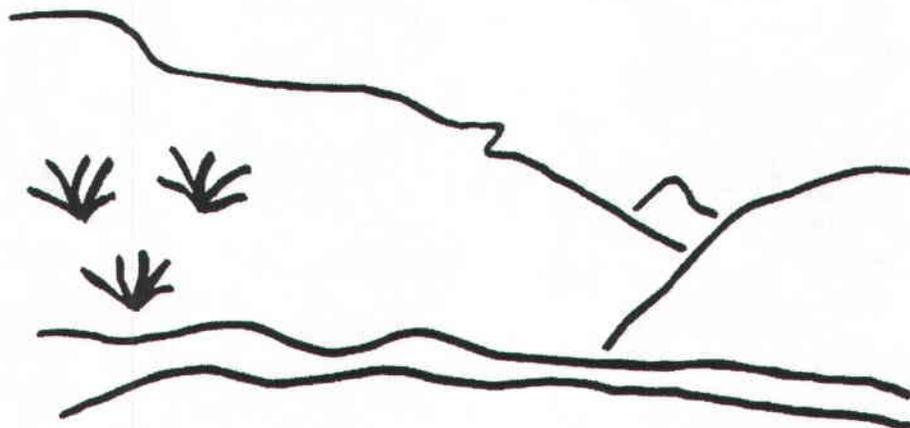


# State of Utah



## Utah Oil Gas and Mining

### Coal Regulatory Program

Deer Creek Mine  
MILL FORK LEASE  
C/015/018-PM01I-1  
Technical Analysis  
October 9, 2002

File in:

- Confidential
- Shelf
- Expandable

Refer to Record No. 0029 Date 10/10/2002  
In C/ 015/018-2002 Outgoing  
For additional information

TABLE OF CONTENTS

**INTRODUCTION..... 3**  
**GENERAL CONTENTS..... 9**  
    IDENTIFICATION OF INTERESTS ..... 9  
    VIOLATION INFORMATION..... 10  
    RIGHT OF ENTRY ..... 10  
    LEGAL DESCRIPTION AND STATUS OF UNSUITABILITY CLAIMS ..... 11  
    PUBLIC NOTICE AND COMMENT..... 12  
**ENVIRONMENTAL RESOURCE INFORMATION ..... 15**  
    GENERAL..... 15  
    PERMIT AREA ..... 16  
    HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION ..... 16  
    VEGETATION RESOURCE INFORMATION ..... 18  
    FISH AND WILDLIFE RESOURCE INFORMATION ..... 19  
    LAND-USE RESOURCE INFORMATION..... 22  
    GEOLOGIC RESOURCE INFORMATION ..... 23  
    HYDROLOGIC RESOURCE INFORMATION ..... 24  
        Sampling and Analysis ..... 26  
        Baseline Information..... 26  
        Baseline Cumulative Impact Area Information ..... 36  
        Modeling..... 38  
        Probable Hydrologic Consequences Determination ..... 38  
**MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION ..... 43**  
    Affected Area Boundary Maps ..... 43  
    Coal Resource and Geologic Information Maps..... 44  
    Existing Surface Configuration Maps..... 44  
    Mine Workings Maps ..... 45  
    Monitoring and Sampling Location Maps ..... 45  
    Permit Area Boundary Maps ..... 45  
    Subsurface Water Resource Maps ..... 45  
    Surface and Subsurface Manmade Features Maps ..... 46  
    Surface and Subsurface Ownership Maps ..... 46  
    Contour Maps ..... 47  
**OPERATION PLAN ..... 49**  
    MINING OPERATIONS AND FACILITIES..... 49  
    EXISTING STRUCTURES: ..... 50  
    COAL RECOVERY ..... 51  
    SUBSIDENCE CONTROL PLAN..... 51  
        Renewable Resources Survey ..... 51  
        Subsidence Control Plan..... 52  
        Performance Standards For Subsidence Control ..... 53  
        Notification ..... 53  
    SLIDES AND OTHER DAMAGE ..... 54  
    FISH AND WILDLIFE INFORMATION ..... 54  
        Protection and Enhancement Plan ..... 55

## TABLE OF CONTENTS

Endangered and Threatened Species .....	55
Bald and Golden Eagles.....	55
VEGETATION.....	56
ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES.....	57
Road Classification System .....	57
SPOIL AND WASTE MATERIALS .....	57
Disposal Of Noncoal Mine Wastes.....	57
Coal Mine Waste.....	57
Refuse Piles.....	57
Impounding Structures.....	57
Excess Spoil:.....	58
HYDROLOGIC INFORMATION .....	58
General.....	58
Ground-Water Monitoring.....	58
Surface Water Monitoring .....	59
Acid- and Toxic-Forming Materials and Underground Development Waste .....	59
Transfer of Wells .....	59
Discharges Into An Underground Mine.....	59
Gravity Discharges From Underground Mines.....	59
Water-Quality Standards And Effluent Limitations .....	59
Diversions: General .....	60
Stream Buffer Zones.....	60
Sediment Control Measures.....	60
Siltation Structures: General.....	60
Siltation Structures: Sedimentation Ponds.....	60
Siltation Structures: Other Treatment Facilities .....	60
Siltation Structures: Exemptions.....	61
Discharge Structures .....	61
Impoundments.....	61
Ponds, Impoundments, Banks, Dams, and Embankments.....	61
SUPPORT FACILITIES AND UTILITY INSTALLATIONS.....	62
SIGNS AND MARKERS.....	62
USE OF EXPLOSIVES .....	62
General Requirements.....	63
MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS.....	63
Affected Area Maps.....	63
Mining Facilities Maps .....	63
Mine Workings Maps .....	64
Monitoring and Sampling Location Maps .....	64
<b>RECLAMATION PLAN.....</b>	<b>65</b>
GENERAL REQUIREMENTS.....	65
APPROXIMATE ORIGINAL CONTOUR RESTORATION.....	65
BACKFILLING AND GRADING.....	65
General.....	66

**TABLE OF CONTENTS**

---

MINE OPENINGS.....	66
ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES .....	66
Reclamation .....	66
HYDROLOGIC INFORMATION .....	67
MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS .....	71
Affected Area Boundary Maps .....	71
Bonded Area Map .....	71
Reclamation Backfilling And Grading Maps .....	71
Reclamation Facilities Maps.....	71
Final Surface Configuration Maps.....	71
BONDING AND INSURANCE REQUIREMENTS.....	72
General.....	72
Terms and Conditions for Liability Insurance.....	72
<b>CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT (CHIA).....</b>	<b>73</b>

## TECHNICAL ANALYSIS

The Division regulates the Surface Mining Control and Reclamation Act of 1977(SMCRA). When mines submit a Permit Application Package or an amendment to their Mining and Reclamation Plan, the Division reviews the proposal for conformance to the R645-Coal Mining Rules. This Technical Analysis is such a review. Regardless of these analyses, the permittee must comply with the minimum regulatory requirements as established by SMCRA.

Readers of this document must be aware that the regulatory requirements are included by reference. A complete and current copy of these regulations and a copy of the Technical Analysis and Findings Review Guide can be found at <http://ogm.utah.gov/coal>

This Technical Analysis (TA) is written as part of the permit review process. It documents the Findings that the Division has made to date regarding the application for a permit and is the basis for permitting decisions with regard to the application. The TA is broken down into logical section headings which comprise the necessary components of an application. Each section is analyzed and specific findings are then provided which indicate whether or not the application is in compliance with the requirements.

Often the first technical review of an application finds that the application contains some deficiencies. The deficiencies are discussed in the body of the TA and are identified by a regulatory reference which describes the minimum requirements. In this Technical Analysis we have summarized the deficiencies at the beginning of the document to aid in responding to them. Once all of the deficiencies have been adequately addressed, the TA will be considered final for the permitting action.

It may be that not every topic or regulatory requirement is discussed in this version of the TA. Generally only those sections are analyzed that pertain to a particular permitting action. TA's may have been completed previously and the revised information has not altered the original findings. Those sections that are not discussed in this document are generally considered to be in compliance.

Page 2  
C/015/018-PM01I-1  
October 9, 2002

**TECHNICAL ANALYSIS**

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## INTRODUCTION

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### INTRODUCTION

The Mill Fork Lease (Utah State Lease ML-48258) will add approximately 5,563 acres to the Deer Creek Mine permit area, bringing total acreage to approximately 24,500 acres. Energy West acquired the lease on April 12, 1999. The surface overlying the lease is federal land managed by the US Forest Service. The Mill Fork Lease lies within the Huntington Canyon-Gentry Mountain and Ferron Canyon, Cottonwood-Trail Mountain multiple-use evaluation area as described in the Manti-La Sal National Forest Land and resource management plan.

The Permit Application Package (PAP) to add the Mill Fork Lease to the Deer Creek permit was received by the Division on October 10, 2001 and determined administratively complete on December 18, 2001. This PAP is formatted to be added as Volume 12 of the Deer Creek Mine Mining and Reclamation Plan (MRP). Technical Analysis TA C/015/018-PM01I, which was sent to the operator in January 2002, identified numerous deficiencies. The operators response to that TA was received April 18, 2002, and this TA applies to that response.

Entry to the Mill Fork Lease from the existing permit area will be by entries in the Hiawatha Seam, advanced from the current permit area by way of Lease Modification #3, a 65.7-acre area that has been added to Lease U-06039 for this purpose. The only potential surface facility associated with this Mill Fork Lease permit extension is the possible ventilation breakout in Crandall Canyon, upstream of the existing Crandall Canyon Mine. The need for these 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 amendment. All currently planned coal mine operations in the Mill Fork Lease will be underground.

The PAP refers to data in Annual Reports and other sources for the required information for adequate and complete baseline water-quantity and -quality data.

Coal will be mined in both the Blind Canyon and Hiawatha Seams. The Blind Canyon is to be mined first, accessed from the Hiawatha through rock slopes that are to be built within the Mill Fork Lease area. Total cumulative vertical extraction from both seams will not exceed 20 feet. The full extraction methods to be used are anticipated to cause subsidence that can be planned and controlled.

Because of recent changes regarding water replacement in the Coal Mining Rules, new deficiencies requiring a plan for replacement of water supplies are included in this technical analysis.

**INTRODUCTION**

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SUMMARY OF DEFICIENCIES

## SUMMARY OF DEFICIENCIES

The Technical analysis of the proposed permit changes cannot be completed at this time. Additional information is requested of the permittee to address deficiencies in the proposal. A summary of deficiencies is provided below. Additional comments and concerns may also be found within the analysis and findings made in this Draft Technical Analysis. Upon finalization of this review, any deficiencies will be evaluated for compliance with the regulatory requirements. Such deficiencies may be conditioned to the requirements of the permit issued by the division, result in denial of the proposed permit changes, or may result in other executive or enforcement action and deemed necessary by the Division at that time to achieve compliance with the Utah Coal Regulatory Program.

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

### *Regulations*

- R645-100-122, -301-725**, The Permittee must provide to the Division, or otherwise make readily available to the Division, a copy of: *Mayo and Associates, March 1997, Results of in-mine slug tests on the Star Point Sandstone, Genwal Resources consulting report prepared for Genwal Resources, Inc., March, 1997, 15 p.*, which is referenced several times in the PAP. . 43
- R645-301-112.900**, After this permit modification is approved but prior to reissuing the permit, the Permittee must update, correct or indicate that no change has occurred in the information previously submitted under R645-301-112.100 through R645-301-112.800..... 10
- R645-301-121**, The information provided in the PAP about the vegetation must correlate to the Vegetation Map..... 19
- R645-301-130**, Data must be presented to support the statement in the PAP that experience from the existing PacifiCorp permit areas has shown that the effects of subsidence on grazing and grazing lands, timber resources or access to timber resources, wildlife resources are minimal. The PAP must contain a commitment to analyze and provided the Division with a report at the time of permit area reduction that quantifies resource protection. .... 56
- R645-301-131**, All technical data must be accompanied by the dates of the data collection. Provide the dates of data collection and analysis for the bat studies. .... 22

**SUMMARY OF DEFICIENCIES**

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**R645-301-150**, the Mill Fork Lease PAP is not considered technically complete at this time. Deficiencies are identified in appropriate sections of this TA..... 13

**R645-301-322**, the PAP must contain a commitment to monitor for macroinvertebrates in Mill Fork Canyon for three years prior to mining. .... 22

**R645-301-322**, the PAP must discuss the potential for the presence or absence of the Mexican spotted owl. .... 22

**R645-301-322.230**, the PAP must discuss the potential for Carrington daisy occurrence in the proposed permit area..... 22

**R645-301-333**, The PAP must address the adverse effects to the four Colorado River endangered fish species: the Colorado pikeminnow, the humpback chub, the bonytail chub, and the razorback sucker. .... 56

**R645-301-521.141**, The Permittee must provide a map indicating the boundaries of all areas proposed to be affected by mining..... 64

**R645-301-521.142, -525.110 and -525.240**, The Permittee must give the Division a map the show the areas that are scheduled to subside (area within the angle-of-draw.) The map must show the subsidence limit for all areas to be mined including subsidence. Stating the information in the text is not considered adequate. .... 54

**R645-301-525.120, -525.500, 727, and -731.530**. The Permittee must describe how appropriated water resources will be replaced in the event their flow is interrupted, diminished or contaminated from coal mining operations. .... 43

**R645-301-525.130**, The Permittee must commit to give a list of the water right survey to each property owner, the locale water conservancy district and to the Division. .... 54

**R645-301-525.130**, The Permittee must conduct a survey or study that shows whether surface water from the Mill Fork Lease area flows to the recharge area of Little Bear Spring. .... 54

**R645-301-525.130**, The Permittee must list all State appropriated water rights in the permit and adjacent areas. In addition the Permittee must list the quality and quantity of the water associated with each water right. .... 54

**R645-301-525.400, -731.530**, The Permittee needs to include a plan for water replacement for Little Bear Spring, and also for other state-appropriated water supplies in and adjacent to the Mill Fork Lease. The plan should specify potential sources for replacement water and how water will be delivered to the water users. The plan should provide for both immediate, short-term replacement and for long-term replacement. .... 42

**SUMMARY OF DEFICIENCIES**

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- R645-301-525.480**, The Permittee must state where they will obtain water rights of sufficient quality and quantity to replace State-appropriated water rights damage from subsidence..... 54
- R645-301-724.100**, The Permittee needs to provide the second year of baseline data collected for the springs proposed for operational monitoring, in particular MFR-30 and SP1-29, which have only one baseline point each. .... 43
- R645-301-728.200, -728.350**, The Permittee must explain why it does not consider the Crandall Canyon Syncline as an analogous structure to the Straight Canyon Syncline. The Crandall Canyon Syncline, and the potential that mining in this syncline will impact the hydrologic balance in and adjacent to the Mill Fork Lease, Little Bear Spring in particular, needs to be discussed in the PHC. .... 43
- R645-301-731.530**, The Permittee needs to add CVSSD's data, or their own equivalent data, for Little Bear Spring to the baseline data in Appendix C, and add Little Bear Spring to the monitoring plan..... 42
- R654-301-724.100**, The Permittee needs to explain why only one set of field parameters have been collected as baseline data for EM-216, RR-5 and MF-19B, why the Division should acknowledge this as acceptable and adequate baseline, and how these monitoring points are going to provide useful operational information without adequate baseline data. .... 43
- R654-301-724.100, -121.200**, The Permittee needs to rectify the discrepancy between the table in section R645-301-200 – Water Monitoring that indicates RR-5 has a water right, and Table MFHT-2 that does not list RR-5 as having a water right..... 42

Page 8  
C/015/018-PM01I-1  
October 9, 2002

**SUMMARY OF DEFICIENCIES**

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GENERAL CONTENTS

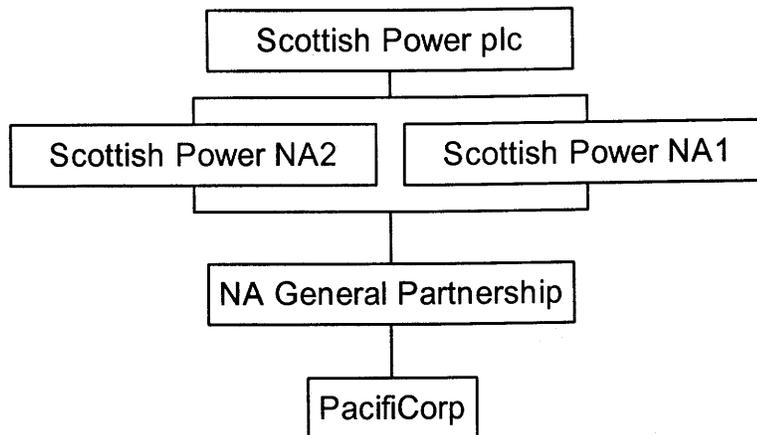
# GENERAL CONTENTS

## IDENTIFICATION OF INTERESTS

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

### Analysis:

The Permittee is PacifiCorp, an Oregon corporation. All stock of PacifiCorp is owned by NA General Partnership, a Nevada General Partnership. Scottish Power NA1 Limited and Scottish Power NA2 Limited make up NA General Partnership and Scottish Power plc owns both of these entities. Energy West Mining Company, a wholly owned subsidiary of PacifiCorp is the operator. Ownership and control information with names of officers and directors is in Appendix A (list is current as of December 2000). The organization is diagrammed below.



The PAP gives the name, address and telephone number of the Permittee and operator (page 1-2). The resident agent is identified as Charles Semborski. Employer I.D. Number is 93-0246090 for PacifiCorp and 87-0246090 for Energy West Mining. PacifiCorp will pay the abandoned mine reclamation fee (page 1-2). The names, addresses, permit numbers, regulatory authorities, and MSHA numbers together with dates of issuance for coal mining and reclamation operations owned or controlled by the Permittee are found in section R645-301-112.400.

The table titled Deer Creek Mine – Underground Right-of-Entry Information with Cited Surface and Subsurface Ownership lists surface and subsurface owners of record together with the right of entry information. Surface owners and subsurface coal rights are shown on maps MFS1838D and MFU1837D, respectively. Section R645-301-112.600 lists the name and

address of each owner of record of all surface and subsurface property contiguous to any part of the permit area.

The only lease interests in the permit area besides coal are oil and gas leases and grazing permits (page 1-21).

After this permit modification is approved but prior to reissuing the permit, the Permittee must update, correct or indicate that no change has occurred in the information previously submitted under R645-301-112.100 through R645-301-112.800.

**Findings:**

Information provided in the PAP is not considered adequate to meet the minimum Identification of Interests section of the regulations. Prior to approval, the Permittee must provide the following in accordance with:

**R645-301-112.900**, After this permit modification is approved but prior to reissuing the permit, the Permittee must update, correct or indicate that no change has occurred in the information previously submitted under R645-301-112.100 through R645-301-112.800.

**VIOLATION INFORMATION**

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

**Analysis:**

The NOV information found in Appendix B of Section R645-301-113 Violation Information is up-dated to April 17, 2002.

**Findings:**

Information provided in the PAP meets the minimum Violation Information section of the regulations.

**RIGHT OF ENTRY**

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

## GENERAL CONTENTS

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### **Analysis:**

The Forest Service owns the surface lands in the Mill Fork Lease and SITLA is the sub-surface coal owner. The specific right of entry document is State Coal Lease ML 48258, issued on April 1, 1999 to PacifiCorp (page 1-19). An Environmental Assessment (EA) for this lease was prepared by the Manti-La Sal National Forest and the Bureau of Land Management for this lease, dated June 1997 and titled Mill Fork Federal Coal Lease Tract UTU-71307 Environmental Assessment Lease-By-Application No. 11.

The permit area addition adds 5,563 acres to the existing permit area for a total of 22,621 acres. The table titled Deer Creek Mine – Underground Right-of-Entry Information with Cited Surface and Subsurface Ownership lists the total right-of-entry acres as 22,572.

### **Findings:**

Information provided in the PAP is considered adequate to meet the minimum Right of Entry section of the regulations. The acreage will be reviewed prior to approval of this significant revision.

## **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:**

Maps MRS1838D and MFU1837D show the new permit area and a legal description is found in Appendix E. A statement is provided that after consultation with state and federal agencies, no lands within or adjacent to the permit area have been identified as qualifying under R645-103-300 of the Coal Mining Rules as areas unsuitable for surface effects of underground coal mining activities (page 1-22).

### **Findings:**

The information provided in the PAP meets the minimum Legal Description and Status of Unsuitability Claims requirements of the regulations.

## **PERMIT TERM**

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

**Analysis:**

The Mill Fork Lease is an extension to the Deer Creek Mine Permit. A new permit will be issued to include this lease, but the permit will have the same term as the current Deer Creek Mine permit. The Lease is described on page 1-19; coal ownership is shown on Drawing MFU1837D and surface ownership on Drawing MFU1838D

Drawings MFU1840D and MFU1841D 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 2006.

See the following section for information on the public notice.

**Findings:**

Permit Renewal Information is adequate to meet the requirements of this section of the Coal Mining Rules.

**PUBLIC NOTICE AND COMMENT**

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

**Analysis:**

Appendix D contains a copy of the proposed public notice. The notice was published in the Emery County Progress for four consecutive weeks, January 1, 2002 to January 22, 2002. The Public Notice contains:

1. Name and business address of Permittee
2. Map of permit area
3. Location of where permit application is available for public review
4. Name and address of Division for comments, although no comments from the public were received.

**Findings:**

Information provided is considered adequate to meet the minimum Public Notice and Comment section of the regulations.

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GENERAL CONTENTS

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## PERMIT APPLICATION FORMAT AND CONTENTS

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

### Analysis:

Some baseline hydrologic data are included in the PAP, and additional data are in Annual and Quarterly reports.

### Findings:

Information provided in the PAP is considered adequate to meet the minimum requirements of the Permit Application Format and Contents section of the regulations.

## MAPS AND PLANS

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

### Analysis:

Maps submitted with the Mill Fork Lease PAP are in the formats required by the Division.

### Findings:

Information provided in the PAP is considered adequate to meet the minimum requirements of the Maps and Plans section of the regulations.

## COMPLETENESS

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

### Analysis:

The Mill Fork Lease PAP is not considered technically complete at this time. There is more information to be submitted by the Permittee.

### Findings:

**R645-301-150**, the Mill Fork Lease PAP is not considered technically complete at this time. Deficiencies are identified in appropriate sections of this TA.

Page 14  
C/015/018-PM01I-1  
October 9, 2002

**GENERAL CONTENTS**

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ENVIRONMENTAL RESOURCES INFORMATION

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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 geologic information describing the existing stratigraphy and structure of the Mill Fork Lease area in section R645-301-600 (Geology) of the PAP. An environmental description is presented under section 645-301-620. All proposed mining activity is underground: no surface activity is currently proposed for the Mill Fork Lease. Regional geology is described in the Geology and Hydrology sections and again in the Probable Hydrologic Consequences Report prepared by Mayo and Associates, LLC, Appendix B to the Hydrology section. Geologic information in the Hydrology section describes the relationship between the stratigraphy and structure and the movement, quantity and quality of water on and near the Mill Creek lease.

The Mill Fork Lease encompasses an area of East Mountain, a finger of the Wasatch Plateau. Its extent is shown on several maps in the PAP. Drawing MFU 48258 shows the lease in relationship to surface ownership and Drawing MFU 1837D shows the lease in relationship to adjacent leases. The lease lies between Huntington Canyon on the east and Joes Valley, a graben valley, on the west. Genwal Resources, Inc. control leases to the north associated with the Crandall Canyon Mine. The Huntington #4 Mine, now reclaimed, lies east of the southeastern section of the lease. Energy West controls leases to the south, which are associated with the Deer Creek Mine. 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.

The topographic features are presented on several maps and overburden isopach maps. Rilda Canyon, Mill Fork Canyon and Little Bear Canyon intersect the lease on the east. Two tributary canyons to Crandall Canyon intersect the lease on the north. At least five small canyons intersect the lease on the west. The canyons are steep. A ridgeline runs north-south down the western third of the property.

Several springs occur on the lease. The majority of springs appear above the Castlegate Sandstone. Little Bear Spring emanates east of the lease area. The flow from Little Bear Spring was studied by HGI/Water Technology and Research and by Mayo and Associates. Mayo and Associates conducted a dye test in 2001 and concluded that water in the Mill Fork drainage flows

through fractures in the Star Point Sandstone to supply Little Bear Spring. Both consultants concluded that the majority of flow from the spring is recharged from the Mill Fork Graben. Mining in both the Deer Creek and Huntington #4 Mines has intercepted the graben faults. The Permittee plans to access the Mill Fork Lease by developing mains from the Deer Creek Mine, and the entries will cross the Mill Fork Fault. 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.

### **Findings**

The Permittee has submitted sufficient information to address the General section of the regulations.

## **PERMIT AREA**

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

### **Analysis:**

Drawing MFU-1837D identifies the proposed permit boundary, which is also identified as the lease area. Having identical boundaries for the permit and lease boundaries requires that all subsidence take place within the angle-of-draw so no effects occur outside the lease boundary. Joes Valley Fault lies along the length of the western boundary. No secondary mining will take place beneath the fault. Drawing MFU-1829D indicates that the Permittee plans to use a 22 degree angle-of-draw away from the Joes Valley Fault.

The lease will be accessed from the Deer Creek Mine, which lies to the south-east. A 65.7 acre modification to lease U-06039 connects the Deer Creek Mine with the Mill Fork Lease area.

### **Findings**

The Permittee has submitted sufficient information in the PAP to address the Permit Area section.

## **HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION**

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

**ENVIRONMENTAL RESOURCES INFORMATION**

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**Analysis:**

An historic and archeological resource evaluation was conducted in the Mill Fork area in 1995 by Archeological Environmental Research Corporation. A stratified sample or Class II survey was the survey method used. This survey actually sampled 15 percent of the lease area. No significant resources were found. Two nonsignificant prehistoric lithic scatters, no historic and no paleontological resources occur on the lease area. The EA states that the two nonsignificant prehistoric sites were found in the Star Point Sandstone and not in the Castlegate Sandstone. The Star Point Sandstone is not likely to be effected by subsidence.

The EA lists several mines and access roads in areas surrounding the lease area developed in the late 1930's and 1940's. The old mines include the Tip Top, Old Leamaster, Johnson, Comfort, Rominger, and Helco Mines. A gas field to the southwest of the lease area was developed in the 1950's. One well lies within the proposed permit area. No evaluation of the historic significance of these mines and gas field is provided in the PAP. No effects of subsidence are expected to occur on these sites.

A letter dated February 8, 2002 from James Dykman, State Historic Preservation Officer, concurs with a determination of No Historic Properties Affected.

**Findings:**

The information provided in the PAP meets the minimum Historic and Archeological Resource Information requirements of the regulations.

**CLIMATOLOGICAL RESOURCE INFORMATION**

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

**Analysis:**

The current Deer Creek, Des-Bee-Dove, Cottonwood-Wilberg MRPs and Annual Reports provide statements of the climatological factors that are representative of the proposed permit area, including:

- the average seasonal precipitation;
- the average direction and velocity of prevailing winds; and
- seasonal temperature ranges.

Surface water originates mainly from snowmelt, with a significant annual runoff season. Precipitation varies from year to year, with resulting variations in stream flows and spring discharges (PAP, section R645-301-624).

As determined by the Division, additional data have not been deemed necessary to ensure compliance with other regulatory requirements.

**Findings:**

Climatological Resource Information in the current Deer Creek Mine MRP provides information that is adequate to meet the requirements of the Coal Mining Rules for the Mill Fork Lease.

**VEGETATION RESOURCE INFORMATION**

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

**Analysis:**

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

The R645-301-300 Biology section of the PAP describes the diversified topography, complex habitats and vegetation in terms of ecosystems and uses the classifications of conifer ecosystem, aspen ecosystems, transitional ecosystems and pinyon-juniper ecosystems and two vegetation communities, which are: mountain brush and sagebrush grasslands. Vegetation types in the Mill Fork Lease area are described on the vegetation map (Drawing #: MFS1821B) as:

- Perennial Grasslands (high elevation)
- Perennial Grasslands (mid-low elevation)
- Perennial forb lands (high-elevations)
- Perennial forb (mid to low elevations)
- Black sagebrush
- Mountain big sagebrush
- Mountain brush
- High mountain brush
- Douglas fir forest
- Spruce-alpine-fir-forest
- Aspen snowberry
- Aspen creeping barberry
- Aspen mixed conifer
- Pinyon juniper woodlands (likely a mistake because this is identified at 9,500 feet elevation)
- Barren Rock outcrops and ledges

**ENVIRONMENTAL RESOURCES INFORMATION**

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No riparian communities are shown on the vegetation map. The Division is unaware of any riparian area large enough to be shown on the map in the permit area. The description of the vegetation in the PAP and the Vegetation Map do not match.

The PAP 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 and likely, prior to recent man's attempt to control fire this area, was in a fire cycle, so climax communities have never been defined in the Mill Fork area. The vegetation communities comprising the transitional ecosystems are the predominant communities in this area.

**Findings:**

The information provided in the PAP does not meet the minimum Vegetation Resource Information requirements of the regulations. Prior to approval the Permittee must provide:

**R645-301-121**, The information provided in the PAP about the vegetation must correlate to the Vegetation Map.

**FISH AND WILDLIFE RESOURCE INFORMATION**

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

**Analysis:**

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 named creeks contain fish and are important fisheries.

The PAP does not provide any macroinvertebrate studies for these streams. Macroinvertebrate data can be an indicator for determining water quality for fish. The Division in consultation with DWR and USFWS is requesting three years macroinvertebrate baseline data collected prior to longwall mining on Mill Fork Creek below the confluence of the Left and Right Forks. The data should be collected one time per year and at permanently marked stations. Sample size should be sufficient to reduce variation of the mean.

A large portion of the permit area contains critical deer and elk summer range, and areas that are not critical summer range are critical or high value winter range (Drawing #: MFS1822B and MFS1849B).

A survey for the spotted bat (Forest sensitive species list) and Townsend's big-eared bat was completed in the existing permit area and lease area (Appendix A). Results found no Townsend's big-eared bats. Spotted bats found were solitary and evenly spaced over foraging habitat (lower elevations off the lease area). Roosting sites can be found within lease area and throughout the Huntington drainage in suitable cliffs. The study concludes, by looking at areas that have already been mined, that cliff failures have not dramatically impacted resident populations. Spotted bats are "common" enough throughout the area that localized cliff failure does not pose a serious threat to the population. The dates and year of the bat study was not provided.

The coal lease stipulates that SITLA, in cooperation with the Forest Service, 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).

A statement is provided in the PAP that no threatened or endangered species of plants or animals inhabit the Mill Fork area (section R645-301-322.210. Threatened and Endangered Species). This statement is based on PacifiCorp conversations with USFS personnel Rod Player and Bob Thompson, respectively qualified Wildlife Biologist and Botanist, and information contained in the EA.

The PAP 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, Forest Service sensitive species, occurring in the permit area. The PAP does not discuss this species. The Utah Natural Heritage program identified the Link Canyon columbine and Canyon sweetvetch, Forest Service sensitive species, occurring adjacent to the proposed permit area in Little Bear Canyon. The PAP address the potential for occurrence.

Raptor surveys have been conducted along the escarpment zone of the Huntington Creek Drainage. The below table summarizes the data available in the DWR database for surveys conducted in the Mill Fork area.

ENVIRONMENTAL RESOURCES INFORMATION

Table 1. Summary of raptor nest status, location and species from DWR database.

Nest No.	78	1210	1211	1282	963	1206
Species	Golden Eagle	Golden Eagle	Golden Eagle	Redtail Hawk	Golden Eagle	Redtail Hawk
2002	Tended	Active	Inactive	Inactive	Tended	Inactive
2001	Inactive	Tended	Dilapidated	N/A	Inactive	Inactive
2000	Tended	N/A	N/A	N/A	Tended	N/A
1999	Inactive	N/A	N/A	N/A	N/A	N/A
1998	Active	N/A	N/A	N/A	N/A	N/A
Location	Mill Fork Permit Area*	Mill Fork Permit Area	Mill Fork Permit Area	Genwal Permit Area	Huntington #4 Mine Permit Area	Current Deer Creek Permit Area

\*For the purposes of this Technical Analysis, the proposed Mill Fork extension to the Deer Creek Permit Area is differentiated from the Deer Creek Permit Area, recognizing Mill Fork Lease will be a part of the Deer Creek Permit Area.

There are 3 golden eagle nests in 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. Current mining plans show one coal seam to be mined under nest 1210 in 2012. Currently, no other nests are within the zone of mining.

The DWR raptor survey flight path was viewed for the 2002 data. No flight line was seen on the western side of the lease area along the Joes Valley Fault. The area was flown several years ago and no nests found (phone conversation with Chuck Semborski October 4, 2002). The presubsidence survey map (MFS1839D) shows outcrops in the first long wall panel that could potentially contain raptor habitat. The Division in consultation with DWR and USFWS is requiring this area to be surveyed for raptors prior to longwall mining.

The Raptor Location Map (MFS1852B) provides the location of raptor nests within and adjacent to the Mill Fork Lease area. The map identifies nest status for 2001. The map would be more representative if it only identified the nest number and species because nest status changes yearly. Nest status is available to the Division after the yearly survey is performed.

Dr. Frank Howe, DWR, in a meeting with the Division and USFWS discussed the potential for Mexican spotted owl in Utah. Potential habitat was discussed in terms of vegetation, slope, elevation and curvature as follows:

- Vegetation - mixed conifer, P-J, tends towards wooded but not always, fewer but larger trees
- Slope - 60 to 80%, minimum 40%
- Elevation - less than 8,000', if greater than 8,000' only mixed conifer (Douglas fir mix)
- Curvature - canyons, branches off of main canyons, steep walls, cooler north aspects

The PAP discusses the habitat requirements for the Mexican spotted owl. However, no discussion is provided about the habitat of the permit area compared to Mexican spotted owl habitat requirements. Habitat for the lease area should be discussed in the PAP for presence or absence of the four factors that determine habitat.

**Findings:**

Information provided in the PAP is not considered adequate to meet the minimum Fish and Wildlife Resource Information section of the regulations. Prior to approval, the Permittee must provide the following in accordance with:

**R645-301-131**, All technical data must be accompanied by the dates of the data collection. Provide the dates of data collection and analysis for the bat studies.

**R645-301-322**, the PAP must discuss the potential for the presence or absence of the Mexican spotted owl.

**R645-301-322**, the PAP must contain a commitment to monitor for macroinvertebrates in Mill Fork Canyon for three years prior to mining.

**R645-301-322.230**, the PAP must discuss the potential for Carrington daisy occurrence in the proposed permit area.

**LAND-USE RESOURCE INFORMATION**

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

**Analysis:**

The Mill Fork Lease area land use is primarily grazing, wildlife and recreation. Other uses in the area are gas production. Currently there is one producing well and plans for future gas development. 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 Genwall, Crandall Canyon Mine. The Flat Canyon road enters and leaves the southwest portion of the permit area.

**ENVIRONMENTAL RESOURCES INFORMATION**

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**Findings**

The information provided in the PAP meets the minimum Land Use Resource Information requirements of the regulations.

**GEOLOGIC RESOURCE INFORMATION**

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

**Analysis:**

The Permittee provides geologic information associated with the Mill Fork Lease area in section R645-301-600 (Geology) of the PAP. An environmental description is presented under R645-301-620.

A description of the regional geology, including stratigraphy and structure, is presented in the PAP. A list of boreholes was submitted in Appendix B. The Permittee collected geological information from boreholes and reports to identify the local geological setting. One representative lithologic log is presented in Appendix B. The Permittee submitted a generalized cross-sectional map, Drawing MFU 1829D. It shows cross-sections of strata from north to south and east to west, but no detailed information is shown, such as fence diagrams identifying changes in the stratigraphic column or location of ground-water bearing zones between drill sites. The drawing and cross-section show the Mill Fork Graben cuts a surface layer of alluvium, Star Point Sandstone, and Mancos Shale in Mill Fork Canyon.

The Permittee provides a table in Appendix C identifying the chemical analyses for acid- and toxic-forming minerals. The samples were collected from the roof, floor, and coal in the Blind Canyon and Hiawatha coal seams during a drilling program in the Mill Fork Lease. Other samples for analyses of roof, floor and coal were collected from the Blind Canyon and Hiawatha coal seam in the Deer Creek Mine. The analyses show low sulfate and a normal range for pH, calcium, boron and selenium levels.

The Permittee discussed subsidence and subsidence control measures in section R645-301-525 of the PAP. Pre-mining resources are identified on the Mill Fork Lease on Drawing MFS 1839D. The Permittee also addresses the potential of impacts to the resources.

**Findings**

The Permittee has submitted sufficient information in the PAP to address the Geologic Resources Information section.

## HYDROLOGIC RESOURCE INFORMATION

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

### Analysis:

Appendix A of the Mill Fork Lease PAP Hydrology section an update of the current monitoring plan in Volume 9 of the Deer Creek, Des-Bee-Dove, Cottonwood-Wilberg PAP. Appendix B is a report by Mayo and Associates, *Surface-water and ground-water investigation of the Mill Fork Lease area, Emery County, Utah*, which includes a PHC determination.

Appendix C to the Mill Fork Lease PAP has been submitted with information on springs and seeps in the Mill Fork Lease. There is an interesting section with photos and descriptions of the sites; details on location and elevation, geology and stratigraphic position, and water rights and development information; relationships to other springs; and a determination of the probable recharge area. This appendix also contains data report sheets for select seeps and springs – including isotope data for select springs, and water rights in the Mill Fork Lease area. Other baseline information for the Mill Fork Lease is in the PAP; and some is in the Annual Reports.

Jointing, which affects hydrologic characteristics, is significant in the rocks of the Mill Fork Lease area. The dominant joints in the area parallel the Joes Valley Fault, trending predominantly north-south to north 10° east, and a few secondary fracture sets follow other orientations (R845-301-624). Geology is described in section R645-301-600, Geology of the Mill Fork Lease PAP, and because geology relates to ground and surface water, it is further discussed in section R645-310-700, Hydrology.

### *Alternative Water Source Information*

The Permittee needs to identify in the PAP the probable impacts to appropriated water resources on and adjacent to the lease (proposed permit area) and provide replacement plans for those appropriated water resources that are likely to sustain impacts from subsidence as a result of coal mining, in accordance with Coal Mining Rules R645-301-525.120, 525.500, and 727, 731.530.

### *Water Replacement*

Because of recent changes regarding water replacement in the Coal Mining Rules, a new deficiency requiring a plan for replacement of water supplies is included in this technical analysis. As defined in R645-301-100 of the Coal Mining Rules,

“Water Supply”, “State-appropriated Water”, and “State-appropriated Water Supply” are all synonymous terms and mean, for the purposes of the R645 Rules, state appropriated water rights, which are recognized by the Utah Constitution or Utah Code.

ENVIRONMENTAL RESOURCES INFORMATION

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Under rule R645-301-525.400, if the Division determines that subsidence could adversely affect state-appropriated water supplies through damage, diminution in value or foreseeable use; or that contamination, diminution, or interruption could occur, the PAP must include a subsidence control plan that contains information in accordance with:

R645-301-525.400 measures to be taken in accordance with R645-301-731.530 and R645-301- 525.500 to replace adversely affected State-appropriated water supplies ....

R645-301-525.480. A description of the measures to be taken in accordance with R645-301-731.530 and R645-301- 525.500 to replace adversely affected State-appropriated water supplies ...

R645-301-731.530. State-appropriated water supply. The permittee will 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.

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

Little Bear Spring is of particular concern. Direct impacts are not likely, but the primary source of recharge to this spring is the runoff from upper Mill Fork Canyon, which flows to Little Bear Spring by way of the creek in Mill Fork Canyon and the Mill Fork Graben. The report by Mayo and Associates in Appendix B (PAP, section R645-301-700) concludes that Mill Fork is the primary source of recharge to Little Bear Spring. (Based on an AquaTrack™ survey that is not cited in the PAP, it has been estimated that 60 to 70 percent of the Little Bear Spring discharge comes from upper Mill Fork Canyon through Mill Fork Graben.)

Between Mill Fork and Little Bear Canyons, the down-plunge end of the Crandall Canyon Syncline intercepts the Mill Fork Graben and may provide part of the recharge to Little Bear Spring. When operations in the Trail Mountain Mine exposed the Spring Canyon Member in the down-plunge end of the Straight Canyon Syncline, ground water under pressure entered the mine at a rate of 200 to 300 gpm until the Spring Canyon Member was depressurized (PAP, section R645-301-700, Appendix B, page 72). The possibility exists that mining in the Mill Fork tract could depressurize the water in this syncline and impact some portion of the flow at Little Bear Spring.

Mining in the eastern half of panels of 14 West, 15 West and 16 West, an area near Crandall Canyon where overlying strata are less than 400 feet thick, may produce surface disturbance from subsidence (Drawing MFS 1824D). The Hydrologic Monitoring Map (Drawing MFS 1851 D) indicates that no springs exist in this low overburden area. The Crandall Canyon Syncline trends through this area and subsidence fracturing could influence natural ground-water flow patterns produced by this structure.

Although the potential is low, subsidence could intercept or interrupt flow from upper Mill Fork Canyon, where precipitation and runoff are greatest, and produce a proportional decrease in the flow at Little Bear Spring (PAP, section R645-301-700, Appendix B, page 127). Going on the basis that 65 percent of Little Bear Spring flow is from Mill Fork, then a 20 to 25 percent reduction of flow in Mill Fork could produce a reduction of flow at Little Bear Spring on the order of 10 to 15 percent. The potential impact from depressurization of the Crandall Canyon Syncline is not as readily estimated, but could be equally significant. Because of these possible impacts to Little Bear Spring, areas within the Mill Fork tract are "renewable resource land" under the Coal Mining Rules and subject to specific regulations and protection. Therefore, the PAP needs to include a water replacement plan for Little Bear Spring. There are also other state-appropriated water supplies in and adjacent to the Mill Fork Lease, identified in R645-301-600, Appendix C of the PAP, that should also be covered by the water replacement plan. The plan should identify potential sources for replacement water and how water will be delivered to the water users. The plan should provide for both immediate short-term replacement and long-term replacement.

### **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". Deer Creek, Des-Bee-Dove, Cottonwood-Wilberg MRP Volume 9, Appendix A has sample documentation and analytical methods and detection limits (R645-301-723, p. 7-69).

### **Baseline Information**

#### *Ground-water Information*

Although some (for example *Lines, G. C., 1985, The ground-water system and possible effects of underground coal mining in the Trail Mountain area, central Utah, USGS Water-Supply Paper 2259*) describe the Blackhawk and Star Point strata as a regional aquifer, 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. A potentiometric surface can be mapped in the Spring Canyon Member of the Star Point Sandstone in the Mill Fork tract (PAP, Figure MFHF-6), but as with other units

ENVIRONMENTAL RESOURCES INFORMATION

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of the Star Point, this unit generally has low permeability and produces water only where permeability has been enhanced by fracturing, erosion, or weathering (PAP, section R645-301-721, A. 3. f.); however, MW-1 at the Crandall Canyon Mine flows 0.5 to 1 gpm from apparently unfractured Star Point Sandstone, from a zone noted by the driller as being coarser-grained than the rest of the unit (Crandall Canyon Mine MRP, p. 7-7). 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 (PAP, section R645-301-624).

The North Horn and Price River Formations also contain localized, perched water tables or saturated zones (PAP, section R645-301-721, A. 3.), although the Price River Formation is generally devoid of water because of a lack of recharge (PAP, section R645-301-721, A. 3. c.).

The locations of known seeps and springs within the Mill Fork Lease area are shown on the Pre-Subsidence Survey Map (MFS1839D). Ground-water rights are described in some detail at R645-301-721, A. 15 of the PAP. No wells with water rights are mentioned, and the Division has no knowledge of water wells or ground-water resources other than seeps and springs in this area.

Reports covering field parameters go back to 1980 for a few springs. A summary of historic water-quality data for the area, mainly collected for the NEPA analysis process prior to leasing of the coal, is in Appendix C of section R645-301-700.

Under existing mine permits, Energy West collects operational water-monitoring data at high flow (May or June) and low flow (August, September, or October). Baseline data collection for the Mill Fork Lease has generally followed the same schedule. Laboratory reports for 39 seeps and springs from the 3<sup>rd</sup> and 4<sup>th</sup> quarter 2000 are in Appendix C of the PAP: this includes EM POND, a spring fed pond used by cattle and wildlife. Reports for 53 seeps and springs from the 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> quarters 2001 are also in Appendix C. Altogether, 30 seeps and springs were sampled more than once during the two-year period, and 10 were sampled three times.

Baseline data in the PAP for the 18 springs that are to be added to the operational monitoring are summarized in Table TM-1 below. Three of these springs (EM-216, RR-5, and MF-19B) had only field parameters measured during this baseline period. - and measured during one quarter only. Of the other 15 springs, two had water quality determined by lab analyses for one quarter only, seven had it determined for two quarters, and six had it determined for three quarters. It is not clear why adequate baseline data have not been collected for EM-216, RR-5, and MF-19B; otherwise, baseline data submitted with the PAP meet the minimum standard in directive Tech 004 that the Division needs one-year of baseline data to initiate a Technical Analysis. The Division has received no indication that additional high-flow and low-flow data have been collected while the PAP has been under review.

According to the table in section R645-731-200 A. 1. of the PAP, there are water rights on seven of these 18 springs that are to be monitored. This table indicates RR-5 has a water

right, but RR-5 is not listed with the water rights in Table MFHT-2. Including spring RR-5, three of the seven springs with water rights that are to be monitored have only field data for baseline.

ENVIRONMENTAL RESOURCES INFORMATION

Table TM-1 – Baseline for Operational Monitoring Springs										
Spring <u>Water Right</u>	1982	1993	1994	1995	1996	2000 3 <sup>rd</sup> quarter	2000 4 <sup>th</sup> quarter	2001 2 <sup>nd</sup> quarter	2001 3 <sup>rd</sup> quarter	2001 4 <sup>th</sup> quarter
EM-216 93-3399			field			field				
EM POND							field, lab		field, lab	
JV-9						field, lab		field, lab		field, lab
JV-34							field, lab	field, lab		field, lab
MF-7		field	field		field	field, lab		field, lab		field, lab
MF-10 93-1412		field	field	field	field		field, lab		field, lab	field, lab
MF-19B 93-1413			field	field	field	field				
MF-213 93-259	field					field, lab		field, lab		field, lab
MF-219 93-1410						field		field, lab		field, lab
MFR-10								field, lab		field, lab
MFR-30								field, lab		
RR-5			field		field	field				
RR-15			field	field	field		field, lab			field, lab
RR-23A				field	field		field, lab			field, lab
SP1-26 SP-1-26							field, lab			field, lab
SP1-29									field, lab	
UJV-101		field		field	field		field, lab			field, lab
UJV-206 93-3400					field	field, lab		field, lab		field, lab

ENVIRONMENTAL RESOURCE INFORMATION

Table TM-2 – Baseline Monitoring of Springs with Water Rights Based on Table MFHT-2 of the PAP (M) = Proposed for Operational Monitoring										
<u>Spring Water Right</u>	1982	1993	1994	1995	1996	2000 3 <sup>rd</sup> quarter	2000 4 <sup>th</sup> quarter	2001 2 <sup>nd</sup> quarter	2001 3 <sup>rd</sup> quarter	2001 4 <sup>th</sup> quarter
<u>EM-215 93-1254</u>			field							
<u>EM-216 (M) 93-3399</u>			field			field				
<u>JV-26 93-998</u>										
<u>JV-36 a23164</u>										
<u>JV-43 93-1572</u>										
<u>MF-10 (M) 93-1412</u>		field	field	field	field		field, lab		field, lab	field, lab
<u>MF-19B (M) 93-1413</u>			field	field	field	field				
<u>MF-213 (M) 93-259</u>	field					field, lab		field, lab		field, lab
<u>MF-219 (M) 93-1410</u>						field		field, lab		field, lab
<u>RR-14A 93-1414</u>			field	field	field					
<u>UJV-204 93-810</u>		field	field	field	field					
<u>UJV-206 (M) 93-3400</u>					field	field, lab		field, lab		field, lab
<u>UJV-207 93-821</u>		field	field	field	field	field, lab		field, lab		
<u>UJV-209A 93-102</u>			field	field	field	field, lab		field, lab		
<u>UJV-213 a21560</u>										
<u>UJV-214 93-811</u>										

R645-301-525.130 of the Coal Mining Rules requires a survey of the quality and quantity of all state appropriated water supplies in the permit and adjacent area that could be contaminated, diminished, or interrupted by subsidence. All springs with water rights that are

**ENVIRONMENTAL RESOURCES INFORMATION**

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located within the permit and adjacent area have at least one flow measurement, and most have pH and TDS or electric conductivity measurements. Print-outs of water-rights information from the Division of Water Rights are in Appendix C: these provide the information on quality and quantity needed for the pre-subsidence survey. This water-rights information will determine the quality and quantity to be replaced under Water Replacement Rules unless the Permittee collects baseline data at the water-right points of diversion: baseline data collected for water quantity should be correlated to variations in precipitation, if possible.

Ten of the springs in the area that have water rights (PAP, section R645-301-700, Table MFHT-2) are not being proposed for operational monitoring (see Table TM-2 below). Information on why these springs do not have baseline and why they will not be monitored was included in the cover-letter sent with the April 18, 2002 submittal: the springs with water rights that are not being proposed for monitoring are either outside both the permit area and the area where the Permittee expects impacts (EM-215, JV-26, JV-36, and JV-43), or within the permit area but outside the area where the Permittee expects impacts (RR-14A, UJV-204, UJV-207, UJV-209A, UJV-213, and UJV-214). For each spring in the second group, an offsetting spring with a history of reliable flow measurement is being monitored. The rationale for selecting springs for monitoring is tabulated in the unnumbered table in section R645-731-200 (PAP, approximately page 101 of section R645-301-700).

Genwal conducted a baseline spring and seep survey in 1994, 1995, and 1996 in the Mill Fork lease-by-application (LBA) tract to meet NEPA requirements (the northern portion of the tract had been surveyed in 1989 and 1990). The connection between these data and the pre-lease hydrology evaluation for the USFS by Genwal is briefly explained in section R645-301-721, A. 4 of the PAP. The USFS determined these Genwal data met Data Adequacy Standards. These data, along with other data from 1980, 1981, 1982, 1991, 1992, and 1993 are presented in Appendix C and Table MFHT-2 of the PAP. Appendix C and Table MFHT-2 do not adequately identify when these data were collected or who collected the data, and these data do not meet the requirements of determining seasonal variations of quality and quantity for the purposes of the Coal Mining Rules.

The Permittee initiated a re-evaluation of ground-water resources in 2000, but found inconsistencies between their field observations and the older data. Because of this, the Permittee has placed little confidence in information from the previous surveys. Springs and seep locations were resurveyed, and new baseline data were collected in 2000 and 2001 and correlated with the older data where possible.

The 2000 and 2001 data tabulated in Tables MFHT-3 and MFHT-4 of the PAP indicate that the response of the Mill Fork seeps and springs to seasonal and climatic changes is similar to that of the other seeps and springs on East Mountain, which have been monitored by the Permittee for more than twenty years.

Water-quality descriptions include those parameters required by the Coal Mining Rules: total dissolved solids (TDS) or specific conductance corrected to 25°C, pH, total iron, and total manganese. In addition, baseline and operational parameters that correspond with those in DOGM directive Tech 004 have been determined for the samples submitted for laboratory analysis.

Monitoring parameters include approximate rates of discharge from the seeps and springs. Usage is given in the water-rights print-outs in Appendix C and locations of the water rights are shown on Drawing MFS1832D- Water Rights in the PAP.

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 (PAP, section R645-301-624). Much of the information from this research is summarized in Appendix B, *Surface-water and ground-water investigation of the Mill Fork Lease area, Emery County, Utah*, by Mayo and Associates, October 24, 2001 (PAP, section R645-301-700, Appendix B). This lack of interconnectivity does not apply to impacts to surface or ground water due to subsidence, nor where fractures link the surface and subsurface systems.

#### *Little Bear Spring*

Little Bear Spring in Little Bear Canyon, east of the Mill Fork Lease, is an important source of water for the Castle Valley Special Services District (CVSSD), supplying 65 percent of the culinary water to the residents of Huntington, Cleveland, and Elmo. The only treatment required before use is chlorination. It is probably the largest and most consistently flowing spring in the region.

Little Bear Spring flows from the bounding fault zone on the west side of the Mill Fork Graben. Isotope analyses, geophysical investigations, dye-tracer tests, and comparisons of flow in Mill Fork with other Huntington Creek tributaries indicate that the ultimate recharge area for Little Bear Spring is upper Mill Fork Canyon. Precipitation runoff, snowmelt, and discharge from numerous springs collect in both the channel and alluvium of Mill Fork, and the water is diverted to Little Bear Spring through the Mill Fork Graben (PAP, section R645-301-721, A. 15. b. (1)). An additional stream-monitoring point has been added upstream of the Mill Fork Graben at the request of the USFS. The proposed location is shown on Drawing MFS1851D.

When operations in the Trail Mountain Mine exposed the Spring Canyon Member in the down-plunge end of the Straight Canyon Syncline, ground water under pressure entered the mine at a rate of 200 to 300 gpm until the Spring Canyon Member was depressurized (PAP, section R645-301-700, Appendix B, page 72). Although recharge to Little Bear Spring from the Star Point Sandstone and Blackhawk Formation is generally discounted in the PAP because of low permeabilities, the down-plunge end of the Crandall Canyon Syncline intercepts the Mill Fork Graben between Mill Fork and Little Bear Canyons and may provide part of the recharge to

ENVIRONMENTAL RESOURCES INFORMATION

**Little Bear Spring.** The possibility exists that mining in the Mill Fork tract could depressurize the water in this syncline and impact some portion of the flow at Little Bear Spring.

Baseline data have not been collected by the Permittee, but CVSSD has measured flow since 1982 and documented quality for a number of years. Flow varies seasonally, one indication of a shallowly circulating ground-water system, but minimum flows have not dropped below approximately 200 gpm, indicating there is also storage capacity in the ground-water system: much of this storage is probably in the channel-bottom alluvium of Mill Fork Canyon. Average flow has been approximately 340 gpm. Isotopes indicate modern water, and quality is similar to surface waters in Huntington and Little Bear Creeks (PAP, section R645-301-721, A. 15. b.). The Permittee needs to add CVSSD's data, or their own equivalent data, for Little Bear Spring to the baseline data in Appendix C and add Little Bear Spring to the monitoring plan.

The Huntington #4 Mine crossed the Mill Fork Graben. Offset is approximately 25 to 30 feet on both sides (PAP, section R645-301-721, A. 3. g.). Within the graben and at the bounding faults, only minor amounts of ground water were encountered, and flow at Little Bear Spring was not measurably impacted (PAP, section R645-301-721, A. 15. b.). Either the mine is above the potentiometric surface or there is an aquitard – perhaps one of the coal seams – isolating the mine from the water.

*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. There was a minor amount of tritium in one sample, indicating some recharge of modern water, but radiocarbon dating indicated all three samples were 2,500 to 5,000 years old (PAP, section R645-301-700, Appendix B, page 78). Drill-holes adjacent to the fault indicated limited lateral hydrologic communication. Mining within 200 to 300 feet of the Joes Valley Fault could intercept modern water, recharged from the surface, but the "active" zone near the fault may include deeper, older water. A stipulation in the coal lease does not allow full extraction-mining within a 22 degree angle-of-draw of the fault (PAP, section R645-301-728, I. 4. a. (2); and Appendix B, page 126).

Joes Valley Fault separates Joes Valley from East Mountain and the Mill Fork Lease. This fault runs generally north-south. It is a normal fault with up to 2,300 feet of vertical offset, downthrown on the west side: the PAP gives the offset as 1,500 feet adjacent to the Mill Fork Lease (PAP, section R645-301-721, A. 3. g.). The fault forms the eastern edge of Joes Valley Graben and the steep escarpment along the western flank of East Mountain. (The fault and graben are regional features that extend both south and north of the East Mountain area.) North Horn and Upper Price River Formations are exposed on the floor of Joes Valley, with thick alluvium and colluvium deposits overlying these formations adjacent to the fault and escarpment. Most of the springs in Joes Valley flow from the alluvium along Indian Creek or from the North Horn Formation exposed west of the creek. Springs also flow in the small canyons that have been eroded into the fault scarp: these springs appear to be less numerous in the northern part of

the Mill Fork tract where the fault and the mountain ridge are close to each other, and to become more numerous towards the south as the distance between the scarp and ridge increases (PAP, Plate 1 and Drawing MFU1823D).

### *Surface Water Information*

Crandall Canyon, Rilda Canyon, Mill Fork, and Indian Creek are the main surface drainages in and adjacent to the Mill Fork Lease area. A number of unnamed tributaries to Indian Creek flow from the west side of East Mountain. Only Crandall Creek is perennial. Crandall, Rilda, and Mill Fork are tributary to Huntington Creek; Indian Creek is tributary to Cottonwood Creek by way of Lowry Water. Little Bear Canyon was excluded from the Mill Fork Lease to protect Little Bear Spring.

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

Rilda Canyon has been monitored downstream of the Mill Fork Lease since 1989. Baseline quality analysis monitoring was done in 1989-1990, and is to be repeated every five years (PAP, section R645-301-721, B. 1. b. 1. (d)).

Data for Mill Fork have been submitted with Energy West's quarterly reports since 1997. Information on flow, pH, conductivity, and dissolved oxygen is summarized in Appendix C of the PAP. Flows have been monitored monthly since January 1997, but it is common for these monitoring sites to have no flow. Laboratory reports for 1997 through 2001 are in Appendix C. Parameters from DOGM directive Tech 004 have been determined for the samples submitted for laboratory analysis. Only one baseline analyses was done at MFA1, June 1999, and this site was either dry or inaccessible due to snow the rest of the 1998 through 2001 baseline period. Baseline quality analyses were done November 1998, June 1999, September 2000, and September 2001 at MFB2, but for unexplained reasons, only operational parameters were done December 1998 and September 1999. Baseline analyses will be repeated every five years ((PAP, section R645-301-721, B. 1. b. 1. (c)). Based on a request from the USFS, an additional monitoring site is to be added upstream of the Mill Fork Graben in 2002; the location is on Map MFS1851D.

Indian Creek was monitored for baseline parameters in 2000 and 2001. Flow and water-quality parameters will be measured during base-flow conditions at ICA, ICB, ICF, and ICD (PAP, section R645-301-721, B. 1. b. 2. (b)). These sites are marked on Map MFS1851D. Water-quality data for October 2000 and 2001 are in Appendix C of section R645-301-600 of the PAP. Genwal has monitored flow and water-quality at ICF since 1996, and the data have been incorporated into the Permittee's hydrologic database and summarized in Appendix C. The Permittee will continue with operational monitoring during base flow only at ICA, ICB, and ICD, but Genwal is currently committed to continue monitoring at ICF. (The ICF flume has a

**ENVIRONMENTAL RESOURCES INFORMATION**

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continuous recorder but because of poor access it is typically operational only from June through October; however, water samples are collected quarterly when the site is accessible.)

There are no known water-supply intakes for current users of surface waters flowing into, out of, and within the Mill Fork Lease hydrologic area (the creek in Mill Fork Canyon is a source of recharge to Little Bear Spring). The water supply system in Rilda Canyon is shown on maps and drawings in the existing Deer Creek Mine MRP.

No surface waters will receive discharges from affected areas in the proposed Mill Fork Lease area. Locations for Deer Creek Mine UPDES discharge points are shown on maps in the existing MRP.

Names and locations of surface water bodies within the proposed Mill Fork Lease permit and adjacent areas are shown on several maps in the PAP, including Plate 1; Drawing MFS1830D – Hydrologic Map; and Drawing MFS1839D - Pre-subsidence Survey Map. Water rights are listed in water-rights print-outs in Appendix C of the PAP, and locations are shown on Drawing MFS1832D - Water Rights. Surface-water bodies are described in the PAP in section R645-301-721, B.

Baseline and operational data have been collected since 1997 at MFA01 and MFB02 in Mill Fork. Data are summarized in Appendix C. Locations are shown on Drawing MFS1851D – Hydrologic Monitoring Map.

Information from ICA, ICB, and ICD in the Mill Fork Lease PAP, when combined with data from ICF, is sufficient to demonstrate seasonal variations of flow and water quality. Water-quality descriptions include baseline information on total suspended solids, total dissolved solids or specific conductance corrected to 25° C, pH, total iron, and total manganese. In addition, baseline and operational parameters from DOGM directive Tech 004 have been determined for the samples submitted for laboratory analysis.

There will be no new mine openings under the Mill Fork Lease extension and no potential for acid drainage from the proposed mining operation in the Mill Fork Lease area. Nevertheless, the Permittee has included information on baseline acidity and alkalinity in the ground-water quality analyses.

Streams in Mill Fork and Crandall Canyons flow from spring snowmelt and heavy thundershowers. In addition to the seasonal surface flow, alluvium transports a significant amount of water throughout the year. After surface runoff has ceased, water from the alluvium may surface over short reaches of the streambed and then percolate into the alluvium again as it continues its flow down the canyon (PAP, section R645-301-624).

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

The Mill Fork Lease is in the cumulative impact area (CIA) for the East Mountain Cumulative Hydrologic Impact Assessment (CHIA) prepared by the Division in 1994. Mining will be done beneath the Mill Fork, Rilda Canyon, and Indian Creek watersheds. The Mill Fork Lease area is between Joes Valley Fault and the Mill Fork graben. The Joes Valley Fault is especially important as it is a hydrologic barrier between the mine and Indian Creek in Joes Valley in the subsurface; shallow ground-water flows through alluvium in the bottoms of the canyons that descend from East Mountain to Joes Valley and then flows into Joes Valley through the alluvial fans that cross the fault (PAP, section R645-301-624, p. 6-18).

Although the areas of impact will shift within the CIA, there should be no change to cumulative impacts outside the CIA. The main hydrologic impact will be removal of water from storage in the Blackhawk Formation and Star Point Sandstone, which will have no impact on the hydrologic balance outside the CIA. The quantity of discharges from the mine to surface waters should continue at rates similar to those from other recent mine operations, and water quality of the discharges should also be similar, so surface water will not be further impacted or materially damaged.

#### *Hydrological Reports*

Hydrologic and geologic information for the cumulative impact area have been obtained by the Division from federal or state agencies. Additional information has been included with the PAP. Other information has been provided by the Crandall Canyon Mine.

1. Christenson, G. E., 1984, Effects of coal mining at Huntington Canyon No. 4 Mine on Little Bear Spring, Emery County, Utah, *in* Harty, K. M., compiler, Utah Geological and Mineral Survey Report of Investigation No. 198, Technical reports for 1984, Site Investigation Section, Utah Geological and Mineral Survey, Salt Lake City, Utah, pp. 121-130.
2. Hansen, Allen and Luce, Inc., March 1997, Genwal Resources- Probable Hydrologic Consequences Evaluation of LBA 11.

Hansen, Allen and Luce conducted a review of the data and material to identify the probable hydrologic consequences of mining LBA 11 on Little Bear Spring and Rilda Canyon Spring. Main concern regarding potential mining impacts is a decrease or loss of water from springs. A consistent continuous aquifer system is not found locally. Perched systems within the Castlegate and Blackhawk Formations provide small amounts of water to surface springs as water flows out to the edge of the confining geologic layer. Little contribution of water is believed to reach the underlying Starpoint Sandstone units. Ancient channels or erosion beds are identified by in overlying strata can be breached from subsidence

**ENVIRONMENTAL RESOURCES INFORMATION**

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fracturing. Faults conveying water such as the Joes Valley Fault and fracture system. Coal structure mapping confirms that the strata dips to the west toward Joes Valley Fault within the entire western half of LBA 11.

3. Mayo and Associates, March 1997, Results of in-mine slug tests on the Star Point Sandstone, Genwal Resources consulting report prepared for Genwal Resources, Inc., March, 1997, 15 p.
4. Mayo and Associates, March 1997, Supplemental hydrogeologic information for LBA 11.
5. Mayo and Associates, November 1997, Summary of new isotopic information for LBA 11. Mayo and Assoc, October 1997, Investigation of surface-water and groundwater systems in the PacifiCorp Lease area, East and Trail Mountains, Emery County, Utah: Probable Hydrologic Consequences of coal mining in ht Trail Mountain LBA and recommendations for surface-water and groundwater monitoring, Consulting Report prepared for PacifiCorp, October 1997, 139 p.
6. Mayo and Associates, June 1999, Investigation of groundwater and surface-water systems in the vicinity of GENWAL's existing permit area and the Mill Fork Tract, Emery County, Utah.  

Mayo and Associates suggested Little Bear Spring is recharged through surface water and/or alluvial ground-water losses in Middle Fork Canyon.
7. Mayo and Associates, January 2001, Investigation of the alluvial groundwater system in Mill Fork Canyon with implications for recharge to Little Bear Spring..
8. Mayo and Associates, February 2001, Investigation of the potential for Little Bear Spring recharge in Mill Fork Canyon, Emery County, Utah.
9. Mayo and Associates, November 2001, Determination of the recharge location of Little Bear Spring by means of florescent dye tracing.
10. Montgomery, J. R., AquaTrack Survey, December 1998, Little Bear Springs study, Huntington Canyon, Utah.
11. Montgomery, J. R., AquaTrack Survey, December 1999, Little Bear Springs study, Huntington Canyon, Utah.
12. Sunrise Engineering, January 2001, Resistivity survey (Mill Fork Canyon).
13. Sunrise Engineering, November 2001, AquaTrack Survey- Little Bear Spring,

Huntington, Utah.

14. Vaughn Hansen Associates, August 1977, Water quality and hydrologic study in vicinity of Huntington Creek Mine No. 4 and Little Bear Spring, prepared for Swisher Coal Company.

The Division has copies of all reports except #3.

### **Modeling**

Modeling techniques have not been included as part of the Mill Fork Lease PAP.

### **Probable Hydrologic Consequences Determination**

A Probable Hydrologic Consequences report was compiled by Mayo and Associates for Energy West. The report is submitted in Appendix B of section R645-301-700 of the PAP. The geologic information presented in the PAP is sufficient to establish the hydrologic activities and functions for a probable hydrologic consequence determination.

The planned subsidence from full-extraction mining should result in a generally uniform lowering of the surface over broad areas, and that will limit the extent of material damage to the surface lands, with no appreciable change to land uses and renewable resources, including seeps, springs, and streams. Experience in the Deer Creek Mine area shows that subsidence occurs within two months of coal extraction, and the land is stable after two years. Predicted subsidence is 0 to 15 feet, based on total cumulative extraction not exceeding 20 feet.

Full-extraction mining will be done beneath the headwaters of Rilda, Mill Fork, and Crandall Canyons. There will be no full-extraction mining beneath and no subsidence of the stream channels in those canyons. The PAP discusses the PHC in section R645-728 (pages 79 – 97) and in Appendix B.

The Coal Mining Rules require the permit application to contain a determination of the PHC of the proposed coal mining and reclamation operation upon the quality and quantity of surface and ground water under seasonal flow conditions for the proposed permit and adjacent areas. Complete and adequate seasonal baseline data, upon which the PHC is to be based, are not in the PAP. Nevertheless, the determination of the PHC on pages 123 – 130 of Appendix B includes findings - based upon the quality and quantity of surface and ground water under seasonal flow conditions for the proposed permit and adjacent areas - on:

1. *Whether adverse impacts may occur to the hydrologic balance;*
  - a. Mining in the current Energy West permit areas has not affected surface- and ground-water flows.

ENVIRONMENTAL RESOURCES INFORMATION

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- i. Most springs identified in the Deer Creek Mine and Mill Fork Lease areas occur in the Price River, North Horn, and Flagstaff formations;
    1. The layout of the past and future mines is designed to minimize subsidence impacts to the steep cliffs of the Castlegate Sandstone.
    2. Nearly all observed subsidence has occurred in the Price River, North Horn, and Flagstaff formations that overlie the Castlegate.
    3. Springs in the Price River, North Horn, and Flagstaff formations are isolated from subsidence related fracturing because of :
      - a. the thickness of overburden; and
      - b. clayey units that deform plastically and swell when wetted.
    4. Numerous springs have been undermined on East and Trail Mountains, and those that are on areas that have subsided show no evidence of discharge declines attributable to subsidence or fracturing.
  - ii. Ephemeral and intermittent reaches of Deer Creek and Grimes Wash have been subsided, with no discharge declines attributable to mining-induced subsidence.
  - iii. Waters encountered underground by mining are from strata immediately above and below the mined horizon and from faults.
    1. Water in strata above the coal are from isolated, inactive systems that are not in connection with the near-surface spring waters.
    2. Inflows into the Deer Creek and Crandall Canyon Mines have occurred from faults.
      - a. In general, these waters do not appear to be tied to modern, active ground-water systems; however
      - b. Tritium data indicate that some ground-water inflows from these faults are local and in hydraulic communication with modern near-surface water.
    3. In the Straight Canyon Syncline, substantial volumes of ground water have flowed into the Deer Creek Mine from the underlying Star Point Sandstone.
- b. By analogy with currently mined areas:
- i. Reduction of surface-water flows in Mill Fork, Crandall, and Rilda Canyons is not anticipated.
  - ii. The potential for adverse affects to headwater reaches of Mill Fork that overlie planned full-extraction mining areas is minimal because these channel reaches are separated from the coal by the

ENVIRONMENTAL RESOURCE INFORMATION

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thick sequence of low-permeability North Horn and Price River Formations.

- iii. The Mill Fork Lease area has no structure analogous to the Straight Canyon Syncline, so inflows to the mine from the underlying Star Point Sandstone are not anticipated.
  - iv. Mining within 200 to 300 feet of the Joes Valley Fault system could intercept appreciable quantities of modern near-surface water.
  - c. The potential for adverse impacts to Little Bear Spring is small because:
    - i. It is 1.5 miles from the lease boundary and 2 miles from the nearest proposed mining; and
    - ii. It discharges from an active ground-water system that is in good communication with shallow recharge sources.
2. *Whether acid-forming or toxic-forming materials are present that could result in the contamination of surface- or ground-water supplies;*
- a. Pyrite has been identified in the PacifiCorp mines.
    - i. The pyrite oxidizes to produce acid.
    - ii. Acidic waters and iron have not been observed in the PacifiCorp mines.
      - 1. Acid produced by pyrite oxidation is quickly neutralized by naturally occurring carbonate minerals.
      - 2. Iron is precipitated as iron hydroxide.
  - b. No other acid-forming material than pyrite and no toxic-forming materials have been found or are suspected to exist in strata to be disturbed by mining.
  - c. Extensive testing of overburden strata, coal, and surrounding rocks has shown that there are no potentially acid- and toxic-forming materials (PAP, section R645-301-623.100). Details of yearly analyses (1993 to 1999) of coal, floor, and roof are in section R645-301-600-Geology - Appendix C of the Mill Fork Lease PAP. Analyses of overburden material are presented in Table G-1 in Volume 8 of the Deer Creek, Des-Bee-Dove, Cottonwood-Wilberg MRP, and summarized in Appendix A of the Mill Fork Lease PAP.
3. *What impact the proposed coal mining and reclamation operation will have on:*
- a. *sediment yield from the disturbed area;*
    - i. Sediment yield from disturbed surface areas is minimized by sediment control structures;
    - ii. Sediment in mine discharge water is minimized by sedimentation ponds;
    - iii. Subsidence can increase or decrease sediment load in streams;
      - 1. Increased stream gradient;
        - a. Higher flow velocities;
        - b. Greater sediment entrainment.

ENVIRONMENTAL RESOURCES INFORMATION

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- c. Extent this will occur in the Mill Fork Lease area is not known, but this is typically local and short-lived.
      2. Decreased stream gradient, stream impoundment;
        - a. Sediment deposited in the impoundment;
        - b. Extent this will occur in the Mill Fork Lease area is not known, but this is typically local and short-lived.
    - b. *acidity, total suspended and dissolved solids and other important water quality parameters of local impact;*
      - i. Most springs occur in strata above the coal seam and mine, so a mechanism for impact is unlikely.
      - ii. Past monitoring at the Deer Creek, Des-Bee-Dove, Cottonwood-Wilberg Mines has detected no impacts to quality of water in springs and streams.
      - iii. Water discharged from the Mill Fork Lease will be subject to UPDES standards.
      - iv. Water discharged should be similar to that discharged from the Deer Creek and Cottonwood-Wilberg Mines, which:
        1. Meets secondary drinking water quality standards, and
        2. Has not had identifiable detrimental impacts on the quality of water in the receiving streams
    - c. *flooding or streamflow alteration;*
      - i. Expected discharge, although impossible to predict, will probably be much less than the maximum runoff during spring snowmelt or summer thundershowers;
      - ii. Flooding and streamflow alteration are not expected from mine discharge waters.
    - d. *ground-water and surface-water availability;*
      - i. Mining will not significantly affect availability of ground water
        1. Ground water in the Blackhawk is compartmentalized and the formation is not a hydraulically continuous aquifer
        2. Ground water in the Blackhawk is isolated from overlying, modern ground waters;
        3. Local effects of dewatering will have no effects on the ground-water availability in the surrounding region.
      - ii. No water supplies will be impacted by removal of water from strata immediately above and below the coal seams.
    - e. *other characteristics as required by the Division;* The Division has required the evaluation of no other characteristics.
  4. *Whether the UNDERGROUND COAL MINING AND RECLAMATION ACTIVITIES conducted after October 24, 1992 may result in contamination,*

**ENVIRONMENTAL RESOURCE INFORMATION**

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*diminution or interruption of State-appropriated Water in existence within the proposed permit or adjacent areas at the time the application is submitted.*

- a. There are no ground-water supply wells in the Mill Fork Lease area.

No water supplies will be impacted by removal of water from strata immediately above and below the coal seams.

Drawing MFU1823D shows the Crandall Canyon Syncline passing right through the heart of the projected Mill Fork Lease projected mine workings, and it intercepts the Mill Fork Graben just upgradient of Little Bear Spring. Why the Permittee does not consider this as an analogous structure to the Straight Canyon Syncline is not clear. The Crandall Canyon Syncline, and the potential that mining in this syncline will impact the hydrologic balance in and adjacent to the Mill Fork Lease, Little Bear Spring in particular, need to be discussed in the PHC.

The Permittee has discussed the expected duration of flow and the volume of water expected to be encountered in section R645-301-728. I. 4. c. Additional information is provided in R645-301-721, A. 9. and R645-301-721, A. 10. Discharge is expected to be similar to that in the Deer Creek Mine and adjacent Crandall Canyon Mine, but discharge per acre mined is not estimated because interception of water varies depending on several factors, and flow from any given area is expected to decline rapidly after the initial encounter and to decrease over time.

**Findings:**

Hydrologic Resource Information is not considered adequate to meet the requirements of this section. Prior to approval, the Permittee must provide the following information for the Mill Fork Lease PAP in accordance with:

**R645-301-525.400, -731.530,** The Permittee needs to include a plan for water replacement for Little Bear Spring, and also for other state-appropriated water supplies in and adjacent to the Mill Fork Lease. The plan should specify potential sources for replacement water and how water will be delivered to the water users. The plan should provide for both immediate, short-term replacement and for long-term replacement.

**R645-301-731.530,** The Permittee needs to add CVSSD's data, or their own equivalent data, for Little Bear Spring to the baseline data in Appendix C, and add Little Bear Spring to the monitoring plan.

**R654-301-724.100, -121.200,** The Permittee needs to rectify the discrepancy between the table in section R645-301-200 – Water Monitoring that indicates RR-5 has a water right, and Table MFHT-2 that does not list RR-5 as having a water right.

**ENVIRONMENTAL RESOURCES INFORMATION**

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**R654-301-724.100**, The Permittee needs to explain why only one set of field parameters have been collected as baseline data for EM-216, RR-5 and MF-19B, why the Division should acknowledge this as acceptable and adequate baseline, and how these monitoring points are going to provide useful operational information without adequate baseline data.

**R645-301-724.100**, The Permittee needs to provide the second year of baseline data collected for the springs proposed for operational monitoring, in particular MFR-30 and SP1-29, which have only one baseline point each.

**R645-301-525.120, -525.500, 727, and -731.530**. The Permittee must describe how appropriated water resources will be replaced in the event their flow is interrupted, diminished or contaminated from coal mining operations.

**R645-100-122, -301-725**, The Permittee must provide to the Division, or otherwise make readily available to the Division, a copy of: *Mayo and Associates, March 1997, Results of in-mine slug tests on the Star Point Sandstone, Genwal Resources consulting report prepared for Genwal Resources, Inc., March, 1997, 15 p.*, which is referenced several times in the PAP.

**R645-301-728.200, -728.350**, The Permittee must explain why it does not consider the Crandall Canyon Syncline as an analogous structure to the Straight Canyon Syncline. The Crandall Canyon Syncline, and the potential that mining in this syncline will impact the hydrologic balance in and adjacent to the Mill Fork Lease, Little Bear Spring in particular, needs to be discussed in the PHC.

## **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 the Mill Fork Lease PAP 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 (PAP, 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 permit boundaries. The Permittee submitted several maps that show the permit boundaries for the Mill

Fork Lease. This issue has been address below in the section called Maps, Plans and Cross Sections of Mining Operations.

The affected area boundary could extend north to the Crandall Canyon mine, west to the into Joes Valley, east to Huntington Creek. Deer Creek mine lies to the south where the same coal seams are being mined. Maps MFU-1824D, MFU-1825D, MFU-1826D, MFU-1827D and MFU-1828D provide geologic information to identify the affected area on and adjacent to the proposed Mill Fork permit area.

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

The Permittee has submitted maps and tables identifying the local geologic and hydrologic features within and near the Mill Fork Lease Tract. Map MFU-1823D, the Geologic Formations Map, shows the locations and elevations on the surface of all exploration drill holes and test wells within the lease area. Seventeen coal exploration holes and one gas well have been drilled within the lease area. The Utah Geological and Mineral Survey (Utah Geological Survey) drilled DH-2 in 1975. The US Geological Survey drilled holes CLB-1, CLB-2, CLB-3A, SLB-1 and SLB-2 in 1980. ARCO Coal Company drilled HC-2 and HC-3 in 1981. PacifiCorp has drilled nine boreholes to date within the lease, EM-169 through EM-177. Meridian Oil and Gas Co. drilled a single gas well on the property in 1987. Energy West used information from these drill holes and wells to assess the underground geology, coal reserves, ground-water resources, and probable impacts to resources.

There are two power lines on the lease. One line crosses a quarter section on the east side of the lease area. There is no planned mining beneath the line. The other line crosses the lease diagonally from south to west. It crosses over one panel. Two towers lie within the panel.

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

The Mill Fork Lease will not have any surface facilities at the present time. All mining activities will be conducted underground. 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-PM01I (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" = 1,000 'and has 100 foot contours.

**ENVIRONMENTAL RESOURCES INFORMATION**

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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.

**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 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.

**Monitoring and Sampling Location Maps**

Several maps, including Geologic Formations Map MFU-1823D, identify the locations of boreholes from which geologic information and sampling was conducted.

**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**

Although Lines (*Lines, G. C., 1985, The ground-water system and possible effects of underground coal mining in the Trail Mountain area, central Utah, USGS Water-Supply Paper 2259*) described the Blackhawk and Star Point strata as a regional aquifer, 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 (PAP, section R645-301-624). The North Horn and Price River Formations also contain localized, perched aquifers or saturated zones (PAP, section R645-301-624). Hydrographs of spring and seep discharge rates, such as Figure 12 of Appendix B (PAP, section R645-301-700, Appendix B), show seasonal and climatic differences of head.

Areal and vertical distribution of the formations that contain these perched waters are shown on Drawings MFU1823D and MFU1829D in the Geology section of the Mill Fork Lease

PAP. There are no maps or cross-sections of individual aquifers nor of seasonal differences of head in different aquifers, and the Division does not routinely require such detailed description or mapping of these localized, discontinuous perched ground-water zones.

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

The Permittee has identified surface and subsurface man made features within, passing through, or passing over the proposed permit area - see Page 5-20 and 5-21 and Map MFS1839D.

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

The Permittee has shown two gas wells, one of which is proposed. This is illustrated on several of the mine maps. The gas well in Section 23 in the Mill Fork Lease will not be undermined. The proposed gas well in Section 14 will be undermined by longwall mining between the years 2012-2016. See map MFU1840D.

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

The surface and subsurface ownership maps for the Mill Fork Lease are Drawings MFS1838D and MFU1837D respectively. The maps identify the ownership of both surface and coal rights.

### **Surface Water Resource Maps**

There are no known water-supply intakes for current users of surface waters flowing into, out of, and within the Mill Fork Lease hydrologic area. The water supply system in Rilda Canyon is shown on maps and drawings in the existing MRP. No surface waters will receive discharges from affected areas in the proposed Mill Fork Lease area. Locations for Deer Creek Mine UPDES discharge points are shown on maps in the existing MRP. Locations of surface water bodies within the proposed Mill Fork Lease permit and adjacent areas are shown on several maps, including Plate 1; Drawing MFS1830D – Hydrologic Map; and Drawing MFS1839D - Pre-subsidence Survey Map.

### **Vegetation Reference Area Maps**

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.

ENVIRONMENTAL RESOURCES INFORMATION

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**Well Maps**

Locations of a gas well and a proposed gas well are shown on several maps, including the two Mine Plans, Drawings MFU1840D and MFU1841D, and the Pre-subsidence Survey Map, Drawing MFS1839D.

*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. The map is at a scale of 1" = 1,000' and has 100 foot contours.

**Findings:**

The information provided in the PAP is considered adequate to meet the minimum requirements of the Maps, Plans and Cross-Sections of Resource Information section of the Coal Mining Rules.

Page 48  
C/015/018-PM01I-1  
October 9, 2002

**ENVIRONMENTAL RESOURCE INFORMATION**

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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 Lease in the near future. 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. A list of boreholes was submitted in Appendix B. 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 in the Star Point Sandstone and Mancos Shale in the Cross-section.

The Mill Fork Lease encompasses an area of East Mountain. Its extent is shown on several maps in the Mill Fork tract submittal. Drawing MFU 48258 shows the lease in relationship to surface ownership. It lies 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 Lease 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.

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

The Permittee will use continuous miner 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 feet. Most of the overburden thickness is over 1,000 feet. The thinner overburden is in the northeast corner of the lease, at a side canyon of Crandall Canyon.

#### *Facilities and Structures*

The Permittee has not proposed any new surface facilities on the Mill Fork Lease.

#### **Findings**

The Permittee has met the minimum requirements of this section of the R645 Coal Rules.

#### **EXISTING STRUCTURES:**

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

#### **Analysis:**

The Permittee needs to state in section R645-301-526 of the PAP the type and location of each existing structure in the Mill Fork Lease. Some of those facilities are listed on Page 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 US Forest Service road #244 and transmission lines in the southwest corner of the lease.

The information listed in section R645-301-526 of the PAP 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.

#### **Findings**

The information provided in the proposal is considered adequate to meet the requirements of the existing structures section of the regulations.

**OPERATION PLAN**

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**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 Lease. 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 the Carbon and Emery Counties. This method of mining yields the highest safety and coal recovery possible for underground coal mining. A coal recovery plan has been approved by the BLM in the R2P2 document.

**Findings**

The Permittee has submitted sufficient information to address the minimum Coal Recovery Section 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 that renewable resources exist in the area. Those resources include springs, water seeps, grazing land, timber and wildlife. Manmade features in the area include unimproved roads, trails, a gas well and pipelines and power transmission lines. Some of the identified renewable resources include State appropriated water rights.

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. At a minimum, the Permittee must list each water right in and adjacent to the permit area. The quality and quantity of the water associated with each water right must be listed.

Because the list of water rights and water quality and quantity will be sent to land owners and the local water conservancy district the Division needs to have this information tabulated in a form the can easily be understood by the public. Therefore, the Division will require that the information be in table form and attached to the MRP as a stand alone document.

**OPERATION PLAN**

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On page 51 of the Hydrology Section of the PAP (R645-301-721, A. 15. b. - Little Bear Spring), the Permittee states the following:

Mayo and Associates (Appendix B Reference List Mayo 1997a,b) suggest that Little Bear Spring is primarily recharged from surface water losses and alluvial ground-water losses in Mill Fork Canyon east of the Mill Fork Lease.

Surface runoff from the Mill Fork Lease area will flow into the recharge area for Little Bear Spring. Should subsidence cause damage to the drainages, some loss of water to the recharge area could occur. Information presented in the PAP supports this conclusion.

**Subsidence Control Plan**

The Permittee has a Subsidence Control Plan on Page 5-20 and 5-21. The Mill Fork Lease has one operating gas well and two gas pipelines, two power transmission lines, one radio repeater station and two roads. The Permittee has stated that no mining will occur under any of these structures except for US Forest Service road #244 (unimproved dirt track) see Page 5-20 and 5-21.

The Permittee plans to undermine approximately 900 feet of the 345 KV line in Section 22, Township 16 South, Range 6 East. There are two towers in the subsidence area. The transmission line is owned and operated by Utah Power, a subsidiary of PacifiCorp.

The Permittee will use a 100-foot barrier pillar along the lease/permit area boundary of the Blind Canyon (upper) seam and a 400-foot barrier pillar for the Hiawatha seam. The barrier pillars should provide protection from the Permittee causing subsidence to occur on the Genwal permit area.

The Division considers subsidence to be part of the coal mining operations and therefore, must be confined to the permit boundaries. (See R645-300-141 of the Coal Mining Rules.) Therefore, the Permittee must contain all subsidence from the Mill Fork Lease to the Deer Creek permit boundary.

Longwall mining consists of mining sequential coal blocks (panels) leaving no barrier pillars. Usually when barrier pillars are left between longwall panels, it is for ground control in the underground workings.

The Permittee must give the Division a map that shows the location of all areas that are anticipated to be subsided (area within the angle-of-draw.) The map must also include all features such as roads and pipelines that need to be protected.

In the Mitigation of Subsidence Damage Effects of the Subsidence section of the Engineering Section of the PAP the Permittee states the following:

**OPERATION PLAN**

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The water will be replaced from an alternative source in sufficient quantity and quality to maintain the current and postmining land use as stated herein.

The Division agrees with the concept of using replacement water to mitigate damages to State-appropriated water right. However, before the Division can approve the PAP the Permittee must show that they have access or the potential access to such water resource.

**Performance Standards For Subsidence Control**

The Permittee has stated on Page 5-29, that a 100-foot barrier along the lease/permit area boundary in the Blind Canyon seam as a precaution against overlapping the underlying Genwal workings in the Hiawatha seam. Map MFU1826D verifies that 100 ft. barrier will be left along the northern boundary of the Blind Canyon seam (next to the Genwal Mine). The Permittee will leave a ~400 foot barrier in the Hiawatha Seam to prevent subsidence from occurring on the Genwal permit area.

For damage that occurs as a result of earth movement within the angle of draw land, a rebuttable presumption exists that the permittee caused the damage. This presumption will normally apply to a 30 degree angle of draw from the vertical, however, the Division may amend the applicable angle of draw for a particular mine through the process described in R645- 301-525.542.

**Notification**

The Permittee committed to mail a notification to the water conservancy district; all owner-occupants of surface property and structures, above the underground workings at least six months before mining.

The Permittee needs to commit to provide copies of the water rights survey to all property owners, the water conservancy district where the water rights are located and to the Division.

**Findings:**

The information provided in the proposal is not considered adequate to meet the requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

**R645-301-521.142, -525.110 and -525.240**, The Permittee must give the Division a map the show the areas that are scheduled to subside (area within the angle-of-draw.) The map must show the subsidence limit for all areas to

be mined including subsidence. Stating the information in the text is not considered adequate.

**R645-301-525.130**, The Permittee must conduct a survey or study that shows whether surface water from the Mill Fork Lease area flows to the recharge area of Little Bear Spring.

**R645-301-525.480**, The Permittee must state where they will obtain water rights of sufficient quality and quantity to replace State-appropriated water rights damage from subsidence.

**R645-301-525.130**, The Permittee must list all State appropriated water rights in the permit and adjacent areas. In addition the Permittee must list the quality and quantity of the water associated with each water right.

**R645-301-525.130**, The Permittee must commit to give a list of the water right survey to each property owner, the locale water conservancy district and to the Division.

## SLIDES AND OTHER DAMAGE

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

### Analysis:

There should be no slides occurring because all mining activities are underground. If slides would occur, it would most likely be caused by subsidence. The remedy for these slides would fall under the subsidence mitigation plan.

### Findings

The Permittee has met the minimum requirements of this section.

## FISH AND WILDLIFE INFORMATION

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

**OPERATION PLAN**

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**Analysis:**

**Protection and Enhancement Plan**

Second mining is expected to occur under the Castlegate Sandstone escarpments on the east side of the permit area. This has caused cliff failure and rock falls in other areas mined in the Deer Creek permit area (section R645-301-525. Subsidence Control Plan). The Pre-Subsidence Survey Map (MFS-1839D) shows the Castlegate Sandstone out crops. Escarpments on the Joes Valley side will be protected from subsidence (page 5-24).

The PAP states (page 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), opinion is that subsidence impacts will be negligible to vegetation within the Mill Fork Lease. The PAP 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 PAP must contain a commitment to analyze and provide the Division with a report at the time of permit area reduction that quantifies resource protection.

**Endangered and Threatened Species**

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

The USFWS have identified that water consumption by underground coal mining operations could jeopardize the continued existence of or adversely modify the critical habitat of the Colorado River endangered fish species. The PAP must address the adverse effects to the four Colorado River endangered fish species: the Colorado pikeminnow, the humpback chub, the bonytail chub, and the razorback sucker. Effects should be addressed by determining the amount of water consumption by the mine. Consumption estimates should include evaporation from ventilation; coal preparation; sediment pond evaporation; subsidence effects on springs; alluvial aquifer abstractions into mines; postmining inflow to workings; coal moisture loss; and direct diversions. Mitigation is required if the loss is estimated to be greater than 100 acre-feet per year. Information should be provided in a table or chart form assigning values to each category.

**Bald and Golden Eagles**

Page 5-22 of the PAP states that cliff escarpment failure could occur in section 1 where an eagle nest is located. Mining plans change and a specific protection plan given at this time

## OPERATION PLAN

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will likely be obsolete when mining actually occurs. Annual raptor monitoring will continue and prior to mining PacifiCorp will consult with the Division to discuss avoidance, mitigation, and impacts (page 3-7). PacifiCorp should recognize that it is the Divisions and not their responsibility to consult with DWR and USFWS.

### **Findings:**

Information provided in the PAP is not considered adequate to meet the minimum Fish and Wildlife Information section of the regulations. Prior to approval, the Permittee must provide the following in accordance with:

**R645-301-130**, Data must be presented to support the statement in the PAP that experience from the existing PacifiCorp permit areas has shown that the effects of subsidence on grazing and grazing lands, timber resources or access to timber resources, wildlife resources are minimal. The PAP must contain a commitment to analyze and provided the Division with a report at the time of permit area reduction that quantifies resource protection.

**R645-301-333**, The PAP must address the adverse effects to the four Colorado River endangered fish species: the Colorado pikeminnow, the humpback chub, the bonytail chub, and the razorback sucker.

## 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. Color infrared photographs at five year intervals will be used as a method to monitor potential vegetation change over time.

### **Findings:**

Information provided in the PAP is considered adequate to meet the minimum Vegetation section of the regulations.

**OPERATION PLAN**

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**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. All access to the Mill Fork Lease will be from underground.

**Findings:**

The Permittee has met the minimum requirements of this section.

**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 Rilda Canyon portal.

**Coal Mine Waste**

Coal mine waste will be removed as stated in the approved MRP.

**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.

### **Excess Spoil:**

Excess spoil will be made when rock slopes are developed as shown in the mine projections map. The mine map shows this material will be stored underground. See Vol. 2, Part 3 of the MRP.

### **Findings:**

The Permittee has met the minimum requirements of this section.

## **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, -300-148, -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:**

#### **General**

Appendix A of the Mill Fork Lease Extension to the Deer Creek Mine PAP is an update of the monitoring plan in Volume 9 of the Deer Creek, Des-Bee-Dove, Cottonwood-Wilberg PAP. Appendix B is a report by Mayo and Associates, *Surface-water and ground-water investigation of the Mill Fork Lease area, Emery County, Utah*, for the Mill Fork Lease, which includes a PHC determination.

Appendix C to the Mill Fork Lease Extension to the Deer Creek Mine PAP has been submitted with information on springs and seeps in the Mill Fork Lease. There is an interesting section with photos and descriptions of the sites; details on location and elevation, geology and stratigraphic position, and water rights and development information; relationships to other springs; and a determination of the probable recharge area. This appendix also contains data report sheets for select seeps and springs – including isotope data for select springs, and water rights in the Mill Fork Lease area.

#### **Ground-Water Monitoring**

R645-301-700 – Hydrology - Appendix A of the Mill Fork Lease PAP lists sampling sites and a monitoring schedule.

**OPERATION PLAN**

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**Surface Water Monitoring**

R645-301-700 – Hydrology - Appendix A of the Mill Fork Lease PAP lists sampling sites and a monitoring schedule.

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

Extensive testing of overburden strata, coal, and surrounding rocks has shown that there are no potentially acid- and toxic-forming materials (PAP, section R645-301-623.100). Details of yearly analyses (1993 to 1999) of coal, floor, and roof are in section R645-301-600-Geology - Appendix C of the Mill Fork Lease PAP. Analyses of overburden material are presented in Table G-1 in Volume 8 of the Deer Creek, Des-Bee-Dove, Cottonwood-Wilberg MRP, and summarized in Appendix A of the Mill Fork Lease PAP.

**Transfer of Wells**

The PAP contains no information on transfer of wells; however, there are no water-monitoring wells, piezometers, or unplugged exploration holes in the Mill Fork Lease area.

**Discharges Into An Underground Mine**

There are no mine openings in the Mill Fork Lease area. The only potential mine opening associated with this permit extension is possible ventilation breakout in Crandall Canyon, upstream of the existing Crandall Canyon Mine. The need for these 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. All currently planned coal mine operations in the Mill Fork Lease will be underground.

**Gravity Discharges From Underground Mines**

There are no mine openings in the Mill Fork Lease area. The only potential mine opening associated with this permit extension is the possible ventilation breakout in Crandall Canyon, upstream of the existing Crandall Canyon Mine. The need for these 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. All currently planned coal mine operations in the Mill Fork Lease will be underground.

**Water-Quality Standards And Effluent Limitations**

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 (PAP, section R645-301-751, p. 7-101). UPDES information is in Appendix B of Deer Creek, Des-Bee-Dove, Cottonwood-Wilberg MRP Volume 9.

**Diversions: General**

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

**Stream Buffer Zones**

No coal mining operations are planned within 100 feet of a perennial or intermittent stream in the Mill Fork Lease. The Permittee states that no such activity will occur without approval from the Division (PAP, section R645-301-731.600, p. 7-100).

**Sediment Control Measures**

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.

**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: 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.

**Siltation Structures: Other Treatment Facilities**

No 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.

**OPERATION PLAN**

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**Siltation Structures: Exemptions**

There is no request for exemption for siltation structures. 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.

**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.

**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.

**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.

*Casing and Sealing of Wells*

Each coal exploration bore hole 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 feet 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 feet 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 (PAP, sections R645-301-631 and -642, p. 6-23 and 6-24, 6-25 and 6-26).

**Findings:**

Operation plan hydrologic information in the current Deer Creek Mine MRP provides information that is adequate to meet the requirements of the Coal Mining Rules for the Mill Fork Lease.

**SUPPORT FACILITIES AND UTILITY INSTALLATIONS**

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

**Analysis:**

No support facilities and utility installations will be developed in this submittal. However, the Permittee is studying the feasibility of a new surface facility at Crandall Canyon. This would require a separate approval from the Division.

**Findings:**

The Permittee has met the minimum requirements of this section.

**SIGNS AND MARKERS**

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

**Analysis:**

No additional signs or markers will be needed, because all mining activity will be underground.

**Findings:**

The Permittee has met the minimum requirements of this section.

**USE OF EXPLOSIVES**

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

**OPERATION PLAN**

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**Analysis:**

**General Requirements**

All mining activities are underground and must comply with MSHA regulations. The Permittee has committed to comply with R645-301-524 of the Coal Mining Rules.

**Findings:**

The Permittee has met the minimum requirements of this section.

**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 the Mill Fork Lease PAP 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 (PAP, section R645-301-513, p. 5-2).

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

**Affected Area Maps**

A complete affected area map was not submitted in the PAP. The Permittee could use the existing mine map MFU-1826D and add the angel of draw. This would give the lands affected by mining of the Mill Fork Lease throughout the life of the mine.

**Mining Facilities Maps**

There will be no changes to the current support facilities map because all mining activities will be underground using existing facilities. All maps are P.E. certified.

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 the Mill Fork Lease PAP. 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 (PAP, section R645-301-623.200). All currently planned coal mine operations in the Mill Fork Lease will be underground.

### **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. Map MFU-1840D gives 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 P.E. certified.

### **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.

### **Findings:**

The information provided in the proposal is not considered adequate to meet the requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

**R645-301-521.141**, The Permittee must provide a map indicating the boundaries of all areas proposed to be affected by mining.

RECLAMATION PLAN

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## RECLAMATION PLAN

### 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 Lease because all mining activities will be underground. Subsidence mitigation is not considered as a reclamation requirement.

#### Findings:

The Permittee has met the minimum requirements of this section.

### APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -301-412, -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.

#### Findings:

The Permittee met the minimum requirements of this section.

### 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.

**Findings:**

The Permittee met the minimum requirements of this section.

**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 mine opening on the Mill Fork Lease.

**Findings:**

The Permittee has met the minimum requirements of this section.

**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:**

**Reclamation**

No roads will be built in the Mill Fork Lease.

**Findings:**

The Permittee has met the minimum requirements of this section.

RECLAMATION PLAN

## 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

##### *General*

There will be no surface disturbance in the Mill Fork Lease area. There will probably be no disturbance to the hydrologic balance within the permit and adjacent areas other than water removed with the coal, water lost with mine ventilation, and water discharged under the UPDES permits: these are minimal and unavoidable effects. There is no anticipation of acid or toxic drainage. Structures in place will prevent, to the extent possible, additional contributions of suspended solids to streamflow. There is no need foreseen for additional water treatment facilities or drainage control in the Mill Fork Lease area. There have been no potential adverse hydrologic consequences identified in the PHC determination.

There are no permanent or temporary structures, stream channel diversions, and other diversions to be constructed, and there will be no need for postmining removal, reclaiming, or rehabilitation of all structures, sedimentation ponds, diversions, impoundments, and treatment facilities within the Mill Fork Lease area.

##### *Casing and sealing of wells*

The Permittee describes the casing and sealing of boreholes. Plans are to backfill or seal exploration holes or boreholes to prevent acid or toxic drainage from entering water resources, minimize disturbance in the permit and adjacent areas of the permit area. Boreholes will be filled from total depth to the surface with type II Portland cement. If circulation cannot be maintained while filling, the borehole will be filled with bentonite chips to within 5 feet of the top, then a cement surface plug with a permanent identification marker will be placed on the top of the hole.

##### *Ground-Water Monitoring*

R645-301-700 – Hydrology - Appendix A of the Mill Fork Lease PAP lists sampling sites and a monitoring schedule.

### *Surface-Water Monitoring*

R645-301-700 – Hydrology - Appendix A of the Mill Fork Lease PAP lists sampling sites and a monitoring schedule.

### *Acid- and Toxic-Forming Materials*

Extensive testing of overburden strata, coal, and surrounding rocks has shown that there are no potentially acid- and toxic-forming materials (PAP, section R645-301-623.100). Details of yearly analyses (1993 to 1999) of coal, floor, and roof are in R645-301-600-Geology - Appendix C of the Mill Fork Lease PAP. Analyses of overburden material are presented in Table G-1 in Volume 8 of the Deer Creek, Des-Bee-Dove, Cottonwood-Wilberg MRP, and summarized in Appendix A of the Mill Fork Lease PAP.

### *Transfer of Wells*

The PAP contains no information on transfer of wells; however, there are no water-monitoring wells, piezometers, or unplugged exploration holes in the Mill Fork Lease area.

### *Discharges into an Underground Mine*

There are no mine openings in the Mill Fork Lease area. The only potential mine opening associated with this permit extension is possible ventilation breakout in Crandall Canyon, upstream of the existing Crandall Canyon Mine. The need for these 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. All currently planned coal mine operations in the Mill Fork Lease will be underground.

### *Gravity Discharges*

There are no mine openings in the Mill Fork Lease area. The only potential mine opening associated with this permit extension is the possible ventilation breakout in Crandall Canyon, upstream of the existing Crandall Canyon Mine. The need for these 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. All currently planned coal mine operations in the Mill Fork Lease will be underground.

### *Water Quality Standards and Effluent Limitations*

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

RECLAMATION PLAN

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set forth in 40 CFR Part 434 (PAP, section R645-301-751, p. 7-101). UPDES information is in Appendix B of Deer Creek, Des-Bee-Dove, Cottonwood-Wilberg MRP Volume 9.

*Diversions*

There are no diversions in the Mill Fork Lease.

**Stream Buffer Zones**

No coal mining operations are planned within 100 feet of a perennial or intermittent stream in the Mill Fork Lease. The Permittee states that no such activity will occur without approval from the Division (PAP, section R645-301-731.600, p. [7-]100).

*Sediment Control Measures*

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.

*Siltation Structures*

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.

*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.

*Other Treatment Facilities*

No 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.

*Exemptions for Siltation Structures*

There is no request for exemption for siltation structures. 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.

*Discharge Structures*

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

*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.

*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.

*Casing and Sealing of Wells*

Each coal exploration bore hole 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 feet of the surface with a 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 feet 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 (PAP, sections R645-301-631 and -642, p. 6-23 and 6-24, 6-25 and 6-26).

**Findings:**

The Permittee has submitted sufficient information to address the minimum Hydrologic Information requirements for this section.

**RECLAMATION PLAN**

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**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.

**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.

**Reclamation Facilities Maps**

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

**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.

**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.

**Findings:**

Maps, plans, and cross sections of reclamation operations for the Mill Fork Lease are considered adequate to meet the requirements of the Coal Mining Rules.

**BONDING AND INSURANCE REQUIREMENTS**

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

**Analysis:**

**General**

No additional bonding will be required because the Mill Fork Lease will be only underground mining. No surface disturbance has been proposed in the PAP.

**Terms and Conditions for Liability Insurance**

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

**Findings:**

The Permittee has met the minimum requirements of this section.

# CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT (CHIA)

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

## **Analysis:**

The Division is updating the CHIA to include the Mill Fork tract and the South Crandall Lease.

## **Findings:**

The Division is updating the CHIA to include the Mill Fork and the South Crandall Leases.

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