operations and facilities section of the TA. The Division found that some information on support facilities was deficient and discussed those deficiencies in the mining and operations and facilities section of the TA.

The Permittee described the support facilities in various sections of the MRP. Section R645-301-521.180 list the support facilities and give a description. Map 500-3 shows the location of the support facilities and a cross section of the primary road.

See the biology and hydrology operational sections of the TA for how the support facilities and utility installations met the requirements for controlling water pollution and siltation and damage to fish and wildlife.

The support facilities for the Rilda Canyon Portal Facilities are located away from by oil, gas, and water wells; oil, gas, and coal-slurry pipelines, railroads; electric and telephone lines and sewage lines. The water lines were relocated as needed or the Permittee designed the facilities so as not to disrupt water supplies.

The Division conducts monthly inspections to verify that the Permittee is operating support facilities in accordance with the regulations. [06302005]

**Findings:**

Information provided in the plan meets the Support Facilities and Utility Installations requirements of the regulations.

**SIGNS AND MARKERS**

Regulatory Reference: 30 CFR Sec. 817.11; R645-301-521.

**Analysis:**

No new signs or markers will be needed because of the Mill Fork lease.

The Permittee met the requirements for placing signs and markers. They committed to meet the relevant requirements as listed in R645-301-521.200. [06302005]

**Findings:**

Information provided in the plan meets the Signs and Markers requirements of the regulations.

**USE OF EXPLOSIVES**

Regulatory Reference: 30 CFR Sec. 817.61, 817.62, 817.64, 817.66, 817.67, 817.68; R645-301-524.

**Analysis:**

**General Requirements**

In Section R645-301-524.200 of the MRP, the Permittee states that they will submit a blast design for any future surface blasts. [06302005]

**Preblasting Survey**

This section does not apply. (07152005)

**General Performance Standards**

In Section R645-301-524.200 of the MRP, the Permittee states that they will submit a blast design for any future surface blasts. [06302005]

**Blasting Signs, Warnings, And Access Control**

**Control of Adverse Effects**

This section does not apply. (07152005)

**Records of Blasting Operations**

This section does not apply. (07111152005)

**Findings:**

Information provided in the plan meets the Use of Explosives requirements of the regulations.

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## MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

### **Analysis:**

Applicable cross sections and maps included in or referenced in Volume 12 have been prepared by, or under the direction of, and certified by a qualified, registered, professional engineer or land surveyor, with assistance from experts in related fields such as hydrology, geology, and biology (Volume 12, Section R645-301-513, p. 5-2).

There are no impounding structures associated with the Mill Fork Lease.

### **Affected Area Maps**

The Division usually considers the affected area to be equivalent to the permit boundary. Several maps show the permit boundaries including Drawing MFU1840D, Deer Creek Mine Mill Fork Lease ML-48258 Hiawatha Mine Plan.

### **Mining Facilities Maps**

There were no changes to the support facilities map for the Mill Fork lease because all associated mining activities are to be underground using existing facilities. [03292005]

The only potential surface facility associated with this permit extension is the possible ventilation breakout in Crandall Canyon, upstream of the existing Crandall Canyon Mine. The location for these portals is shown on Drawing MFU1841D in Section 500 of Volume 12. These locations are preliminary, and the need for the portals will be evaluated and the design will be made based on future coal exploration. If these portals are needed, they will be permitted in a separate application (Volume 12, section 623.200). [03292005]

The surface facilities map (Drawing DS202E) of the Deer Creek mine has been updated as of June 10, 2005. [06102005, SJD]

Map 500-3, Deer Creek Mine Rilda Canyon Surface Facilities shows the following:

- Buildings,
- Utility corridors
- Roads,
- Topsoil and subsoil storage areas
- Underground development waste (rock waste) temporary storage
- Noncoal waste storage area;

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- Water diversion, collection, conveyance, treatment, storage and discharge facility
- Sedimentation pond
- Cross sections of the surface configuration during mining operations. [06302005]

### **Mine Workings Maps**

The Permittee has submitted maps showing the underground mine working associated within the Mill Fork Lease. The maps show active, inactive and abandon underground mine workings of Genwal Coal Company, Skeen Mine, Helco Mine, Huntington #4 Mine, and the Deer Creek Mine.

The Permittee has given mine projection for the Blind Canyon and Hiawatha coal seam in the Mill Fork Lease. Maps MFU-1840D and MFU1841D give the mining sequence for nineteen years in the Hiawatha Seam. These map are projected and can change in the future due to ground condition, roof control, coal quality, mineable reserves, and coal market. Maps are PE certified.

Map HM-11 has been removed from the plan because all information is now included on Map HM-10. Maps HM-9 and HM-10 have been updated to show more recent mine workings in the North Rilda tract and the entries from North Rilda to Mill Fork. [03292005]

Map 500-3, Deer Creek Mine Rilda Canyon Surface Facilities shows the following:

- The location and extent of known workings of proposed, active, inactive, or abandoned underground mines within the Rilda Canyon Portal Facility area.
- Mine openings to the surface within the Rilda Canyon Portal Facility area.
- Location and extent of existing or previously surface-mined areas within the within the Rilda Canyon Portal Facility area. [06302005]

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

HM-1, the Water Monitoring Location Map, is in Volume 9. Map HM-9 shows the five shallow Rilda Canyon wells surrounding the spring collection system. There is no new monitoring for the Rilda Canyon facilities. For the Mill Fork leases, elevations and locations of monitoring stations used to gather data on water quality and quantity are on Plate 1 by Mayo and Assoc. and Drawings MFS1830D and MFS1839D. [11092006]

### **Certification Requirements**

All maps and cross-sections that are required to be certified have been certified.

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**Findings:**

Information provided in the plan meets the Maps, Plans, and Cross Sections requirements of the regulations.

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### GENERAL REQUIREMENTS

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR Sec. 784.13, 784.14, 784.15, 784.16, 784.17, 784.18, 784.19, 784.20, 784.21, 784.22, 784.23, 784.24, 784.25, 784.26; R645-301-231, -301-233, -301-322, -301-323, -301-331, -301-333, -301-341, -301-342, -301-411, -301-412, -301-422, -301-512, -301-513, -301-521, -301-522, -301-525, -301-526, -301-527, -301-528, -301-529, -301-531, -301-533, -301-534, -301-536, -301-537, -301-542, -301-623, -301-624, -301-625, -301-626, -301-631, -301-632, -301-731, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-732, -301-733, -301-746, -301-764, -301-830.

#### Analysis:

There will be no reclamation needed on the Mill Fork leases because all mining activities will be underground. Subsidence mitigation is not considered as a reclamation requirement. [11092006]

The vegetation- and land use- related information below provides discussion of the reclamation plan for disturbed sites and how the plan addresses the regulations.

In Section R645-301-541.300 of the MRP, the Permittee states:

All asphalt material from the disturbed area will be excavated and taken to a permitted class IV landfill.

The Permittee will not modify the spring collection system during reclamation. [06302005]

#### Findings:

Information provided in the plan meets the Reclamation - General Requirements of the regulations.

### POSTMINING LAND USES

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

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### **Analysis:**

The postmine land use is grazing, wildlife, and recreation. During the reclamation phase, the Permittee will remove a planned trail and parking pad near the Rilda portal project as well as restore the existing road to the original location. [06292005]

### **Findings:**

Information provided in the plan meets the Reclamation - Postmining Land Uses requirements of the regulations.

## **PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES**

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

### **Analysis:**

To enhance wildlife habitat, the Permittee will form rock piles and plant tublings during the reclamation phase. The Permittee will use a seed mix that provides wildlife with a "natural" and compatible food source once the plants are established.

The Permittee will monitor for changes in Rilda Creek during reclamation. [06292005]

### **Findings:**

Information provided in the plan meets the Reclamation - Protection of Fish, Wildlife, and Related Environmental Values requirements of the regulations.

## **APPROXIMATE ORIGINAL CONTOUR RESTORATION**

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

### **Analysis:**

Because no surface disturbance is planned for the Mill Fork area, the Permittee does not have to address the AOC section for the Mill Fork amendment.

The definitions of Approximate Original Contour (AOC) are contained in SMCRA and the R645 Rules. The objectives of AOC requirements are that the final surface configuration

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shall closely resemble the general surface configuration of the land before mining. Note: the requirement to return the disturbed area to the approximate original contour does not necessarily mandate that the site be restored to the original elevation. Therefore, the main criterion for compliance with AOC is "Does the postmining topography, excluding elevation, closely resemble its premining configuration?"

The Division examined the premining and postmining cross-sections and determined:

- The main mine site will be restored to the approximate premining configuration. The reclaimed slopes will be slightly smoother than the natural slopes. However, pocking will roughen the final surface so that it will look more natural than standard grading methods. See Map 500-4 Sheet 1 of 5 and Sheet 2 of 5.
- The topsoil storage site will be restored to the original contours. See Map 500-4 sheet 3 of 5.
- The subsoil/construction fill storage site will be restored to the original contours. See Map 500-4 sheet 4 of 5.
- The sediment pond area will be restored to a slope configuration similar to the premining slope. See Map 500-4 sheet 5 of 5, which shows how the reclaimed site will blend into the surrounding area.
- Map 500-5, Final Reclamation Topography, shows that the reclaimed site will blend into the surrounding area. The reclaimed site which will have slope of no more than 2H:1V will smoothly transition into the steeper surrounding hill or into the gentler streambed area.

Specific items that the Division uses to determine if the AOC requirements will be met include:

- All spoil piles will be eliminated. The Permittee estimates that at final reclamation there will be approximately 6,000 yd<sup>3</sup> of excess material. The total amount of fill is 110,982 yd<sup>3</sup> and the total amount of fill is 110,982 yd<sup>3</sup>. The fill material will come from the subsoil storage area or the topsoil storage area. The Permittee will place 2 ft of topsoil at the site.
- Elimination of all highwalls. There will be two highwalls at the North Rilda Portal Facility. The highwalls are shown on Map 500-4 sheet 1 of 5 at cross-section 2+50 and 5+00. The highwall areas are also shown on contour Map 500-5. On both maps, the Permittee shows that the highwalls will be eliminated.
- Hydrology. The two major hydrologic concerns are drainage restoration and sediment control. The Division considers that those issues were adequately addressed if the general hydrology regulations were addressed. The Permittee will install silt fences during reclamation and the silt fences will remain in place for a minimum of two years after vegetation has been established.

- Postmining Land Use. The Division considers that the site met all AOC issues related to postmining land use if the site met the general postmining land use regulations.

**Findings:**

Information provided in the plan meets the Approximate Original Contour Restoration requirements of the regulations.

**BACKFILLING AND GRADING**

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

**Analysis:**

**General**

Because no surface disturbance is planned for the Mill Fork area, the Permittee does not have to address the backfilling and grading section for the Mill Fork amendment.

The general backfilling and grading requirements for the Rilda Canyon Portal Facility are:

- Achieve the approximate original contour requirements. The Division determined that the site meet those requirements. See the AOC section of the TA for details.
- Eliminate all highwalls, spoil piles and depressions. The highwall and spoil pile issues were addressed in the AOC section of the TA. The reclaimed surface as shown on Map 500-4 and 500-5 show that no depressions will be left. Minor depression from pocking and other surface roughening methods will leave minor depressions needed for micro environments, slope stability and erosion control.
- Slope Stability. In Section R645-301-553.140 of the MRP, the Permittee stated that the reclaimed slopes will not exceed 2H:1V, the soils will have similar characteristics to material used to reclaim the Des Bee Dove Mine. Because the two sites are similar, the North Rilda Portal area will have slopes that meet the minimum 1.3 safety factor requirement. Because the plans are certified by a professional engineer, the Division will accept the safety factor analysis.
- The Division considers that the erosion and water pollution both on and off the site will be minimized if the general hydrologic requirements are adequately addressed.

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- The Division considers that the postmining land use will be met if those requirements have been adequately addressed.

Specific backfilling and grading issues are:

- Settled and revegetated fills. There are no settled and revegetated fills in the area that the Permittee proposes to leave that do not meet the general backfilling and grading requirements.
- There are no toxic or acid forming materials on the site.
- There are no exposed coal seams on the site.
- There will be no cut and fill terraces on the site.
- Pocking and other surface roughening methods will ensure that topsoil slippage is minimal. [06302005]

In Rilda Cyn, 97,259.65 yd<sup>3</sup> of subsoil will be salvaged for replacement during final reclamation (Vol 11, Section R645-301-232.500). Pad surface will be recontoured before subsoil is redistributed, effectively eliminating the compacted pad surface (Map 500-4 and Section R645-301-553).

Regraded subsoil will be sampled on 500 ft intervals to a depth of four ft as described in Section R645-301-231.300. The samples will be analyzed on site for pH and EC. Problem areas will be further sampled and sent to a laboratory for analysis. When subsoil testing is complete and any problems are resolved, topsoil will be hauled by dumptruck and redistributed by track equipment.

The construction of a sediment pond is briefly mentioned in Sections 645-301-521.180, 645-301-526, and 645-301-732.200, 645-301-742.220. More detail is provided in Volume 11 Appendix – Hydrology Appendix B section 3. Section 3 indicates that native fill will be used where possible. However, due to the very permeable sandy gravel below the surface soils, imported clay will line the sediment pond as suggested in the geotechnical reports included in Appendix F of Volume 11- Appendix – Engineering. The clay liner will be buried at least four ft below the surface during final reclamation (Volume 11 Section R645-301-533 and Volume 11 Appendix - Hydrology Appendix B). [06302005]

### **Previously Mined Areas**

The provisions of the previously mined areas allow a Permittee to only partially reclaim highwalls under specific circumstances. None of those circumstances exists at the site because all highwalls will be constructed post-SMCRA. The Permittee committed to reclaim all highwalls that they create.

**Findings:**

Information provided in the plan meets the Backfilling and Grading requirements of the regulations.

**MINE OPENINGS**

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

**Analysis:**

The Permittee has not proposed any new mine opening on the Mill Fork Lease or a change in the mine opening closure plan.

In Section R645-301-550 of the MRP, the Permittee states that portal sealing plan. The plan meets the Division and MSHA requirements by having a block seal 25 ft from the opening and then backfilled. The drill hole used to pump gray water into abandoned workings will be plugged and then backfilled with concrete

**Findings:**

Information provided in the plan meets the Mine Openings requirements of the regulations.

**TOPSOIL AND SUBSOIL**

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

**Analysis:**

**Redistribution**

Deer Creek Mine Facilities

Table 3-1 shows the timing of various steps in reclamation, and Table 3-2 is a schedule of monitoring activities. Except for soil sampling, the reclamation timetable does not show months in which the activities would occur, but a note below the table discusses the timing of seeding and planting more specifically. Soil salvage and replacement activities would be done during backfilling and grading operations.

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Reclamation will involve three disturbed areas: Deer Creek Canyon, Deer Canyon, and Elk Canyon. According to the backfilling and grading plan in Section R645-301-553 of the application, reclamation will begin at the uppermost parts of the disturbed areas and will proceed down the canyons. Various stages of the process will be occurring simultaneously. Substitute topsoil will be excavated from the existing undisturbed drainage corridor. Substitute topsoil will be placed as shown on drawing DS-1816-D in Appendix R645-301-500C.

Maps DS1783D Sheets 1 and 2 illustrate substitute topsoil excavation along the length of the Deer Creek drainage. The locations of these cross sections are shown on map DS-1782-D. A statement on page 5-6 indicates that substitute topsoil will be taken from between stations 9+00 to 15+00 and 24+00 to 31+00. It is estimated 58,891.08 cubic yards of material can be obtained to provide an average cover depth of 27 inches over 16 acres as illustrated on Map DS-1816-D. As discussed above, sampling conducted in 2002 suggests that the material in the drainage between stations 7+00 to 13+00 and from 27+00 to 31+00 is unsuitable due to EC and SAR and Boron values (R645-301-200 Appendix A). Therefore, this plan will not be instituted, unless further analyses indicates that the sodium is being leached from the profile over time or that a amendment can be successfully used to improve the SAR value of the cover material, see deficiency written under R645-301-233, above. In addition, the MRP indicates that during reclamation, soils will be contemporaneously sampled for pH and SAR to ensure that the final graded surface is suitable (MRP, Section R645-301-233). [05092007]

The fill slopes at the equipment yard and run of mine conveyor which were seeded twenty years ago will be used as substitute topsoil over less desirable soils (high SAR) in the material storage yard (pg 5-7). The procedure will be as follows:

1. Push the top 7 feet of pad soils towards the cut slope.
2. Utilize remaining soils to complete the 2:1 slope and cover the salt-laden soils.

Substitute topsoil for the water tank and fan pad will come from the top layer of the berm and outslope of the pad (Section R645-301-500, pp. 5-7).  
[03072003]

Soil Nutrients and Amendments at the Deer Creek Facilities

The biology chapter of the application says fertilizer will be applied at the rate of 40 pounds per acre of ammonium nitrate and 35 pounds per acre of triple superphosphate. Based upon the recent soil sampling information, indicating an unsuitable level of sodium in the proposed substitute topsoil and in the mine waste, the Division believes a better course would be to apply superphosphate (rather than treble superphosphate) since it contains approximately 50% gypsum. The value of the gypsum application would be to displace sodium from the profile. Hence, the Division has requests that a professional, qualified soil scientist become involved in

the soil amendment and fertilizer plan design. see permit condition written under R645-301-233. [05092007]

In addition to the fertilizer, the Permittee commits to apply one ton per acre of certified noxious weed free hay, and the hay and fertilizer will be incorporated into the soil in the gouging process. This should help to increase the amount of organic matter and the fertility and structure of the substitute topsoil.

[03072003]

#### Deer Creek Refuse Pile Reclamation

To date, information on the refuse shows that it is unsuitable as a plant growth medium. However, sampling of vegetation established on portions of the refuse pile for interim erosion control indicates the refuse can, at least in some areas, support vegetation. In 1998, vegetation cover on the refuse pile was measured by the Permittee's consultant as 40.5%, and in 1999, vegetation cover on the pinyon-juniper reference area was roughly estimated as about 40%. While this seems to indicate the refuse can, by itself, support adequate vegetation, there is no vegetation established on the area of the refuse pile where the high salt concentrations were found near the surface. [03072003]

Refuse that is cut during grading will be used as fill along cut banks and highwalls. Any acid-forming or toxic [sodic] materials will be covered with 4 feet of non-acid and/or nontoxic material (pp 2-3, 5-9 and 5-10). Page 5-10 also indicates that the spoil stored southeast of the coal bin (Elk Canyon) will be tested for acid/toxic characteristics prior to its use as fill within the top 4 feet.

Sampling in the year 2002 concentrated on the Deer Creek and Elk Canyon refuse piles. October 2002 sites 1 and 2 located in Elk Canyon were sampled to a depth of approximately 15 ft, with two composite samples taken from each location. These samples indicate that the waste at the 12 – 16 ft depth increment is not acid or toxic forming. October 2002 samples 5 and 6 were on the Deer Creek refuse pile. Sites 5 and 7 were sampled to a depth of 16 feet. The SAR value becomes extreme in the 4-foot increment that will be exposed during final reclamation. This material must be covered with 4 feet of cover. (Sample analyses are found in Volume 2, R645-301-200, Appendix A.) [05092007]

#### Rilda Canyon

The Rilda Canyon sediment pond and portal facilities areas will be recontoured with subsoil, scarified and covered with topsoil dedicated to reclamation of the respective sites (R645-301-242 and R645-301-231.100).

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Regraded subsoil will be sampled on 500 ft intervals to a depth of four ft as described in Section R645-301-231.300 (three or four samples for the 2,000 linear ft in the facilities area). The samples will be analyzed on site for pH and EC. Problem areas will be further sampled and sent to a laboratory for analysis.

When subsoil testing is complete and any problems are resolved, topsoil will be hauled to by dumptrucks and will then be redistributed by track-mounted equipment. Approximately 6.1 acres (excluding road and sediment pond) will receive 24 inches of stockpiled topsoil, depending upon actual recovery volumes (Section R645-301-242). Stakes will be used to monitor the replacement depth (Section R645-301-242). Three composite samples will be taken from the facilities area and sediment pond. Samples will be analyzed for parameters to be compared with baseline information and to determine the need for amendments, including fertilizer. Boulders will be replaced to provide 5% surface cover. The site will be gouged.

Topsoil storage sites and slopes less than 2h:1v in the subsoil storage area will be reclaimed with roughening of the surface as described (Section R645-301-242 and Item 5 of Plan for Experimental Practice In. R645-302-218). Subsoil storage area slopes greater than 2h:1v will receive an application of anionic polyacrylamide (PAM). (Some details of this application are described in Item 5 of Plan for Experimental Practice In. Section R645-302-218.) Boulders will be placed randomly to achieve 5% coverage. Seeding and root stock planting is described in Tables 300-7 and 300-8. Root stock will be treated with PAM before planting. Slopes greater than 20% will receive a tackifier (R645-301-243).

Reestablishment of microbial activity in stockpiled soil material usually occurs as a result of the addition of straw or hay and with seeding. The plan encourages rapid establishment of locally adapted strains of microbes through the use of a slurry of native soil and water (Vol. 11, Section R645-301-243).

[06302005]

**Findings:**

Sampling conducted in 2002 suggests that the material in the drainage between stations 7+00 to 13+00 and from 27+00 to 31+00 is unsuitable for use as substitute topsoil due to EC and SAR and Boron values (R645-301-200 Appendix A). Therefore, the reclamation plan described in Section R645-301-553 of the MRP should not be instituted, unless further analyses indicates that the sodium is being leached from the profile over time or that a amendment will be used to improve the SAR value of the cover material,

## **ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES**

Regulatory Reference: 30 CFR Sec. 701.5, 784.24, 817.150, 817.151; R645-100-200, -301-513, -301-521, -301-527, -301-534, -301-537, -301-732.

### **Analysis:**

No new roads or road reclamation plans are associated with the Mill Fork Lease.

### **Reclamation**

### **Retention**

The pavement within the main North Rilda Portal Facility will be reclaimed as part of the general backfilling and grading plan.

The Permittee will realign and resurface the main haul road (County Road 306) during reclamation. See Section R645-301-526.116.2.

The Permittee and Emery County have an agreement for the realignment of County Road 306 and the agreement is included in the MRP. [06302005]

### **Findings:**

Information provided in the plan meets the Reclamation - Road Systems and Other Transportation Facilities requirements of the regulations.

## **HYDROLOGIC INFORMATION**

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

### **Analysis:**

### **Hydrologic Reclamation Plan**

There is no planned surface disturbance in the Mill Fork leases area. There will be no need for postmining removal, reclaiming, or rehabilitation of structures, sedimentation ponds, diversions, impoundments, and treatment facilities within the Mill Fork Lease area. (11092006)

**RECLAMATION PLAN**

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The Rilda Canyon portal facilities hydrologic reclamation plan is in Volume 11, Hydrology Appendix B, Sections 4.1 – 4.4. Some details are discussed in Section 553.100. Siltation structures and diversions will be located, maintained, constructed, and reclaimed according to plans and designs given under R645-301-732, R645-301-742 and R645-301-763 (Volume 11, Section 752). Before abandoning the permit area or seeking bond release, the Permittee will ensure that all temporary structures are removed and reclaimed (Section 760). The road and culverts will be removed during final reclamation from the site and the Forest Development Trail will be re-established (Section 543). All permanent sedimentation ponds, diversions, impoundments, and treatment facilities meet the requirements of R645-301 and R645-302 for permanent structures, have been maintained properly, and meet the requirements of the approved reclamation plan for permanent structures and impoundments (Section 760). No permanent structures are planned for the Rilda Canyon Portal Facilities (Sections 732.200, 733, and 743). (07012005)

*Casing and sealing of wells*

Each water well will be cased, sealed, or otherwise managed, as approved by the Division (Volume 9, Section R645-3101-748, 755, and 765). All wells will be managed to comply with R645-301-748 and R645-301-765 (Volume 11, Sections 551, 631, 731.400, and 755). (07012005)

*Water Monitoring*

Surface water-monitoring stations (Volume 9, Appendix A) will continue to be monitored quarterly (when accessible) throughout the operational phase of the mine. Monitoring will continue until the release of the reclamation bond or until an earlier date to be determined after appropriate consultation with local, state, and federal agencies (Volume 11, Section 728, Hydrologic Balance-Surface Water System, F).

Monitoring of the described ground-water resources will proceed through mining and continue during reclamation until bond release. The Rilda Canyon piezometers will be removed after approval from the Division in conjunction with the Utah State Division of Water Rights (Volume 11, Section 731.200). (07012005)

*Diversions*

There are no diversions in the Mill Fork Lease. [03292005]

There are no permanent structures at the Rilda Canyon facilities. The Rilda Canyon portal facilities hydrologic reclamation plan is in Volume 11, Hydrology Appendix B, Sections 4.1 – 4.4. Related information is in Volume 11, Section 540. Before abandoning the permit area or seeking bond release, PacifiCorp will ensure that all temporary structures are removed and

reclaimed (Volume 11, Hydrology, Section 760). Silt fences or straw bales will be located in the reclaimed drainage to treat and control sedimentation (Volume 11, Engineering, Section 553.100). (07012005)

**Findings:**

Information provided in the plan meets the Reclamation – Hydrologic Information requirements of the regulations.

**CONTEMPORANEOUS RECLAMATION**

Regulatory Reference: 30 CFR Sec. 785.18, 817.100; R645-301-352, -301-553, -302-280, -302-281, -302-282, -302-283, -302-284.

**Analysis:**

**General**

The plan for the Rilda Canyon portal project does not include contemporaneous reclamation during the construction and operation phases. The Permittee will conduct interim reclamation for the topsoil stockpiles. The Permittee will also stabilize reclaimed areas by seeding immediately following earthwork. [06292005]

**Findings:**

Information provided in the plan meets the minimum Reclamation - Contemporaneous Reclamation requirements of the regulations.

**REVEGETATION**

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

**Analysis:**

**Revegetation: General Requirements**

Volume 11 includes the reclamation and revegetation plan for the Rilda portal project. Volume 2, Part 4 includes the reclamation and revegetation plan for the left fork facilities. [06292005]

**RECLAMATION PLAN**

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Volume 11, Tables 300-8 through 300-10 provide three community-based seed mixes for the interim and final reclamation phases for the Rilda portal project. The seed mixes are for the pinyon/juniper, sagebrush/grass, and white fir/aspen community types. The Permittee will use the same seed mixes for interim and final reclamation. The topsoil piles from the undisturbed and disturbed AML areas will receive the sagebrush/grass seed mix (Vol. 11, p. 300-23) and white fir/aspen (Vol. 1. p. 30-28), respectively. The Permittee will use the pinyon/juniper seed mix for the 0.25 acres of disturbed Douglas fir/white fir community type near the eastern edge of the main facilities site in Rilda Canyon (refer to Collins 2003/2004 vegetation map). The Permittee will also use the pinyon/juniper seed mix for the previously mined and reclaimed AML site. [06292005]

The Permittee will plant containerized plants of shrub species that are native to the Rilda Canyon area. These transplants will augment seeding in areas commonly difficult for seed to germinate e.g., steep slopes, southern exposures and extremely windy sites. Transplants will contribute to soil stabilization and wildlife habitat enhancement. [06292005]

**Revegetation: Timing**

Volume 11, Tab. 300-6 is a general reclamation timetable for the Rilda portal project. According to this timetable, many reclamation activities will occur simultaneously. [06292005]

Volume 11, Tab. 300-7 is a monitoring program timetable for evaluating site stability, plant health, need for reseeding, and vegetation for bond release. The Permittee will conduct vegetation monitoring during the 4<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup>, and 10<sup>th</sup> years following reclamation.

**Revegetation: Mulching and Other Soil Stabilizing Practices**

The Permittee will conduct earthwork immediately followed by seedbed preparation and seeding. Seedbed preparation will include:

- Amending the soil with 2000 lbs./acre of certified noxious weed free alfalfa hay.
- Pocking to provide water-catching sites and incorporate the hay.
- Hurricane or hydroseeding with native seed mixes.
- Hydromulching with 1,500 lbs./acre of wood fiber or other acceptable product.
- Applying a tackifier to slopes greater than 2:1 at the manufacturers recommended rate.
- Planting tublings at a rate of 200/acre.
- Placing signs around the site to limit access and ensure slope protection. [06292005]

The Permittee may consider using the track hoe to cast some dead trees and large rocks back onto the reclaimed surface. This debris would provide solar protection and increases available moisture in small areas as well as increases topographic and vegetation diversity.

**Revegetation: Standards For Success**

The Permittee must use the Division's approved sampling techniques listed in the Division's "Vegetation Guidelines, Appendix A". Qualitative surveys will include sampling reclaimed sites for cover, woody species density, diversity, and productivity. [06292005]

The Division will assess success of the revegetated sites to the designated reference areas. Success measurements include evaluating the effectiveness and permanence of the vegetation for the approved postmine land use as well as the extent of cover compared to the reference area. The Permittee will meet success standards when ground cover and production rates are not less than 90% of the standard at the 90% confidence level.

Two of the postmine land uses for the permit area are wildlife and recreation. Success standards for wildlife require that tree and shrub stocking rates, planting arrangement, and value are appropriate for the postmine land use. The Permittee will meet success standards when:

- Density attains at least set rates.
- Trees and shrubs are healthy.
- 80% of trees and shrubs are in place at least 60% of the extended responsibility period.

The Permittee will use reference areas as the measure of success for the previously mined AML reclaimed site in Rilda Canyon. This action is above the requirement for predisturbed sites. The Collins 2003/2004 surveys provide data for cover, cover by species, and woody plant density for the pinyon/juniper reference (Collins 2003, Tab. 3) and AML reclaimed areas (Collins 2003, Tab. 2). The NRCS 2004 evaluation provides the required productivity value and range condition for this site. The NRCS evaluated this site within the required range of fair to better condition. The surveyors conducted the vegetation survey and evaluation within a normal precipitation year. [06292005]

There is no plan to irrigate following reclamation.

The Permittee will implement a weed or rodent control program, only if needed. The Permittee will seek approval prior to implementing an animal control program.

The Permittee plans to follow regulations associated with repair of rills and gullies.

**Findings:**

Information provided in the plan meets the minimum Reclamation – Revegetation requirements of the regulations.

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## STABILIZATION OF SURFACE AREAS

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

### Analysis:

Hay mulch (1 Ton/ac) will be blown over the redistributed topsoil surface. Small depressions (pocks) will be constructed for the purpose of retaining moisture and minimizing erosion (Section R645-301-552). Pocks will measure 2 ft in diameter and 18 inches deep. Wood fiber mulch will be applied to the surface, and on slopes greater than 2h:1v, a soil tackifier will be used (R645-301-244 and Plan for Experimental Practice - Rilda Canyon Portal Facility Reclamation Plan In. Section R645-302-218.)

Boulders larger than 1 ft in diameter will be segregated during construction of the site for use in final reclamation (R645-301-232.500) when they will be redistributed over the surface to provide 5% surface cover (R645-301-244).

Rills and gullies will be reworked if they affect the post mining land use (wildlife and grazing and recreation) or if they affect water quality standards in Rilda Creek (R645-301-244). Sediment control on the reclamation site will be monitored by water quality measurements as described in Surface Monitoring Plan in Section F of Section R645-301-728 of the MRP. [06302005]

### Findings:

Information provided in the plan meets the Reclamation -Stabilization of Surface Areas Configuration requirements of the regulations.

## CESSATION OF OPERATIONS

Regulatory Reference: 30 CFR Sec. 817.131, 817.132; R645-301-515, -301-541.

### Analysis:

Where temporary cessation of operations is necessary for a period beyond 30 days, the Permittee will submit the proper notification and information required of R645-301-515 .300 to DOGM – Volume 11, Section R645-301-515. (07152005)

**Findings:**

Information provided in the plan meets the Reclamation – Cessation of Operations requirements of the regulations.

**MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS**

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

**Analysis:**

**Affected Area Boundary Maps**

The Division usually considers the affected area to be equivalent to the permit boundary. Several maps show the permit boundaries including Drawing MFU1840D, Deer Creek Mine Mill Fork Lease ML-48258 Hiawatha Mine Plan.

**Bonded Area Map**

The bonded area is usually the same as the disturbed area. Because no new surface disturbance is planned for the Mill Fork Lease area, the bonded area map will not change.

Map 500-5, Deer Creek Mine Rilda Canyon Final Reclamation Topography, is adequate because it shows the disturbed area boundaries. [06302005]

**Reclamation Backfilling And Grading Maps**

Because no new surface disturbance will occur with the Mill Fork Lease no backfilling or grading on the Mill Fork Lease will be needed.

The backfilling and grading maps and cross sections are shown on Map 500-4 and Map 500-5. The maps are at a scale of 1 inch equal 100 ft and the cross-sections vary between 1 inch equals 60 ft and 1 inch equals 40 ft. [06302005]

**Reclamation Facilities Maps**

No new surface facilities will be associated with the Mill Fork Lease.

The Permittee shows the reclamation facilities for the North Rilda Canyon Portal Facilities on Map 500-5. The map is adequate because it shows the reclamation facilities such as the restored trailhead and public parking lot. [06302005]

#### **Final Surface Configuration Maps**

No surface structures or facilities will be developed for the Mill Fork Lease. Therefore, no new disturbed areas will be created. Because subsidence will take place, the final surface elevations will be shorter. The Division usually is not concerned with the surface configuration after subsidence has taken place.

The final surface configuration for the North Rilda Portal Facility is shown on Map 500-4 and Map 500-5. [06302005]

#### **Reclamation Monitoring And Sampling Location Maps**

Elevations and locations of monitoring stations used to gather data on water quality and quantity are on Plate 1; Drawing MFS1830D – Hydrologic Map; and Drawing MFS1839D - Pre-subsidence Survey Map.

#### **Reclamation Surface And Subsurface Manmade Features Maps**

#### **Reclamation Treatments Maps**

#### **Certification Requirements.**

#### **Findings:**

Information provided in the plan meets the Maps, Plans, and Cross Sections of Reclamation Operations requirements of the regulations.

### **BONDING AND INSURANCE REQUIREMENTS**

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

#### **Analysis:**

**General**

The Division does not consider that being under bonded is a deficiency. The Division can make a finding that the information in the permit is adequate but wait to give approval until the bond is posted. [07012005]

The Deer Creek mine has liability insurance and will provide coverage for the Mill Fork Lease.

**Form of Bond**

**Determination of Bond Amount**

A detailed reclamation cost estimate is included in the MRP.

**Terms and Conditions for Liability Insurance**

The Deer Creek mine has liability insurance sufficient to meet the requirements of the R645 Coal Rules. Copies of Insurance Certificates (for the period 04/01/2005 to 04/01/2006) are in Appendix E of the Legal and Financial Volume. (04192005)

**Findings:**

Information provided in the plan meets the Bonding and Insurance requirements of the regulations.

## **REQUIREMENTS FOR PERMITS FOR SPECIAL CATEGORIES OF MINING**

### **INTRODUCTION**

Regulatory Reference: 30 CFR Sec. 785; R645-302, et seq.

#### **Analysis:**

An Experimental Practice is described at the end of Chapter 2, Vol. 11 of the Deer Creek Mining and Reclamation Plan. The Division has received information that shows that the Experimental Practice will be conducted according to the applicable requirements of the regulatory program. All of the general permanent program provisions apply to these operations, unless otherwise specifically provided under the Experimental Practice.

#### **Findings:**

Information provided in the plan meets the Introduction requirements of the regulations.

### **EXPERIMENTAL PRACTICES MINING**

Regulatory Reference: 30 CFR Sec. 785.13; R645-302-210, -302-211, -302-212, -302-213, -302-214, -302-215, -302-216, -302-217, -302-218.

#### **Analysis:**

Chapter 2, Soils, incorporates traditional methods of salvaging/stockpiling and an experimental practice method for protecting soils in-place. The Experimental Practice is unique by taking a reclamation approach to topsoil protection on steep slopes and over previously buried mine waste. In addition, the experimental practice includes: 1) measurements of bulk density testing of the in-place soils on slopes less than 2h:1v, before and after burial, to advance understanding of the depth of compaction created by large stockpiles on surface soils; and 2) treatment of slopes greater than 2h:1v with anionic polyacrylamide (PAM) to enhance stability and water retention.

#### **Operations - Experimental Practices**

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An Experimental Practice is described at the end of Chapter 2, Vol. 11 of the Deer Creek Mining and Reclamation Plan. Energy West Mining proposes a topsoil protection plan that incorporates Experimental Practices (R645-302-200) for in-place soil storage beneath a subsoil stockpile. The experimental practice will occur in Rominger Canyon where a subsoil pile with dimensions 550 ft long X 250 ft wide X 40 ft deep (on the average) will be constructed to hold 107,000 yd<sup>3</sup> of subsoil and where boulders will be stored until use during reclamation (cross sections of the subsoil site are on Map 500-4 sheet 4 of 5).

The 3.0-acre experimental practice area will be covered with marker fabric. The fabric will provide a physical barrier between existing soil and the imported stored subsoil. During final reclamation the marker fabric will be removed and slopes greater than 50% will be treated with polyacrylamide (PAM). The PAM should enhance infiltration of water and stabilize soil aggregates to improve vegetation establishment and minimize erosion of the re-exposed, reclaimed slopes. By utilizing these procedures, the original ground surface configuration including cobbles, rocks, and soil cementation of the profile will be preserved in place. The experimental practice monitoring will provide an indication of the degree of compaction related to the loading of the in place soil through measurements of the bulk density of the in-place soil before and after burial.

### *Existing Soil Resources*

The experimental practice will occupy 3.0 acres as shown on Map 500-3. (There are no prime farmlands in the vicinity.) Within these 3.0 acres, there is an undisturbed area of 1.6 acres and the remainder of the 3.0 acres (1.4 acres) contains mine waste that was reclaimed in 1989 with approximately 18 inches of cover soil (see attached Map 500-3). A photo of the Rominger mine side canyon is provided in Volume 11-Appendix Volume – Engineering Appendix G.

The 1.6 acres of undisturbed soils on the slopes around the reclaimed Rominger disturbance is represented by soil sample site RC6 on Map 200-1 (Mt. Nebo Scientific Survey, Dec. 2004). The site description indicates that the soil is on a slope of 60% and has a 0-4 inch topsoil horizon, with a lithic contact at 34 inches. The soil was placed in the Great Group of Haplusteps and Ustorthents and is described as stony sandy loam (20% stones at the surface).

The 1.4 acres of disturbed soils in the Rominger side canyon are approximately 18 inches deep over mixed coal/soil (AMR project report #AMR-015-904M). Sample S-8 is shown on Map 200-1 (Soils Appendix Vol 11.), and a site description confirms 14 inches of topsoil over coal mixed with soil. The soils contain 20% gravels, 15% cobbles, 5% stones, and 5% coal fragments on the surface. The original soil surface was found buried under the coal at a depth of about 5 ft in AMEC pit 13 (Vol 11. Appendix- Engineering). Disturbed soils of the reclaimed Rominger site were sampled for laboratory analysis in December 2004 (site RC5, Appendix B, Vol. 11) to establish a baseline condition.

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Under optimal conditions, salvage from the 3.0 acres would yield approximately 3 yd<sup>3</sup> of soil: based upon 4-inch recovery over 1.6 acres and 14-inch recovery over 1.4 acres. This figure is the maximum potential for the site, because the coal mine waste burial site in Rominger Canyon does not have even coverage and because the steeper slopes have a large amount of rock on the surface and in the profile.

*Construction Sequence*

Step 1.

Bulk density will be analyzed to a depth of 4 ft. on slopes less than 2h:1v, prior to disturbance to provide baseline information on the native and reclaimed surface soils of Rominger Mine Canyon. The bulk density testing will follow an accepted agronomic procedure described in the following reference:

Soil Science Society of America. 1986. Series No. 9. Methods of Soil Analysis: Physical and Mineralogical Methods. Part 1. Second Edition. Arnold Klute, Ed.

Bulk density measurements will be taken again, after re-exposure of the buried soil, to provide an indication of the degree of compaction created by large stockpiles of soil.

Step 2.

Large vegetation will be removed and track equipment will be used to install 2 ft diameter culvert UC10 (Sections R645-301-231.100 and R645-301-231.400 and Vol. 11-Appendix - Hydrology Appendix B Table 8, and Map 700-2) to direct surface flows (originating from the watershed above Rominger Canyon) beneath the storage pile.

Step 3.

Marker fabric will be laid over the entire surface of the storage area.

Step 4.

The subsoil will be placed on top using track equipment.

**Experimental Practices -Operational Monitoring**

*Ongoing monitoring*

Section R645-302-218 indicates that the undisturbed bypass culvert inlet and outlet will be regularly monitored and maintained, as required by R645-301-742.312, to be stable and to provide protection against flooding, etc.

*Prior to disturbance and Reclamation Monitoring*

Bulk density testing of the existing soil surface to a depth of four ft (or lithic contact) prior to and after disturbance will be conducted on slopes less than 2h:1v, to obtain information about the depth of compaction resulting from long term storage of soil. The important aspect of the bulk density testing is that the same procedure is used before and after disturbance. Monitoring will follow an agronomic method, such as listed in Soil Science Society of America. 1986. Series No. 9. Methods of Soil Analysis: Physical and Mineralogical Methods. Part 1. Second Edition. Arnold Klute, Ed., Chapter 13.

The Permittee has developed a split-spoon method of determining density in large stockpiles that will be compared to the agronomic method. If initial tests determine the two methods are equivalent, then the split spoon method will be used to determine bulk density down to a depth of six ft prior to and after reclamation. And if successful, the method will be provided in written form as an attachment to the Experimental Practice.

Application of PAM to slopes greater than 50% (2h:1v) will be monitored for cover and erosion as described in item 6) Experimental Practice Monitoring, p. 37, Chap 2, Vol. 11 of the MRP. The treated slopes will be compared with monitoring of adjacent undisturbed areas to determine effectiveness of the PAM application in encouraging vegetation establishment and limiting erosion.

**Reclamation - Experimental Practices**

*Slopes steeper than 50% (2h:1v)*

At final reclamation, the stored construction fill soil will be removed to the depth marker fabric. Care will be taken not to sub-excavate or disturb the native soil profile. Fill removal will be done by small earth moving equipment. The marker fabric will be removed and the condition of the underlying soil materials observed at this time.

Re-exposed soil of the reclaimed Rominger Mine site (lesser slopes) will be tested for nutrient status and bulk density.

Slopes steeper than 50% will be treated with an anionic polyacrylamide (PAM) during seeding to increase cohesion and infiltration of water without disrupting soil structure. Seed mix will be as described in Table 300-8, Vol. 11. Bareroot or containerized plant stock will be pre-treated with PAM and used as enhancement plantings on the re-exposed, steep slopes. The Division and Permittee assume that 20 years hence, advances will be made concerning the specifics of PAM application, consequently the plan indicates that details of the PAM application will be reviewed prior to implementation.

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For current information on the use of PAM:

<http://kimberly.ars.usda.gov/pampage.shtml>

[http://esce.ucr.edu/soilwater/spring\\_2001.htm](http://esce.ucr.edu/soilwater/spring_2001.htm)

<http://www.hydrosource.com/clpbbs02.htm>

### *Slopes less than 50% (2h:1v)*

Slopes less than 2h:1v will be sampled for bulk density to a depth of four ft (Section R645-301-242) before and after soil burial. The effect of soil storage on underlying soils will be reported, increasing our understanding of the compaction created by large soil stockpiles.

To relieve soil compaction and increase the ability of the soil to absorb moisture, the re-exposed soils over reclaimed mine waste will be covered with 1 T/ac alfalfa hay mulch which will be worked into the soil with gouging. (Fertilizer will be added pending test results and comparison with baseline information.) Gouging will create a pattern of depressions that help control erosion through water retention, minimize siltation, and allow for air and water penetration into the soil horizon.

Excess boulders will be randomly placed to cover 5% of the surface. The seed mix described in Table 300-8 will be applied. PAM will not be applied to slopes less than 50%.

### **Analysis of the Proposed Experimental Practice**

The soils regulations are intended to protect and preserve topsoil resources for the purpose of revegetation thus providing a stable surface capable of supporting the postmining land use. The proposed experimental practice, including operation and reclamation procedures, provides protection equal to or greater than what would be obtained through traditional methods required in the regulations. The Division has analyzed issues related to the proposed experimental practice, and the Permittee has adequately addressed each of these concerns as follows:

- 1. Compaction.** Pad fill material will compact the soil, but to what degree and what depth is unknown. Previous in-place experimental practices have assumed that below 18 inches, there should be few effects of compaction from the fill. The Permittee intends to measure the bulk density of the in-place soil before and after subsoil storage to gain some understanding of the depth of compaction with loading. Compaction will be monitored on slopes less than 2h:1v and will be relieved through gouging of the surface. This procedure, combined with natural processes (e.g., freeze/thaw), should adequately alleviate compaction and allow vegetation to become established. Compaction will be relieved on steep slopes because the entire soil profile of boulders, rocks, cobbles will remain in place and through the use of PAM

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which is reported to provide for infiltration of water which will encourage root growth.

2. **Decreased microbial activity.** Soil sterility is a problem whether soil is salvaged and stockpiled for years, or buried in place. Previous experimental practices have assumed that natural inoculation from adjacent undisturbed areas occurs over time. The Rominger Canyon Experimental Practice will enhance natural re-colonization by microorganisms with a supernatant from a slurry of soil and water that will be added to the hydroseeder. The soil in the slurry will be taken from adjacent undisturbed topsoil (Vol. 11, Section R645-301-243).
3. **Preserving configuration.** The experimental practice will not only allow preservation of soils in place, it will also preserve the configuration of boulders, cobbles, stones and cementation that provides structure, support and stability of the soils. This structure is difficult to duplicate in reclamation.
4. **Contamination.** Subsoils were sampled and analyzed during the soil survey (to a depth of six ft) and found to be non-toxic. It is unlikely that native soils would be contaminated by the imported subsoils, because subsoils will be placed against the native soils on a 60 ° slope and water will tend to drain downward into the subsoil fill. The in-place reclaimed mine waste at the bottom of the fill is not likely to be contacted by leachate from the subsoil as the depth of fill will average 40 ft and the average rainfall is 16 inches annually.

Subsoils removed from the experimental practice area at final reclamation will be tested at the time of reclamation to determine whether extremes of pH or salts exist. Extreme values will provide an indication for remedial action of the subsoil (Vol 11, Section R645-301-231.300).

[06302005]

**Findings:**

The Division finds that the information provided meets the requirements for approval of the Experimental practice and seeks the concurrence of the Office of Surface Mining in accordance with:

**R645-302-214.100**, the experimental practice encourages advances in coal mining and reclamation technology due to 1) information gained from bulk density testing of the existing surface soils prior to and after storage of the subsoil. 2) enhancement of reclamation technique on steep slopes through the use of anionic polyacrylamide (PAM).

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**R645-302-214.200**, the experimental practice is potentially more, or at least as, environmentally protective, during and after coal mining reclamations, as would otherwise be required, because 1) Additional disturbance in the form of a larger topsoil storage area would be required for salvage and storage of the native soil and soil covering the coal mining waste. 2) The undisturbed surface soils will be covered the with marker fabric to delineate and protect it in place from contamination and erosion.

**R645-302-214.300**, The coal mining and reclamation operations are not larger than necessary to determine the effectiveness of the experimental practice: storage of subsoil will take place in a single side canyon, previously disturbed by mining (reclaimed by the Division's AML program). The use of the previously disturbed area allows evaluation of the experimental practice of storing subsoils on undisturbed topsoil and against steep, undisturbed slopes, without creating additional disturbed lands.

**R645-302-214.400**, The experimental practice does not jeopardize the public health and safety. The soil will be placed, stored and removed in a stable manner. The application of PAM will be according to manufacturers directions. Details of application type and rate will be reviewed with the Division at reclamation.

**MOUNTAINTOP REMOVAL MINING**

Regulatory Reference: 30 CFR Sec. 785.14, 824; R645-302-220, et. seq.

**Analysis:**

**Special Permanent Program Performance Standards--Mountaintop Removal**

This section does not apply. (07012005)

**Findings:**

This section does not apply. (07012005)

**STEEP SLOPE MINING**

Regulatory Reference: 30 CFR Sec. 785.15; R645-302-230 et. seq.

**Analysis:**

This section does not apply. (07012005)

**Findings:**

This section does not apply. (07012005)

**PRIME FARMLAND**

Regulatory Reference: 30 CFR Sec. 785.16, 823; R645-301-221, -302-300 et seq.

**Analysis:**

Previous non- prime farmland determinations made by the Soil Conservation Service for Rilda Canyon above the left and right forks of Rilda Canyon are found in Vol. 1 Part 2, pp 2-218.1 – 2-218.3. For the north Rilda facilities area, the non-prime farmland correspondence is found in Vol. 11 – Appendix Volume Soils Appendix C.

The Division to consulted with the Natural Resources Conservation Service (NRCS) concerning the potential for prime farmland in Rilda Canyon. The matter was discussed with Leland Sasser of the NRCS Price Field Office in October 2004. The Division is in agreement with the NRCS that there are no prime farmlands in Rilda Canyon due to slope and rockiness of the soils. [06302005]

**Prime Farmland Application Contents**

This section does not apply. (07152005)

**Consultation with Secretary of Agriculture**

This section does not apply. (07152005)

**Issuance of Permit**

This section does not apply. (07152005)

**Soil Removal and Stockpiling**

This section does not apply. (07152005)

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**SPECIAL CATEGORIES**

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**Soil Replacement**

This section does not apply. (07152005)

**Revegetation and Restoration of Soil Productivity**

This section does not apply. (07152005)

**Findings:**

The Division concurs with NRCS in finding that there are no prime farmlands in the permit area.

**COAL PREPARATION PLANTS NOT LOCATED WITHIN THE PERMIT AREA OF A MINE**

Regulatory Reference: 30 CFR Sec. 785.21, 827; R645-302-260, et seq.

**Analysis:**

This section does not apply. (07012005)

**Findings:**

This section does not apply. (07012005)

**OPERATIONS IN ALLUVIAL VALLEY FLOORS**

Regulatory Reference: 30 CFR Sec. 822; R645-302-324.

**Analysis:**

Based on information provided in the application, the Division finds that there is an alluvial valley holding Rilda Creek in the bottomlands of Rilda Canyon. The extent of the alluvial valley floor is shown on Drawing 200-1 as map unit A. There are streamlaid deposits in the bottomlands that have historically been the source of irrigation and culinary water in Emery County. [07152005]

**Essential Hydrologic Functions**

## **SPECIAL CATEGORIES**

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Precautions are being taken to limit activity near the spring collection system and to provide a buffer zone between facilities and the creek. [07152005]

### **Protection of Agricultural Activities**

This section does not apply. [07152005]

### **Monitoring**

Precautions are being taken to monitor quality and flow in the canyon. [07152005]

### **Findings:**

Based on information provided in the application, the Division finds that there is an alluvial valley holding Rilda Creek in the bottomlands of Rilda Canyon. The extent of the alluvial valley floor is shown on Drawing 200-1 as map unit A. There are streamlaid deposits in the bottomlands that have historically been the source of irrigation and culinary water in Emery County. Precautions are being taken to limit activity near the spring collection system, to monitor quality and flow in the canyon and to provide a buffer zone between facilities and the creek. [07152005]

## **IN SITU PROCESSING**

Regulatory Reference: 30 CFR Sec. 828; R645-302-254.

### **Analysis:**

This section does not apply. (07012005)

### **Findings:**

This section does not apply. (07012005)

## **AUGER MINING**

Regulatory Reference: 30 CFR Sec. 785.20, 819; R645-302-240 et. seq.

### **Analysis:**

This section does not apply. (07012005)

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**SPECIAL CATEGORIES**

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**Findings:**

This section does not apply. (07012005)

**SPECIAL CATEGORIES**

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## **CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT (CHIA)**

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

### **Analysis:**

The Division has updated the CHIA to include the Mill Fork lease, South Crandall Lease, Crandall Canyon IBC, and Rilda Canyon portal facilities. (07012005)

### **Findings:**

The Division has updated the CHIA to include the Mill Fork lease, South Crandall Lease, Crandall Canyon IBC, and Rilda Canyon portal facilities. (07012005)



**APPENDICES**

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**APPENDICES**

**APPENDICES**

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**SUMMARY OF COMMITMENTS**

December 11, 2007

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**SUMMARY OF COMMITMENTS**

The summary below presents a list of commitments stated within the mining and reclamation plan (MRP). This list provides the following information for each commitment, when applicable:

- Title.
- Objective.
- Frequency.
- Status.
- Reports.
- Citation.

**REPORTING OF TECHNICAL DATA**

**Title:** Confidential. **Objective:** Submit confidential information in amendments, annual reports, and explorations in a separate folder. **Frequency:** NA. **Status:** Starting in June 2005. **Reports:** NA. **Citation:** NA.

**ENVIRONMENTAL RESOURCES: LAND USE**

**Title:** Trail. **Objective:** Construct a new trailhead and parking pad at the east end of the facilities site. **Frequency:** NA. **Status:** Pending Rilda portal construction in 2005. **Reports:** NA. **Citation:** MRP, Sec. 526.116.2, p. 34.

**OPERATIONS: FISH AND WILDLIFE INFORMATION**

**Title:** Revegetate. **Objective:** Revegetate previously disturbed areas to nondisturbed standards. **Frequency:** NA. **Status:** Pending Rilda portal construction in 2005 and reclamation. **Reports:** NA. **Citation:** MRP, Sec. 330, p. 16, #1 of list.

**Title:** Wildlife. **Objective:** Adhere to wildlife exclusionary periods. **Frequency:** NA **Status:** Ongoing during Rilda portal construction in 2005 and reclamation. **Reports:** NA. **Citation:** MRP, Sec. 322, p. 10; Sec. 330, p.16, #14 in list; Sec. 342, p. 32, #7 in list.

**Title:** Macroinvertebrates "Aquatic". **Objective:** Monitor macroinvertebrates in Rilda Creek. **Frequency:** Spring/fall two years prior to and spring/fall one year immediately following start of construction. Spring every three years during operations and reclamation. **Status:** On going.

## SUMMARY OF COMMITMENTS

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Spring/fall 2006 is the anticipated date for the year following construction. Spring 2009 is the anticipated date for the first of the three-year monitoring surveys. **Reports:** Division Annual Report. **Citation:** MRP, Sec. 330, p. 26.

**Title:** Fish "Aquatic". **Objective:** DWR will monitor fish in Rilda Creek as part of annual surveys. **Frequency:** Spring/fall two years prior to and spring/fall one year immediately following start of construction. Spring every three years during operations and reclamation. **Status:** On going. Spring/fall 2006 is the anticipated date for the year following construction. Spring 2009 is the anticipated date for the first of the three-year monitoring surveys. **Reports:** Division Annual Report. **Citation:** MRP, Sec. 330, p. 26.

**Title:** Raptors. **Objective:** Over-flight surveys. **Frequency:** Yearly. **Status:** On going for life of mine. **Reports:** Upon request. **Citation:** MRP, Sec. 322, Subsec. Terrestrial Species.

**Title:** Bats. **Objective:** Install a "stay-out" sign near a large cavern. **Frequency:** NA. **Status:** Prior to Rilda portal construction in 2005. **Reports:** NA. **Citation:** MRP, Sec. 330, p. 16, #15 in list.

**Title:** Rilda Creek. **Objective:** Enhance riparian corridor along the Rilda Creek. **Frequency:** NA. **Status:** Initiate 180 days after Rilda portal construction begins in 2005. **Reports:** NA. **Citation:** MRP, Sec. 330, Tab. 300-5.

**Title:** Rat midden. **Objective:** Install a fence around a rat midden in Rilda Canyon. **Frequency:** NA. **Status:** Prior to Rilda portal construction in 2005. **Reports:** NA. **Citation:** MRP, Sec. 322.

**Title:** Mitigation. **Objective:** Several projects to enhance and mitigate potential impacts associated with Rilda portal facilities. **Frequency:** NA. **Status:** Pending approval or Rilda portal construction in 2005. **Reports:** NA. **Citation:** MRP, Sec. 330, Tab. 300-5.

### SOILS

**R645-301-230 •Title:** Rilda Soil Salvage plan • **Objective:** The Permittee will have a qualified person (familiar with the soil survey and salvage plan) on site to monitor the soil salvage operations (Section R645-301-231.100). • **Frequency:** during construction • **Status:** ongoing • **Reports:** as-built volumes of salvaged soil • **Citation:** Vol 11. Section R645-301-231.100

**R645-301-231.400 •Title:** Rilda Topsoil Pile Construction • **Objective:** After construction, the stockpile will be surveyed and the volume of topsoil stockpiled will be documented •

**SUMMARY OF COMMITMENTS**

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December 11, 2007

**Frequency:** after construction • **Status:** ongoing • **Reports:** As-built of topsoil stockpile  
• **Citation:** Vol 11. R645-301-232

**R645-301-731.311, •Title:** Subsoil Testing • **Objective:** Regraded subsoil will be sampled on 500 ft intervals to a depth of four ft (three or four samples for the 2,000 linear ft in the facilities area). The samples will be analyzed on site for pH and EC. Problem areas will be further sampled and sent to a laboratory for analysis. • **Frequency:** Final regarding • **Status:** ongoing • **Reports:** Laboratory analysis to be provided to the Division • **Citation:** Vol 11. Section R645-301-231.300

**R645-301-231.300, •Title:** Topsoil Handling Testing Plan • **Objective:** Three composite samples will be taken from the facilities area and sediment pond. Samples will be analyzed for parameters to be compared with baseline information and to determine the need for amendments, including fertilizer • **Frequency:** Final Reclamation • **Status:** ongoing • **Reports:** Laboratory analysis to be provided to the Division • **Citation:** Vol 11. Section R645-301-242

**SUMMARY OF COMMITMENTS**

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**PERMIT INFORMATION TABLE**

December 11, 2007

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**PERMIT INFORMATION TABLE**

The following permit condition was recommended May 1, 2007, after review of the 2002 substitute soil analyses (see documents associated with tasks 2590 and 2748):

**R645-301-233 and R645-301-132**, The Permittee has stated that the sodium within the proposed substitute topsoil will either be leached out or be amended during reclamation to provide a suitable substitute topsoil medium. With this in mind, prior to the next permit renewal in January 2012, an individual, qualified to conduct soil sampling, will undertake the following sampling and analysis, providing field notes and mapped GPS locations for all sites:

- 1) Disturbed soils to provide a baseline for comparison of salt values. The native soils will be sampled by horizon down to lithic contact. The surface 0 – 12 inches of the storage pad outslope to determine suitability of these soils as substitute topsoil. Field notes and GPS locations of sampling will be provided.
- 2) Resample the proposed substitute topsoil locations above the buried culvert to provide an indication of the extent of salt loading in the surface 0-3 feet along the roadway and/or to show that the salt is leaching out of the surface 3 feet over time. The Permittee will find a site accessible by backhoe at one of these locations, such that the qualified individual can resample to greater depth at 3-foot increments.
- 3) Direct the laboratory that if, in any of the above samples, the Sodium Adsorption Ratio (SAR) values are greater than 15, an analysis of total Cation Exchange Capacity (CEC) and Exchangeable Sodium Percentage (ESP), will be required, such that a calculation of the gypsum requirement can be made.
- 4) Soils found unacceptable due to sodium content, will be buried in the fill or reclaimed through the use of amendments, prior to placement on the surface of the reclamation site.
- 5) Engage a professional, qualified in soil science to formulate the soil amendment and fertilization plan for reclamation.
- 6) Commit to resample the substitute topsoil above the buried culvert and analyze for Electrical Conductivity and SAR values (and, if necessary, based on item 4 above, analyze for CEC and ESP) once within each permit term.