C0150009 Incoming

Fossil Rock Mine

#5494

Canyon Fuel Company, LLC
A Subsidiary of Bowie Resource Holdings, LLC

June 29, 2017

RECEIVED
JUL 03 2017
DIV. OF OIL, GAS & MINING

Permit Supervisor, Utah Coal Regulatory Program
Utah Division of Oil, Gas and Mining
1594 West North Temple, Suite 1210
PO Box 145801
Salt Lake City, UT 84114-5801

Re: Revisions to the Disturbed Area Boundary and Legal Description Change, Fossil Rock Mine, Fossil Rock Resources, LLC, Canyon Fuel Company, LLC, Permit Number C/015/0009, Task ID# 5288

Dear Sirs:

Please find attached to this letter a copy of the amendment related to the boundary line between the Fossil Rock and Cottonwood mines and other changes to the Fossil Rock M&RP.

The primary deficiencies associated with this amendment were addressed in a meeting with division representatives and personnel representing CFC on May 2nd of this year. Among those were defining permit obligations regarding the new boundary along the county road.

Clean copies of this amendment will contain correct pagination and an updated table of contents.

If you have questions or need additional information, please contact Bryant Bunnell at (435) 286-4490 or Vicky Miller at (435) 286-4481.

CANYON FUEL COMPANY, Fossil Rock Mine

Rick Parkins
General Manager

Encl.

cc: DOGM Correspondence File

APPLICATION FOR COAL PERMIT PROCESSING

Permit Change ■ New Permit ☐ Renewal ☐ Exploration ☐ Bond Release ☐ Transfer ☐

Permittee: Canyon Fuel Company, LLC

Mine: Fossil Rock Resources, LLC **Permit Number:** C/015/0009

Title: Disturbed Area Boundary and Legal Description Text and Plate Changes, Task#5288

Description, Include reason for application and timing required to implement:

Instructions: If you answer yes to any of the first eight (gray) questions, this application may require Public Notice publication.

☒ Yes ☐ No 1. Change in the size of the Permit Area? Acres: 2.86 Disturbed Area: _____ ■ increase ☐ decrease.
☐ Yes ☒ No 2. Is the application submitted as a result of a Division Order? DO# _____
☐ Yes ☒ No 3. Does the application include operations outside a previously identified Cumulative Hydrologic Impact Area?
☐ Yes ☒ No 4. Does the application include operations in hydrologic basins other than as currently approved?
☐ Yes ☒ No 5. Does the application result from cancellation, reduction or increase of insurance or reclamation bond?
☐ Yes ☒ No 6. Does the application require or include public notice publication?
☒ Yes ☐ No 7. Does the application require or include ownership, control, right-of-entry, or compliance information?
☒ Yes ☐ No 8. Is proposed activity within 100 feet of a public road or cemetery or 300 feet of an occupied dwelling?
☐ Yes ☒ No 9. Is the application submitted as a result of a Violation? NOV # _____
☐ Yes ☒ No 10. Is the application submitted as a result of other laws or regulations or policies?
Explain: _____
☒ Yes ☐ No 11. Does the application affect the surface landowner or change the post mining land use?
☐ Yes ☒ No 12. Does the application require or include underground design or mine sequence and timing? (Modification of R2P2)
☐ Yes ☒ No 13. Does the application require or include collection and reporting of any baseline information?
☐ Yes ☒ No 14. Could the application have any effect on wildlife or vegetation outside the current disturbed area?
☐ Yes ☒ No 15. Does the application require or include soil removal, storage or placement?
☐ Yes ☒ No 16. Does the application require or include vegetation monitoring, removal or revegetation activities?
☐ Yes ☒ No 17. Does the application require or include construction, modification, or removal of surface facilities?
☐ Yes ☒ No 18. Does the application require or include water monitoring, sediment or drainage control measures?
☒ Yes ☐ No 19. Does the application require or include certified designs, maps or calculation?
☐ Yes ☒ No 20. Does the application require or include subsidence control or monitoring?
☐ Yes ☒ No 21. Have reclamation costs for bonding been provided?
☐ Yes ☒ No 22. Does the application involve a perennial stream, a stream buffer zone or discharges to a stream?
☐ Yes ☒ No 23. Does the application affect permits issued by other agencies or permits issued to other entities?

Please attach one (1) review copy of the application.

I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments, undertakings, and obligations, herein.

Jacob D Smith
Print Name

Sign Name, Position, Date: Engr. Mgr. 6/29/17

Subscribed and sworn to before me this 29 day of June, 2017

Notary Public

My commission Expires: _____, 20___ }
Attest: State of _____ } ss:
County of _____

JACQUELYN NEBEKER
Notary Public
State of Utah
My Commission Expires 03/24/2019
COMMISSION NUMBER 681827

For Office Use Only:	Assigned Tracking Number:	Received by Oil, Gas & Mining
		RECEIVED JUL 03 2017 DIV. OF OIL, GAS & MINING

Form DOGM- C1 (Revised 9/17/2013)

APPLICATION FOR COAL PERMIT PROCESSING
Detailed Schedule Of Changes to the Mining And Reclamation Plan

Permittee: Canyon Fuel Company, LLC
Mine: Fossil Rock Resources, LLC **Permit Number:** C/015/0009
Title: Disturbed Area Boundary and Legal Description Text and Plate Changes, Task#5288

Provide a detailed listing of all changes to the Mining and Reclamation Plan, which is required as a result of this proposed permit application. Individually list all maps and drawings that are added, replaced, or removed from the plan. Include changes to the table of contents, section of the plan, or other information as needed to specifically locate, identify and revise the existing Mining and Reclamation Plan. Include page, section and drawing number as part of the description.

			DESCRIPTION OF MAP, TEXT, OR MATERIAL TO BE CHANGED
☐ Add	☐ Replace	☐ Remove	
☐ Add	☐ Replace	☐ Remove	General Chapter One (changes were sent in and approved in a different amendment)
☐ Add	■ Replace	☐ Remove	Chapter 1
☐ Add	■ Replace	☐ Remove	Chapter 2
■ Add	☐ Replace	☐ Remove	Chapter 2, Appendix 2
☐ Add	■ Replace	☐ Remove	Chapter 3
■ Add	☐ Replace	☐ Remove	Chapter 3, Appendix 3-6 and 3-11
☐ Add	■ Replace	☐ Remove	Chapter 3, Figure 3-1
☐ Add	■ Replace	☐ Remove	Chapter 3, Plates 3-1, 3-2, 3-4, 3-5, 3-6A, thru 3-6A thru 3-6D, 3-7 and 3-8
☐ Add	■ Replace	☐ Remove	Chapter 4, Pages 1 thru 6
☐ Add	■ Replace	☐ Remove	Chapter 4, Plates 4-1 and 4-2
☐ Add	■ Replace	☐ Remove	Chapter 5, Pages i, 1 thru 2
☐ Add	■ Replace	☐ Remove	Chapter 6, Plates 6-1, 6-2, 6-3, 6-4, and 6-5
☐ Add	■ Replace	☐ Remove	Chapter 7, TOC, Pages 7-8, 7-10, 7-11, 7-24, 7-32, and 7-44
☐ Add	■ Replace	☐ Remove	Chapter 7, Plates 7-1, 7-2, 7-3, 7-4, 7-6, 7-7, 7-9, 7-10, 7-11
■ Add	☐ Replace	☐ Remove	Chapter 7, Plate 7-12
☐ Add	■ Replace	☐ Remove	Chapter 8, Pages 5 and 6
☐ Add	■ Replace	☐ Remove	Chapter 8, Plate 8-1
☐ Add	■ Replace	☐ Remove	Chapter 9, Page 13
☐ Add	■ Replace	☐ Remove	Chapter 9, Plate 9-1
☐ Add	☐ Replace	☐ Remove	
☐ Add	☐ Replace	☐ Remove	
☐ Add	☐ Replace	☐ Remove	
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☐ Add	☐ Replace	☐ Remove	

Any other specific or special instruction required for insertion of this proposal into the Mining and Reclamation Plan.

Received by Oil, Gas & Mining

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JUL 03 2017
DIV. OF OIL, GAS & MINING

Form DOGM - C2 (Revised March 12, 2002)

CHAPTER 1

INTRODUCTION AND SUMMARY OF PERMIT APPLICATION

TABLE OF CONTENTS

Section No.	Description	Page No.
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1.2	SCOPE OF OPERATION	2
1.3	SUMMARY OF ENVIRONMENTAL IMPACTS	3

LIST OF FIGURES

Figure No.	Description	Page No.
1-1	Location Map of the Mine	(Refer to Plate 3-4)

1.1 INTRODUCTION

Fossil Rock Mine is located in Cottonwood Canyon, I2 miles west of Orangeville, Utah (See Figure 1-1). A mining and reclamation permit, ~~ACT~~C/0I5/009, which incorporates the Office of Surface Mining (OSM) permit UT-00I7, was issued by the State of Utah, Division of Oil, Gas and Mining (DOGM) to Trail Mountain Coal Company on February I9, I985. The subsequent permit, ~~ACT~~ C/0I5/009-1, was modified to include the Tract II area on April 30, I987. A permit transfer from Arch Minerals (Trail Mountain Coal Co.) to Beaver Creek Coal Company (Trail Mountain No. 9 Mine) was approved by DOGM on 11/23/87. A permit transfer from Beaver Creek Coal Company (Trail Mountain No. 9 Mine) to PacifiCorp (Mine) was approved on 11/13/92. A permit transfer from PacifiCorp (Trail Mountain Mine) to Fossil Rock Resources, LLC (Fossil Rock Mine) was approved on October 8, 2015.

PacifiCorp notified the Division of temporary cessation of coal mining operations at the Mine effective May 4, 2001. Coal mining at the Mine ceased as of March 15, 2001. In preparation of temporary cessation, ~~all~~ mining equipment including:" production (longwall and continuous miner), belt haulage and electrical were removed from the mine. Verification of equipment removal was conducted on April 6, 2001 with the Bureau of Land Management (Steve Falk) and Division of Oil, Gas and Mining (Pete Hess)participating in the review. A plan to construct permanent seals was submitted to and approved by Mine Safety Health Administration. Sealing of the mine portals was completed on May 1, 2001.

The following Permit Application will focus on the entire mine which from this time forth will be referred to as the Fossil Rock Mine.

The surface facilities are located in Sections 25, T.I7S, R 6 E., SLB&M, in Emery County, twelve miles west of Orangeville, Utah.

Historically, the Trail Mountain Mine has been developed to operate with longwalls and continuous miners in the Hiawatha Coal Seam. The Hiawatha seam is the only minable seam in the Mine area. The historic Trail Mountain Mine operated approximately 220 days per year, three shifts per day, eight hours per shift with two production shifts and one maintenance shift. Annual production from the Mine has been approximately 3,500,000 to 5,000,000 tons. Annual production was dictated by the demand requirements of the Hunter Power Plant.

1.2 SCOPE OF OPERATION

The Mine is an underground coal operation. The Trail Mountain operations have historically extended throughout Sections 25, 26, 27, 34, 35, and 36 in Township I7 South, Range 6 East; and Sections 1, 2, and 3 in Township 18 South, Range 6 East; and Section 6 in Township 18 South, Range 7 East, Salt Lake Base and Meridian, Emery County, Utah. ~~The underground working covered an area of approximately 773.50 acres of Federal leases and fee coal lands.~~ For the legal and financial information for the Fossil Rock Mine, refer to the General Chapter 1 binder and Chapter 2. The waste rock site that serves the mine is located in Section 34, Township17 South, Range 7 East.

Underground mining occurs in the Hiawatha seam of the Blackhawk Formation. Surface facilities, including the offices, bathhouse, shop, storage facilities and tipple are located at the

intersection of the coal seam and the canyon floor. ~~Surface facilities occupy approximately 10.39 acres. The waste rock site disturbance adds an addition 15.82 acres.~~

1.3 SUMMARY OF ENVIRONMENTAL IMPACTS

Similar to many other coal operations along the east front of the Wasatch Plateau, the Mine is located in a steep walled canyon. Vegetation, soils, geology, hydrology, and wildlife of the mine plan area are typical of the general area.

As mining has been conducted in the area for over 50 years with rather minimal impact to the environmental resources, it is expected that continued operation of the Mine will also have minimal impact. Impacts are expected to be minimal due to implementation of mining practices which incorporate sound and practical engineering and environmental considerations in the mine planning process.

CHAPTER 2
LEGAL AND FINANCIAL

FOSSIL ROCK MINE
LEGAL, FINANCIAL, COMPLIANCE AND RELATED INFORMATION

This application for a mining and/or reclamation permit is submitted to the State of Utah, Department of Natural Resources, Division of Oil, Gas and Mining, in accordance with the Utah Coal Mining and Reclamation Act, Title 40, Chapter 10, U.C.A., 1953 (as amended); the applicable rules and regulations adopted thereunder; the Surface Mining Control & Reclamation Act of 1977, and applicable regulations adopted thereunder (30 CFR 770, et seq.), the Cooperative Agreement between the State of Utah and the United States Secretary of Interior, and other applicable laws and regulations.

R645-301-100 GENERAL CONTENTS

Additional Legal and Financial Information pertaining to the Fossil Rock Mine is located in the Supplemental Volume entitled: GENERAL CHAPTER 1

Business Entity: Fossil Rock Resources, LLC is a Limited Liability Company organized under the laws of Delaware on August 29, 2014 and is owned 100% by Canyon Fuel Company, LLC. Canyon Fuel Company LLC a Limited Liability Company organized under the laws of Delaware in December 1996 which in turn is owned 100% by Bowie Resource Partners, LLC a Delaware Limited Liability Company. Refer to General Chapter 1 for addition organizational structure.

Applicant: Operations, Administration, Permit Revisions and Amendments
Fossil Rock Resources, LLC
225 North 5th Street, 9th Floor
Grand Junction, CO 81501
Telephone: (970)263-5130

Operator: Fossil Rock Resources, LLC (See information above)

Resident Agent: CSC Lawyers Incorporating Service Company
421 West Main
Frankfort, KY 40601
(800) 927-9800

Contact Person: Eugene E. DiClaudio
Canyon Fuel Company, LLC
225 North 5th Street, 9th Floor
Grand Junction, CO 81501
Telephone: (970) 263-5130

Person Who Will Pay Abandoned Mine Reclamation Fees:

Eugene E. DiClaudio
Canyon Fuel Company, LLC
225 North 5th Street, 9th Floor
Grand Junction, CO 81501
Telephone: (970) 263-5130

Employer ID#: 47-1742876

Right of Entry Information

See information below regarding surface and subsurface ownership and right of entry to underground coal mining operations. For surface and coal ownership, see Plate 4-1.

		Right of Entry Acres	Permit Acres
Fossil Rock	Federal Coal Leases		
	UTU-64375*	260	260
	UTU-49332*	380	380
	UTU-82996*	80	80
	UTU-65027**	25.87	25.85
	Private Coal Leases		
	Fee*	56.36	56.36
	Total	802.23	802.21

*Mine Plan Acreage: 776.36 **Waste Rock Lease Acreage: 25.87

Surface Right of Entry Information: The disturbed area at the Fossil Rock Mine is owned by Fossil Rock Resources, LLC. The disturbed area at the waste rock site is leased under Federal Lease UTU-65027. Documents of transfer and sale, BLM Leases, Special Warranty Deeds and BLM Right-of-Ways are located in Appendix 4-2

Disturbed Area Acreage: In 2016 approximately 2.86 acres was added to the disturbed area acreage of 10.39, increasing the acreage to 13.25 acres. The additional acreage includes lands between the center line of Cottonwood Creek to the western edge of the county road and from the northern to the southern end of the disturbed area. The disturbed area associated with the waste rock site is 15.82 acres. This makes the total disturbed area 29.07 acres. Also see Section 3.2.11 in Chapter 3.

Mine Site Permit Area Legal Description – (776.36 Acres more or less)

Township 17 South, Range 6 East, SLM

Section 25: S1/2NW1/4, SW1/4, Portions of the SW1/4 NE1/4, Portions of the NW1/4SE1/4, and Portions of the SW1/4SE1/4: (280 Acres)

Section 26: S1/2SW1/4, SE1/4NE1/4, E½SW1/4NE¼, E1/2SE1/4, E1/2NW1/4SE1/4, SW1/4SE1/4: (280 Acres)

Section 27: S1/2S1/2 (160 Acres)

Leases Granting Right-of-Entry

On August 1, 2015 the following leases were assigned to Fossil Rock Resources, LLC from PacifiCorp by the Bureau of Land Management. In addition, Fossil Rock Resources, LLC has agreed to assume the rights and responsibilities of LMU-73339.

Lease UTU-64375 Legal Description (260 +/- acres)

Township 17 South Range 6 East SLB&M
Section 26, S1/2SW1/4, W1/2SW1/4SE1/4
Section 27, S1/2S1/2

Lease UTU-49332 Legal Description (380+/- acres)
Township 17 South Range 6 East SLB&M
Section 25, S1/2NW1/4, W1/2E1/2SW1/4, W1/2SW1/4
Section 26, SE1/4NE1/4, E1/2SW1/4NE1/4, E1/2SE1/4, E1/2W1/2SE1/4

Lease UTU-82996 Legal Description (80 +/- acres)
Township 17 South Range 6 East SLB&M
Section 25, E1/2E1/2SW1/4, SW1/4SE1/4

Fee Property

Special Warranty Deed (Parcel L3-11-1) (53.5 +/- acres)
Beginning at the Southwest corner of the Northwest quarter of the Southeast quarter of Section 25, Township 17 South, Range 6 East, SLB&M: thence North 160 rods; thence East 44 roads, more or less, to the center line of Cottonwood Creek; thence East 44 rods, more or less to the centerline of said Cottonwood Creek to a point 76 rods, more or less East of beginning; thence West 76 rods more or less to the point of beginning.

Special Warranty Deed (Parcel L3-001-0003) (2.86 +/- acres)
Beginning at a point which is West, 116 Rods, more of less from the Northeast corner of the South East quarter of the Northeast quarter of Section 25, Township 17 South Rand 6 East SLB&M. Refer to Appendix 4-2 for the more complete legal description.

Waste Rock Site Permit Area ~~Legal Description – (25.85 Acres more or less)~~

BLM Right-of-Way UTU-65027 Legal Description (25.87 +/- acres)
Township 17 South Range 7 East SLB&M
Section 34, SE1/4NE1/4, N1/2SE1/4, SW1/4SE1/4

Surveyed Legal Description
Township 17 South, Range 7 East, SLM
Section 34: Beginning at point N82° 39'28"W, 809.58 feet from the east 1/4 corner of Sec. 34; thence, S 74° 09' 46" W, 246.23 feet; thence, S 27° 14' 28" W, 647.59 feet; thence, S 46° 59' 05" W, 165.64 feet; thence, S 76° 41' 51" W, 264.72 feet; thence, N 72° 09' 12" W, 670.20 feet; thence, S 06° 10' 47" W, 105.57 feet; thence, S 23° 08' 12" W, 35.27 feet; thence, S 36° 59' 41" W, 71.59 feet; thence, S 40° 44' 45" W, 114.04 feet; thence, S 23° 37' 34" W, 93.77 feet; thence,

S 60° 40' 32" W, 113.86 feet; thence, S 05° 17' 52" E, 108.19 feet; thence, S 23° 20' 37" E, 105.29 feet; thence, S 24° 38' 51" W, 61.70 feet; thence, S 31° 19' 19" E, 129.90 feet; thence, S 29° 19' 58" E, 80.45 feet; thence, S 24° 11' 44" E, 104.97 feet; thence, S 47° 47' 54" E, 168.95 feet; thence, S 40° 17' 54" E, 87.31 feet; thence, S 17° 50' 49" W, 43.32 feet; thence, S 72° 11' 49" E, 213.13 feet; thence, S 78° 08' 28" E, 287.64 feet; thence, N 11° 43' 23" E, 86.24 feet; thence, N 73° 40' 14" E, 120.87 feet; thence, N 17° 04' 33" E, 74.31 feet; thence, N 14° 20' 36" W, 65.70 feet; thence, N 17° 05' 06" E, 75.21 feet; thence, N 09° 13' 24" W, 65.92 feet; thence, N 12° 54' 35" W, 99.73 feet; thence, N 02° 44' 30" W, 82.47 feet; thence, N 08° 32' 17" W, 85.51 feet; thence, N 01° 39' 36" W, 104.82 feet; thence, N 17° 50' 48" E, 218.03 feet; thence, N 76° 41' 51" E, 353.88 feet; thence, N 27° 14' 28" E, 629.52 feet; thence, N 50° 42' 06" E, 123.74 feet; thence, N 74° 09' 48" E, 113.70 feet; thence, N 15° 50' 13" W, 150.00 feet; to the point of beginning. Said parcel contains 25.85 acres more or less.

Mining Schedule

Refer to Chapter 3 ~~Sheet 1 (Appendix 2),~~ for the location and timing of mining within currently permitted leases and private fee coal. ~~The Mine Plan covers three years (2018 – 2020) of proposed mining falling within the existing leases.~~

Reclamation

Reclamation is discussed in Chapter 3, Section 3.5.

APPENDIX 2

APPENDIX 2

Ent 410237 Page 1 of 3
Date: 05-Jun-2015 02:18PM
Fee: $14.00
Filed By: CJ
Connie Jensen, Recorder
EMERY COUNTY CORPORATION
For: FIRST AMERICAN TITLE INSURANCE

RECORDING REQUESTED BY AND WHEN RECORDED RETURN TO:

Stoel Rives, LLP
Attn: Richard R. Hall
201 S. Main St., Suite 1100
Salt Lake City, Utah 84111

FIRST AMERICAN TITLE #089426 CP

(Space Above For Recorder's Use)

GRANT of TEMPORARY EASEMENT

Tax Parcel No. L3-0011-0003

PACIFICORP, an Oregon corporation, having a mailing address of 1407 West North Temple, Suite 310, Salt Lake City, Utah 84116, as "***Grantor***", for good and valuable consideration, receipt and sufficiency of which is hereby acknowledged hereby GRANTS, BARGAINS, SELLS, and CONVEYS to FOSSIL ROCK RESOURCES, LLC, a Delaware limited liability company, having a mailing address of 6100 Dutchmans Lane, 9th Floor, Louisville, Kentucky 40205, as "***Grantee***," a non-exclusive temporary easement and right of way for vehicular and pedestrian ingress and egress (the "***Temporary Easement***") over and across that certain parcel of real property owned by Grantor located in Emery County, State of Utah, together with any and all interests, rights and appurtenances thereto, as well as access to and the right to utilize any and all improvements thereon, as more particularly described in Exhibit A attached hereto (described hereinafter as the "***Real Property***").

TO HAVE AND TO HOLD the Temporary Easement unto Grantee and its successors and assigns, until such time as Grantor amends its mine permit from the Utah Board of Oil, Gas and Mining for the Cottonwood Wilberg Mine (the "***Mine Permit***") and removes the Real Property from the Mine Permit.

Grantor covenants that as soon as practicable after amendment of the Mine Permit, Grantor will convey fee title for the Real Property to Grantee by Special Warranty Deed, and this Temporary Easement shall terminate.

IN WITNESS WHEREOF, Grantor has executed this Grant of Temporary Easement as of this 5th day of June, 2015.

PACIFICORP,
an Oregon corporation

Cindy A. Crane
President/CEO - PacifiCorp dba Rocky Mountain Power

STATE OF UTAH)
:ss
COUNTY OF SALT LAKE)

The forgoing instrument was acknowledged before me this 5th day of June, 2015, CINDY A. CRANE, the President/CEO of the PacifiCorp dba Rocky Mountain Power, an Oregon corporation.

Witness my hand and official seal.

CANDACE A. TIPPETTS
Notary Public State of Utah
My Commission Expires on:
June 4, 2017
Comm. Number: 666945

Notary Public

My Commission expires: 6/4/2017 Residing at: Midvale, Utt

Exhibit A

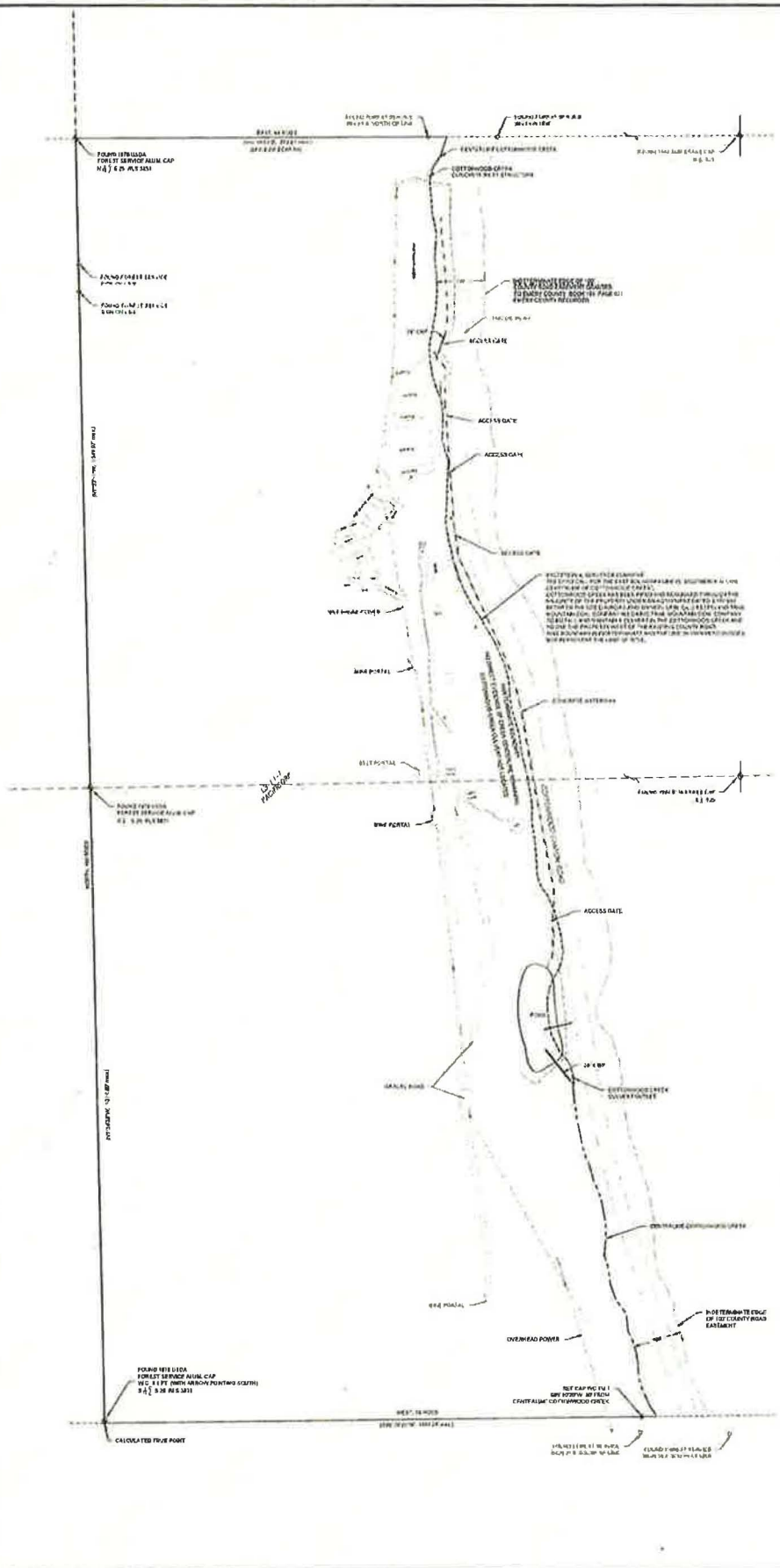
Parcel East of Cottonwood Creek and West of Cottonwood Canyon Road

Legal Description

That certain parcel of land located in Emery County, State of Utah, as more particularly described as follows:

Beginning at a point which is West, 116 Rods, more or less from the Northeast corner of the Southeast quarter of the Northeast quarter of Section 25, Township 17 South, Range 6 East, SLB&M (S 89°46'01" W, 1898.88 feet along 40 acre line by survey), said point being at the center of Cottonwood creek and running thence in a Southerly direction along center of said Creek to a point 84 Rods more or less, West of the Southeast corner of the Northeast quarter of the Southeast quarter of said Section 25 (S 89°20'20" W, 1482.82 feet along 40 acre line by survey); thence N 89°20'20" E, 68.64 feet to the centerline of Cottonwood Canyon Road; thence N 18°32'22" W, 211.65 feet along centerline of said road; thence N 18°00'23" W, 236.55 feet along centerline of said road; thence N 13°36'45" W, 219.23 feet along centerline of said road; thence N 10°17'37" W, 104.54 feet along centerline of said road; thence N 08°20'49" W, 350.40 feet along centerline of said road; thence N 10°33'11" W, 476.22 feet along centerline of said road; thence N 24°01'08" W, 163.55 feet along centerline of said road; thence N 20°01'04" W, 87.46 feet along centerline of said road; thence N 10°00'01" W, 150.85 feet along centerline of said road; thence N 02°27'38" W, 152.52 feet along centerline of said road; thence N 01°54'03" E, 211.25 feet along centerline of said road; thence N 00°12'51" W, 242.02 feet along centerline of said road; thence N 10°41'22" E, 106.12 feet along centerline of said road to the north line of the South half of the Northeast quarter of said Section 25; thence S 89°46'01" W, 48.79 feet along 40 acre line to the point of beginning.

Containing 2.86 acres more or less.



CERTIFICATE

To PacifiCorp, a Utah Corporation, LLC and First American Title Insurance Company

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2011 Minimum Standard Detail Requirements for ALTA/ACSM Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes items of Table A thereof. The field work was completed on May 14, 2015

Date of Plat or Map: May 19, 2015

Lee M. Swasey
Utah PLS # 163834

LOCATION OF SURVEY

Located within the Northwest quarter of the Southeast quarter and the Southwest quarter of the Northeast quarter of Section 25, Township 17 South Range 8 East, Salt Lake Base and Meridian

SURVEYOR'S DESCRIPTION OF PROPERTY

Beginning at the Southeast corner of the Northeast quarter of the Southwest quarter of Section 25 Township 17 South Range 8 East, SLB&M thence North 160 rods thence East 44 rods more or less, to the center line of Cottonwood Creek, thence in a Southerly direction along the centerline of said Cottonwood Creek to a point 78 rods more or less East of beginning thence West, 78 rods, more or less to the point of beginning

Containing 54.75 acres more or less

BASIS OF BEARING

For bearings shown as measured the basis of bearing is N 89°46'01" E along the North line of the South half of the Northeast quarter of Section 25 T 17 S R 8 E, SLB&M.

PURPOSE OF SURVEY

Surveyed at the request of PacifiCorp to perform an ALTA / ACSM Land Title Survey

The survey was based on a Commitment for Title Insurance issued by First American Title Insurance Company National Commercial Services, Order number NCS-689406-SLC1, Effective date May 5, 2015

NARRATIVE

The survey was based on found Section Corner monuments the Section was subdivided in accordance with the BLM Manual of Instructions

MONUMENTS FOUND

Denotes found monument as noted

MONUMENTS SET:

Denotes a #5 rebar with a 1½" aluminum cap set on top marked LWS-J&T ENG LS 163834 and additionally stamped as shown on drawing

SCHEDULE B SECTION 2 EXCEPTIONS AS LISTED IN Item 2

Exception 1 Not applicable to survey

Exception 2 Any facts, rights interests or claims which are not actual by the public records but which could be ascertained by an inspection of said land or by making inquiry of persons in possession of thereof

Surveyor Comment: No rights, interests or claims were apparent at the time of this survey

Exception 3 Easements, claims of easements or encumbrances which are not shown by the public record

Surveyor Comment: No easements, claims of easements or encumbrances were apparent at the time of this survey

Exception 4 Discrepancies, conflicts in boundary lines, shortage area, encroachments and any other facts which a correct survey would disclose and which are not shown by the public records.

Surveyor Comment: Boundary lines were determined per plat. Exact area could not be determined because of inconsistencies between the 8.0 and 8.5 rods of property. Unless shown to exist by physical evidence where apparent at the time of the survey.

Exception 5, 6, 7, 8, 9, 10, 11 Not applicable to survey

Exception 12 Any rights associated with the County Road or Cottonwood Canyon Road as disclosed on an aerial of said land and in the Acknowledgment of Right-of-Way by the USA as recorded on May 7, 2003 as entry No. 380262.

Surveyor Comment: Document does not apply to private property.

Exception 14 Not applicable to survey

VICINITY MAP

KEY MAP

LEGEND

SCALE: 1" = 100'

	SECTION	TOWNSHIP	RANGE	SCALE
	25	17 S	8 E	1" = 100'
	DATE	DRAWN	SURVEY	DRAWN BY
				R.K.A.

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REVISIONS			CHECKED		
DRAWN	MRA	05.15	CHECKED	SMT	05.15
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PROJECT NO.					

CHAPTER 3
ENGINEERING

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OPERATION AND RECLAMATION PLAN

3.1 SCOPE

Chapter 3 sets out the plans intended to be undertaken during the permit term and life of the operation. The chapter is divided into five sections: surface facilities, operation plan, environmental protection, reclamation plan, and bibliography.

The Division was notified of temporary cessation of coal mining operations at the Trail Mountain Mine effective May 4, 2001. There continues to be no active mining at the Fossil Rock Mine Site. Refer to Section 3.3.6.4 for additional information. ~~Coal mining at the Trail Mountain Mine ceased as of March 15, 2001. In preparation of temporary cessation, all mining equipment including; production (longwall and continuous miner), belt haulage and electrical were removed from the mine. Verification of equipment removal was conducted on April 6, 2001 with Bureau of Land Management (Steve Falk) and Division of Oil, Gas and Mining (Pete Hess) participating in the review. A plan to construct permanent seals was submitted to and approved by Mine Safety Health Administration. Sealing of the mine portals was completed on May 1, 2001.~~

3.2 SURFACE FACILITIES

The Trail Mountain Mine (renamed Fossil Rock Mine in 2015) is an existing operation that was started in the 1940's. All Surface facilities are in place under an approved mining and reclamation plan C/015/0009.

3.2.1 Site Selection and Preparation

The mine site was selected for its location. Access to the coal seam is facilitated by the intersection at the mine site of the coal outcrop and the canyon floor.

Site preparation consisted of clearing the site, construction of pads and facilities, and development of portals.

3.2.2 Portals

Historically, five portals provide access to the Mine. One portal located on the corner of the outcrop of Cottonwood Canyon and a small side-drainage canyon is a fan portal. The second portal, 150 feet south of the fan portal, is the main intake and travel portal. The third portal is the belt portal. It is located just to the south of the main portal. The fourth portal is south of the belt portal and is used as a ventilation portal.

A fifth portal has been driven to the outside approximately 1000' south of the fourth portal. This is a ventilation portal, and surfaces just south of the old sealed entry at this location. Complete description of this project is found in Appendix 3-7. (See Plate 3-1 for locations). An old sealed entry is found 500 feet south of the fourth portal (ventilation portal). It is not used in this operation. The Mine went into temporary cessation on May 4, 2001. All portals associated with the Mine were sealed as specified in 30CFRPart 75.335 (except one (1) opening which was inaccessible, this opening was completely backfilled with non-combustible fill from the surface).

3.2.3 Surface Building and Structures

The buildings and structures associated with the Mine are shown in Plate 3-1. They consist of an office, bathhouse, shop, power substation, and fan control house, coal handling system, explosive magazines, ~~,~~ sediment control facilities, and fuel storage tank farm area. The following table describes the tanks within the tank farm area:

Tank Contents*	Diesel	Unleaded Gasoline	Emulsion Oil	Calcium Chloride
Capacity	15,000 gal.	4,100 gal.	6,300 gal.	500 gal.

* Spill containment and cleanup is outline in the SPCC Plan.

Historical - the office, shop, sub-station, fan control house, fuel storage tank farm area, and sediment controls were all in place prior to 1987. A new bathhouse, coal handling facility, explosive magazines, ventilation portal, and culinary water system were added in late 1990. The main canyon culvert was also extended approximately 300' at that time. After PacifiCorp purchased the Trail Mountain Mine in 1992, surface modifications have taken place such as, concrete portal liners, new travel portal, new twin fan, new fuel storage area, high pressure water building and tank, relocation of water treatment plant, storage shed, storage dock, modified ROM transfer and a 60" overland tube conveyor. See Appendix 3-4 for the Operation Plan for the structures. Also, see Appendices 3-7, 3-8, 3-9, 3-10 and 7-13 for details on the new facilities.

3.2.4 Coal Handling, Processing, Preparation, and Storage

Historical - Coal in the Mine has been mined by longwalls and continuous miners. The 48 inch section belts transferred coal to the 60 inch main belt. The 60 inch main belt conveyed the coal to the surface where a magnet at the ROM transfer removed metal from the coal stream. The coal could then be shipped on a 60 inch belt to the Cottonwood Mine via the tube conveyor or could be shipped to the 575 ton silo and coal storage area via the crusher and the 54 inch belt. When the coal was shipped to the Cottonwood Mine it was sized from 16" x 0" run of mine to 6" x 0". When the coal was shipped to the Mine Facilities it passed through a crusher. The crusher at the Mine has the capability of sizing the coal from 16" x 0" through 2" x 0". The crushed coal was then conveyed to a 575-ton bin where it was loaded by a short belt into on-road trucks for shipment. In the event the crusher failed or the bin was full, coal was diverted by a flop gate into a chute and placed in an open storage pile. Figure 3-1 shows a generalized schematic of the coal handling system. Appendix 3-8 describes further details on the coal handling system.

Coal mining at the Mine ceased as of March 15, 2001. In preparation of temporary cessation, all mining equipment including; production (longwall and continuous miner), belt haulage and

electrical were removed from the mine. Verification of equipment removal was conducted on April 6, 2001 with Bureau of Land Management (Steve Falk) and Division of Oil, Gas and Mining (Pete Hess) participating in the review. A plan to construct permanent seals was submitted to and approved by Mine Safety Health Administration. Sealing of the mine portals was completed on May 1, 2001.

3.2.5 Power System Transmission Lines, Substation, Mine Feeders

The present utility power is supplied at 25,000 volts, 60 HZ. This incoming line supplies the mine substation located south of the office building. The existing 25,000 volts primary, 12,470 volts secondary, substation rate at 7500 KVA is connected to this transmission line in a delta primary, wye secondary configuration for underground distribution. Underground power was distributed by three (3) 4/0 mine feeder cables at 12,470 volts. At each working section, belt drive location, compressor station, high pressure pump station, etc., a transformer reduces the 12,470 volts to 950/480 machine voltage.

A 400 KVA 4160 volt primary, 480 volt secondary transformer supplies power to miscellaneous surface areas (tipple, shop, etc.). The mine office receives power from a pole mounted 480/220/120 transformer.

PacifiCorp upgraded the power system on August 5, 1995 which consisted of the following: 1) incoming utility power upgraded by Utah Power to 69,000 volts, 60 HZ, phase 3, 2) installation of two (2) identical substation transformers (one of which is a standby/backup unit) rated at 10 MVA. These transformers are located southwest of the office building. The primary voltage is 69,000 volts delta connected and the secondary will be 12,470 volts wye connected. The existing 7500 KVA transformer will remain in place for a secondary backup power system. ~~All~~ Power from the substation ~~on~~ will remain the same as mentioned above.

3.2.6 Water Supply System

Historically, the culinary water supply for the Mine was drawn from underground mine water. Mine water was collected in an underground sump and skimmed of oil. Approximately 10,000 gallons per day of this water was prepared in the treatment plant for use as potable water. Some mine water was used for wash down. Water was treated on the surface at a maximum rate of 10 gpm and then stored in two 22,000 gallon capacity fresh water storage tanks. The treatment plant and process are approved by the State of Utah, Department of Environmental Quality, Division of Drinking Water. A schematic of the water system is shown in Figure 3-2. This system is connected to the mine water system at the belt portal location. If the need should develop for filling water trucks, or supplying alternate water to the mine or surface system, this water would be drawn from the 2-22,000 gallon surface storage tanks referred to in Figure 3-2.

Refer to Figure 3-3 for typical underground water system schematic. As stated previously, PacifiCorp notified the Division of temporary cessation of coal mining operations at the Trail Mountain Mine effective May 4, 2001. Coal mining at the Mine ceased as of March 15, 2001. In preparation of temporary cessation, ~~all of~~ the mine de-watering system was removed from the mine, except for a six (6) inch steel supply line (9066') and a twelve (12) inch PVC de-watering line (9066), refer to Plate 3-8 for details. Verification of equipment removal was conducted on April 6, 2001 with Bureau of Land Management (Steve Falk) and Division of Oil, Gas and Mining (Pete Hess) participating in the review.

3.2.7 Sewage System

Historic - The septic system for the Facility was approved by the Division of Water Quality on March 17, 1995. The system is somewhat unique in that the grey-water portion of the sewage is separated and eventually enters the Cottonwood Mine sewage system and leach field for final disposal.

The sewage enters one of three septic tanks, depending on location, removing the majority of solids from the sewage. The grey-water then flows, via an 8 inch line, to the collection/pumping station, located south of the rock dust silo. The collection/pumping station contains a 10,000 gallon holding tank and two pumps. In the case of emergencies, the system can dispose of the sewage grey-water at the collection/pumping station by haulage truck to ~~the Cottonwood Mine sewage system or to~~ another facility licensed to accept septic tank waste. For short term emergencies, the storage capacity of the collection tank can handle more than the 24 hour sewage waste generation of the mine. In 2016 the system is believed to be in place however, the facilities are in poor repair and it can be better determined once the facility begins renovations potentially in 2018.

3.2.8 Water Diversion Structures

Three water diversion structures are maintained at the Mine. A concrete curb and gutter running north-south through the facilities area diverts water from the disturbed area into the sediment pond. A 66-inch culvert that has been placed in Cottonwood Creek has allowed the facilities pad area to be extended, and also allow Cottonwood Creek to flow beneath the mining operation. The length of this culvert is approximately 1,900 feet, extending from below the sedimentation pond to the property boundary north of the bathhouse (see Chapter 7). A 48-inch culvert located at the mouth of the side canyon, just west of the fan portal, diverts water from the canyon directly into the 66-inch culvert of Cottonwood Creek without crossing the mine property (see Chapter 7).

3.2.9 Sedimentation Control Structures and Water Treatment Facilities

A sedimentation pond is located on the southern end of the ~~permit~~ disturbed area. All Surface water that has crossed the mine property is diverted to this structure. Mine water can also be periodically pumped directly into the sediment pond. The pond contains a 48 inch emergency overflow culvert and a decant pipe, located on the east side of the pond (see Chapter 7).

3.2.10 Transportation, Roads, Parking Areas

Access to the mine and its facilities is provided by a County road, Forest Service road, and private right-of-way along Cottonwood Creek. The County road is paved and used by mine personnel private vehicles, coal trucks for haulage, and by the public for access to the upper canyon.

The facilities area of the Mine is accessed from a county road. The facilities area consists of: coal storage areas, parking lot, supply yard, equipment and material storage areas. No primary road exists on the mine site. Controlled pad and parking lot drainage flow across the facility and enters the curb and gutter system which reports to the sediment pond.

The roads on the site are ancillary roads. These include the upper terrace access road, portal access road and the tipple access road. Ancillary roads are used on an occasional, as needed basis only, and therefore are classed as ancillary roads according to R645-301-527.100.

The roads are constructed and maintained to minimize disturbance and adverse impacts on fish, wildlife and related environmental values. Roads will be maintained to meet applicable design standards throughout their use, by blading, watering and resurfacing as necessary. Roads are also located, designed, constructed, reconstructed, used, maintained, and will be reclaimed so as to prevent or control damage to public or private property; using non-acid or non-toxic forming substances in surfacing; and will have a static safety factor of 1.3 for ~~all~~ embankments.

The mining operation is conducted within 100 feet of a public (county owned) road. The requirements of R645-103-234 and protection of the public interests are met in the following ways:

(1) This is a pre-law operation, and has always been located adjacent to the public road which provides access to the public and private lands in and beyond Cottonwood Canyon;

(2) The road has been upgraded and paved through cooperation of the Mine, Emery County Road Department, and the US Forest Service;

(3) Necessary approvals for the road have been obtained from the authorities with jurisdiction over the public road through the cooperative effort of upgrading and paving of the road to the mine site. Necessary encroachment permits have been obtained from Emery County for accesses to and from the public road.

(4) Required public notices concerning the operation have been posted in local newspapers for Permit Approvals, Permit Renewals and Permit Transfers.

3.2.11 Total Area for Surface Disturbance During the Permit Term

The total area of present surface disturbance at the Mine plan area, including all compliance activities (sediment pond, upper and lower culvert installation, borrow area, portal areas, and surface pad extension) ~~is 10.39 acres~~ can be found in Chapter 2 of this text (see Plate 3-1 and 7-5 ~~in Volume 3~~). Other disturbed areas include the waste rock site area which covers ~~15.85~~ 15.82 acres of disturbance (refer to Plate 4-1). ~~in Volume 4~~

3.2.12 Detailed Construction Schedule

Construction of basic facilities was completed prior to the 1977 Act. Sediment controls, including the sediment pond, curb/gutter and bypass culverts were completed in late 1987. Minor system enhancements were completed from 1987 through the fall of 1990. Construction details and schedules for these projects are found in Appendices 7-13, 3-7, 3-8, 3-9 and 3-10 respectively.

3.3 OPERATION PLAN

Historic - During the operational phase of Trail Mountain (pre 2015), the mine employed a maximum of approximately 300 people to conduct its underground mining activities. Underground mining consisted of longwall retreat mining and continuous miner development. Production ranged from 3,500,000 to 5,000,000 tons per year. Coal was conveyed to the surface at approximately 16" x 0" run of mine product. It was then conveyed through an overland tube conveyor (demolished in September 2014) to the Cottonwood Mine Portal on the opposite canyon side. It then traveled underground until it reached the Cottonwood Mine Facility, where it was crushed to a 6" x 0" run of mine product before shipment via triple trailers to the Hunter Power Plant. Coal could also be crushed to 6" x 0" run of mine product at the existing Mine facilities and shipped via double trailers.

3.3.1 Mining Plans

The layout of the mine are shown on Plate 3-2. Historically, first and second mining occurred in the areas within the southern end of Trail Mountain. Those areas have been mined out and the leases have been relinquished backed to the federal agencies who manage the surface and subsurface resources.

3.3.1.1 Orientation and Multiple Seam Considerations

Historic - As shown on Plate 3-2, the original mains were driven north to south, with panels being driven off the mains in an east to west orientation. This mine layout was developed prior to the Act. Longwall section development was in an east to west orientation. Surface exploration drilling, along with geologic mapping, have been utilized to document the coal resources of the Trail Mountain area. (United States Department of the Interior. Memorandum Resource Recovery Report,

March 25, 1982, states that the Hiawatha is the only coal seam of current economic interest known to occur in the vicinity of the Trail Mountain tract). Coal resources above the Hiawatha seam to date show the seams to be thin, discontinuous and of poor quality[1]. PacifiCorp had no plans to mine the upper coal seam (see Appendix 3-2).

3.3.1.2 Portals, Shafts, and Slopes

Portals have been previously addressed in the Surface Facilities section. Shafts and slopes do not apply to this property because of the geology of the coal seam.

3.3.1.3 Mining Methods – Continuous Miner and Longwall

~~No Room and pillar mining is anticipated during the permit term.~~ Longwall retreat mining with continuous miner development of mains, longwall panels and gate road development will be employed during the life of the mine.

Continuous Mining Unit

The principal purpose of continuous mining units at the Mine was mine development; i.e., section development of mainline entries, longwall sections - gate road development and longwall section - setup/bleeder entry development.

Figure 3-4 illustrates the basic configuration of a typical five entry main, consisting of 20 ft. wide entries and crosscuts driven on 80 ft. x 100 ft. pillar centers. The pillars created measure a nominal 60 ft. wide x 80 ft. long; a size which has been developed for sufficient support of the main entries and overlying strata.

Figure 3-4 also illustrates the basic configuration of a typical two-entry longwall panel development, consisting of 20 ft. wide entries and crosscuts driven on 50 ft. x 100 ft. pillar centers. Bleeder and setup development consists of 20 ft. wide entries and crosscuts on nominal 50 ft. x 100 ft. pillar centers. With the retreating longwall mining system, ~~all~~ panel development work is accomplished by continuous mining units prior to longwall equipment installation.

Longwall Mining System

The predominant mining method at the Trail Mountain Mine was longwall retreat mining. This method, as practiced by PacifiCorp, presents the safest and most efficient underground resource recovery mining method available. PacifiCorp notified the Division of temporary cessation of coal mining operations at the Trail Mountain Mine effective May 4, 2001and mining ceased as of March 15, 2001.

As referenced above, the two-entry gate road system is developed with 20 ft. wide entries and crosscuts on nominal 50 ft. x 100 ft. pillar centers. This type of "yield pillar" configuration is designed so that the gate road support pillars will gradually yield as longwall retreat proceeds from panel to panel. The purpose of this design is to prevent the buildup of unrelieved stresses within the pillar; stresses which, in the past have resulted in pillar failure and the accompanying danger to personnel and property.

Figure 3-5 illustrates the basic configuration of a retreating longwall system. After gate road entries are driven to the extent of the longwall panel length, on both sides of the longwall face, setup and bleeder entries are driven to connect the gate roads. A solid coal barrier is left between the setup and bleeder entries, sized based on geologic parameters, to insure long term bleeder stability.

Long wall face width, depending on geologic parameters of the coal deposit, varies from 500 ft. to 1000 ft. wide. Standard face width is 750 ft., from center-line of headgate entry to center-line setup entry, the longwall begins retreat mining; from the setup entry, "outby" toward the mainline entries. A protection barrier is left between the mined out longwall panel (extraction face) and the mainline entries; sized to insure long term mainline entry stability. Panels are designed within the mining area, bounded by natural and imposed limits with varying degrees of confidence as to location and extent. Lease boundaries are definitely located and invariable in the short term. Faults may vary somewhat from currently assumed locations. Geologic limitations; such as seam splits, channel scours, spars, stratigraphic thinning, etc. may affect the mining limits by varying hundreds of feet as information becomes available and as mining recovery economics and practicality are further refined. Underground burned areas, from a practical point of view, are indeterminate prior to mining. Regulatory mining restrictions, such as escarpment protection barriers and perennial stream buffer zones further confine the mining extent.

Within the limitation of the above boundaries, longwall panel length and width are maximized to the extent possible due to the economic cost and production loss associated with longwall moves. The minimum panel length, currently considered economical, is 1500 ft. of recoverable reserves. The minimum panel width, currently considered economical, is 500 ft. of recoverable reserve.

3.3.1.4 Projected Mine Development – Mains, Submains, Panels, Etc.

The plan of mine development projected for the Mine is shown in Plate 3-2.

Historic - After the mine acquisition, development of the fifth left mains and third west mains continued. The panels east of fifth left main were driven west to east and

the panels west off the fifth left mains were driven east to west. Panel sequence for extraction was from second east to fifth east and tenth right to first right. The coal lease of these underground areas (with exception of 3rd West) were partially relinquished effective January 9, 2009.

3.3.1.5 Retreat Mining

Historic - Panel extraction commenced once the fifth left mains were developed below the second east panel and the second east tailgate, headgate and bleeders were completed. ~~All~~ The coal leases containing panels off the 5th Left mains below 1st Right have been relinquished effective January 9, 2009.

3.3.1.6 Roof Control, Ventilation, Water Systems, Dust Suppression, Dewatering, Electrical, Etc.

Plans for roof control, ventilation, water system, dust suppression, etc., have been submitted to MSHA and are on file at the MSHA district office; Mine Safety and Health Administration. ~~P.O. Box 25367, Denver Colorado 80225.~~

3.3.2 Barrier Pillars

PacifiCorp left barrier pillars around oil and gas wells, surface structures and streams, property boundaries, and outcrops. These barriers will protect the recovery of the resource and the environment. A ~~complete~~ discussion of barrier pillars is presented in Chapter 12, Geotechnical.

3.3.2.1 Protection of Oil and Gas Wells

Presently no oil or gas wells exist in the areas of underground mining activities. However, should any well be drilled, a barrier of 300 feet in diameter will be left unless a variance from MSHA is obtained to leave a smaller barrier.

3.3.2.2 Protection of Surface Structures and Streams

No surface structures or perennial stream beds will be undermined during the life of the mine.

3.3.2.3 Boundaries

Lease, permit, and adjacent area boundaries are designated in accordance with both State and Federal mining regulations.

3.3.2.4 Outcrop Protection

Historic - Outcrop protection is provided by leaving a minimum barrier of 200' between mine workings and the coal outcrop. One exception to the above is the eastern most entry of the 3-entry system driven north and northeast to the ventilation portal. The eastern entry is located within the 200' barrier for a distance of approximately 240' and at no time comes closer than 160' from the outcrop. The 3-entries were necessary to meet MSHA regulations and provide adequate ventilation. The location of this variance is in the side canyon approximately 1700' south of the forth portal, and is shown on Figure A-3-7-2, Appendix 3-7. Outcrop protection is further addressed in the geotechnical chapter of this permit.

3.3.3 Conservation of Coal Resources

3.3.3.1 Projected Maximum Recovery

There is no recoverable coal from the historical (relinquished) Trail Mountain mine plan area. Table 3-1 shows the breakdown of coal recovery (refer to Plate 3-2: Mining Plan and Plate 3-3: Areas of Coal Recovery).

3.3.3.2 Justification of Non-Recovery

Historic - It is estimated that resource recovery rate of 80% or better can be obtained within the proposed longwall panels. Overall minable reserve recovery for the Trail Mountain Mine was estimated at 60%.

The maximum amount of economically recoverable coal will be extracted with the exception of protective coal, which must be left in place to ensure the integrity of the mine. This protective coal falls into two categories. The two categories are barrier coal and strata control coal. (See Appendix 11-1).

3.3.3.3 Access to Future Reserves

Historic - There are two (2) areas currently designated as future reserve access points at the Mine: 1) 3rd West Mains and 2) North Mains.Access to future western reserves will be by western extension of the existing 3rd West Mains, running east/west, at the northern boundary of Federal Lease U-64375. Access to future northern reserves will be by northern extension of the existing North Mains, running north/south, at the western boundary of Federal Lease U-49332. Solid coal barrier pillars are to be left on either side of these main entries to ensure their long term stability for access.

Mining plans and projections may change between permit submittal and actual mining. However, the permittee will commit to conducting operations in accordance with accepted industry practices, so as to achieve maximum economic recovery as specified by 43 CFR 3482.1 (c) (7). The permittee also commits to professional cooperation with the Bureau of Land Management (BLM) in achieving MER on ~~all~~ Federal Coal leases.

Table 3-1 Recoverable Reserves

LEASE AREA	IN-PLACE TONS	RECOVERABLE TONS	Tons Planned for Recovery 2022-2025	ACTUAL PRODUCED TONS By EWMC (as of 6/1/2001)	TOTAL TONS PRODUCED BY ALL OPERATORS FROM LEASE
*Federal Lease UTU-49332	4,361,837	1,239,936 (261)	62,800	22,917	1,509,199
Federal Lease U-082996	276,954	56,718	0	0	219,755
**Federal Lease U-64375	45,404,832	433,363 (2504)	0	21,508,007	21,938,730
TOTAL TONS	50,043,623	1,727,252	62,800	21,530,924	23,667,684

(Relinquished Tons)
*Partial relinquishment of 261.47 acres effective January 9, 2009.
**Partial relinquishment of 2504.01 acres effective January 9, 2009.

3.3.4 Equipment Section As stated previously, PacifiCorp notified the Division of temporary cessation of coal mining operations at the Trail Mountain Mine effective May 4, 2001. Coal mining at the Trail Mountain Mine ceased as of March 15, 2001.

3.3.4.1 Surface Equipment

In preparation of temporary cessation, ~~all~~ the surface equipment was transferred to remaining operations.

3.3.4.2 Underground Equipment

The permit area will be mined with longwall and continuous mining equipment. Typical continuous mining equipment is;

Continuous Miners, Shuttle Cars, Section Scoops, Roof Bolters
Feeder Breakers, Rock Dusters, Face Fans, Power Centers
Welders, Shop Car

Typical longwall mining equipment is;

Longwall Shearer	Power Center
Face Conveyor	Electrical Controls
Longwall Supports	Emulsion pumps
Stageloader	Shield Movers
Crusher	Pod Rock Duster
Scoop/Forklift	Shop Car

Typical general mine equipment is;

Diesel Scoops,	Conveyors
Diesel Trucks	Belt Storage
Diesel Pickups	Road Grader
Mantrips	Dozer
Trailers	Power Centers
Compressors	Section Switches
Welders	Submersible Pumps
Belt Drives	Rock Dusters

3.3.5 Mine Safety, Fire Protection, and Security

During mining operations, a safety department was maintained at the mine site. All New miners were trained in basic first aid before working underground. Once each year ~~all~~ miners were given an eight hour retraining class. All working sections maintained the necessary first aid items including stretchers, bandages, splints, tourniquets, etc. ~~Fire protection All machines underground are equipped with a fire suppression system. On portable non-water machines a dry type chemical system is used. On machines equipped with water, a deluge system or a dry type chemical system is maintained. All belt drives and take-ups were equipped with these systems. An adequate supply of rock dust and a dry type fire extinguisher were located at belt drives transformers, oil storage areas, and other dangerous areas in and around the mine.~~

Surface Fire Fighting Plan

In compliance with Title 30 Code of Federal Regulations Part 77.215(j) and R645-301-528.323.1 the following plan to extinguish surface fires and coal waste fires will be adhered to in the advent of a fire.

I. PREVENTION

A. ~~All~~ Warning and non-smoking signs will be observed by employees and visitors to the mine.

B. Accumulations of oil, grease, diesel fuel, coal fines and other combustibles will not be allowed to accumulate as a possible source of fire.

C. Coal stock piles and coal waste piles will be closely monitored to detect symptoms of a possible fire.

D. ~~All~~ Employees will be trained as to their responsibilities in the advent of a fire.

II. EXTINGUISHING SURFACE FIRES

A. In the advent of a fire on the surface area of the coal mine ~~all~~ employees both in the mine and on the surface will be notified immediately, all persons will be accounted for and evacuated to a safe place.

B. The local fire departments, mine rescue teams and other trained and qualified persons experienced in fighting fires will be notified immediately, equipped with the appropriate equipment, and the proper action will be taken to extinguish the fire.

C. Measures will be taken to prevent unauthorized persons interfering or being endangered by the fire and the methods to extinguish the fire.

D. ~~All~~ Necessary controls available to prevent adverse impact on water quality and other environmental concerns will be incorporated immediately.

III. REPORTING PROCEDURES

A. ~~All~~ Necessary reports and accident claims will be completed and filed with the appropriate state and/or federal agency.

3.3.5.1 Signs

~~Required signs are maintained at the Mine.~~ Property boundary signs are posted along the access to the mine property and at the northern and southern property boundaries. Buffer zone signs are maintained on the west side of Cottonwood Creek (see Figure 3-6).

~~All~~ Signs will be maintained throughout the operational life of the facility, or at least as long as they are required and relevant. Permit ID signs and required perimeter markers will be maintained until bond release.

3.3.5.2 Fences and Gates

Approximately 2,000 feet of chain link fence, containing ~~three~~ multiple-access gates, is maintained at the Mine site. The multiple-access gates are made up of 15 , 48" X 72" panels (approximate), these panels make up four gates, some gates have two panels some have more. ~~Also, a~~ The substation is enclosed by a seven foot chain link fence with a three strand barb-wire cap and two gates. This chain link fence also serves to alienate the east boundaries of the surface disturbance of the mine plan area. Identification and perimeter signs are installed on the fence.

3.3.5.3 Facilities – Coal Stockpiles, Refuse Piles, Coal Seams

~~Historic~~ Coal conveyed from the mine ~~is~~ was historically transferred via a tube conveyor (demolished September 2014) to the Cottonwood Mine. ~~or to a 575-ton storage bin~~ At the Mine a 575-ton storage bin was used to stockpile coal. In the event of a system failure or if the bin is full, coal is diverted and stockpiled north

of the bin. The size of this pile will vary greatly

depending on conditions; however, extreme dimensions are approximately 300' by 150'. This pile is recovered by front-end loaders which place the coal back into the handling system going to the loadout bin. All runoff from the stockpile, as well as other coal handling facilities, is directed to the sediment pond. ~~All~~ Conveyors are covered, and water sprays are used as necessary to reduce fugitive dust emissions. There are no refuse piles at this mine site. ~~Any~~ Coal refuse or waste generated will be hauled to the approved ~~Cottonwood/Wilberg~~ Waste Rock disposal area.

3.3.5.4 Explosive – Storage and Handling

(Removed from Mine Site in 2001, explosives will potentially be returned to site, at that time the commitments in this section will apply.)

Storage - Explosives and caps are stored in separate MSHA approved explosive magazines. The magazines are of approved steel construction. The doors are so constructed to prevent easy access and tampering with the locking mechanisms. All Magazines are properly electrically grounded. The magazines are located as required to provide added security. Locations of the magazines are shown on Plate 3-1.

Handling - ~~All~~ Materials are transported in an approved boxes separated into two compartments with a divider. These boxes are then carried on trailers and diesel powered tractors.

Use - Explosives are primarily used underground. Underground explosives are used to blast rock to make room for overcasts, belt drives, and at other areas where extra height is required. Other uses underground include grading of roadways and to facilitate cleaning up of unintentional roof falls, etc.

When surface blasting is done it will be in accordance with the applicable R645-301-524 rules. Surface blasting will be done by a certified blaster under the Utah

Blaster Certification Program. This certification will be carried by the blaster or kept on file during the blasting operations. At least one other person will be present during the blast. Proper training will be given to crews associated with the blast or explosive handling. The blast design will be prepared by a certified blaster and will be submitted to the Division at a time before the blast.

No blasts will utilize more than five (5) pounds of blasting agent or explosives detonated in any eight-millisecond period; therefore a pre-blast survey is not required.

When using explosives on the surface, ~~all~~ blasting will be done between sunrise and sunset. No residents are located within a half mile radius of the permit area. Blasting signs will meet R645-301-521.200 and be conspicuously placed along the edge of the blasting area or road entrance. Signs will be placed at ~~all~~ accessible entrances to the blasting area from public roads stating "Warning! Explosives in Use". Access control will be exercised preventing unauthorized access to the blasting area. No structures exist within a distance that would present concerns from air blast or ground vibration.

Blasting records will be kept on file for review by the Division. Blasting records will comply with R645-301-524.700. Exhibit 1 (Appendix 3-6) shows a typical report which will be compiled to satisfy these requirements.

3.3.6 Operation Schedule

The Fossil Rock Mine is not currently operating. The mine ~~has been~~ moved into temporary cessation ~~since~~ in 2001 (Section 3.3.6.4) and moved out June 2016. There is the potential for the mine to start development mining in

2018. Prior to the potential re-opening of the mine, the operating schedule will be described in this section and proceed through the SMCRA permitting process. There is insufficient information currently to describe the schedule, etc. of this operation.

Most information in this section describing mining operations should be considered as historic.

Historic - Trail Mountain Mine operated with longwalls and continuous miners for development of longwall panels and mains. The longwall operated two shifts a day or two machine shifts and the continuous miners operated two shifts a day or four machine shifts.

3.3.6.1 Annual Production Per Year for the Permit Term

Historic - The Trail Mountain Mine produced approximately 3,500,000 to 5,000,000 tons per year until notifying the Division of temporary cessation on May 4, 2001.

3.3.6.2 Operating Schedule – Days, Shifts

Historic - The Trail Mountain Mine operated as follows:

208-240 days/year
3 shifts/day
10 hours/shift
2 production shift/day
1 maintenance shift/day
2 continuous miner shifts/production shift
1 longwall shift/production shift

This schedule is a general outline and subject to change.

3.3.6.3 Operation Employment

Historic - During coal mining operations, Trail Mountain Mine employed approximately 300 people, 66 salaried and 234 hourly employees.

3.3.6.4 Temporary Cessation

Whenever it is known that operations are to be temporarily ceased for more than 30 days, the permittee shall submit to the Division a notice of intention to cease or abandon the operations, in accordance with R645-301-515.320 and to MSHA standards.

This notice will describe mitigation measures to be employed in accordance with the terms and conditions of the permit approval, such as a statement of the number of surface acres involved in the cessation, extent of sub-surface strata, prior reclamation efforts accomplished on the property, and identification of ~~all~~ backfilling, regarding, revegetation, environmental monitoring, underground opening closures and water treatment activities that will continue during the temporary cessation.

If underground openings are to remain inactive for a period greater than 90 days, such openings will be temporarily closed off from access. Such closures will consist of a chain link or other substantial wire mesh fabric fence placed over the portals to prevent public access while allowing for air flow. Locked gates may be installed in the portal to allow for mine inspection.

PacifiCorp notified the Division of temporary cessation of coal mining operations at the Trail Mountain Mine effective May 4, 2001. Coal mining at the Trail Mountain Mine ceased as of March 15, 2001. In preparation of temporary cessation, ~~all~~ mining equipment including; production (longwall and continuous

miner), belt haulage and electrical were removed from the mine. Verification of equipment removal was conducted on April 6, 2001 with Bureau of Land

Management (Steve Falk) and Division of Oil, Gas and Mining (Pete Hess) participating in the review. A plan to construct permanent seals was submitted to and approved by Mine Safety Health Administration. Sealing of the mine portals was completed on May 1, 2001. Mining began in June of 2016 at the Fossil Rock Waste Rock site which changed the mines temporary cessation status and is now considered active. In 2016, the mine site facilities are as they were when the ~~facility~~ mine was put into cessation in 2001.

3.3.7 Mine Plan Area

The mine plan area ~~of the Trail Mountain Mine~~ is outlined in Plate 3-2. ~~A total of 773.50 acres are included in the mine plan area~~. Refer to Chapter 2 and legal description of the permit area, which includes acreage.

3.3.7.1 Projected Mining By Year

The mine development and projected mining schedule are shown on Plate 3-2. As shown, additional permit terms will be required.

3.3.7.2 Acreage and Delineation

As described in Chapter II, the mine plan area consists ~~of approximately 773.50 acres~~ of fee and federal land. ~~Federal land consists of three leases totaling 720.00 acres. The remainder of the mine plan area (53.50 acres) is fee land~~.

3.4 ENVIRONMENTAL PROTECTION

This section addresses the environmental concerns and impact of the mining operation. The aspects of land-use, cultural resources, hydrology, soils, vegetation, fish and wildlife, air quality, subsidence, and waste disposal are addressed. Each aspect is addressed in terms of projected impacts and control measures. For those aspects that warrant it (hydrology, vegetation, fish and wildlife, air quality, and subsidence) a discussion of monitoring procedures are also included.

3.4.1 Preservation of Land Use

The post-mining land-uses are anticipated to remain the same as the pre-mining land-uses of grazing, wildlife habitat and recreation. A ~~full~~ discussion of these uses area found in Chapter 4.

Following completion of the mining operations, the mine site will be reclaimed and revegetated. The area will be graded, scarified, and seeded. ~~before the next growing season.~~ Refer to Sections 3.5.1 and 3.5.5.2 for description of seeding plan. The seed mixtures to be used are discussed in Chapter 9 and Section 3.5 of this Chapter. ~~The site will receive treatments of fertilizer and additional seedings until it is determined stable for the bond release period. During low run-off, the stream diversion culvert will be removed and the stream channel will be restored.~~ Refer to Section 3.5.5.3 for culvert removal plan. No reclamation work is contemplated on the access road to the site. This road has varied ownership (county, federal and private) and provides access for Forest Service and private land up Cottonwood Canyon.

~~Lands held by PacifiCorp are classified by Emery County, the US Forest Service, and the State of Utah as a recreation, forestry and mining area.~~ *Moved to Chapter 4*

3.4.1.1 Projected Impacts of Mining on Current and Future Land Use

~~Within The permit area, approximately 10.39 acres has been disturbed by surface facilities of the mine.~~ ~~This disturbance~~ Construction of the surface facilities has affected the soils and vegetation of the area. The effect on vegetation is temporary and will be eliminated by revegetation of the disturbed area. ~~Wildlife~~ The loss of wildlife habitat in the riparian community ~~has occurred. The acreage~~ is small; however, the riparian area is considered to be of critical value to the overall density of terrestrial wildlife. Continued operation of the surface facilities will have no significant impact on the local wildlife. A full

discussion can be found in Chapter 10. Discussion of the impact at the Waste Rock Disposal Site are found in Volume 4.

3.4.1.2 Control Measures to Mitigate Impacts

Careful planning of the reclamation activities will help to minimize the impact of the Mine on land-use. Return of the mine site to the premining land-use of grazing, wildlife, and recreation at the conclusion of mining will be accomplished according to the steps outlined below:

1) Seal ~~all~~ large diameter openings with non-combustible material.
2) Remove ~~all~~ surface structures, equipment and facilities, followed by trash and debris removal.
3) Re-establishment of drainages and grading and contouring of disturbed areas.
4) Establishment of a permanent diverse vegetative cover suited to the post-mining land-use on ~~all~~ affected land will be done as soon as practicable following reclamation.

Contemporaneous reclamation of those areas not needed during operation will take place throughout the life of the mine. ~~All~~ Other areas (building and equipment sites, storage and parking areas) will not be reclaimed until the conclusion of mining.

3.4.2 Protection of Cultural Resources

No public parks or historical sites worthy of preservation have been found in the mine plan area. Chapter 5 contains a discussion of cultural resources.

3.4.2.1 Projected Impacts of Mining on Cultural Resources

Two types of projected impacts exist on cultural resources as a result of mining. Direct impacts ~~are a direct~~ as a result of mine development or operation. And indirect impacts ~~result from activities that are~~ not directly associated with the mine development or operation. ~~Any effect of the Trail Mountain Mine on cultural resources probably occurred during development. No cultural resources have been found in the area of the mine, therefore no direct impacts from any future development are likely to occur.~~

~~The inventory indicated two CRRS: 2 sites located in the lower canyon. These sites are vulnerable to indirect impact from vandalism. During development of the canyon road by Emery County, measures to avoid impact were observed.~~

3.4.2.2 Control Measures to Mitigate Impacts

Measures used to mitigate the effects of the mining operation on cultural resources were implemented prior to any disturbance associated with the development. Once construction began, ~~only~~ avoidance procedures were the only feasible mitigation measures.

During 1985 and 1986, the ~~proposed~~ construction and realignment of three miles of county road by Emery County from Highway 29 to the ~~Trail Mountain~~ Mine site was completed. Two ~~CRRS~~ cultural sites were located and avoided during the road construction. ~~all engineer and design work conducted by the Emery County Engineering departments was done in such a manner as to avoid these cultural sites.~~

In 1990, additional facilities were constructed at the mine site. Construction details, as well as control measures to mitigate impacts for each of these projects are described in Appendices 7-13, 3-9, 3-7, 3-8, 3-9 and 3-10 respectively.

The Mine site contains no know cultural resources that are liable to be impacted by the continued operation or compliance construction.

3.4.3 Protection of Hydrologic Balance

The Mine operates ~~all~~ mine activities in such a way as to minimize potential impacts to surface and groundwater resources. Drainage control facilities will contain and hold the required volume for the specified period for water flowing through or originating in the disturbed area. Suspended material will be allowed to settle in a sediment control pond before discharge into natural drainages. Such discharges will be in accordance with an approved UPDES Discharge Permit.

The protection of the hydrologic resources at the waste rock site are discussed in the waste rock permit ~~Volume 4~~.

Sedimentation production from the berm outslope to the creek has been greatly reduced by a portion of the creek being placed in a bypass culvert. This bypass culvert was installed in 1983, and extended some 300' to the north in 1990 and 70' further north in 1996.

~~All~~ Mine portals are designed in accordance with R645-301-731.521. This ensures that water will not discharge from the portal by gravity flow. Upon reclamation of the mine, portal seals will be placed in ~~all~~ entries as soon as underground reclamation has been completed.

The Division was notified of temporary cessation of coal mining operations at the Trail Mountain Mine effective May 4, 2001. Refer to Section 3.3.6.4 for additional information. ~~Coal mining at the Trail Mountain Mine ceased as of March 15, 2001. In preparation of temporary cessation, all mining equipment including; production (longwall and continuous miner), belt haulage and electrical were removed from the mine. Verification of equipment removal was conducted on April 6, 2001 with Bureau of Land Management (Steve Falk) and Division of Oil, Gas and Mining (Pete Hess) participating in the review. A plan to construct permanent seals was submitted to and approved by Mine Safety Health Administration. Sealing of the mine portals was completed on May 1, 2001.~~

3.4.3.1 Projected Impacts of Mining on the Groundwater Hydrologic Balance

Geology controls movement of groundwater. Because of the low permeability of the consolidated sedimentary rocks in the Trail Mountain area, groundwater is primarily through fractures. Data has been collected from numerous coal exploration drill holes, from within the mine workings, from surface drainages, and from spring surveys. ~~The data have identified two separate isolated aquifer systems within the vicinity of the mine; the first is localized perched water tables in the North Horn Formation, and the second is a combination of localized perched water tables in the Blackhawk Formation and the Starpoint Sandstone which exhibits some limited potential as a regional aquifer. The generally discontinuous nature of the Blackhawk and apparent low specific yield (Cordova, 1964) indicates that the water yielding capabilities of the Blackhawk are only of local importance.~~ A ~~complete~~ description of the hydrologic/geologic resources of the Trail Mountain area is discussed in Chapter 7, Section 7.1, and Appendix 7-10 (PHC).

Groundwater Quantity – Refer to Section 7.1.3.2.

~~Mining occurs in the lower Blackhawk Formation, which consists of interbedded layers of sandstone and mudstone separated by mineable and non-minable coal seams. The sandstone beds fluvial channel systems are generally massive while the mudstone layers are fine textured and have a tendency to swell when wet and decompose into an impervious clay. Because of the aquiclude formed by mudstone layers in the North Horn Formation, recharge to the Blackhawk Formation is limited, even along major fault systems. Due to the lithologic characteristics of the Blackhawk, both vertical and horizontal migration is constricted. Refer to Chapter 7, Hydrology, for a detailed discussion of the Hydrologic Balance.~~

~~The interception of groundwater varies and is dependent on several factors. One of the moist significant is that when the mine enters virgin country, a significant amount of water is liberated. In virtually all cases the amount of water which flows into the mine exceeds the recharge and, in time, the water inflow decreases in volume. If new areas are not mined, the discharge from the mine will decrease accordingly.~~

Groundwater Quality – Refer to Section 7.1.3.2

~~Groundwater chemical quality is very good in strata above the Mancos Shale. The USGS reports a range in dissolved solids from 50 to 750 mg/l for samples from 140 springs in the region issuing from the Starpoint Sandstone and overlying formations (Danielson et al., 1981). Danielson et al. (1981) identified the regional trends of decreasing water quality from north to south and west to east across the Wasatch Plateau. Waters percolation through the underlying Mancos Shale quickly deteriorate, with total dissolved solids concentrations frequently exceeding 3000 mg/l.~~

~~The quality also decreases vertically because of the influence of marine sediments along with the trend of decreasing quality from north to south. The predominant~~

~~dissolved chemical constituents of the groundwater from both surface springs and samples collected in the mine are calcium, bicarbonate, magnesium and sulfate. Concentrations of magnesium are normally about one-half the concentration of calcium. Sulfate concentrations are typically higher in water from springs issuing from the Starpoint-Blackhawk aquifer zone or confined aquifers intersected by mine workings. As mentioned earlier water quality degrades from the north to the south and also vertically.~~

3.4.3.2 Control Measures to Mitigate Impacts

Refer to Sections 7.1.3 and 7.1.6.1~~. Although the analysis of the overburden samples tested has shown that no toxic or hazardous materials are present, groundwater quality will be protected by handling earth materials and runoff in a manner that minimizes infiltration to the groundwater system. Mine water encountered in the mine, which is not needed for dust suppression or mining, will be discharged according to stipulations in UPDES Permit No. UT-0023728.~~

~~State and federal regulations (R645-301-727) require that an alternate water supply be provided to replace any water source disrupted, degraded, or diminished by the mining operation. Though the mining operation is unlikely to affect the water supplies in the Trail Mountain area, the permittee will provide this alternate supply if needed.~~

~~In the unlikely event of mining adversely affecting a water source, the permittee will review and select an alternative after considering all possibilities of each site-specific circumstance.~~

3.4.3.3 Groundwater Monitoring Plan

Representative springs and groundwater (see Chapter 7, Section 7.1.7) will be monitored in accordance with the monitoring program. ~~In addition, data will be collected from within the mine.~~

3.4.3.4 Projected Impacts of Mining on Surface Water Hydrologic Balance

As has been previously mentioned, the occurrence and quality of water in any region is highly controlled by geology. The Permittee's adjacent and permit area is located in the headwater region of the San Rafael River Basin. The surface drainage system of the permit area is within the Cottonwood Creek drainage system. Reference Section 7.2.3.1 for quantity information.

~~Quantity~~

~~Cottonwood Creek above Straight Canyon drains approximately 21.9 square miles. The average channel gradient of Cottonwood Creek above Straight Canyon is 300 feet/mile (5.7 percent). Only a short period of record (October 1978 to present is available for the USGS stream gaging station (09324200) on Cottonwood Creek above Straight Canyon. Danielson et al. (1981) estimate the average annual precipitation to be on the order of twenty two (22) inches, or 26,000 acre-feet, on the Cottonwood Creek drainage above Straight Canyon. Danielson et al. (1981) also estimate that only two percent of the precipitation on Cottonwood Creek above Straight Canyon leaves the basin as stream flow compared to thirty percent for Huntington Creek above Huntington. The suggested reasons for the wide difference in percent of precipitation contributing to stream flow are: 1) Cottonwood Creek Basin has a greater portion of area with southern exposure with more gradual slopes than Huntington Creek Basin and 2) possible subsurface movement of water through fractures associated with Joe's Valley Fault. About seventy percent of the total discharge at the Cottonwood Creek station above Straight Canyon for the water year 1979 occurred during the snow melt period (April-July).~~

~~Sixty years of data are available for the gaging station on Cottonwood Creek near Orangeville (9324500). The drainage area above Orangeville contributing to Cottonwood Creek is approximately 208 square miles. Cottonwood Creek has an average discharge near Orangeville of about ninety-five (95) cfs, or 69,000 acre-feet per year. The maximum and minimum discharges of record on Cottonwood Creek near Orangeville are 7,220 cfs (August 1, 1964) and 1.2 cfs (April 8, 1966), respectively.~~

~~The mine adjacent and permit area is drained by minor drainage systems associated with Cottonwood Canyon Creek. Cottonwood Canyon Creek is a major drainage system which borders the eastern limit of the mine plan area. Based on data collected by PacifiCorp, (see 1992 Annual Hydrologic Report) Cottonwood Canyon Creek is an ephemeral stream from its headwaters to the northeast quarter of Section 24 Township 17 South, Range 6 East and intermittent from that point to its confluence with Cottonwood Creek at Straight Canyon. During periods of drought, flow in Cottonwood Canyon Creek is limited to flow emanating from the alluvial deposits at the intersection with Roans Canyon. From the intersection with Roans Canyon to Section 36 the stream loses water to alluvial deposits. The drainage is dry from Section 36 to Section 6 except during spring runoff which normally occurs from late April through June or during precipitation events. Flow in the channel re-emerges in Section 6 and continues to the confluence with Cottonwood Canyon at Straight Canyon.~~

~~The quality of flow from the headwaters of the San Rafael River Basin is excellent. However, this quality rapidly deteriorates downstream as streams cross shale formations and receive irrigation return flow from Mancos-derived soils. The impact of the mining on this system will be quite limited.~~

~~The existence of runoff and sediment control structures should minimize the potential for degradation of the quality of stream waters due to runoff from disturbed areas of the Mine. The construction and upgrading of surface facilities utilized in conjunction with the Mine (yard areas, road, etc.) may result in temporary increases in the suspended sediment concentration of the adjacent stream. However, because of the regulatory requirement that sediment control be provided for all areas of surface disturbance, concentrations should be quickly normalized.~~

3.4.3.5 Mitigation and Control Plans

Runoff from ~~all~~ disturbed areas will be passed through sediment control facilities, as discussed earlier in this chapter ~~report~~. Any Discharge from facilities will be monitored in accordance with UPDES permit standards and state and federal regulations.

The effects of the mining operation on the surface water system will be analyzed through the surface water monitoring plan described in Chapter 7 (Section 7.2.7). ~~In the unlikely event that monitoring shows that the surface water system is being adversely affected by mining activities, additional steps will be taken to rectify the situation in consultation with state and federal regulatory agencies~~.

3.4.3.6 Surface Water Monitoring Plan

An ongoing hydrologic monitoring program will be conducted at each of the stations shown in Figure 7-9. Stations have been established to monitor water quality and quantity above and below the mine plan area.

3.4.4 Preservation of Soil Resources

The Mine site is a previously disturbed site. Topsoil resources were not protected during development activities from 1948 to 1967. A small amount of topsoil has been removed and

stockpiled from the more recent channel/culvert construction. In the event of any future disturbances, soil resources will be protected. Protection will involve the removal, stockpiling and stabilizing of soils suitable for reclamation. Suitability will be determined by analyses of soil samples.

3.4.4.1 Projected Impacts of Mining on Soil Resources

Little soil exists on the presently disturbed mine site. What soil existed prior to commencement of mining activities has long been buried by construction of the pads and buildings.

A small pile of topsoil has been stored just northwest of the fan portal area. This material was salvaged prior to the recent installation of the 48" culvert in the side canyon. The topsoil pile has been marked and reseeded according to requirements.

The remaining surficial materials are being compacted and mixed with crushed coal and coal fines. Operation and maintenance of equipment contributes oil, gasoline and diesel fuel to the soil in some places.

3.4.4.2 Control Measures to Mitigate Impacts

As only limited amounts of soil remain on the disturbed site due to previous disturbance and no further disturbances are proposed, few, if any, mitigation measures can be implemented.

In the event future disturbances of operations uncover or encounter salvageable soils, the permittee will remove, stockpile and stabilize the soils for use in future reclamation work.

Testing is planned to determine if the surficial materials can be used for revegetation work. Historic plots were set up on the mine site in cooperation with the regulatory agency to determine the feasibility of using the existing material for revegetation.

In 1984, a test plot area was installed just north of the bathhouse at the Trail Mountain Mine site. For a complete description of this test plot and record of yearly sampling, please refer to Chapter 9.

3.4.5 Protection of Vegetative Resources

The mine site was disturbed during development activities from 1948-1967. As such no vegetative protection activities were implemented during development of the mine site. Future disturbances will require verification that threatened and endangered species do not exist on the area of proposed disturbance. If any threatened and endangered species are found, the appropriate authorities will be contacted.

3.4.5.1 Projected Impacts of Mining on Vegetative Resources

The mine has been in existence since 1948 and development work since that time has removed or covered vegetative resources. Impact has been to portions of the riparian and grassland-shrub communities. The extent of impact is not great due to the limited areal extent of the disturbance.

3.4.5.2 Mitigating Measures to be Employed to Reduce Impacts to Vegetative Resources

As previously mentioned, the mine site was disturbed during development activities for 1948-1967. Disturbance of the vegetative resources has already occurred. Any further disturbance will require the verification that threatened and

endangered species do not exist on the proposed site. If any threatened and endangered species are found, the appropriate authorities will be contacted.

3.4.5.3 Monitoring Procedures – Reference Areas and Revegetation

Revegetation of the disturbed area will be undertaken following the completion of the mining activities. Success of the revegetation activities will be determined yearly through quantitative and qualitative data. The vegetation test plot methods and design that were used are described in Chapter 9.

3.4.6 Protection of Fish and Wildlife

The presence of wildlife in the mine plan area indicates their adaptability to the impacts of the mine. As a result, the overall impacts to wildlife are expected to be very minor. In addition, the permittee is committed to practical mitigation of adverse effects of construction and maintenance of the mine operation.

3.4.6.1 Projected Impacts of Mining on Fish and Wildlife

Refer to Section 10.4. ~~The known impacts of mining on fish and wildlife resources are many and varied according to the type, location, and age of the mine and technology used to remove the coal. Additionally the floral and faunal components in the mining area determine the resultant impact. It is desirable that environmental protection be accomplished during all aspects of the life of the mine from construction through final reclamation, but the degree of environmental protection is often difficult to determine. This is particularly true in cases where mining operations have been functioning for many years prior to serious environmental awareness and new improved standards of protection. Such mining operations do not have the benefit of modern sites, design, construction, and technology and have often already impacted the environmental resources such that continued operation will not be a serious additional consequence.~~

~~Continued operation of Mine will continue to have the same effect on the fish and wildlife resources in the area; therefore consideration of these affects is warranted. Reclamation also needs to be considered since discontinuation of the operation would potentially facilitate a return of the habitat to its "normal state". The impacts of concern that have and could result in perturbations to the environment and ultimately relate to the stability of fish and wildlife in the area of concern are directly related to: (1) surface disturbance, (2) loss of habitat, (3) noise and (4) human activity. Both aquatic and terrestrial habitats are of concern since the portals, loading facilities and haul roads occupy riparian habitat adjacent to a small stream, and the mine underlies a variety of terrestrial communities that are considered of high interest to various management agencies because these species are of economic or recreational value.~~

3.4.6.2 Mitigating Measures to be Employed to Protect Fish and Wildlife

Refer to Sections 10.5 and 10.7.

~~The permittee will perform the following mitigation measures in order to minimize disturbances and impacts on wildlife and their habitats that could be impacted during continued operation of the mine. The mitigating measures will meet the requirements of R645-301-322 and will be consistent with the performance standards of R645-301-358.~~

~~The permittee will make significant efforts to educate all employees associated with their on-site mine operation to the intricate values of the wildlife resources within the mine plan permit and adjacent areas. High interest species, critical habitats and critical life history periods will be emphasized.~~

~~The company will maintain the relative inaccessibility of the mine plan area.~~

~~Discharge of firearms by employees will be prohibited on company controlled property during working hours.~~

~~In winter a portion of the mine plan area, particularly the canyon bottom along the stream and haul and access road is inhabited by mule deer, and the potential is present for road strikes and harassment when the animals are in a weakened energy state due to snow and cold. These impacts need to be reduced. Drivers will be informed of the concerns for protection of wildlife, and encouraged to reduce speed in the canyon between November 1 and May 15 when mule deer are abundant.~~

~~The permittee will take precautions to keep all forms of coal or other sediments generated by operation of the mine from inadvertently entering the stream.~~

~~Since the major area of concern in introduction of sediments into the stream is the portal and load out facilities immediately adjacent to the stream, the company has put the stream into a bypass culvert. This will prevent sediment input. This was done in consultation with the appropriate management agency to alleviate the problem. The main canyon culvert was extended approximately 300' upstream in late 1990. This extension impacted approximately 0.21 acres of riparian habitat. As mitigation for this removal of riparian area, 20 small rock check dams were installed in the lower portion of Cottonwood Creek to enhance water retention and possible fish survival. This mitigation was performed in accordance with approval from DWR. Details on location and installation of these structures (as well as the culvert extension) are found in Appendix 7-13 of this MRP. All Wildlife habitats will be maintained or improved if disturbed. This will be done by using native or other vegetation approved for reclamation or~~

~~habitat improvement. No new actions will be undertaken that compromise wildlife or their use areas without prior approval by the appropriate management or regulatory agency.~~

3.4.6.3 Monitoring Procedures

~~There are few species that will be seriously impacted by the proposed actions. There are no identified active aeries being occupied by high interest species of raptors, nor any readily accessible reproductive sites for game species that are critical to perpetuation of the species. However, should raptors, moose or any threatened or endangered species subsequently move into or be found in the mine plan area, appropriate UDOGM, UDWR and USWS personnel will be notified and mutually agreed upon monitoring instituted.~~

The mitigation action planned is such that it will require little to no monitoring, but enforcement by company officials and management or law enforcement personnel will be necessary. An exception might be the activities planned to reduce sediment loads in the stream. This is covered by the surface water monitoring program (Section 7.2.7). Refer to Section 10.7 for additional monitoring information.

3.4.7 Protection of Air Quality

On July 9, 2016, an application for Air Quality Small Source Exemption Registration for Fossil Rock Mine facilities was sent to Bryce Bird the Director of the Utah Division of Air Quality (DAQ). The registration was granted September 7, 2016 by the DAQ. The exemption registration application, calculations and registration are available for review at the DAQ office in Salt Lake City, Utah.

3.4.7.1 Projected Impacts of Mining Operations on Air Quality

The mining operation has some effect on the air quality of Cottonwood Canyon. Dust production by the mining operation is the main contribution. The areas that

are the highest producers of dust are coal haulage down canyon from the mine, coal handling, and surface winds over the disturbed area.

3.4.7.2 Mitigating Measures to be Employed to Control Air Quality

Several practices are incorporated in the operations of the mine to protect the air quality in the mine vicinity. Protection of the air quality is mainly accomplished by reduction of dust production by the mine operations. Practices used to reduce dust production are:

1) Periodic watering, scraping, and compaction of coal loading area and paving of the coal haulage road.
2) Wetting of coal during handling activities.
3) Keeping the size of the disturbed area to a minimum.
4) Revegetation of disturbed areas as soon as practicable.

3.4.7.3 Air Quality Monitoring Plans

Plans to monitor the air quality in the vicinity of the Mine have not been considered or incorporated in the mining and reclamation plan. The effect on air quality by the mine will be minimal due to the limited area and the mitigation measures incorporated in the operation.

3.4.8 Subsidence Control Plan

The subsidence monitoring requirements were first imposed by the 211 US Geological Survey regulations. Later with the formation of the Office of Surface Mining and the realignment of the USGS responsibilities subsidence monitoring became the authority of OSM. Chapter 11 describes in detail the Applicant's plan to ensure minimal environmental impacts from mine induced subsidence.

3.4.8.1 Projected Subsidence Effects

Several surveys have been conducted over the area presently controlled by ~~PacifiCorp~~ the various permittees which may be affected by mining operations. Timber, wildlife, grazing areas, water seeps and springs are the renewable resources occurring within the permit and adjacent areas. There are no oil and gas wells, pipelines, utility structures or high power lines that will be affected by any surface subsidence within the permit boundary and adjacent areas. No buildings or dwellings have been constructed on any surface that will be subject to subsidence within the mine plan area. Timber growth and wildlife should not be affected as regional subsidence is anticipated rather than cracking the surface due to the thickness of overburden. Seeps and springs within mine permit and adjacent areas have been surveyed and are currently being monitored (refer to Chapter 7 - Hydrology, for a description of groundwater resources and monitoring).

3.4.8.2 Control Measures to Mitigate Impacts

Should material damage be incurred by any structure despite the planned subsidence damage prevention measures, the applicant will repair the damage caused by subsidence resulting from the applicant's activities or will compensate the owner of the structure for such damage.

~~Any~~ Roads, fences, stock ponds, earth dams, or water troughs which are materially damaged by subsidence will be repaired and regraded to restore them to their pre-subsidence usefulness.

Should significant subsidence impacts occur, the applicant will restore, those surface lands that were reduced in reasonably foreseeable use as a result of such subsidence to a condition capable of supporting reasonably foreseeable uses that such lands were capable of supporting before subsidence.

In order to restore any land affected by Applicant's mining operations to a condition capable of supporting the current and postmining land uses stated herein, the Applicant will replace water determined to have been lost or adversely affected as a result of Applicant's mining operations if such loss or adverse impact occurs prior to lease relinquishment. The water will be replaced from an alternate source in sufficient quantity and quality to maintain the current and postmining land uses as stated herein.

During the course of regular monitoring activities required by the permit, or as the Applicant otherwise acquires knowledge, the Applicant will advise the Division of the loss or adverse occurrence discussed above, within ten working days of having determined that it has occurred. Within ten working days after the Division notifies Applicant in writing, that it has determined that the water loss is the result of the Applicant's mining operation, the Applicant will meet with the Division to determine if a plan for replacement is necessary and, if so, establish a schedule for submittal of a plan to replace the affected water. Upon acceptance of the plan by the Division, the plan shall be implemented. Applicant reserves the right to appeal the Division's water loss determinations as well as the proposed plan and schedule for water replacement as provided by Utah Code Ann. 40-10-22(3)(a).

PUBLIC NOTICE

Applicant will not mine in ~~any~~ areas that would allow potential subsidence effects (as indicated by the angle of draw) to affect any area outside of the lease, and permit boundary until this constraint on coal recovery is resolved by the OSM and the BLM Branch of Solid Minerals or permission is granted by the adjacent surface agencies.

A mining schedule which details the area in which mining is to take place and the planned date of the mining activity will be submitted to the affected surface owners, following approval of the application and prior to mining.

3.4.8.3 Subsidence Monitoring

The subsidence monitoring at Trail Mountain Mine prior to PacifiCorp's acquisition (November 1992) was conducted using conventional surveying methods. Nowhere did monitoring identify subsidence greater than a few tenths of feet. PacifiCorp used aerial photogrammetric survey methods and annual helicopter reconnaissance flights to monitor subsidence. Baseline photography was conducted August 6, 1993 including color infrared (See Chapter 11 for details on subsidence monitoring.) Refer to Chapter 11 for additional subsidence information.

3.4.8.4 Slides and Other Damage

At any time a slide occurs which may have a potential adverse effect on public property, health, safety or the environment, the permittee shall notify the Division by the fastest available means and comply with remedial measures required by the Division.

3.4.9 Waste Disposal

The permittee has contracted with local firms to handle and remove ~~all~~ non-coal wastes from the mine site. Non-coal wastes and materials that constitute a potential fire hazard are hauled by a licensed contractor to a state approved waste disposal area.

Waste oil is collected ~~in drums~~ in a designated storage area at the site. A licensed contractor will pick up this material on a regular basis and remove it for recycling purposes.

It should be noted that during a spoils survey, it was pointed out that there was no evidence of toxic materials at this mine site (Mr. George Cook, SCS). Prior to reclamation, ~~all~~ spoil material will be re-sampled in a comprehensive random method and retested in accordance to UDOGM guidelines for acid and/or toxic forming potential. Sampling will be conducted per Appendix 9-1, Attachment C.

Sediment pond waste is removed from the site and disposed of in the ~~Cottonwood/Wilberg~~ Waste Rock Site ~~in accordance with the Division's "Sediment Pond Clean out Procedural Guidelines". The Division will be notified and procedures will be approved prior to the start of pond cleaning activities.~~ The sediment material will be sampled and analyzed for acidity and toxicity parameters outlined in Table 7 of the UDOGM Soil Guidelines. If the sediment material does not meet the acceptable value for the acidity and toxicity parameter as reported in Table 8 of the UDOGM Soil Guidelines the material will be buried beneath 4 feet of material within the waste rock pile. Previous analyses of this material have shown it to be non-toxic and non-acid forming. ~~tested according to Division "Title V Coal, Program Policy for Disposal of Sediment Pond Waste".~~

Underground development waste is kept underground as allowed by MSHA regulations. In the event this material must be brought out of the mine, it will be hauled to the ~~Cottonwood/Wilberg~~ Waste Rock Site and disposed of in an approved manner.

There are no coal washing facilities at this mine site; therefore, there are no refuse or other permanent waste piles located at the Mine. The waste rock temporary storage area is shown on Plate 3-1.

3.5 RECLAMATION PLAN

Reclamation of the Mine site will be accomplished in an efficient and environmentally sound manner. This section addresses the reclamation plans for the site. Seven areas are

addressed: contemporaneous reclamation, soil removal and storage, final abandonment, backfilling and grading, revegetation, reclamation schedule, and reclamation cost estimate.

3.5.1 Contemporaneous Reclamation

The mine disturbs only a minimal area for surface facilities. ~~Most of the disturbed area will be needed for operations during the life of the mine. Those~~ Areas not needed (outslopes, embankments, etc.) will be prepared, seeded with quick growing species and mulched to provide protection and cover to reduce erosion. (See following section, "Contemporaneous Reclamation Plan for Mine" and Plate 3-7 for location of contemporaneous reclamation.)

CONTEMPORANEOUS RECLAMATION PLAN FOR MINE

PLANTING DATES - Seeding will normally occur in October or November of the year, depending on climatic conditions at that time. This will allow little chance of premature germination, increase the likelihood of hibernation (or inactivity) of most seed predators and will allow seed emergence in early spring when moisture conditions are most favorable.

PLANT SPECIES - Plant species used for temporary, contemporaneous reclamation with their respective justifications are listed below:

Agropyron dasystachyum --Thickspike Wheatgrass-- This grass species was chosen for its on-site adaptability of these climatic patterns, high salt tolerance, sod forming characteristics and rapid establishment capabilities.

Oryzopsis hymenoides--Indian Rice grass-- This grass species has excellent success on spoils establishment and has moderate salt tolerance qualities.

Astragalus cicer--Silklepod Milkvetch--This forb will be planted because it is sod forming, nitrogen fixing, has moderate salinity adaptation, has establishment qualities and for aesthetics values.

Melilotus officinalis--Yellow Sweetclover-- This species is an introduced forb that establishes readily on severe disturbed sites. It is also a nitrogen fixing plant that has high affinity for salt tolerance.

No shrub or tree species are included in the seed mix for contemporaneous reclamation.

SEEDING METHODS - Slopes less than 20% will be drill seeded, or seeded by hydro seeder or hand broadcast methods. Slopes greater than 20 % will be seeded by hydro seeder or hand broadcasting.

MULCH - Hydro seeded areas will be sprayed with a wood fiber mulch. Since this is temporary reclamation the application of mulch will be optional on areas of drill seeding or seeded by hand broadcasting.

FERTILIZATION - Contemporaneous reclaimed areas will be visually checked on a yearly basis to determine success. ~~Qualitative observations of interim or contemporaneous revegetation will be submitted in the annual report.~~ An appropriate fertilizer will be applied if it appears necessary to increase plant vigor or to obtain the desired cover.

FUTURE CONTEMPORANEOUS RECLAMATION - If additional areas are disturbed or, if current disturbed areas become idle, contemporaneous reclamation procedures (as described above) will be implemented pursuant to R645-301-352.

Note: seeding rates of species will be in equal proportions totaling 52 PLS per square foot, with not more than 20 PLS per square foot of any one species.

3.5.2 Soil Removal and Storage

Refer to Section 8.7. ~~The mine was operational before the 1979 State Act or the 1977 Federal Act. Having been constructed prior to the requirement to save and stockpile topsoil, the soils on the site were used in construction of the roads and pads.~~

~~A post-law borrow pit was utilized on site to obtain fill material for the 66" culvert for Cottonwood Creek. Topsoil was salvaged from the pit area, and is stockpiled in a protected area just northwest of the intake portal for the mine. The pile has been revegetated, and is further protected by installation of a silt fence around the bottom end.~~

~~No additional area is planned~~ for disturbance~~, therefore, it is unlikely that any topsoil will be encountered. However, if in the future, during upgrading operations or facility modifications, any salvageable topsoil is found, it will be tested in accordance with the "UDOGM Guidelines for Management of Topsoil and Overburden, Table 1", and if found satisfactory, will be saved and stockpiled in a location acceptable to the regulatory authority.~~

3.5.3 Final Abandonment

Upon final abandonment of the mining operation, the mine portals and openings will be sealed, the structures removed, and the drainages restored. More detailed description of the procedures to be followed will be found in the following sections. Unmined recoverable coal reserves will be protected in accordance with 43 CFR 3482.1 (c) (3) (IV). Prior to the abandonment of any part of the Mine, the permittee will get approval from authorized officers of the BLM.

The following table list the machinery abandoned at the Trail Mountain Mine (pre-sealing in 2001).

LEASE #	LOCATION	TYPE OF EQUIPMENT	BUREAU OF LAND MANAGEMENT APPROVAL DATE
UTU-64375 (Partial relinquishment accepted 1/9/09)	10TH Right	148 Longwall Shields and Face Conveyor *Abandoned Due to Safety Concerns	September 11, 1998 - Verbal February 26, 2001 - Written
UTU-64375 (Partial relinquishment accepted 1/9/09)	3rd Right	3 Longwall Shields *Abandoned Due to Safety Concerns	December 11, 2000 - Written

Abandonment of Machinery: To comply with Section 10 of the Federal Coal Lease Stipulations the permittee will request approval prior to abandonment of machinery within the mine.

Abandonment of this machinery is insignificant compared to the other steel materials that must be left underground. Ferrous materials include steel roof bolts, steel wire ceiling mesh and steel covered longwall support cans. These materials are not removed due to safety concerns in ~~all~~ underground coal mines.

Although the shields contained emulsified oil which could eventually enter the hydrologic system, it will have as insignificant impact on the hydrologic balance in the area based on the following criteria:

- It will be a period of many years prior to the sediments being saturated to reach potential areas of discharge

- The combination of water chemistry, temperature, and lack of oxygen will impede the rate of oxidation of the metal
- The combination of specific gravity and dip of the geology will potentially carry any migration away from the surface waters
- The total volume of the potential contaminants is so minute it will be diluted within a short distance
- No municipal or domestic water uses exist within 8,000 feet of the sites

* DOGM Technical Findings Dated November 1, 2000 *

Temporary Cessation: PacifiCorp notified the Division of temporary cessation of coal mining operations at the Trail Mountain Mine effective May 4, 2001. Coal mining at the Trail Mountain Mine ceased as of March 15, 2001.

In preparation of temporary cessation, ~~all~~ mining equipment including; production (longwall and continuous miner), belt haulage and electrical were removed from the mine. The mine de-watering system was removed from the mine, except for a six (6) inch steel supply line (9066') and a twelve (12) inch PVC de-watering line (9066'), refer to Figure 3-8 for details.

3.5.3.1 Sealing of Mine Openings

A. PORTAL SEALING

Upon completion of mining activities, the portals will be sealed in accordance with State and Federal regulation. A typical drawing of portal sealing to be used is shown in Figure 3-7. Seals will be located at least 25' inside the portal entry. ~~All~~ Loose material around the seal area will be removed for roof, rib and floor prior to installation. The mine entry seals will be made of solid concrete blocks to form a wall two blocks thick.

B. DRILL HOLE SEALING

Exploration drill holes will be sealed to BLM specifications which entails sealing each hole from total depth to the surface with cement. Drill holes are typically sealed and the pads reclaimed within months of the exploration being completed. See (Figure 3-8).

3.5.3.2 Removal of Surface Facilities

Upon completion of mining activities, ~~all~~ surface structures will be removed, with the exception of portions of the culverts and the sediment pond as described in the following section. Salvageable materials will be hauled off-site to a temporary storage for re-use or sale. Non-salvageable items will be removed to an approved land fill (i.e. - Emery County Dump). Concrete will be broken up by dozer or other equipment and either placed against the highwall prior to backfilling or hauled to an approved landfill.

3.5.3.3 Disposition of Dams, Ponds, and Diversions

Due to the close proximity of the mine site to a perennial stream, it is proposed to leave the sediment pond in place to treat reclaimed area runoff until revegetation standards are reached. To direct the runoff, a 40' length of 48" cmp will be left in place at the point where the restored side canyon drainage meets the restored main channel, as shown on Plate 3-5.

The reclaimed area will be bermed along the restored side canyon drainage where it meets the restored main channel, as shown on Plate 3-5. The reclaimed area will be bermed along the restored banks of the channels to direct runoff to the sediment pond. Approximately 300' of 66" culvert (with the 96" to 66" transition and trash rack) will be left in place beneath the pond to convey the undisturbed Cottonwood Canyon drainage. ~~All~~ Other diversions and culverts will be removed during this Phase I of final reclamation. Once revegetation standards are reached, the sediment ponds and ~~all~~ remaining culvert

sections will also be removed, and the remaining disturbed area will be reseeded. Additional sediment controls, such as straw bales, silt fences, berms, etc., will be placed as needed to ensure protection for the stream during this final phase of reclamation (Phase II).

A perpetual discharge from the sealed Cottonwood mine portals is located on the east side of the mine site. This discharge flows under the county road via a culvert and connects to the bypass culvert. See section 7.5.2 for more information regarding reclamation at this location.

3.5.4 Backfilling and Grading Plan

The surface of this area was originally disturbed in the 1940's by a previous owner. The surface is ~~all~~ privately owned. Since no major effort was made at that time to save or store any topsoil or other material, restoration to approximately original contour is highly impractical. However, it is the intent of the permittee is to restore the area to a topography acceptable to the Division and compatible with the post-mining land use, using such materials that are available at the site.

In general, the backfilling and regrading will proceed as follows:

a) After sealing of the portals and removal of ~~all~~ structures, a backhoe will be brought to the upper (portal road) terrace. The backhoe will begin by reaching down over the fill bank and retrieving as much material as can be reached. This material will be placed on the terrace.

b) ~~A Cat~~ Other appropriate equipment will work with the backhoe where possible, taking the retrieved material and spreading and compacting it from the cut outward to reach a configuration as shown on Plate 3-5, Post-Mining Topography.

c) The mine yard will then be re-sloped to drain as shown. A rock-lined natural drainage will be restored in the main and side channels as previously described.

d) The reclaimed area will be left in a roughened condition by placement of material with the backhoe and subsequent ripping and/or tracking with the dozer. This will promote moisture retention on the site to enhance vegetation.

e) Available topsoil, from the storage pile, will be redistributed to a depth of 6", starting at the north end of the storage area, and continuing down as far as material is available.

f) Upon final shaping and preparation of an area, it will be reseeded as per the plan.

g) Soil sampling of the regraded surface will be conducted as per the program described in Appendix 9-1, Attachment C.

3.5.4.1 Contouring

Plate 3-5 shows the post mining contours of the Mine. Upon abandonment, the post mining land use will not require extensive backfilling or returning the land to the original contours, however, ~~all~~ areas which are compacted through the reclamation activities or during mining will be "deep-ripped" utilizing a dozer ripper to a depth of 12" to 24" prior to seeding.

The drainage channels will be graded to reestablish the streams, following removal of the bypass culverts. Attempts will be made to restore the channels to the pre-mining slopes and conditions.

3.5.4.2 Removal or Reduction of Highwalls

Highwalls will be reclaimed as is practicable for the site and for the post mining land use. A static factor of a least 1.3 will be developed in the reclaimed highwall.

It should be noted that highwalls, by definition, are only those cut areas associated with portals. Other cut areas exist on this site; however, these are

primarily road or pad cuts and do not fit the definition of a highwall. Portions of these areas may be retained as terraces to enhance the stability of road backfills.

3.5.4.3 Erosion Control

Measures for erosion control will be implemented on a case by case basis. Some methods which might be used are: mulching, straw dikes, water bars, silt fence, and limiting access to the area.

The berms along the reclaimed channels will be checked for erosion in the flow paths. If signs of erosion are evident, erosion controls such as loose rock check dams or silt fences will be installed along at intervals of 500' or less as necessary to control the erosion. Rills or gullies deeper than nine inches in regraded areas will be filled, graded or otherwise stabilized and reseeded as per the plan. This will be accomplished by hand, using adjacent or eroded material whenever possible. If larger gullies develop, a backhoe may be used in addition to hand work. Existing material that has been found satisfactory as a growth media through testing from the site will be used to accomplish this task.

3.5.5 Revegetation Plan

The disturbed areas of the mine will be revegetated the first normal period for favorable planting conditions after final site preparation. A suitable, diverse seed mix will be used to revegetate the disturbed area. Timing of the revegetation within the mine reclamation schedule is shown in Section 3.5.6, Schedule of Reclamation. Proposed seed mixes for the revegetation are listed in Appendix 9-1 of the MRP.

The method of revegetation will be largely determined by the results of the revegetation test plots. Those test plot methods that yield the best results will be used on the full scale reclamation of the mine site.

3.5.5.1 Soil Preparation

With special handling, the disturbed land fill should provide a suitable seed bed for revegetation. Soil sampling will be conducted per Appendix 9-1, Attachment C. Special handling will include removal of contaminated material and large coarse rock fragments (greater than 18 inches). The large rock fragments will be used as rip-rap in channel restoration, buried with the fill, or randomly placed on the reclaimed surface. The mine coal pad areas will be removed and ~~all~~ coal/refuse associated with the pads will be hauled to the ~~Cottonwood~~ Waste Rock Site for disposal.

Contaminated soil material which contains greater than 50 percent coal fines, will be disposed of at the ~~Cottonwood~~ Waste Rock Site. Soil contaminated with oil and grease will be disposed of at an approved site. This will be determined by visual inspection, and any material with visible oil or grease contamination will be removed. The volume of such material cannot be accurately estimated; however, it will likely be less than two percent of total volume. Material with less than 50 percent coal fines will be buried against the cut banks and covered with a minimum of four feet of incombustible material. There are no acid-or toxic-forming materials known to exist at this site. Any of these materials discovered will be disposed of on-site and covered with 4' of material or removed to the ~~Cottonwood~~ Waste Rock Site.

Salt contamination may also be a problem in soils used for reclamation. If visible salty areas or analyzed salty areas are found, the soils will be buried along the cut banks or other available sites to a minimum depth of 48".

Non-coal waste will be separated from the soils, loaded into trucks and hauled to an approved landfill for final disposal. ~~All~~ The pad areas will be ripped for 12 to

24 inches to loosen the fill profile using the rippers on the dozer, and pulverized if a cloddy surface exists. Once backfilled and graded, the surface will be scarified with the teeth on the backhoe, or using the tracks of the dozer to create "pockets" for water retention and root penetration. Soil samples will be taken to identify the need for replenishment of various soil nutrients, as described in Appendix 9-1, Attachment C.

3.5.5.2 Seeding and Transplanting

Information from the test plots has been utilized together with proven reclamation results in order to arrive at the best treatment and seeding methods. After regrading and top soiling, the disturbed area will be mulched, fertilized (if determined beneficial) and seeded. The steeper areas will be hydroseeded or broadcast, and areas flat enough to safely allow operation of a drill seeder ~~will~~ may be drill seeded. Regraded areas will not be smooth, but will have numerous depressions that will hold moisture and provide a micro-climate for vegetation establishment.

Riparian Community - During reclamation, the culverts will be removed, and the stream channels will be restored. The main channel will be rip-rapped with a 1.4 foot median rock size at least 4 feet above the stream bottom. The flatter, reclaimed area is expected to be 60-70 feet west of the stream bank, and 20-40 feet east to where the public road will remain. Most of this area will consist of a slope of 5-10 degrees; therefore, drill-seeding will be used.

The riparian seed mix (see Table A9-3, Appendix 9-1) will be used approximately 20-40 feet on each side of the rip-rap, leaving a total floodplain area of 50-60 feet.

Grassland - Shrub Community - The seed mix for the grassland - shrub community will be used on the entire mine site, with the exception of the riparian

are described above. See Table A9-1, Appendix 9-1 for seed mix and application rates. Portions of the grassland - shrub community area may be flat enough to safely utilize a drill-seeder; however, the majority of this area will be on the steeper slopes and will thus be hydro-seeded or broadcast.

Containerized Stock - Following the seeding and mulching containerized woody plant species will be planted at a rate of 90 individuals/acre (or 2% of the undisturbed density in equal proportions). Wherever possible, this stock will be spatially arranged in clumps to maximize cover for wildlife. It is recommended (R645-301-358) that "edge effect" be optimized in support of resident wildlife species. Significant stands of coniferous plant cover (Pinion-Juniper and Douglas Fir) exist throughout the permit areas. These stands occur well within the limits of maximum distances required to optimize edge effect. A diagram illustrating the general spatial arrangement of the grassland - shrub community is included in Appendix 9-1, along with the description of the containerized stock proposed for both grassland-shrub and riparian areas.

One proposed option is that fresh-cut willow shoots be used on the riparian area in lieu of containerized stock. These shoots would be cut from local sources along Cottonwood Creek and placed on 3' centers on each side of the reclaimed channels.

3.5.5.2.1 Seed Mix and Rate/Acre

Two seed mixes are proposed for reclamation of the two vegetative communities that existed on the disturbed site. The first seed mix is for the riparian community, the second is for the grassland-shrub community. Lists of the species for both seed mixes can be found in Appendix 9-1.

3.5.5.3 Management

The reclaimed area will be protected from livestock grazing until bond release by fencing. The proposed fence is shown on Figure 3-9, and is not intended to preclude wildlife access. The revegetated area will be observed on a yearly basis. If heavy use occurs by wildlife, rodents, etc. other protection measures may be considered.

3.5.5.4 Vegetative Monitoring

Vegetation monitoring for permanent reclamation will be conducted as indicated in Table 3-2 and Section 9.8.

Revegetation success at the mine will be based on comparison with the approved reference areas. Ground cover, woody plant density, and shall be considered equal to their respective reference area counterparts, when there is 90 percent success at 90% statistical confidence.

3.5.6 Schedule of Reclamation

3.5.6.1 Detailed Timetable for Completion of Each Major Step in Reclamation (See Table 3-3).

3.5.6.2 Reclamation Monitoring

Monitoring of the success of reclamation will encompass subsidence, revegetation and water quality and quantity monitoring.

- Annual surveys will be conducted to determine surface deformation due to subsidence and possible movement of surface subsidence monuments for a minimum of three years after no additional subsidence is detected within the area.

- Water Quality and quantity monitoring will continue until reclamation has been accomplished as approved by the regulatory authority.
- ~~All~~ Seeded areas will be inventoried to determine success of seeding.

3.5.7 Cost Estimate for Reclamation

The 1979 Act "Regulation of Coal Mining and Reclamation Operations" requires the operator of a coal mine to file with the Utah Division of Oil, Gas and Mining (DOGM) a bond in the amount equal to the estimated cost of completing the work described in the operator's reclamation plan. The bond is to ensure the State of Utah that in the event of the operator being financially unable to reclaim the disturbed areas, such areas can and will be restored by the DOGM at no cost to state residents.

The strata characteristics above the coal seam, the slow and uniform rate of subsidence will not affect the surface terrain to such an extent that reclamation will be necessary. As such, a reclamation bond is not required for the surface lands over the underground workings.

An estimate of the cost of reclamation of the Mine site is shown in Appendix 1. ~~This table reflects the required bond increase from all additions. Supporting cost calculations for each major reclamation step is also presented. The amount of the bond posted for this operation is broken down in Appendix 1.~~

Earthwork estimates for final reclamation are summarized in the Mass Balance Table 3-4. The quantities are taken from cross-sectional areas shown on Plate 3-6. Cross section locations are shown on Plates 3-1 and 3-5. Estimates indicate a cut volume of 38,579 cubic yards and a required fill volume of 39,719 cubic yards for final mine site reclamation.

TABLE 3-4 MASS BALANCE

STATION	CUT VOLUME CU. YDS.	FILL VOLUME CU. YDS.	ACC. CUT VOLUME CU. YDS.	ACC. FILL VOLUME CU. YDS.
0+00	0	0	0	0
2+00	1,556	1,467	1,556	1,467
4+00	3,778	3,022	5,334	4,489
6+00	4,889	4,519	10,223	9,008
8+00	6,222	6,148	16,445	15,156
10+00	5,511	5,482	21,956	20,638
12+00	4,341	3,259	26,297	23,897
14+00	3,719	3,170	30,016	27,067
16+00	2,533	3,926	32,549	30,993
18+00	3,185	3,511	35,734	34,504
20+00	2,415	2,400	38,149	36,904
22+00	430	1,200	38,579	38,104
24+00	0	1,274	38,579	39,378
25+00	0	341	38,579	39,719
TOTALS	38,579	39,719	38,579	39,719

NOTES: (1) Refer to Plates 3-1 and 3-5 for cross sections. (2) Refer to Plate 3-6 for cross section

APPENDIX 1 – RECLAMATION BOND

Exhibit 1 Blasting Record (Appendix 3-6)

(R645-301-524.700)

(R645-301-524.711) Name of Operator Conducting Blast.

(Company _____ Name)

(Address) _____

(City - State) _____

(Telephone _____ Number)

(R645-301-524.712) Location, Date and Time of Blast.

(Mine) _____

(Location) _____

(Date) _____ (Time of Blast)

(R645-301-524.713) Name, Signature, and Certification Number of Blaster in Charge.

(Name) _____

(Signature) (Certification Number) _____

(R645-301-524.720) Direction and Distance, in feet from the nearest blast hole to the nearest dwelling, public building, school, church, community or institutional building outside the permit area.

(Direction) _____

(Distance in Feet) _____

(R645-301-524.730) Weather Conditions.

(Wind Direction & Velocity) _____ Approximate

(R645-301-524.741) Type of Material Blasted

(Material) _____

(R645-301-524.742) Sketches of the blast pattern including number of holes, burden, spacing, decks, and delay pattern.

(R645-301-524.743) Diameter and Depth of Holes.

_____

(R645-301-524.744) Types of Explosives Used.

_____

(R645-301-524.745) Total Weight of Explosives Used.

_____

(R645-301-524.746) Maximum Weight of Explosives Detonated in an Eight (8) Millisecond Period.

_____

(R645-301-524.747) Initiation System.

_____

(R645-301-524.748) Type and Length of Stemming.

_____

(R645-301-524.749) Mats or Other Protection Used.

_____

(R645-301-524.750) Seismographic Records and Airblast Information.

_____

(Type of instrument, sensitivity, Certification of Calibration)

(Reading) _____

(Location & _____ Distance)

_____

(Name of Person & Firm Analyzing Reading)

(R645-301-524.760) Reason for Unscheduled Blast

_____

_____

_____

APPENDIX 3-6
TECHNICAL DATA INFORMATION

Add to the back of existing information

Exhibit 1 Blasting Record (Appendix 3-6)

(R645-301-524.700)

(R645-301-524.711) Name of Operator Conducting Blast.

(Company _____ Name)

(Address) _____

(City - State) _____

(Telephone _____ Number)

(R645-301-524.712) Location, Date and Time of Blast.

(Mine) _____

(Location) _____

(Date) _____ (Time of Blast)

(R645-301-524.713) Name, Signature, and Certification Number of Blaster in Charge.

(Name) _____

(Signature) (Certification Number) _____

(R645-301-524.720) Direction and Distance, in feet from the nearest blast hole to the nearest dwelling, public building, school, church, community or institutional building outside the permit area.

(Direction) _____

(Distance in Feet) _____

(R645-301-524.730) Weather Conditions.

(Wind Direction & Velocity) _____ Approximate

(R645-301-524.741) Type of Material Blasted

(Material) _____

(R645-301-524.742) Sketches of the blast pattern including number of holes, burden, spacing, decks, and delay pattern.

(R645-301-524.743) Diameter and Depth of Holes.

_____

(R645-301-524.744) Types of Explosives Used.

_____

(R645-301-524.745) Total Weight of Explosives Used.

_____

(R645-301-524.746) Maximum Weight of Explosives Detonated in an Eight (8) Millisecond Period.

_____

(R645-301-524.747) Initiation System.

_____

(R645-301-524.748) Type and Length of Stemming.

_____

(R645-301-524.749) Mats or Other Protection Used.

_____

(R645-301-524.750) Seismographic Records and Airblast Information.

_____

(Type of instrument, sensitivity, Certification of Calibration)

(Reading) _____

(Location & _____ Distance)

_____

(Name of Person & Firm Analyzing Reading)

(R645-301-524.760) Reason for Unscheduled Blast

_____

_____

_____

Appendix 3-11

Municipality Correspondence

EMERY COUNTY

Road Department

February 4, 2015

PacifiCorp
15 North Main Street
P. O. Box 310
Huntington, Utah 84528
Dennis Oakley
Senior Mine Engineer

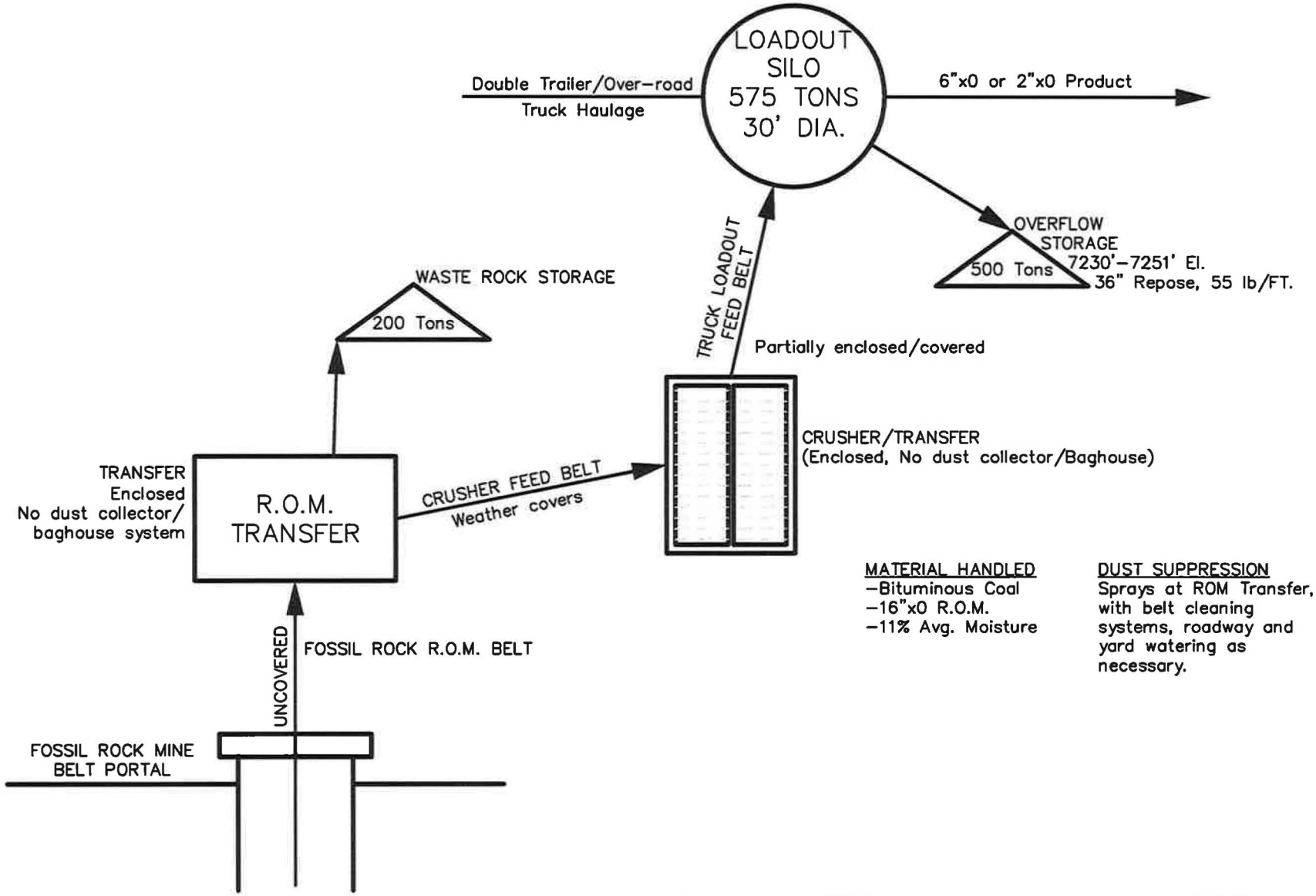
Mr. Oakley,

PacifiCorp has a water discharge line draining from the Cottonwood Mine/Trail Mt. access portal. Currently this line is buried under the bar ditch and draining into a drop box and culvert structure crossing county road #506. Emery County Road Department wishes to leave this in place as is to better facilitate maintenance. Leaving the line underground will keep ice from building up in the winter. Emery County will maintain this line as our own from now on.

Sincerely,

Wayde S. Nielsen
Emery County Road Supervisor

P.O. Box 889 300 West SR29 Castle Dale, Utah 84513 Telephone (435) 381-3510 FAX (435) 381-5239



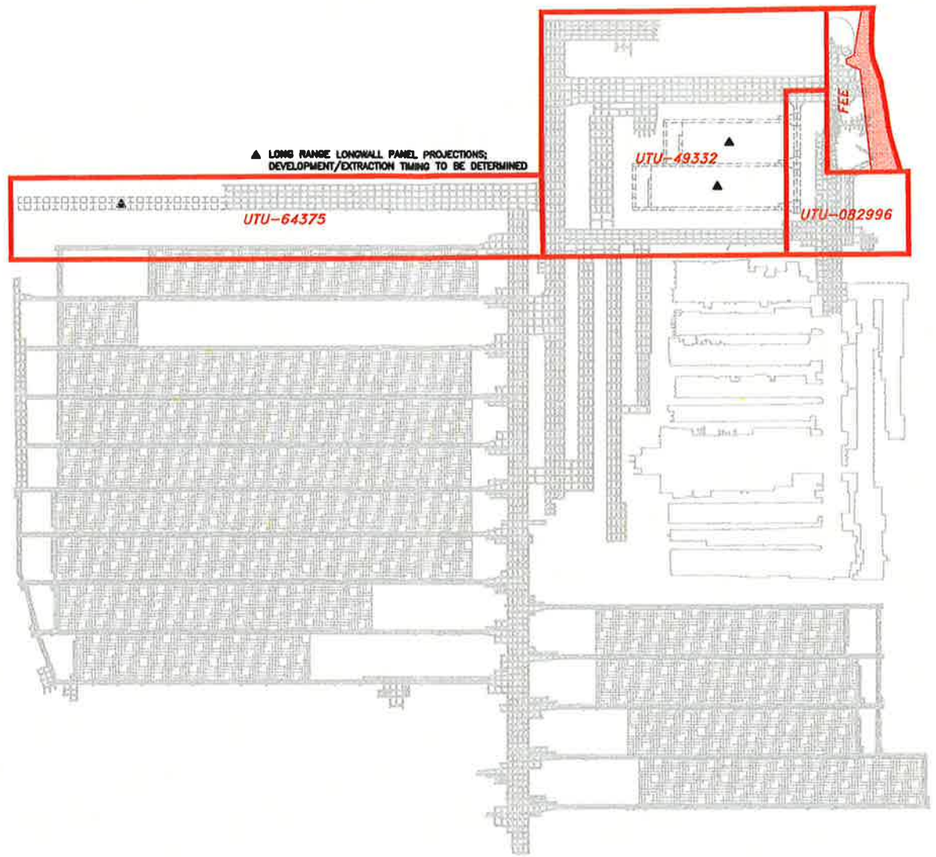
Fossil Rock Resources, LLC
Fossil Rock Mine
597 South SR 24 - Salina, UT 84654
(435) 286-4880 Phone
(435) 286-4499 Fax

FOSSIL ROCK MINE
COAL FLOW DIAGRAM

SCALE: NO SCALE	DATE: 3/23/2016	DRAWN BY: J.K.M.
ENGINEER: A.B.E.	CHECKED BY: V.M.	PROJ: ####
FILE NAME: H:\DRAWINGS\Trail Mountain\Fossil Rock Permit Drawings\FIGURE 3-1.dwg		

SHEET NO.

FIG. 3-1



N

PROFESSIONAL ENGINEER
No. 9073281
JACOB D. SMITH
STATE OF UTAH

I CERTIFY THE ITEMS SHOWN ON THIS DRAWING ARE ACCURATE TO THE BEST OF MY KNOWLEDGE

MINING PLAN

LEASE BOUNDARY

PERMIT AREA

Fossil Rock Resources, LLC
Fossil Rock Mine
597 South SR 24 - Salina, UT 84654
(435) 286-4880 Phone
(435) 286-4499 Fax

Fossil Rock Mine

Mining Plan

SCALE: 1" = 2000'	DATE: 9/14/2016	DRAWN BY: B.R.	ENGINEER: J.S.	CHECKED BY: V.M.
FILE NAME:				PROJ:

REVISIONS				
NO.	DATE	REQ. BY	DWG. BY	REMARKS

SHEET NO.

PLATE 3-2

CHAPTER 4

LAND STATUS, LAND USE, AND POST MINING LAND USE

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Plate No.	Description
4-1	Surface and Coal Ownership Map
4-2	Land Use Map

LIST OF APPENDICES

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4-2	Coal Leases
4-2(L)	Federal Coal Lease UTU-64375
4-3	Prime Farmland Determination
4-4	Incidental Boundary Change

LAND USE

4.1 SCOPE

This chapter of the mining and reclamation plan describes the status of lands in and adjacent to the mine plan permit and adjacent areas. Present and post-mining land-uses will also be discussed with emphasis on how mining can be integrated in the multiple land-use of the area.

4.2 METHODOLOGY

Information used in preparing this chapter of the mining and reclamation plan has been gathered from published sources and from discussions with the relevant land-management agencies.

4.3 LAND STATUS

4.3.1 Mine Plan Area Surface Land Status

Land status within the mine plan area is separated into two areas: private, and federal (Refer to Plate 4-1 ~~in Volume 3~~).

4.3.1.1 Ownership

PacifiCorp owned 53.35 acres of private land surrounded by federal land of the Manti-LaSal National Forest. Ownership of land was obtained by Beaver Creek Coal Company in October, 1987, through purchase of the mine from the Arch Minerals Company of St. Louis, MO. A legal description of the ~~extent of the~~ property is given in Chapter 2. ~~below. Also refer to the Legal and Financial Volume for more details:~~

~~Beginning point SW corner of NW1/4 SE1/4, Sec. 25, T17S, R6E, SLB&M, thence North 160 rods, thence East 44 rods to center Cottonwood Creek, Southward along creek to a point 76 rods East of the beginning, thence West 76 Rods to the point of beginning.~~

4.3.1.2 Surface Managing Authorities

Historically and/or presently, the surface lands of the mine plan area have been or are currently managed by the State of Utah, Division of State Lands and United States of America, US Forest Service. Section 36, Township 17 South, Range 6 East, part of the mine plan area, is managed by the Utah Division of State Lands (relinquishment for ML-22603 effective 01/31/1996). Areas within Township 17 South, Range 6 East, Sections 25, 26, 27, 34 and 35, Township 18 South, Range 6 East, Sections 1, 2, and 3, and Township 18 South, Range 7 East are managed by the Manti-LaSal National Forest, US Forest Service. The majority of these lands have been mined out and relinquished. Refer to Chapter 2 ~~Legal and Financial Volume~~ for lease area, permit area, and adjacent area details.

Lands held by PacifiCorp are classified by Emery County, the US Forest Service, and the State of Utah as a recreation, forestry and mining area.

4.3.1.3 Special Use Permits and Leases

The US Forest Service Manti-LaSal National Forest has issued a special use permit ~~to the Trail Mountain Mine~~ for a right-of-way to the mine property. ~~As discussed previously, the Mine is surrounded by Forest Service land; therefore, the special use permit was required.~~ A copy of the permit can be found in Appendix 4-1.

4.3.2 Mineral Ownership

4.3.2.1 Coal Ownership and Mines

The Mine is located in an area of intermixed state (relinquished), federal, and fee coal. Plate 4-1 shows the ownership of the area surrounding the mine plan area. Those areas not outlined are unleased federal coal.

4.3.2.2 Coal Leases

PacifiCorp was granted federal coal lease U-082996 for 80 acres, U-49332 for 641.47 acres (partial relinquishment of 261.47 acres accepted as of 01/09/09) 380 acres remain and lease U-64375 for 2,630.81 acres (partial relinquishment of 2,504.01 acres accepted as of 01/09/09) 260 acres remain. Copies of these mineable leases are located in Appendix 4-2 and 4-2L. Refer to Chapter 2 for additional information pertaining to leases.

~~Township 17 South, Range 6 East, SLB&M Section 25, (80 acres); T17S. R6E, Sections 25, 26 and 35 (380.00 acres), T17S. R6E, Sections 26, 27 (260.00 acres); Copies of the leases are found in Appendix 4-2.~~

4.3.2.3 Mineral Ownership

~~Ownership of 53.35 acres of surface and mineral rights is held by the permittee.~~ Refer to Chapter 2, Appendix 4-2 and Plate 4-1 for additional information

4.3.2.4 Mineral Leases

A copy of the lease agreements can be found in Appendix 4-2.

4.3.2.5 Oil and Gas Wells

No oil and gas wells have been or are presently being drilled on or adjacent to the mine plan area.

4.3.2.6 Oil and Gas Leases

Oil and gas lease are held on the mine plan area. A state lease ML-31104 is held by Placid Oil Company, filed in September, 1974. Leases held on federal land are shown in Table 4-1.

4.4 LAND USE

4.4.1 Regional Land Use

Traditionally land use in the Wasatch Plateau has been mining, grazing, recreation, wildlife habitat and timber harvesting. ~~Generally~~ Land management of the plateau has been controlled by the Manti-LaSal National Forest due to the largest portion of the plateau being within the forest boundaries.

Table 4-1: Oil and Gas Lease Ownership for Mine Area. (See Plate 4-1)

Location	Ownership	Lease
T 17 S, Section 24		**U-15200**
Southland Royalty Company	25%	
Enterprise Gas Company	37½ %	
El Paso Exploration Company	37½ %	
T 17 S, Section 25		**U-24355**
Hawthorn Oil Company		
T17 S Sections 26 & 35		**U-15197**
Southland Royalty Company	25 %	
Enterprise Gas Company	37½ %	
El Paso Exploration Company	37½ %	
T 18 S, R 6 E, Section 1		**U-23208**
Edward Mike Davis	47½ %	
T 18 S, R 6 E, Section 2		**U-15195**
El Paso Exploration Company	37½ %	
Southland Royalty Company	25 %	
Enterprise Gas Company	37½ %	

4.4.2 Mine Plan Area Land Use

4.4.2.1 Existing Use

Existing land uses of the Mine permit and adjacent areas consist of grazing, wild life habitat and recreation. No commercial forest uses have existed on the privately owned or National Forest lands within the permit or adjacent areas. No farming has or is being done on the permit or adjacent areas.

Grazing - The National Forest land within the mine plan area is considered as unsuitable range (Niebergall, 1981). Since 1981 when John Niebergall made the preceeding statement, lease U-64375 was added to the mine plan area. Much of this lease, issued in 1990 (2,504.01 acres relinquished effective 01/09/09), is used as rangeland for both domestic livestock and wildlife. Section 36 (relinquished 01/31/1996), owned by the State of Utah, is leased by Emile Luke. Eight cows are allowed on the property from June 21 through September 20 (24 AUM's). The actual land within this section utilized for grazing is probably limited to 120 acres or less in the west portion of the section. The remainder of the area is unsuitable for range due to the cliff-like nature of the area. A map showing the US Forest Service grazing allotments is provided (see Figure 4-3). Livestock are also trailed on the road in Cottonwood Canyon (Niebergall, 1981). Cattle are moved to summer range at the higher elevations above the mine plan area.

It should be noted, that PacifiCorp has provided for the US Forest Service and the Trail Mountain Cattleman's Association, fences and gates at the Roan Canyon location and the adjacent Cottonwood Canyon location. The company has provided a cattle guard and a stock corral at the Cottonwood Canyon location, (see Figure 4-3) to aid the cattlemen in their efforts to trail cattle to and from summer ranges above the permit areas.

Recreation - Recreational use of the area consists primarily of sightseeing by people traveling up Cottonwood Canyon to the Upper Joes Valley area. Limited

hunting also occurs on the small section of the mine plan area on the plateau. Most of the area is characterized by steep and extremely rugged cliffs which are not conductive to recreational uses (Niebergall, 1981). There is no fishing in the canyon near the mine (Niebergall, 1981).

Access to the mine plan area is by the paved road in Cottonwood Canyon. Jeep trails allow access to the mine plan or adjacent areas on the high plateau above the ~~Trail Mountain~~ Mine. Access is gained via road on the upper end of Trail Mountain.

Farming - Farming is not practical within the permit or adjacent area. Farming is impractical due to the steep and rocky terrain, lack of water to irrigate and therefore, no future farm use is expected within the permit or adjacent area.

4.4.2.2 Previous Mining

Underground Mined Areas - The Johnson mines, located across the canyon from the Mine facilities were active from 1909 to 1948. The Cottonwood Canyon prospects are located across Cottonwood Canyon from the Mine. The Cottonwood Canyon prospects were active from 1946 to 1948. No other known minerals of value have been mined within the permit or adjacent area.

Production from the earlier mines was from the Hiawatha seam by room and pillar mining. An estimated production of 96,000 tons is reported by Doelling (1972) for all mining in the area. Of this, the Cottonwood Canyon mines produced approximately 54,000 tons.

Surface Mined Areas - There have been no previous surface mines located within the mine permit or adjacent areas.

4.4.3 Land Use During Operations

Land use in the area has not changed greatly in the past 20 to 50 years. The following section will look at the potential effects of the operation on the use of the land. At the present time, the Applicant has no plans to disturb any additional surface area during the mining permit term.

4.4.3.1 Effect of Operation on Land Use

The Trail Mountain Mine has operated in the Cottonwood Canyon since 1946. Land use in the canyon has adapted to the existence of the mining operation. As described previously, the majority of the mine plan area is not suitable for grazing or forestry. The uses affected are wildlife habitat and recreation. Recreationalists and ranchers use the canyon for access to the upper parts of Cottonwood Canyon and the top of the plateau. Sightseeing and seasonal cattle drives are the only major activity, other than mining, in the lower canyon.

Access up the canyon is not obstructed by the mining operation and facilities. Traffic on the county access road is not a problem. In 1987, three miles of the Cottonwood Canyon road from Highway 29 to the Trail Mountain Mine site was surfaced with six inches of asphalt.

4.4.3.2 Mitigation of Effects of Operation

The realignment and surfacing of the access road has greatly facilitated traffic flow and has mitigated any erosion or fugitive dust pollution problems.

The mine plan area due to its underground nature will have no adverse impacts other than those which may result through subsidence. Should subsidence occur and alter springs, seeps, or ponds that is used as a watering source for wildlife or cattle, the permittee will commit to mitigating the loss of seeps and springs with the installation of guzzlers. These guzzlers will be fenced to keep out cattle and allow wildlife in.

Manmade and natural stock ponds are provided on the Trail Mountain area as a source of water for grazing cattle. These ponds are supplied by snow runoff or springs. There are several developed springs in the allotment areas that have watering troughs. If subsidence affects ponds, the ponds will be rebuilt with equipment and a bentonite liner will be placed in the affected pond. Should subsidence alter a seep or spring that is supplying a water source to livestock, the permittee will, after consulting with the Forest Service and DOGM, commit to replace or relocate the trough or pond to a suitable range area. The permittee has implemented a subsidence and hydrologic monitoring program whereby, the extent and the effects of subsidence to water resources can be studied, identified, and the appropriate mitigating action taken.

4.5 POST MINING LAND USE

4.5.1 Mine Plan Area

Land use following mining will remain essentially the same on a regional basis. A combination of coal mining, grazing, wildlife habitat and recreation will tend to be the typical uses. These uses will be, as previously described, strongly influenced if not controlled by the Manti-LaSal National Forest.

The post mining use of the mine plan areas is proposed as a multiple use of grazing, wildlife habitat, hunting and recreation. All of these uses are compatible with the surrounding area.

4.5.2 Mine Site

The mine site will be reclaimed to a grazing, wildlife habitat, and recreational use. Rehabilitation of the site will include removal of all buildings and facilities, regrading the tipple pad and sediment pond, removal of the bypass culvert, and reestablishment of stream, soil preparation, and revegetation of the site.

Use of the site will probably be recreational during late spring, summer, and fall and for wildlife grazing during the winter and early spring. In this area, the recreational use should not interfere with the wildlife use due to limited access during the winter months. This will allow for protection of the deer during the crucial period while on their winter range.

4.5.3 Final Surface Configuration

The graded surface of the mine site will blend existing slopes into the surrounding terrain. The slopes will be stabilized with vegetation, and the erosion hazard reduced. (See Chapter 3.)

4.6 BIBLIOGRAPHY

US Forest Service, 1979. Land Management Plan. Ferron-Price Planning Unit, Manti-LaSal National Forest, Price, Utah.

Niebergall, John-US Forest Service, District Ranger, Manti-LaSal National Forest, Ferron, Utah - Range Improvement and Allotment Description.

Appendix 4-2

Coal Leases

CERTIFICATE OF EXISTENCE
FOSSIL ROCK RESOURCES, LLC

Utah Department of Commerce
Division of Corporations & Commercial Code
160 East 300 South, 2nd Floor, PO Box 146705
Salt Lake City, UT 84114-6705
Service Center: (801) 530-4849
Toll Free: (877) 526-3994 Utah Residents
Fax: (801) 530-6438
Web Site: http://www.commerce.utah.gov

05/13/2015
9155195-016105132015-1933780

CERTIFICATE OF EXISTENCE

Registration Number:	9155195-0161
Business Name:	FOSSIL ROCK RESOURCES, LLC
Registered Date:	September 03, 2014
Entity Type:	LLC - Foreign
Current Status:	Good Standing

The Division of Corporations and Commercial Code of the State of Utah, custodian of the records of business registrations, certifies that the business entity on this certificate is authorized to transact business and was duly registered under the laws of the State of Utah. The Division also certifies that this entity has paid all fees and penalties owed to this state; its most recent annual report has been filed by the Division (unless Delinquent); and, that Articles of Dissolution have not been filed.

Kathy Berg
Director
Division of Corporations and Commercial Code

Delaware

The First State

I, JEFFREY W. BULLOCK, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY "FOSSIL ROCK RESOURCES, LLC" IS DULY FORMED UNDER THE LAWS OF THE STATE OF DELAWARE AND IS IN GOOD STANDING AND HAS A LEGAL EXISTENCE SO FAR AS THE RECORDS OF THIS OFFICE SHOW, AS OF THE TWENTY-SECOND DAY OF MAY, A.D. 2015.

AND I DO HEREBY FURTHER CERTIFY THAT THE SAID "FOSSIL ROCK RESOURCES, LLC" WAS FORMED ON THE TWENTY-NINTH DAY OF AUGUST, A.D. 2014.

AND I DO HEREBY FURTHER CERTIFY THAT THE ANNUAL TAXES HAVE NOT BEEN ASSESSED TO DATE.

Jeffrey W Bullock, Secretary of State

5595063 8300

AUTHENTICATION: 2403222

150746270

DATE: 05-22-15

You may verify this certificate online at corp.delaware.gov/authver.shtml

FEDERAL COAL LEASE - UTU-64375

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Utah State Office
440 West 200 South, Suite 500
Salt Lake City, UT 84101-1345
http://www.blm.gov/ut/st/en.html

IN REPLY REFER TO:
3453 / (UT-9223)
UTU-082996
UTU-49332
UTU-64375
UTU-73339 (LMU)

AUG 1 3 2015

CERTIFIED MAIL- Return Receipt Requested
91 7199 9991 7035 9001 7143
91 7199 9991 7031 4480 2164

DECISION

Assignor: PacifiCorp 1407 West North Temple Salt Lake City, Utah 84116	:	Federal Coal Leases: UTU-082996, UTU-49332 and UTU-64375
Assignee: Fossil Rock Resources, LLC Dutchmans Lane, 9th Floor Louisville, Kentucky 40205	:	Federal Logical Mining Unit (LMU): UTU-73339

Assignments of Federal Coal Leases Approved

On June 9, 2015, Fossil Rock Resources, LLC submitted assignments of Federal coal leases UTU-082996, UTU-49332 and UTU-64375 with PacifiCorp as assignor, and Fossil Rock Resources, LLC, as assignee.

Satisfactory evidence of the qualifications and holdings of Fossil Rock Resources, LLC, has been filed, as required pursuant to the regulations at 43 CFR 3472. The Department of Justice has been forwarded information as to whether this transfer would create a situation inconsistent with the antitrust laws and no comments were received within the 30-day period. Therefore, the assignments meet the requirements of the regulations and are hereby approved effective August 1, 2015. Approval of the assignments does not constitute approval of any of the terms therein which may be in violation of the lease terms.

In addition PacifiCorp assigned their right as operator of the Trail Mountain Logical Mining Unit (LMU), serial number UTU-73339. Fossil Rock Resources, LLC, has agreed to assume all of the rights and responsibilities under the LMU including agreeing to the all stipulations and obligations of the LMU.

A LMU bond, No. SUR60000336, in the amount of $115,000 for LMU UTU-73339 with Fossil Rock Resources, LLC as principal, and Ironshore Indemnity, Inc. as surety, were filed on July 15, 2015. This bond has been examined, found to be satisfactory and is hereby accepted effective the date of filing. The regulations at 43 CFR 3474.2 does allow for the amount of any bond to be increased when additional coverage is determined to be appropriate. A written request must be submitted when you want to have the period of liability of this bond terminated.

If you have further questions call Bill Buge of this office at (801) 539-4086.

Jenna Whitlock
Acting State Director

Enclosure:
1. Assignment

cc: Price Field Office (UTG02)

Mr. John Baza, Director, Utah Division of Oil, Gas and Mining, P.O. Box 145801, Salt Lake City, Utah 84114-5801

KIM S COLTON
Direct Dial: 801.237.0316
email: kcolton@vancott.com

VANCOTT

June 9, 2015

VIA HAND DELIVERY

U.S. Bureau of Land Management
Utah State Office
Attn: Roger L. Bankert
P.O. Box 45155
Salt Lake City, Utah 84145-0155

Dear Mr. Bankert:

We represent Fossil Rock Resources, LLC, a Delaware limited liability company (the "Assignee"). The Assignee is a wholly-owned subsidiary of Bowie Resource Partners. Under the terms of the Assignment and Assumption of Coal Leases and Logical Mining Unit, Assignee acquired from PacifiCorp the leasehold and operating interest in and to the following federal coal leases at the Trail Mountain Mine in Emery County, Utah:

- **UTU-082996** (80 Acres located in Emery County, Utah)
- **UTU-49332** (380 Acres located in Emery County, Utah)
- **UTU-64375** (260 Acres located in Emery County, Utah)

The Assignee hereby requests approval of the assignment of the above-referenced coal leases. In accordance with 43 C.F.R. § 3453.2-2, this request filing is made in triplicate and includes a transfer filing fee of $195 ($65 per lease).

The three subject leases comprise all federal leases and lands within a Logical Mining Unit (**UTU-73339**), held by PacifiCorp. Assignee will be the sole operator of the LMU and acknowledges that it will be subject to the stipulations and obligations of the LMU.

In accordance with 43 C.F.R. § 3453 *et. seq.* and 43 C.F.R. § 3472 *et. seq.* the following items are enclosed:

- A Qualifications Statement-including Assignee's federal coal lease acreage holdings.
- Certificate of Good Standing and Certificate of Existence for Assignee.
- Documents evidencing transfer of record title interest:
  - Special Warranty Deed recorded June 5, 2015 in Emery County, Utah.
  - Assignment and Assumption Logical Mining Unit by and between PacifiCorp and Fossil Rock Resources, dated June 5, 2015.
- Sealed Envelope containing a completed Western Federal Coal Lease form for DOJ antitrust review. (43 C.F.R. § 3422.3-4)

VAN COTT, BAGLEY, CORNWALL & MCCARTHY, P.C.
ESTABLISHED 1874

36 S. STATE STREET
SUITE 1900
SALT LAKE CITY, UTAH
84111-1478 USA
T 801.532.3333
F 801.534.0058
WWW.VANCOTT.COM

LAW OFFICES
SALT LAKE CITY
OGDEN

VANCOTT

We ask that any information related to Fossil Rock Resources, LLC or its affiliates' federal coal acreage holdings, coal reserve estimates, production estimates, consideration/value paid for the subject federal lease rights, and any information related to the financing of Fossil Rock Resources, LLC's acquisition be kept confidential.

Pursuant to 43 C.F.R. § 3453.3, Fossil Rock Resources, LLC requests that if this lease transfer application is approved, the effective date of the lease shall be the first day of the month of the lease transfer application approval.

Pursuant to 43 C.F.R. § 3453.2-4, Assignee understands that it will be required to furnish bonds before your office can approve the requested transfer. We look forward to hearing from your office after you consult with the Price Field Office to confirm the bonds and bond amounts associated with the above referenced coal leases.

Please contact me if you have any questions regarding this request for approval, or need any additional information. On behalf of Fossil Rock Resources, LLC, we appreciate your assistance in this matter.

Very truly yours,

Kim S Colton

KSC: jds
Enclosures
cc: Brian S. Settles, General Counsel for Fossil Rock Resources, LLC

Qualification Statement and Certification

FOSSIL ROCK RESOURCES, LLC

Pursuant to the regulatory requirements outlined in 43 C.F.R. § 3453 *et seq.* (2015) and 43 C.F.R. § 3472 *et seq.* (2015), Fossil Rock Resources, LLC, a Delaware limited liability company makes the following statements:

1. Fossil Rock Resources, LLC is (i) duly organized in the State of Delaware; (ii) authorized to do business in the State of Utah; and (iii) authorized to hold leases or licenses to mine.[1]

2. The following people comprise the officers authorized to act on behalf of the corporation:

John Siegel –Executive Chairman
Johannes (Manie) Dryer – Chief Executive Officer
James Wolff – Chief Financial Officer
Gene DiClaudio – Chief Operating Officer
Brian Settles – Senior Vice President, Secretary and General Counsel
Grant Quasha – Chief Commercial Officer

None of Fossil Rock Resources, LLC's voting stock, units, or membership interests is owned by aliens or people who reside outside of the United States.

3. Fossil Rock Resources, LLC has not held any other federal coal lease for more than 10 years that is not producing coal in commercial quantities.

4. Fossil Rock Resources, LLC is the sole party in interest in this application.

5. Fossil Rock Resources, LLC has acquired, through the execution of an Assumption Agreement and a Special Warranty Deed (Recorded June 5, 2015 Entry No. 410236 in Emery County, Utah),[2] the following federal coal leases:

- UTU-082996
- UTU-49332
- UTU-64375

These three lease files are in good standing.

6. These three leases comprise all federal lands within a Logical Mining Unit (UTU-73339). Fossil Rock Resources, LLC will be the sole operator of this LMU and hereby acknowledges that it will be subject to all existing stipulations and obligations under the LMU.

---

[1] A Certificate of Good Standing from the Delaware Secretary of State and Certificate of Existence from the Utah State Department of Commerce, Division of Corporations and Commercial Code are included in this Lease Transfer Application.

[2] These two instruments of transfer are included in this Lease Transfer Application.

7. Fossil Rock Resources, LLC, as transferee, is not controlled by and is not under common control with PacifiCorp or Interwest Mining Company, as transferor.

8. Acreage Limitation. Fossil Rock Resources, LLC is a wholly-owned subsidiary of Bowie Resource Partners, LLC. Bowie Resource Partners, LLC holds, owns, or controls, indirectly through its subsidiaries, the following federal coal leases and federal acreage for coal production:

UTAH			COLORADO	
Lease Number	Acreage		Lease Number	Acreage
U-69635	2,177.52		COD-036955	440.00
U-07064-027821	2,881.15		COC-037210	5,274.66
UTSL-051279	1,548.31		COC-053356	521.78
U-50722	440.00		COC-061209	4,168.95
UTU-0147570	1,532.70		COC-027432	1,014.03
UTU-0020305	279.40		COC-025079	310.51
UTU-0142235	520.00		COC-075916	1,790.20
UTU-044076	2,489.32		*Total Colorado*	*13,520.13*
UTU-073120	557.22			
UTU-067939	4,832.04			
SL-062583	3,079.83			
UTU-28297	716.51			
UTU-062453	480.00			
UTU-47080	1,953.73			
UTU-63214	8,826.34			
UTU-0149084	240.00			
UTU-76195	5,694.66			
UTU-082996†	80.00		*Total Federal Coal Lease Acreage United States*	*52,488.86*
UTU-49332†	380.00			
UTU-64375†	260.00			
Total Utah	*38,968.73*			
† indicates subject to lease transfer				

PENDING LEASES BY APPLICATION	
UTU-77114	2,692.16
UTU-84102	5,636.79
Total Utah pending lease acreage	*8,328.95*

Fossil Rock Resources, LLC hereby certifies that the above information is correct, that it is qualified to hold the three new federal coal leases, and that it is in compliance with the Mineral Leasing Act and the requirements set forth in 43 C.F.R. Group 3400 (2015).

DATED as of June 1, 2015.

Fossil Rock Resources, LLC
a Delaware limited liability company

By: Brian S. Settles
Its: Senior Vice President, Secretary and General Counsel

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
UTAH STATE OFFICE
324 SOUTH STATE, SUITE 301
SALT LAKE CITY, UTAH 84111-2303

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
3425
UTU-64375
(U-942)

SEP 18 1990

CERTIFIED MAIL--Return Receipt Requested

DECISION

Beaver Creek Coal Company
1305 S. Carbon Avenue
Price, Utah 84501

Coal Lease
UTU-64375

Bond Accepted
Lease Issued

On August 15, 1990, coal lease bond U 8001367 in the amount of $4,891,505 with Beaver Creek Coal Company, as principal, and United Pacific Insurance Company, as surety, was filed in this office to provide bond coverage for coal lease UTU-64375. The bond has been examined, found to be satisfactory, and is accepted effective August 15, the date of filing.

Pursuant to the Lease By Application Coal Sale held June 28, 1990, the bid of Beaver Creek Coal Company for the Trail Mountain Tract, assigned Serial No. UTU-64375, was determined to be the high bid. Satisfactory evidence of the qualifications and holdings of Beaver Creek Coal Company has been filed; therefore, coal lease UTU-64375 is hereby issued effective October 1, 1990.

Chief, Minerals
Adjudication Section

Enclosure
Coal Lease UTU-64375

Form 3400-12
(April 1986)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

COAL LEASE

Serial Number

UTU-64375

PART I. LEASE RIGHTS GRANTED

This lease, entered into by and between the UNITED STATES OF AMERICA, hereinafter called lessor, through the Bureau of Land Management, and *(Name and Address)*

Beaver Creek Coal Company
1305 S. Carbon Avenue
Price, Utah 84501

hereinafter called lessee, is effective *(date)* OCT 1 1990, for a period of 20 years and for so long thereafter as coal is produced in commercial quantities from the leased lands, subject to readjustment of lease terms at the end of the 20th lease year and each 10-year period thereafter.

Sec. 1. This lease is issued pursuant and subject to the terms and provisions of the:

☑ Mineral Lands Leasing Act of 1920, Act of February 25, 1920, as amended, 41 Stat. 437, 30 U.S.C. 181-287, hereinafter referred to as the Act;

☐ Mineral Leasing Act for Acquired Lands, Act of August 7, 1947, 61 Stat. 913, 30 U.S.C. 351-359;

and to the regulations and formal orders of the Secretary of the Interior which are now or hereafter in force, when not inconsistent with the express and specific provisions herein.

Sec. 2. Lessor, in consideration of any bonuses, rents, and royalties to be paid, and the conditions and covenants to be observed as herein set forth, hereby grants and leases to lessee the exclusive right and privilege to drill for, mine, extract, remove, or otherwise process and dispose of the coal deposits in, upon, or under the following described lands:

T. 17 S., R. 6 E., SLM, Utah
Sec. 26, S½SW¼, W½SW¼SE¼;
Sec. 27, S½S½;
Sec. 34, all;
Sec. 35, lots 3 and 4, W½SW¼NE¼, S½NW¼, SW¼, W½W½SE¼.

T. 18 S., R. 6 E., SLM, Utah
Sec. 1, lots 1-8, S½N½, E½NE¼SW¼, E½NW¼NE¼SW¼, N½NW¼NE¼SE¼, N½NW¼SE¼;
Sec. 2, lots 1-8, S½N½, N½NE¼SW¼, N½SW¼NE¼SW¼, SE¼NE¼SW¼, NW¼NE¼SE¼, N½SW¼NE¼SE¼, N½NW¼SE¼, N½S½NW¼SE¼;
Sec. 3, lots 1, 2, and 8, NE¼SE¼NE¼.
T. 18, S., R. 7 E., SLM, Utah
Sec. 6, lots 4-7, W½SE¼NW¼, W½E½SW¼.

containing 2,630.81 acres, more or less, together with the right to construct such works, buildings, plants, structures, equipment and appliances and the right to use such on-lease rights-of-way which may be necessary and convenient in the exercise of the rights and privileges granted, subject to the conditions herein provided.

PART II TERMS AND CONDITIONS

Sec. 1. (a) RENTAL RATE - Lessee shall pay lessor rental annually and in advance for each acre or fraction thereof during the continuance of the lease at the rate of $ 3.00 for each lease year.

RENTAL CREDITS - Rental shall not be credited against either royalty reduction or advance royalties for any year.

Sec. 2. (a) PRODUCTION ROYALTIES - The royalty shall be 12½ & 8 percent of the value of the coal as set forth in the regulations. Royalties are due to lessor the final day of the month succeeding the calendar month in which the royalty obligation accrues.

ADVANCE ROYALTIES - Upon request by the lessee, the authorized officer may accept, for a total of not more than 10 years, the payment of advance royalties in lieu of continued operation, consistent with the applicable regulations. The advance royalty shall be based on a percent of the royalty on a minimum number of tons determined in the manner specified by the advance royalty regulations in effect at the time the lessee requests approval to pay advance royalties in lieu of continued operation.

Sec. 3. BONDS - Lessee shall maintain in the proper office a lease bond in the amount of $ ** The authorized officer may require an increase in this amount when additional coverage is determined appropriate.

** $4,891,505.00

Sec. 4. DILIGENCE - This lease is subject to the conditions of diligent development and continued operation, except that these conditions are excused when operations under the lease are interrupted by strikes, the elements, or casualties not attributable to the lessee. The lessor, in the public interest, may suspend the condition of continued operation upon payment of advance royalties in accordance with the regulations in existence at the time of the suspension. Lessee's failure to produce coal in commercial quantities at the end of 10 years shall terminate the lease. Lessee shall submit an operation and reclamation plan pursuant to Section 7 of the Act not later than 3 years after lease issuance.

The lessor reserves the power to assent to or order the suspension of the terms and conditions of this lease in accordance with, inter alia, Section 39 of the Mineral Leasing Act, 30 U.S.C. 209.

Sec. 5. LOGICAL MINING UNIT (LMU) - Either upon approval by the lessor of the lessee's application or at the direction of the lessor, this lease shall become an LMU or part of an LMU, subject to the provisions set forth in the regulations.

The stipulations established in an LMU approval in effect at the time of LMU approval will supersede the relevant inconsistent terms of this lease so long as the lease remains committed to the LMU. If the LMU of which this lease is a part is dissolved, the lease shall then be subject to the lease terms which would have been applied if the lease had not been included in an LMU.

Sec. 6. DOCUMENTS, EVIDENCE AND INSPEC - At such times and in such form as lessor may prescribe, lessee shall furnish detailed statements showing the amounts and quality of all products removed d sold from the lease, the proceeds therefrom, and the amount used nduction purposes or unavoidably lost.

shall keep open at all reasonable times for the inspection of any a... authorized officer of lessor, the leased premises and all surface and underground improvements, works, machinery, ore stockpiles, equipment, and all books, accounts, maps, and records relative to operations, surveys, or investigations on or under the leased lands.

Lessee shall allow lessor access to and copying of documents reasonably necessary to verify lessee compliance with terms and conditions of the lease.

While this lease remains in effect, information obtained under this section shall be closed to inspection by the public in accordance with the Freedom of Information Act (5 U.S.C. 552).

Sec. 7. DAMAGES TO PROPERTY AND CONDUCT OF OPERATIONS - Lessee shall comply at its own expense with all reasonable orders of the Secretary, respecting diligent operations, prevention of waste, and protection of other resources.

Lessee shall not conduct exploration operations, other than casual use, without an approved exploration plan. All exploration plans prior to the commencement of mining operations within an approved mining permit area shall be submitted to the authorized officer.

Lessee shall carry on all operations in accordance with approved methods and practices as provided in the operating regulations, having due regard for the prevention of injury to life, health, or property, and prevention of waste, damage or degradation to any land, air, water, cultural, biological, visual, and other resources, including mineral deposits and formations of mineral deposits not leased hereunder, and to other land uses or users. Lessee shall take measures deemed necessary by lessor to accomplish the intent of this lease term. Such measures may include, but are not limited to, modification to proposed design of facilities, timing of operations, and specification of and final reclamation procedures. Lessor reserves to itself the g... to lease, sell, or otherwise dispose of the surface or other mineral deposits in the lands and the right to continue existing uses and to authorize future uses upon or in the leased lands, including issuing ases for mineral deposits not covered hereunder and approving sements or rights-of-way. Lessor shall condition such uses to prevent unnecessary or unreasonable interference with rights of lessee as may consistent with concepts of multiple use and multiple mineral velopment.

c. 8. PROTECTION OF DIVERSE INTERESTS, AND EQUAL OPPORTUNITY - Lessee shall: pay when due all taxes legally assessed and levied der the laws of the State or the United States; accord all employees mplete freedom of purchase; pay all wages at lease twice each month lawful money of the United States; maintain a safe working vironment in accordance with standard industry practices; restrict workday to not more than 8 hours in any one day for underground rkers, except in emergencies; and take measures necessary to protect health and safety of the public. No person under the age of 16 years ll be employed in any mine below the surface. To the extent that s of the State in which the lands are situated are more restrictive n the provisions in this paragraph, then the State laws apply.

see will comply with all provisions of Executive Order No. 11246 of tember 24, 1965, as amended, and the rules, regulations, and vant orders of the Secretary of Labor. Neither lessee nor lessee's contractors shall maintain segregated facilities.

Sec. 9. (a) TRANSF

☒ This lease may be transferred in whole or in part to any person, association or corporation qualified to hold such lease interest.

☐ This lease may be transferred in whole or in part to another public body or to a person who will mine the coal on behalf of, and for the use of, the public body or to a person who for the limited purpose of creating a security interest in favor of a lender agrees to be obligated to mine the coal on behalf of the public body.

☐ This lease may only be transferred in whole or in part to another small business qualified under 13 CFR 121.

Transfers of record title, working or royalty interest *must* be approved in accordance with the regulations.

(b) RELINQUISHMENT - The lessee may relinquish in writing at any time all rights under this lease or any portion thereof as provided in the regulations. Upon lessor's acceptance of the relinquishment, lessee shall be relieved of all future obligations under the lease or the relinquished portion thereof, whichever is applicable.

Sec. 10. DELIVERY OF PREMISES, REMOVAL OF MACHINERY, EQUIPMENT, ETC. - At such time as all portions of this lease are returned to lessor, lessee shall deliver up to lessor the land leased, underground timbering, and such other supports and structures necessary for the preservation of the mine workings on the leased premises or deposits and place all workings in condition for suspension or abandonment. Within 180 days thereof, lessee shall remove from the premises all other structures, machinery, equipment, tools, and materials that it elects to or as required by the authorized officer. Any such structures, machinery, equipment, tools, and materials remaining on the leased lands beyond 180 days, or approved extension thereof, shall become the property of the lessor, but lessee shall either remove any or all such property or shall continue to be liable for the cost of removal and disposal in the amount actually incurred by the lessor. If the surface is owned by third parties, lessor shall waive the requirement for removal, provided the third parties do not object to such waiver. Lessee shall, prior to the termination of bond liability or at any other time when required and in accordance with all applicable laws and regulations, reclaim all lands the surface of which has been disturbed, dispose of all debris or solid waste, repair the offsite and onsite damage caused by lessee's activity or activities incidental thereto, and reclaim access roads or trails.

Sec. 11. PROCEEDINGS IN CASE OF DEFAULT - If lessee fails to comply with applicable laws, existing regulations, or the terms, conditions and stipulations of this lease, and the noncompliance continues for 30 days after written notice thereof, this lease shall be subject to cancellation by the lessor only by judicial proceedings. This provision shall not be construed to prevent the exercise by lessor of any other legal and equitable remedy, including waiver of the default. Any such remedy or waiver shall not prevent later cancellation for the same default occurring at any other time.

Sec. 12. HEIRS AND SUCCESSORS-IN-INTEREST - Each obligation of this lease shall extend to and be binding upon, and every benefit hereof shall inure to, the heirs, executors, administrators, successors, or assigns of the respective parties hereto.

Sec. 13. INDEMNIFICATION - Lessee shall indemnify and hold harmless the United States from any and all claims arising out of the lessee's activities and operations under this lease.

Sec. 14. SPECIAL STATUTES - This lease is subject to the Clean Water Act (33 U.S.C. 1252 et. seq.), the Clean Air Act (42 U.S.C. 4274 et. seq.), and to all other applicable laws pertaining to exploration activities, mining operations and reclamation, including the Surface Mining Control and Reclamation Act of 1977 (30 U.S.C. 1201 et. seq.).

15. SPECIAL STIPULATIONS -

Sec. 15. SPECIAL STIPULATIONS (Cont'd.) -

This coal lease is subject to termination if the lessee is determined at the time of issuance to be in noncompliance with Section 2(a)2(A) of the Mineral Leasing Act.

- SEE ATTACHED STIPULATIONS -

THE UNITED STATES OF AMERICA

Beaver Creek Coal Company
pany or Lessee Name

President (Signature of Lessee)

(Title)

AUG 15 1990
(Date)

By DEPARTMENT OF THE INTERIOR
Bureau of Land Management

(Signing Officer)

Chief, Minerals Adjudication Section
(Title)

SEP 18 1990
(Date)

18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

orm does not constitute an information collection as defined by 44 U.S.C. 3502 and therefore does not require OMB approval.

1. The Regulatory Authority shall mean the State Regulatory Authority pursuant to a cooperative agreement approved under 30 CFR Part 745 or in the absence of a cooperative agreement, Office of Surface Mining. The authorized officer shall mean the State Director, Bureau of Land Management. The authorized officer of the Surface Management Agency shall mean the Forest Supervisor, Forest Service. Surface Management Agency for private surface is the Bureau of Land Management. For adjoining private lands with Federal minerals and which primarily involve National Forest Service issues, the Forest Service will have the lead for environmental analysis and, when necessary, documentation in an environmental assessment or environmental impact statement.

2. The authorized officers of the Bureau of Land Management, Office of Surface Mining (Regulatory Authority), and the Surface Management Agency (Forest Service) respectively, shall coordinate, as practical, regulation of mining operations and associated activities on the lease area.

3. In accordance with Sec. 523(b) of the "Surface Mining Control and Reclamation Act of 1977," surface mining and reclamation operations conducted on this lease are to conform with the requirements of this Act and are subject to compliance with Office of Surface Mining regulations, or as applicable, an equivalent Utah program approved under a cooperative agreement in accordance with Sec. 523(c). The United States Government does not warrant that the entire tract will be susceptible to mining.

4. Federal Regulations 43 CFR 3400 pertaining to Coal Management make provisions for the Surface Management Agency, the surface of which is under the jurisdiction of any Federal agency other than the Department of the Interior, to consent to leasing and to prescribe conditions to insure the use and protection of the lands. All or part of this lease contain lands the surface of which are managed by the United States Department of Agriculture, Forest Service Manti-LaSal National Forest.

The following stipulations pertain to the lessee responsibility for mining operations on the lease area and on adjacent areas as may be specifically designated on National Forest System lands.

5. Before undertaking activities that may disturb the surface of previously undisturbed leased lands, the lessee may be required to conduct a cultural resource inventory and a paleontological appraisal of the areas to be disturbed. These studies shall be conducted by qualified professional cultural resource specialists or qualified paleontologists, as appropriate, and a report prepared itemizing the findings. A plan will then be submitted making recommendations for the protection of or measures to be taken to mitigate impacts for identified cultural or paleontological resources.

If cultural resources or paleontological remains (fossils) of significant scientific interest are discovered during operations under this lease, the lessee prior to disturbance shall immediately bring them to the attention of the appropriate authorities. Paleontological remains of significant scientific interest do not include leaves, ferns, or dinosaur tracks commonly encountered during underground mining operations.

The cost of conducting the inventory, preparing reports, and carrying out mitigating measures shall be borne by the lessee.

6. If there is reason to believe that threatened or endangered (T&E) species of plants or animals, or migratory bird species of high Federal interest occur in the area, the lessee shall be required to conduct an intensive field inventory of the area to be disturbed and/or impacted. The inventory shall be conducted by a qualified specialist and a report of findings will be prepared. A plan will be prepared making recommendations for the protection of these species or action necessary to mitigate the disturbance.

The cost of conducting the inventory, preparing reports, and carrying out mitigating measures shall be borne by the lessee.

7. The lessee shall be required to perform a study to secure adequate baseline data to quantify the existing surface resources on and adjacent to the lease area. Existing data may be used if such data is adequate for the intended purposes. The study shall be adequate to locate, quantify, and demonstrate the inter-relationship of the geology, topography, surface hydrology, vegetation, and wildlife. Baseline data will be established so that future programs of observation can be incorporated at regular intervals for comparison.

8. Powerlines used in conjunction with the mining of coal from this lease shall be constructed so as to provide adequate protection for raptors and other large birds. When feasible, powerlines will be located at least 100 yards from public roads.

9. The limited area available for mine facilities at the coal outcrop, steep topography, adverse winter weather, and physical limitations on the size and design of the access road, are factors which will determine the ultimate size of the surface area utilized for the mine. A site specific environmental analysis will be prepared for each new mine site development and for major modifications to existing developments to examine alternatives and mitigate conflicts.

10. Consideration will be given to site selection to reduce adverse visual impacts. Where alternative sites are available, and each alternative is technically feasible, the alternative involving the least damage to the scenery and other resources shall be selected. Permanent structures and facilities will be designed and screening techniques employed to reduce visual impacts and, where possible, achieve a final landscape compatible with the natural surroundings. The creation of unusual, objectionable, or unnatural land forms and vegetative landscape features will be avoided.

11. The lessee shall be required to establish a monitoring system to locate, measure, and quantify the progressive and final effects of underground mining activities on the topographic surface, underground and surface hydrology and vegetation. The monitoring system shall utilize techniques which will provide a continuing record of change over time and an analytical method for location and measurement of a number of points over the lease area. The monitoring shall incorporate and be an extension of the baseline data.

12. The lessee shall provide for the suppression and control of fugitive dust on haul roads and at coal handling and storage facilities. On Forest Development Roads (FDR), lessees may perform their share of road maintenance by a commensurate share agreement if a significant degree of traffic is generated that is not related to their activities.

13. Except at specifically approved locations, underground mining operations shall be conducted in such a manner so as to prevent surface subsidence that would: (1) cause the creation of hazardous conditions such as potential escarpment failure and landslides, (2) cause damage to existing surface structures, or (3) damage or alter the flow of perennial streams. The lessee shall provide specific measures for the protection of escarpments, and determine corrective measures to assure that hazardous conditions are not created.

14. In order to avoid surface disturbance on steep canyon slopes and to preclude the need for surface access, all surface breakouts for ventilation tunnels shall be constructed from inside the mine, except at specifically approved locations.

15. If removal of timber is required for clearing of construction sites, etc., such timber shall be removed in accordance with the regulations of the surface management agency.

16. The coal contained within, and authorized for mining under this lease, shall be extracted only by underground mining methods.

17. Existing Forest Service owned or permitted surface improvements will need to be protected, restored, or replaced to provide for the continuance of current land uses.

18. In order to protect big game wintering areas, elk calving and deer fawning areas, sagegrouse strutting areas, and other critical wildlife habitat and/or activities, specific surface uses outside the mine development area may be curtailed during specific periods of the year.

19. Support facilities, structures, equipment, and similar developments will be removed from the lease area within 2 years after the final termination of use of such facilities. This provision shall apply unless the requirement of Section 10 of the lease form is applicable. Disturbed areas and those areas previously occupied by such facilities will be stabilized and rehabilitated, drainages reestablished, and the areas returned to a premining land use.

20. The lessee at the conclusion of the mining operations, or at other times as surface disturbance related to mining may occur, will replace all damaged, disturbed, or displaced corner monuments (section corners, quarter corners, etc.), their accessories and appendages (witness trees, bearing trees, etc.), or restore them to their original condition and location, or at other locations that meet the requirements of the rectangular surveying system. This work shall be conducted at the expense of the lessee by a professional land surveyor registered in the State of Utah and to the standards and guidelines found in the manual of surveying instruction, U.S. Department of the Interior.

21. The lessee at his expense will be responsible to replace any surface water identified for protection that may be lost or adversely affected by mining operations with water from an alternate source in sufficient quantity and quality to maintain existing riparian habitat, fishery habitat, livestock and wildlife use, or other land uses.

22. The lessee must comply with all the rules and regulations of the Secretary of Agriculture set forth at Title 36, Chapter II, of the Code of Federal Regulations governing the use and management of the National Forest System (NFS) when not inconsistent with the rights granted by the Secretary of the Interior in the lease. The Secretary of Agriculture's rules and regulations must be complied with for (1) all use and occupancy of the NFS prior to approval of a permit/operation plan by the Secretary of the Interior, (2) uses of all existing improvements, such as Forest Development Roads, within and outside the area licensed, permitted or leased by the Secretary of the Interior, and (3) use and occupancy of the NFS not authorized by a permit/operation plan approved by the Secretary of the Interior.

All matters related to this stipulation are to be addressed to:

Forest Supervisor
Manti-LaSal National Forest
599 West Price River Drive
Price, Utah 84501

Telephone No.: 801-637-2817

who is the authorized representative of the Secretary of Agriculture.

ASSIGNMENT AND ASSUMPTION of COAL LEASES and LOGICAL MINING UNIT

THIS ASSIGNMENT AND ASSUMPTION of COAL LEASES and LOGICAL MINING UNIT (the "***Assignment***") is made and entered into as of the 5th day of June, 2015, by PACIFICORP, an Oregon corporation, having a mailing address of 1407 West North Temple, Suite 310, Salt Lake City, Utah 84116 ("***Lessor***") *and* INTERWEST MINING COMPANY, an Oregon corporation, having a mailing address of 201 South Main Street, Suite 2100, Salt Lake City, Utah 84111("***Operator***") (Lessor and Operator are collectively referred to herein as "***Assignor***"), as Assignor, to and for the benefit of FOSSIL ROCK RESOURCES, LLC, a Delaware limited liability company, (the "***Assignee***"), having a mailing address of 6100 Dutchmans Lane, 9th Floor, Louisville, Kentucky 40205, as Assignee. For Ten Dollars ($10.00) and other good and valuable consideration, receipt and sufficiency of which is hereby acknowledged, Assignee and Assignor hereby agree as follows:

1. To the extent assignable, Assignor assigns, transfers, and conveys to the Assignee and the Assignee hereby accepts, all right, title and interest, as Lessee, in and to all of those three certain federal coal leases described in the attached **Schedule 1** by and between Assignor, as Lessee, and the United States of America, as Lessor, (collectively, the "***Leases***"). Further, to the extent assignable, the Assignor hereby assigns, transfers, and conveys to the Assignee and the Assignee hereby accepts, all right title and interest, as Operator, in and to all of that certain logical mining unit described in the attached Schedule 2, by and between Assignor and the United States of America (the "***LMU***"). The Leases and the LMU affect that certain real property more particularly described in the attached **Exhibit A.**

2. Assignee accepts the foregoing assignment and assumes all of the Lessee's obligations under the Leases and all of the Operator's obligations under the LMU. Assignee also acknowledges that it will be the single operator of the LMU and accepts all stipulations and obligations of the LMU.

3. This Assignment shall be binding upon and inure to the benefit of Assignor, the Assignee, and their respective legal representatives, successors and assigns. Assignor will execute or cause to be executed such other documents or instruments as may be necessary or appropriate, in the Assignee's reasonable discretion, to effectuate this Assignment.

[Signatures on Following Page]

IN WITNESS WHEREOF, Assignor and Assignee have executed and delivered this Assignment by their duly authorized representatives as of June 5, 2015.

ASSIGNOR:

PACIFICORP,
an Oregon corporation

Cindy A. Crane
President/CEO - PacifiCorp dba Rocky Mountain Power

INTERWEST MINING COMPANY,
an Oregon corporation

By: CINDY A. CRANE
Its: PRESIDENT

ASSIGNEE:

FOSSIL ROCK RESOURCES, LLC,
a Delaware limited liability company

By: Johannes H. Dreyer
Its: CEO

SCHEDULE 1

(Leases)

1. Coal Lease UTU-64375 issued effective October 1, 1990, as amended and readjusted.
2. Coal Lease UTU-49332 issued effective March 1, 1983, as amended and readjusted.
3. Coal Lease UTU 0-082996 issued effective July 1, 1962, as amended and readjusted.

SCHEDULE 2

(LMU)

Trail Mountain Logical Mining Unit UTU-73339 issued effective September 13, 1988, as amended and readjusted.

EXHIBIT A

(Legal Description of Real Property)

UTU-64375

Township 17 South, Range 6 East SLB&M
Section 26: S½SW¼, W½SW¼SE¼;
Section 27: S½S½

260 acres more or less in Emery County, Utah

UTU-49332

Township 17 South, Range 6 East SLB&M
Section 25: S½NW¼, W½E½SW¼, W½SW¼;
Section 26: SE¼NE¼, E½SW¼NE¼, E½SE¼, E½W½SE¼

380 acres more or less in Emery County, Utah

UTU 0-082996

Township 17 South, Range 6 East SLB&M
Section 25: E½E½SW¼, SW¼SE¼

80 acres more or less in Emery County, Utah

FEDERAL COAL LEASE - UTU-49332

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Utah State Office
440 West 200 South, Suite 500
Salt Lake City, UT 84101-1345
http://www.blm.gov/ut/st/en.html

IN REPLY REFER TO:
3453 / (UT-9223)
UTU-082996
UTU-49332
UTU-64375
UTU-73339 (LMU)

AUG 1 3 2015

CERTIFIED MAIL- Return Receipt Requested
91 7199 9991 7035 9001 7143
91 7199 9991 7031 4480 2164

DECISION

Assignor: PacifiCorp 1407 West North Temple Salt Lake City, Utah 84116	:	Federal Coal Leases: UTU-082996, UTU-49332 and UTU-64375
Assignee: Fossil Rock Resources, LLC Dutchmans Lane, 9th Floor Louisville, Kentucky 40205	:	Federal Logical Mining Unit (LMU): UTU-73339

Assignments of Federal Coal Leases Approved

On June 9, 2015, Fossil Rock Resources, LLC submitted assignments of Federal coal leases UTU-082996, UTU-49332 and UTU-64375 with PacifiCorp as assignor, and Fossil Rock Resources, LLC, as assignee.

Satisfactory evidence of the qualifications and holdings of Fossil Rock Resources, LLC, has been filed, as required pursuant to the regulations at 43 CFR 3472. The Department of Justice has been forwarded information as to whether this transfer would create a situation inconsistent with the antitrust laws and no comments were received within the 30-day period. Therefore, the assignments meet the requirements of the regulations and are hereby approved effective August 1, 2015. Approval of the assignments does not constitute approval of any of the terms therein which may be in violation of the lease terms.

In addition PacifiCorp assigned their right as operator of the Trail Mountain Logical Mining Unit (LMU), serial number UTU-73339. Fossil Rock Resources, LLC, has agreed to assume all of the rights and responsibilities under the LMU including agreeing to the all stipulations and obligations of the LMU.

A LMU bond, No. SUR60000336, in the amount of $115,000 for LMU UTU-73339 with Fossil Rock Resources, LLC as principal, and Ironshore Indemnity, Inc. as surety, were filed on July 15, 2015. This bond has been examined, found to be satisfactory and is hereby accepted effective the date of filing. The regulations at 43 CFR 3474.2 does allow for the amount of any bond to be increased when additional coverage is determined to be appropriate. A written request must be submitted when you want to have the period of liability of this bond terminated.

If you have further questions call Bill Buge of this office at (801) 539-4086.

Jenna Whitlock
Acting State Director

Enclosure:
1. Assignment

cc: Price Field Office (UTG02)

Mr. John Baza, Director, Utah Division of Oil, Gas and Mining, P.O. Box 145801, Salt Lake City, Utah 84114-5801

KIM S COLTON
Direct Dial: 801.237.0316
email: kcolton@vancott.com

VANCOTT

June 9, 2015

VIA HAND DELIVERY

U.S. Bureau of Land Management
Utah State Office
Attn: Roger L. Bankert
P.O. Box 45155
Salt Lake City, Utah 84145-0155

Dear Mr. Bankert:

We represent Fossil Rock Resources, LLC, a Delaware limited liability company (the "Assignee"). The Assignee is a wholly-owned subsidiary of Bowie Resource Partners. Under the terms of the Assignment and Assumption of Coal Leases and Logical Mining Unit, Assignee acquired from PacifiCorp the leasehold and operating interest in and to the following federal coal leases at the Trail Mountain Mine in Emery County, Utah:

- **UTU-082996** (80 Acres located in Emery County, Utah)
- **UTU-49332** (380 Acres located in Emery County, Utah)
- **UTU-64375** (260 Acres located in Emery County, Utah)

The Assignee hereby requests approval of the assignment of the above-referenced coal leases. In accordance with 43 C.F.R. § 3453.2-2, this request filing is made in triplicate and includes a transfer filing fee of $195 ($65 per lease).

The three subject leases comprise all federal leases and lands within a Logical Mining Unit (**UTU-73339**), held by PacifiCorp. Assignee will be the sole operator of the LMU and acknowledges that it will be subject to the stipulations and obligations of the LMU.

In accordance with 43 C.F.R. § 3453 *et. seq.* and 43 C.F.R. § 3472 *et. seq.* the following items are enclosed:

- A Qualifications Statement-including Assignee's federal coal lease acreage holdings.
- Certificate of Good Standing and Certificate of Existence for Assignee.
- Documents evidencing transfer of record title interest:
  - Special Warranty Deed recorded June 5, 2015 in Emery County, Utah.
  - Assignment and Assumption Logical Mining Unit by and between PacifiCorp and Fossil Rock Resources, dated June 5, 2015.
- Sealed Envelope containing a completed Western Federal Coal Lease form for DOJ antitrust review. (43 C.F.R. § 3422.3-4)

VAN COTT, BAGLEY, CORNWALL & MCCARTHY, P.C.
ESTABLISHED 1874

36 S. STATE STREET
SUITE 1900
SALT LAKE CITY, UTAH
84111-1478 USA
T 801.532.3333
F 801.534.0058
WWW.VANCOTT.COM

LAW OFFICES
SALT LAKE CITY
OGDEN

VANCOTT

We ask that any information related to Fossil Rock Resources, LLC or its affiliates' federal coal acreage holdings, coal reserve estimates, production estimates, consideration/value paid for the subject federal lease rights, and any information related to the financing of Fossil Rock Resources, LLC's acquisition be kept confidential.

Pursuant to 43 C.F.R. § 3453.3, Fossil Rock Resources, LLC requests that if this lease transfer application is approved, the effective date of the lease shall be the first day of the month of the lease transfer application approval.

Pursuant to 43 C.F.R. § 3453.2-4, Assignee understands that it will be required to furnish bonds before your office can approve the requested transfer. We look forward to hearing from your office after you consult with the Price Field Office to confirm the bonds and bond amounts associated with the above referenced coal leases.

Please contact me if you have any questions regarding this request for approval, or need any additional information. On behalf of Fossil Rock Resources, LLC, we appreciate your assistance in this matter.

Very truly yours,

Kim S Colton

KSC: jds
Enclosures
cc: Brian S. Settles, General Counsel for Fossil Rock Resources, LLC

Qualification Statement and Certification

FOSSIL ROCK RESOURCES, LLC

Pursuant to the regulatory requirements outlined in 43 C.F.R. § 3453 *et seq.* (2015) and 43 C.F.R. § 3472 *et seq.* (2015), Fossil Rock Resources, LLC, a Delaware limited liability company makes the following statements:

1. Fossil Rock Resources, LLC is (i) duly organized in the State of Delaware; (ii) authorized to do business in the State of Utah; and (iii) authorized to hold leases or licenses to mine.[1]

2. The following people comprise the officers authorized to act on behalf of the corporation:

John Siegel –Executive Chairman
Johannes (Manie) Dryer – Chief Executive Officer
James Wolff – Chief Financial Officer
Gene DiClaudio – Chief Operating Officer
Brian Settles – Senior Vice President, Secretary and General Counsel
Grant Quasha – Chief Commercial Officer

None of Fossil Rock Resources, LLC's voting stock, units, or membership interests is owned by aliens or people who reside outside of the United States.

3. Fossil Rock Resources, LLC has not held any other federal coal lease for more than 10 years that is not producing coal in commercial quantities.

4. Fossil Rock Resources, LLC is the sole party in interest in this application.

5. Fossil Rock Resources, LLC has acquired, through the execution of an Assumption Agreement and a Special Warranty Deed (Recorded June 5, 2015 Entry No. 410236 in Emery County, Utah),[2] the following federal coal leases:

- UTU-082996
- UTU-49332
- UTU-64375

These three lease files are in good standing.

6. These three leases comprise all federal lands within a Logical Mining Unit (UTU-73339). Fossil Rock Resources, LLC will be the sole operator of this LMU and hereby acknowledges that it will be subject to all existing stipulations and obligations under the LMU.

---

[1] A Certificate of Good Standing from the Delaware Secretary of State and Certificate of Existence from the Utah State Department of Commerce, Division of Corporations and Commercial Code are included in this Lease Transfer Application.

[2] These two instruments of transfer are included in this Lease Transfer Application.

7. Fossil Rock Resources, LLC, as transferee, is not controlled by and is not under common control with PacifiCorp or Interwest Mining Company, as transferor.

8. Acreage Limitation. Fossil Rock Resources, LLC is a wholly-owned subsidiary of Bowie Resource Partners, LLC. Bowie Resource Partners, LLC holds, owns, or controls, indirectly through its subsidiaries, the following federal coal leases and federal acreage for coal production:

UTAH			COLORADO	
Lease Number	Acreage		Lease Number	Acreage
U-69635	2,177.52		COD-036955	440.00
U-07064-027821	2,881.15		COC-037210	5,274.66
UTSL-051279	1,548.31		COC-053356	521.78
U-50722	440.00		COC-061209	4,168.95
UTU-0147570	1,532.70		COC-027432	1,014.03
UTU-0020305	279.40		COC-025079	310.51
UTU-0142235	520.00		COC-075916	1,790.20
UTU-044076	2,489.32		*Total Colorado*	*13,520.13*
UTU-073120	557.22			
UTU-067939	4,832.04			
SL-062583	3,079.83			
UTU-28297	716.51			
UTU-062453	480.00			
UTU-47080	1,953.73			
UTU-63214	8,826.34			
UTU-0149084	240.00			
UTU-76195	5,694.66			
UTU-082996†	80.00		*Total Federal Coal Lease Acreage United States*	*52,488.86*
UTU-49332†	380.00			
UTU-64375†	260.00			
Total Utah	*38,968.73*			
† indicates subject to lease transfer				

PENDING LEASES BY APPLICATION	
UTU-77114	2,692.16
UTU-84102	5,636.79
Total Utah pending lease acreage	*8,328.95*

Fossil Rock Resources, LLC hereby certifies that the above information is correct, that it is qualified to hold the three new federal coal leases, and that it is in compliance with the Mineral Leasing Act and the requirements set forth in 43 C.F.R. Group 3400 (2015).

DATED as of June 1, 2015.

Fossil Rock Resources, LLC
a Delaware limited liability company

By: Brian S. Settles
Its: Senior Vice President, Secretary and General Counsel

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SERIAL NUMBER

U-49332

COAL LEASE

This lease, is entered into on FEB 18 1983 , by the United States of America, the lessor, the Bureau of Land Management, and

Natomas Minerals of Utah, Inc.
5970 So. Syracuse St., Ste 124
Englewood, CO 80111

, the lessee, and shall become effective on MAR 1 1983 , (effective date).

Sec. 1. STATUTES AND REGULATIONS--This lease is issued pursuant and subject to the terms and provisions of the Mineral Leasing Act of February 25, 1920, 41 Stat. 437, as amended, 30 U.S.C. Sections 181-263, hereinafter referred to as the Act; and of the Surface Mining Control and Reclamation Act of 1977, 30 U.S.C. Section 1201, et seq., the Federal Coal Leasing Amendments Act of 1976, as amended, 90 Stat. 1083-1092, and, in the case of acquired lands, the Mineral Leasing Act for Acquired Lands of September 7, 1947, as amended, 30 U.S.C. 351-359, et seq. This lease is also subject to all regulations of the Secretary of the Interior (including, but not limited to, 30 CFR Part 211 and Chapter VII and 43 CFR Group 3400), which are now in force or (except as expressly limited herein) hereafter in force, and all of such regulations are made a part hereof.

WITNESSETH:

Sec. 2. RIGHTS OF LESSEE--The lessor, in consideration of any bonus paid (or to be paid if deferred), rents and royalties and other conditions hereinafter set forth, hereby grants and leases to the lessee the exclusive right and priviledge to mine and dispose of all coal in

T. 17 S., R. 6 E., SLM, Utah
Sec. 25, S½NW¼, W½SW¼, W½E½SW¼;
Sec. 26, SE¼NE¼, E½SW¼NE¼, E½SE¼, E½W½SE¼;
Sec. 35, lots 1, 2, SE¼NE¼, E½SW¼NE¼, E½SE¼, E½W½SE¼.

containing 641.47 acres, more or less, and subject to the conditions, limitations and prohibitions provided n this lease and in applicable acts and regulations, the right to construct all works, buildings, structures, equipment, and appliances which may be necessary and convenient for the mining and preparation of the coal for market, and subject to the conditions herein provided, to use so much of the surface as may reasonably be required in the exercise of the rights and privileges herein granted for a period of 20 years and so long thereafter as the condition of continued operation is met.

Sec. 3 DILIGENT DEVELOPMENT AND CONTINUED OPERATION--The lessee shall engage in the diligent development of the coal resources subject to the lease. After diligent development is achieved, the lessee shall maintain continued operation of the mine or mines on the leased lands. The terms diligent development and continued operation are defined in the applicable regulations in Titles 10, 30, and 43 of the Code of Federal Regulations.

Sec. 4. BOND--The lessee shall file with the appropriate Bureau of Land Management offic a lease bond in the amount of $5,000.00 , for the use and benefit of the United States, to insure payment of deferred bonus payments, rentals and royalties and to insure compliance with all other items of this lease, the regulations and the Act (except for reclamation within the area covered by a surface mining permit issued under the permanent regulatory program by the regulatory authority) and, if appropriate, for the protection of the interests of the surface owners on the leased lands. An increase in the amount of the lease bond may be required by the lessor at any time during the life of the lease to reflect changed conditions.

Sec. 5. RENTAL--An annual rental of $3.00 for each acre or fraction thereof shall be paid in advance on or before the anniversary date of this lease. This section shall not be subject to revision except in the course of lease readjustment.

Sec. 6. PRODUCTION ROYALTY--The lessee shall pay a production royalty of 12½ percent of the value of coal produced by strip or auger mining methods and 8 percent of the value of coal produced by underground mining methods. The value of coal shall be determined as set forth in 30 CFR 211. Production royalties paid for a calendar month shall be reduced by the amount of any advance royalties paid under this lease to the extent that such advance royalties have not been used to reduce production royalties in a previous month. However, production royalties payable after the 20th year of the lease shall not be reduced by advance royalties paid during the first 20 years of the lease. Production royalties shall be payable the final day of the month succeeding the calendar month in which the coal is sold, unless otherwise specified in 30 CFR 211. The royalty rates provided in this section shall not be subject to revision except in the course of lease readjustment.

Sec. 7. ADVANCE ROYALTY--Upon request by the lessee, the District Mining Supervisor may accept, for a total of not more than 10 years, the payment of advance royalties in lieu of the condition of continued operation consistent with the regulations in 43 CFR 3473 and 30 CFR 211. The advance royalty shall be based on a percent of the value of a minimum number of tons which shall be determined in the manner established by the regulations in 43 CFR 3473.

Sec. 8. METHOD OF PAYMENTS--The lessee shall make rental payments to the appropriate Bureau of Land Management (BLM) office until production royalties become payable. Thereafter, all rentals, production royalties and advance royalties shall be paid to the appropriate office of the United States Geological Survey.

Sec. 9. EXPLORATION PLAN--The lessee shall not commence any exploration, except casual use, on the leased lands without an approved exploration plan. Exploration plans for leased lands covered by an approved mining permit shall be submitted to the Regional Director of the Office of Surface Mining in accordance with the regulations in 30 CFR Chapter VII. Exploration plans for leased lands not covered by an approved mining permit shall be submitted to the District Mining Supervisor in accordance with the regulations in 30 CFR 211.

Sec. 10. MINING PLAN--In accordance with the regulations in 30 CFR 211 and Chapter VII, the lessee shall submit a mining and reclamation plan not more than three years after the effective date of this lease. Mining operations shall not commence until after the mining and reclamation plan is approved. The mining and reclamation shall be conducted in accordance with the approved mining and reclamation plan. Exploration activities which were not included in the approved mining and reclamation plan require submittal of exploration plans in accordance with Section 9 of this lease.

Sec. 11. LOGICAL MINING UNIT (LMU)--This lease is automatically considered to be an LMU. This LMU may be enlarged, adjusted or diminished in accordance with the applicable regulations in Titles 10, 30, and 43 of the Code of Federal Regulations. The mining plan for the LMU shall require that the reserves of the LMU will be mined within a period of 40 years in accordance with 30 CFR 211 and 43 CFR 3400.0-5. The definition of LMU and LMU reserves and other applicable conditions are set forth in the regulations in 43 CFR 3400.0-5 and 3475, 30 CFR 211, and Title 10 of the Code of Federal Regulations.

Sec. 12. OPERATIONS ON LEASED LANDS--(a) In accordance with conditions of this lease, the exploration and mining and reclamation plans, the permit issued pursuant to 30 CFR Chapter VII, and all applicable acts and regulations, the lessee shall exercise reasonable diligence, skill, and care in all operations on leased lands.

(b) The lessee shall minimize to the maximum extent possible wasting of the coal deposits and other mineral and nonmineral resources, including but not limited to, surface resources which may be found in, upon, or under such lands.

Sec. 13. SPECIAL STATUTES--The lessee shall comply with the provisions of the Federal Water Pollution Control Act, 33 U.S.C. 1151-1175, and the Clean Air Act, 42 U.S.C. 7401, et seq.

Sec. 14. AUTHORIZATION OF OTHER USES AND DISPOSITION OF LEASED LANDS--(a) The lessor reserves the right to authorize other uses of the leased lands by regulation or by issuing, in addition to this lease, leases, licenses, permits, easements, or rights-of-way, including leases for the development of minerals other than coal under the Act. The lessor may authorize any other uses of the leased lands that do not unreasonably interfere with the exploration and mining operations of the lessee, and the lessee shall make all reasonable efforts to avoid interference with such authorized uses.

(b) The lessor reserves the right: (i) to sell or otherwise dispose of the surface of the leased lands under existing law or laws hereafter enacted insofar as said surface is not necessary for the use of the lessee in the extraction and removal of the coal therein, or (ii) to dispose of any resource in such lands if such disposal will not unreasonably interfere with the exploration and mining operations of the lessee.

(c) If the leased lands have been or shall hereafter be disposed of under laws reserving to the United States the deposits of coal therein, the lessee shall comply with all conditions as are or may hereafter be provided by the laws and regulations reserving such coal.

Sec. 15. EQUAL OPPORTUNITY CLAUSE--The lessee will comply with all provisions of Executive Order No. 11246 of September 24, 1965, as amended, and the rules, regulations and relevant orders of the Secretary of Labor.

Sec. 16. CERTIFICATION OF NONSEGREGATED FACILITIES--By entering into this lease, the lessee certifies that he does not and will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not and will not permit his employees to perform their services at any location under his control where segregated facilities are maintained. The lessee agrees that a breach of this certification is a violation of the Equal Opportunity clause of this lease. As used in this certification, the term "segregated facilities" means, but is not limited to, any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise. Lessee further agrees that (except where lessee has obtained identical certifications from proposed contractors and subcontractors for specific time periods) lessee will obtain identical certifications from proposed contractors and subcontractors prior to award of contracts or subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause; that lessee will retain such certifications in lessee's files; and that lessee will forward the following notice to such proposed contractors and subcontractors (except where proposed contractor or subcontractor has submitted identical certifications for specific time periods). Notice to prospective contractors and subcontractors of requirement for certification of nonsegregated facilities. A Certification of Non-segregated Facilities, as required by the May 9, 1967 order (32 F.R. 7439, May 19, 1967) on Elimination of Segregated Facilities, by the Secretary of Labor, must be submitted prior to the award of a contract exceeding $10,000 which is not exempt from the provisions of the Equal Opportunity clause. Certification may be submitted either for each contract and subcontract or for all contracts and subcontracts during a period (i.e., quarterly, semiannually, or annually).

Sec. 17. EMPLOYMENT PRACTICES--The lessee shall pay all wages due persons employed on the leased lands at least twice each month in lawful money of the United States. The lessee shall grant all miners and other employees complete freedom to purchase goods and service of their own choice. The lessee shall restrict the workday to not more than 8 hours in any one day for underground workers, except in case of emergency. The lessee shall employ no person under the age of 16 years in any mine below the surface. If the laws of the State in which the mine is situated prohibit the employment, in a mine below the surface, of persons of an age greater than 16 years, the lessee shall comply with those laws.

Sec. 18. MONOPOLY AND FAIR PRACTICES--The lessor reserves full authority to promulgate and enforce orders and regulations under the provisions of Sections 30 and 32 of the Act (30 U.S.C. Sections 187 and 189) necessary to insure that any sale of the production from the leased lands to the United States or to the public is at reasonable prices, to prevent monopoly, and to safeguard the public welfare, and such orders and regulations shall upon promulgation be binding upon the lessee.

Sec. 19. TRANSFERS--

[X] This lease may be transferred in whole or in part to any person, association or corporation qualified under 43 CFR 3472.1-1 to hold a lease.

[ ] This lease may only be transferred in whole or in part to another public body, or to a person who will mine the coal on behalf of and for the use of the public body, or to a person for the limited purpose of creating a security interest in favor of a lender who agrees to be obligated to mine the coal on behalf of the public body. The transferee must be qualified under 43 CFR 3472.

[ ] This lease may only be transferred in whole or in part to other small businessess qualifying under 13 CFR 121 and 43 CFR 3472.2-2(c).

Any transfer of this lease in whole or in part is subject to the procedures and requirements for approval in the relevant regulations in 43 CFR 3400. A transfer will become effective on the first day of the month following its approval by the authorized officer, or, if the transferee requests, the first day of the month of the approval.

Sec. 20. RELINQUISHMENT OF LEASE--The lessee may file a relinquishment of the entire lease, a legal subdivision or aliquot part thereof, but not less than 10 acres, or any bed of the coal deposits therein. The relinquishment shall be filed in triplicate with the authorized officer. Upon the determination by the authorized officer that the public interest shall not be impaired, that all accrued rentals and royalties have been paid and that all of the obligations of the lessee under the regulations and the lease terms have been met, the relinquishment shall be accepted effective the date filed.

Sec. 21. NONCOMPLIANCE--Any failure to comply with the conditions of this lease, the approved exploration and mining and reclamation plans, the regulations, or applicable acts, shall be dealt with in accordance with the procedures set forth in the regulations.

Sec. 22. WAIVER OF CONDITIONS--The lessor reserves the right to waive any breach of the conditions contained in this lease, except the breach of such conditions as are required by the Act, but any such waiver shall extend only to the particular breach so waived and shall not limit the rights of the lessor with respect to any future breach; nor shall the waiver of a particular breach prevent cancellation of this lease for any other cause, or for the same cause occurring at another time.

Sec. 23. READJUSTMENT OF TERMS AND CONDITIONS--(a) The lease is subject to readjustment on the 20th year after the effective date and on each 10th year thereafter. In order that the lease may be readjusted as close as possible to the dates when it becomes subject to readjustment, the lessor may propose the terms of readjustment of any conditions of this lease, including rental and royalty rates, before the 20th year after the effective date and before each 10-year interval thereafter. The authorized officer shall notify the lessee whether he intends to readjust the terms and conditions of the lease and, if he intends to readjust, the nature of the readjustments in accordance with the regulations in 43 CFR 3451. Unless the lessee, within 60 days after receipt of the proposed readjusted terms, files with the lessor an objection to the proposed readjusted conditions or relinquishes the lease as of the effective date of the readjustment, the lessee shall be deemed conclusively to have agreed to such conditions.

(b) If the lessee files objections to the proposed readjusted conditions, the existing conditions shall remain in effect until there has been an agreement between the lessor and the lessee on the new conditions to be incorporated in the lease, or until the lessee has exhausted his rights of appeal under Section 31 of this lease, or until the lease is relinquished, except that the authorized officer may provide in the notice of readjusted lease terms that the readjustment or any part thereof is effective pending the outcome of the appeal. If the readjusted royalty provisions are subsequently rescinded or amended, the lessee shall be permitted to credit any excess royalty payments against royalties subsequently due to the lessor.

Sec. 24. DELIVERY OF PREMISES--Upon termination of this lease for any reason, or relinquishment of a part of this lease, the lessee shall deliver to the lessor in good order and condition all or the appropriate part of leased lands. Delivery of the leased lands shall include underground timbering and such other supports and structures as are necessary for the preservation of the mine or deposit, and shall be in accordance with all other applicable provisions of the regulations, including 30 CFR 211 and Chapter VII, for the completion of operations and abandonment.

Sec. 25. PROPRIETARY INFORMATION--Geological and geophysical data and information, including maps, trade secrets, and commercial and financial information which the lessor obtains from the lessee shall be treated in accordance with 43 CFR Part 2, 30 CFR 211.6 and other applicable regulations. Total lease reserve figures developed from this information will not be confidential.

Sec. 26. LESSEE'S LIABILITY TO LESSOR--(a) The lessee shall be liable to the United States for any damage suffered by the United States in any way arising from or connected with the lessee's activities and operations under this lease, except where damage is caused by employees of the United States acting within the scope of their authority.

(b) The lessee shall indemnify and hold harmless the United States from any and all claims arising from or connected with the lessee's activities and operations under this lease.

(c) In any case where liability without fault is imposed on the lessee pursuant to this section, and the damages involved were caused by the action of a third party, the rules of subrogation shall apply in accordance with the law of the jurisdiction where the damages occurred.

Sec. 27. INSPECTIONS AND INVESTIGATIONS--(a) All books and records maintained by the lessee showing information required by this lease or regulations must be kept current and in such manner that the books and records can be readily checked at the mine, upon request, by the Regional Director or District Mining Supervisor or their representative.

(b) The lessee shall permit any duly authorized officer or representative of the lessor at any reasonable time (1) to inspect or investigate the leased lands, the exploration and mining and reclamation operations, and all surface and underground improvements, works, machinery, and equipment, and all books and records pertaining to the lessee's obligations to the lessor under this lease and regulations and (2) to copy, and make extracts from any such books and records.

Sec. 28. UNLAWFUL INTEREST--No member of, or Delegate to, Congress, or Resident Commissioner, after his election or appointment, either before or after he has qualified and during his continuance in office, and no officer, or employee of the Department of the Interior, except as provided in 43 CFR 7.4(a)(3), shall hold any share or part in this lease or derive any benefit therefrom. The provisions of Section 3741 of the Revised Statutes, as amended, 41 U.S.C. Section 22, and the Act of June 25, 1948, 62 Stat. 702, as amended, 18 U.S.C. Sections 431-433, relating to contracts, enter into and form a part of this lease insofar as they may be applicable.

Sec. 29. APPEALS--The lessee shall have the right to appeal (a) under 43 CFR 3000.4 from an action or decision of any official of the Bureau of Land Management (b) under 30 CFR Part 290 from an action, order, or decision of any official of the United States Geological Survey, or (c) under applicable regulation from any action or decision of any other official of the Department of the Interior arising in connection with this lease, including any action or decision pursuant to Section 23 of this lease with respect to the readjustment of conditions.

Sec. 30. DEFERRED BONUS--This lease is issued subject to the payment of $ 1,140,000 by the lessee as a deferred bonus. Payment of the deferred bonus by the lessee shall be made on a schedule specified in Section 31 (Special Stipulations) of this lease.

Sec. 31. SPECIAL STIPULATIONS-- The District Mining Supervisor shall mean the authorized representative of the Minerals Management Service and the Regional Director shall mean the authorized representative of the Office of Surface Mining. The Authorized Officer shall mean the State Director, Bureau of Land Management. The Authorized Officer of the Surface Management Agency shall mean the Forest Supervisor, Forest Service. The surface management agency for private surface shall be the Forest Service.

1. The Lessee will be responsible to comply with applicable Federal, State, and local laws and regulations.

2. In accordance with Sec. 523(b) of the "Surface Mining Control and Reclamation Act of 1977," surface mining and reclamation operations conducted on this lease are to conform with the requirements of this Act and are subject to compliance with Office of Surface Mining Regulations, or as applicable, a Utah program equivalent approved under cooperative agreement in accordance with Sec. 523(c) and final determination of suitability for mining. The United States Government does not warrant that the entire tract will be susceptible to mining.

3. The coal contained within the lease area and authorized for mining under this lease shall be extracted only by underground mining methods.

4. All support facilities, structures, equipment, and similar developments will be removed from the lease area within two years after the final termination of use of such facilities. All disturbed areas and those areas occupied by such facilities will be rehabilitated in accordance with an approved reclamation plan, 30 CFR 211 and the "Surface Mining Control and Reclamation Act of 1977" or approved Utah program as applicable.

5. (a) Before undertaking any activities that may disturb the surface of the leased lands, the Lessee may be required to conduct a cultural resource intensive field inventory in a manner specified by the Regional Director and the Authorized Officer of the surface managing agency on portions of the mine plan area and adjacent areas, or exploration plan area, that may be adversely affected by lease-related activities and which were not previously inventoried at such a level of intensity. The inventory shall be conducted by a qualified professional cultural resource specialist (i.e., archaeologist, historian, or historical architect, as appropriate), approved by the Authorized Officer of the surface managing agency and a report of the inventory and recommendations for protecting any cultural resources identified shall be submitted to the Regional Director (or the District Mining Supervisor if activities are associated with coal exploration outside an approved mining permit area) and the Authorized Officer of the surface managing agency. The Lessee shall undertake measures, in accordance with instructions from the Regional Director (or the District Mining Supervisor if activities are associated with coal exploration outside an approved mining permit area), to protect cultural resources on the leased land. The Lessee shall not commence the surface disturbing activities until permission to proceed is given by the Regional Director or the District Mining Supervisor as appropriate.

(b) The Lessee shall protect all cultural resource properties within the lease area from lease-related activities until the cultural resource mitigation measures can be implemented as part of an approved mining and reclamation plan or exploration plan.

(c) The cost of conducting the inventory, preparing reports, and carrying out mitigation measures shall be borne by the Lessee.

(d) If cultural resources are discovered during operations under this lease, the Lessee shall immediately bring them to the attention of the Regional Director (or the District Mining Supervisor as appropriate), and the Authorized Officer, Surface Management Agency. The Lessee shall not disturb such resources except as may be subsequently authorized by the Regional Director (or the District Mining Supervisor). Within two (2) working days of notification, the Regional Director (or the District Mining Supervisor, as appropriate) will evaluate or have evaluated any cultural resources discovered and will determine if any action may be required to protect or preserve such discoveries.

(e) All cultural resources shall remain under the jurisdiction of the United States until ownership is determined under applicable law.

6. Before undertaking any activities that may disturb the surface of the leased lands, the Lessee shall contact the Regional Director and Authorized Officer of the Surface Management Agency to determine whether the Lessee will be required to conduct a paleontological appraisal of the mine plan and adjacent areas, or exploration plan areas, that may be adversely affected by lease-related activities. If the Regional Director and Authorized Officer, Surface Management Agency, determines that one is necessary, the paleontological appraisal shall be conducted by a qualified paleontologist approved by the Authorized Officer of the surface management agency, using the published literature and, where appropriate, field appraisals for determining the possible existence of fossils of scientific significance. A report of the appraisal and recommendations for protecting any fossils of significant scientific interest on the leased lands so identified shall be submitted to and approved by the Regional Director and the Authorized Officer, Surface Management Agency. When necessary to protect and/or collect the fossils of significant scientific interest on the leased lands, the Lessee shall undertake the measures provided in the approval of the mining and reclamation plan or exploration plan.

(a) The Lessee shall not knowingly disturb, alter, destroy, or take any fossils of significant scientific interest, and shall protect all such fossils in conformance with the measures included in the approval of the mining and reclamation plan or exploration plan.

(b) The Lessee shall immediately bring any such fossils that might be altered or destroyed by his operation to the attention of the Regional Director or the District Mining Supervisor, as appropriate. Operations may continue as long as the fossil specimen or specimens would not be seriously damaged or destroyed by the activity. The Regional Director or the District Mining Supervisor, as appropriate, shall evaluate or have evaluated such discoveries brought to his attention and, within five (5) working days, shall notify the Lessee what action shall be taken with respect to such discoveries.

(c) All such fossils of significant scientific interest shall remain under the jurisdiction of the United States until ownership is determined under applicable law. Copies of all paleontological resource data generated as a result of the lease term requirements will be provided to the Regional Director or the District Mining Supervisor, as appropriate.

(d) These conditions apply to all such fossils of significant scientific interest discovered within the lease area whether discovered in the overburden, interburden, or coal seam or seams. Fossils of significant scientific interest do not include those fossils commonly encountered during underground mining operations such as ferns and dinosaur tracks. Skeletal remains shall be considered significant.

7. The Lessee shall, prior to entry upon the lease, conduct an intensive field inventory for threatened and endangered plant and/or animal species, bald or golden eagles, or migratory species of high Federal interest on those areas to be disturbed and/or impacted including the access routes to the lease area. The inventory shall be conducted by a qualified specialist(s) approved by the Authorized Officer, Surface Management Agency, and a report of the inventory and recommendation for the protection of these species submitted to and approved by the Authorized Officer, Surface Management Agency, and Regional Director or District Mining Supervisor as appropriate. An acceptable report of any findings shall include the specific location, distribution, and habitat requirements of the species. The Lessee shall protect these species within the lease area from any activities associated with operations conducted under the terms of the lease and shall undertake such protective measures as may be required by the Authorized Officer, Surface Management Agency, and Regional Director, or District Mining Supervisor as appropriate.

8. Powerlines used in conjunction with the mining of coal from this lease shall be constructed so as to conform with the publication "Suggested Practices for Raptor Protection on Powerlines" (Edison Electric Institute, 1975). When feasible, powerlines will be located at least 100 yards from public roads.

9. The Lessee shall provide for the suppression and control of fugitive dust on all haul roads, and at coal hauling, transportation, and storage facilities. The migration of road surfacing materials shall be controlled by watering, chemical treatment, or hard surfacing. Loss of gravel courses shall be periodically replaced.

10. In order to avoid surface disturbance on steep canyon slopes and the need for surface access, all surface breakouts for ventilation tunnels shall be constructed from inside the mine, except at specific locations approved by the Regional Director with the concurrence of the Authorized Officer, Surface Management Agency and the District Mining Supervisor.

11. Prior to mining, the Lessee shall perform a study to secure adequate baseline data to quantify the existing surface resources on and adjacent to the lease area. The study will be established in consultation with and approved by the Authorized Officer, Surface Management Agency, the Regional Director, and the District Mining Supervisor and shall be adequate to locate, quantify, and demonstrate the interrelationship of the geology, topography, surface hydrology, vegetation, and wildlife. Baseline data will be established so that future programs of observation can be incorporated at regular intervals for comparison.

12. The Lessee shall establish a monitoring system to locate, measure, and quantify the progressive and final effects of underground mining activities on the topographic surface, underground and surface hydrology, and vegetation. The monitoring system shall utilize techniques which will provide a continuing record of change over time and an analytical method for location and measurement of a sufficient number of points over the lease area. The monitoring shall be an extension of the baseline data and shall be conducted by a method approved by the Regional Director in consultation with and concurrence by the Authorized Officer, Surface Management Agency and District Mining Supervisor.

13. Underground mining operations shall be conducted in such a manner so as to prevent surface subsidence that would (1) cause the creation of hazardous conditions such as potential escarpment failure and landslides, (2) cause damage to surface structures, and improvements, and (3) damage or alter the flow of perennial streams. The Lessee in his mining plan shall provide specific measures for the protection of escarpments. The Regional Director in consultation with and concurrence of the District Mining Supervisor and Authorized Officer, Surface Management Agency, shall approve such measures and may prescribe any additional measures to be employed such as mining methods, specify the amount of coal recovered, and determine any corrective measures considered necessary to assure that escarpment failure does not occur except at specifically approved locations, or that hazardous conditions are not created.

14. Existing surface improvements required for the surface uses of the lease area will need to be protected or maintained to provide for the post-mining continuance of the current land uses. Existing surface improvements whose utility may be lost or damaged as result of mining activities are to be replaced or restored.

15. The Lessee shall reclaim all areas disturbed as a result of mining and exploration operations to a land use capable of supporting the pre-mining levels of livestock grazing, big game winter range, and other wildlife habitat.

16. At the conclusion of the mining operation, or at the request of the Authorized Officer of the Surface Managing Agency, all damaged, disturbed, or displaced land monuments, accessories and appendages shall be replaced or restored in their original location (or at other locations that meet the needs of the land net, and as approved by the Authorized Officer of the Surface Managing Agency) and shall be done at the expense of the Lessee.

17. The Lessee will be responsible to replace any water lost or adversely affected by mining operations with water from an alternative source in sufficient quantity and quality to maintain existing riparian habitat, fishery habitat, and livestock and wildlife use.

18. The Lessee will be required to reconstruct the road in Cottonwood Canyon from the mine site to Highway 29 in a manner agreeable to Emery County and the authorized officer of the Surface Management agencies. In the interim, until reconstruction is completed, traffic management requirements will be imposed on the existing road commensurate with the season of use, road conditions, and volumes of traffic.

19. The Lessee shall assure that mine facilities, parking areas, and equipment do not encroach on the Cottonwood Canyon Road (FDR #50041) nor interfere with traffic on this road.

20. Reasonable stock driveway access must be provided and maintained to the Trail Mountain cattle and horse allotment.

21. The Cottonwood Canyon Road shall be maintained in such a manner so as to provide suitable forest access as well as coal haulage. Because of the narrow confines of Cottonwood Canyon, all future and existing facilities such as power, telephone, water and sewer lines, coal conveyors, and similar facilities, shall be constructed and/or maintained by the Lessee so as to not interfere with the Cottonwood Canyon Road or access provided thereby.

22. Deferred Bonus Payment Schedule:

The balance of the bonus bid shall be paid in equal annual installments in the amount of $285,000.00 due and payable on the next four anniversary dates of this lease.

If the lease is relinquished or otherwise cancelled or terminated, the unpaid remainder of the bid shall be immediately payable to the United States.

THE UNITED STATES OF AMERICA

By Roland D. Robinson

STATE DIRECTOR

(Title)

FEB 18 1983
(Date)

WITNESS TO SIGNATURE OF LESSEE

Sally J. Maguire

Diana L. Peterson

Gary E. Gray

Dean V. Madsen
(Signature of Lessee)

J. J. Obert
(Signature of Lessee)

John J. Schoche

ASSIGNMENT AND ASSUMPTION of COAL LEASES and LOGICAL MINING UNIT

THIS ASSIGNMENT AND ASSUMPTION of COAL LEASES and LOGICAL MINING UNIT (the "***Assignment***") is made and entered into as of the 5th day of June, 2015, by PACIFICORP, an Oregon corporation, having a mailing address of 1407 West North Temple, Suite 310, Salt Lake City, Utah 84116 ("***Lessor***") *and* INTERWEST MINING COMPANY, an Oregon corporation, having a mailing address of 201 South Main Street, Suite 2100, Salt Lake City, Utah 84111("***Operator***") (Lessor and Operator are collectively referred to herein as "***Assignor***"), as Assignor, to and for the benefit of FOSSIL ROCK RESOURCES, LLC, a Delaware limited liability company, (the "***Assignee***"), having a mailing address of 6100 Dutchmans Lane, 9th Floor, Louisville, Kentucky 40205, as Assignee. For Ten Dollars ($10.00) and other good and valuable consideration, receipt and sufficiency of which is hereby acknowledged, Assignee and Assignor hereby agree as follows:

1. To the extent assignable, Assignor assigns, transfers, and conveys to the Assignee and the Assignee hereby accepts, all right, title and interest, as Lessee, in and to all of those three certain federal coal leases described in the attached **Schedule 1** by and between Assignor, as Lessee, and the United States of America, as Lessor, (collectively, the "***Leases***"). Further, to the extent assignable, the Assignor hereby assigns, transfers, and conveys to the Assignee and the Assignee hereby accepts, all right title and interest, as Operator, in and to all of that certain logical mining unit described in the attached Schedule 2, by and between Assignor and the United States of America (the "***LMU***"). The Leases and the LMU affect that certain real property more particularly described in the attached **Exhibit A.**

2. Assignee accepts the foregoing assignment and assumes all of the Lessee's obligations under the Leases and all of the Operator's obligations under the LMU. Assignee also acknowledges that it will be the single operator of the LMU and accepts all stipulations and obligations of the LMU.

3. This Assignment shall be binding upon and inure to the benefit of Assignor, the Assignee, and their respective legal representatives, successors and assigns. Assignor will execute or cause to be executed such other documents or instruments as may be necessary or appropriate, in the Assignee's reasonable discretion, to effectuate this Assignment.

[*Signatures on Following Page*]

IN WITNESS WHEREOF, Assignor and Assignee have executed and delivered this Assignment by their duly authorized representatives as of June 5, 2015.

ASSIGNOR:

PACIFICORP,
an Oregon corporation

Cindy A. Crane
President/CEO - PacifiCorp dba Rocky Mountain Power

INTERWEST MINING COMPANY,
an Oregon corporation

By: CINDY A. CRANE
Its: PRESIDENT

ASSIGNEE:

FOSSIL ROCK RESOURCES, LLC,
a Delaware limited liability company

By: Johannes H. Dreyer
Its: CEO

SCHEDULE 1

(Leases)

1. Coal Lease UTU-64375 issued effective October 1, 1990, as amended and readjusted.
2. Coal Lease UTU-49332 issued effective March 1, 1983, as amended and readjusted.
3. Coal Lease UTU 0-082996 issued effective July 1, 1962, as amended and readjusted.

SCHEDULE 2

(LMU)

Trail Mountain Logical Mining Unit UTU-73339 issued effective September 13, 1988, as amended and readjusted.

EXHIBIT A

(Legal Description of Real Property)

UTU-64375

Township 17 South, Range 6 East SLB&M
Section 26: S½SW¼, W½SW¼SE¼;
Section 27: S½S½

260 acres more or less in Emery County, Utah

UTU-49332

Township 17 South, Range 6 East SLB&M
Section 25: S½NW¼, W½E½SW¼, W½SW¼;
Section 26: SE¼NE¼, E½SW¼NE¼, E½SE¼, E½W½SE¼

380 acres more or less in Emery County, Utah

UTU 0-082996

Township 17 South, Range 6 East SLB&M
Section 25: E½E½SW¼, SW¼SE¼

80 acres more or less in Emery County, Utah

RIGHT-OF-WAY GRANT UTU-65027
WASTE ROCK SITE

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Green River District
Price Field Office
125 South 600 West
Price, UT 84501
http://www.blm.gov/ut/st/en/fo/price.html

AUG 17 2015

In Reply Refer To:
UTU-65027
2800 (UTG020)

CERTIFIED MAIL-RETURN RECEIPT REQUESTED:
7014-2120-0004-6185-9703

Van Cott
Attn: Jason D. Steiert
36 S. State Street, Suite 1900
Salt Lake City, Utah 84111-1478

Re: Assignment of ROW Grant UTU-65027

DECISION

:

:

Right-of-Way Grant UTU-65027 Assigned

Enclosed is a copy of a right-of-way grant (serial number UTU-65027) which has been approved by the Bureau of Land Management and issued under authority of Title V of the Federal Land Policy and Management Act of October 21, 1976, as amended through September 1999, (90 Stat. 2776; 43 U.S.C. 1761). The assignment of this right-of-way grant constitutes a final decision by the Bureau of Land Management in this matter.

This decision may be appealed to the Interior Board of Land Appeals, Office of the Secretary, in accordance with the regulations contained in 43 CFR, Part 4, and the enclosed Form 1842-1. If an appeal is taken, your notice of appeal must be filed in this office (at the above address) within 30 days from receipt of this decision. The appellant has the burden of showing that the decision appealed from is in error.

If you wish to file a petition pursuant to regulation 43 CFR 4.21 (58 FR 4939, January 19, 1993) or 43 CFR 2801.10 for a stay of the effectiveness of this decision during the time that your appeal is being reviewed by the Board, the petition for a stay must accompany your notice of appeal. A petition for a stay is required to show sufficient justification based on the standards

listed below. Copies of the notice of appeal and petition for a stay must also be submitted to each party named in this decision and to the Interior Board of Land Appeals and to the appropriate Office of the Solicitor (see 43 CFR 4.413) at the same time the original documents are filed with this office. If you request a stay, you have the burden of proof to demonstrate that a stay should be granted.

Standards for Obtaining a Stay

Except as otherwise provided by law or other pertinent regulation, a petition for a stay of a decision pending appeal shall show sufficient justification based on the following standards:

(1) The relative harm to the parties if the stay is granted or denied;

(2) The likelihood of the appellant's success on the merits;

(3) The likelihood of immediate and irreparable harm if the stay is not granted; and

(4) Whether the public interest favors granting the stay.

Please note that under the regulations in 43 CFR Group 2800, this decision is effective even if an appeal is filed. If you have any questions, please contact Connie Leschin, Realty Specialist, at the above address, by e-mail cleschin@blm.gov, or by phone (435) 636-3610.

Sincerely,

Ahmed Mohsen
Field Manager

Enclosure

FORM 2800-14
(August 1985)

Issuing Office
Price Field Office

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
RIGHT-OF-WAY GRANT

SERIAL NUMBER UTU-65027

1. A right-of-way is hereby granted pursuant to Title V of the Federal Land Policy and Management Act of October 21, 1976 (90 Stat. 2776; 43 U.S.C. 1761).

2. Nature of Interest:

   a. By this instrument, the holder:

   Fossil Rock Resources, LLC
   6100 Dutchman's Lane, 9th Floor
   Louisville, KY 40205

   receives a right to operate, maintain, and terminate the Cottonwood / Wilberg waste rock storage facility on public lands described as follows:

   T.17 S., R. 7 E., Salt Lake Meridian, Emery County, Utah
   Section 34: SE¼NE¼, N½SE¼, SW¼SE¼.

   b. The right-of-way or permit area granted contains 25.87 acres, more or less.

   c. This instrument shall expire on June 7, 2025, unless, prior thereto, it is relinquished, abandoned, terminated, or modified pursuant to the terms and conditions of this instrument or of any applicable Federal law or regulation.

   d. This instrument may be renewed. If renewed, the right-of-way or permit shall be subject to the regulations existing at the time of renewal and any other terms and conditions that the Field Manager or other authorized officer deems necessary to protect the public interest.

   e. Notwithstanding the expiration of this instrument or any renewal thereof, early relinquishment, abandonment, or termination, the provisions of this instrument, to the extent applicable, shall continue in effect and shall be binding on the holder, its successors, or assigns, until they have fully satisfied the obligations and/or liabilities accruing herein before or on account of the expiration, or prior termination, of the grant.

3. Rental:

   For and in consideration of the rights granted, the holder agrees to pay the Bureau of Land Management fair market value rental as determined by the authorized officer unless specifically exempted from such payment by regulation. Provided, however, that the rental may be adjusted by the authorized officer, whenever necessary, to reflect changes in the fair market rental value as determined by the application of sound business management principles, and so far as practicable and feasible, in accordance with comparable commercial practices.

Terms and Conditions:

4. Standard

   a. This grant or permit is issued subject to the holder's compliance with all applicable regulations contained in Title 43 Code of Federal Regulations part 2800.

   b. Each grant issued for a term of 10 years or more shall, at a minimum, be reviewed by the authorized officer at the end of the 10th year and at regular intervals thereafter not to exceed 10 years. Provided, however, that a right-of-way or permit granted herein may be reviewed at any time deemed necessary by the authorized officer.

   c. The stipulations, plans, maps, or designs set forth in Exhibits A (Maps) and B (Professional Engineer Drawing), attached hereto, are incorporated into and made a part of this grant instrument as fully and effectively as if they were set forth herein in their entirety.

   d. BLM may suspend or terminate your grant if you do not comply with applicable laws and regulations or any terms, conditions, or stipulations of the grant (such as rent payments), or if you abandon the right-of-way. Your failure to use your right-of-way for its authorized purpose for any continuous 5-year period creates a presumption of abandonment.

   e. In the event that the public land underlying the right-of-way (ROW) encompassed in this grant, or a portion thereof, is conveyed out of Federal ownership and administration of the ROW or the land underlying the ROW is not being reserved to the United States in the patent/deed and/or the ROW is not within a ROW corridor being reserved to the United States in the patent/deed, the United States waives any right it has to administer the right-of-way, or portion thereof, within the conveyed land under Federal laws, statutes, and regulations, including the regulations at 43 CFR Part [2800][2880], including any rights to have the holder apply to BLM for amendments, modifications, or assignments and for BLM to approve or recognize such amendments, modifications, or assignments. At the time of conveyance, the patentee/grantee, and their successors and assigns, shall succeed to the interests of the United States in all matters relating to the right-of-way, or portion thereof, within the conveyed land and shall be subject to applicable State and local government laws, statutes, and ordinances. After conveyance, any disputes concerning compliance with the use and the terms and conditions of the ROW shall be considered a civil matter between the patentee/grantee and the ROW Holder.

5. Applicable Laws

   a. The holder shall comply with all Federal, State, and local regulations whether or not specifically mentioned within this grant.

   b. Use of pesticides shall comply with the applicable Federal and state laws. Pesticides shall be used only in accordance with their registered uses and within limitations imposed by the Secretary of the Interior. Prior to the use of pesticides, the holder shall obtain from the Field Manager or other authorized officer written approval of a plan showing the type and quantity of material to be used, pest(s) to be controlled, method of application, location of storage and disposal of containers, and any other information deemed necessary by the authorized officer. Emergency use of pesticides shall be approved in writing by the authorized officer prior to such use.

   c. The holder of this right-of-way grant or the holder's successor in interest shall comply with Title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000d et seq.) and the regulations of the Secretary of the Interior issued pursuant thereto.

   d. The holder shall meet Federal, State, and local emission standards for air quality.

   e. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder(s) shall comply with the Toxic Substances Control Act of 1976, as amended (15 U.S.C. 2601, et seq.) with regard to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation and Liability Act of 1980, Section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State

government.

f. The holder shall comply with the construction practices and mitigating measures established by 33 CFR 323.4, which sets forth the parameters of the "nationwide permit" required by Section 404 of the Clean Water Act. If the proposed action exceeds the parameters of the nationwide permit, the holder shall obtain an individual permit from the appropriate office of the Army Corps of Engineers and provide the authorized officer with a copy of same. Failure to comply with this requirement shall be cause for suspension or termination of this right-of-way grant.

g. The holder of Right-of-Way No. UTU-65027 agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act of 1976, 42 U.S.C. 6901 et seq.) on the right-of-way (unless the release or threatened release is wholly unrelated to the right-of-way holder's activity on the right-of-way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

h. The holder is prohibited from discharging oil or other pollutants into or upon the navigable waters of the United States, adjoining shorelines, or the waters of the contiguous zone in violation of Section 311 of the Clean Water Act as amended, 33 U.S.C. 1321, and the regulations issued there under, or applicable laws of the State and regulations issued there under. Holder shall give immediate notice of any such discharge to the authorized officer and such other Federal and State officials as are required by law to be given such notice.

6. Miscellaneous

a. The holder shall perform all operations in a good and workmanlike manner so as to ensure protection of the environment and the health and safety of the public. All design, material, and construction, operation, maintenance, and termination practices shall be in accordance with safe and proven engineering practices.

b. The holder shall designate a representative who shall have the authority to act upon and to implement instructions from the authorized officer. The holder's representative shall be available for communication with the authorized officer within a reasonable time when construction or other surface disturbing activities are underway.

c. The holder shall permit free and unrestricted public access to and upon the right-of-way for all lawful purposes except for those specific areas designated as restricted by the Field Manager or other authorized officer to protect the public, wildlife, livestock or facilities constructed within the right-of-way.

d. The holder shall inform the Field Manager at (435) 636-3600 within 48 hours of any accidents on federal lands.

e. All surface disturbing activities will have a cultural survey completed (if one has not been previously completed) and submitted to the BLM before activities begin and may be monitored by a BLM permitted archaeologist if determined necessary by the BLM. If any cultural materials are discovered during construction, work in the area will halt immediately and the authorized official notified.

f. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the authorized officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the authorized officer after consulting with the holder.

g. The holder shall protect all survey monuments found within the right-of-way. Survey monuments include, but are not limited to, General Land Office and Bureau of Land Management Cadastral Survey Corners, reference corners, witness points, U.S. Coastal and Geodetic benchmarks and triangulation stations, military control monuments, and recognizable civil (both public and private) survey monuments. In the event of obliteration or disturbance of any of the above, the holder shall immediately report the incident, in writing, to the authorized officer and the respective installing authority if known. Where General Land Office or Bureau of Land Management right-of-way monuments or references are obliterated during operations, the holder shall secure the services of a registered land surveyor or a Bureau cadastral surveyor to restore the disturbed monuments and references using surveying procedures found in the Manual of Surveying

Instructions for the Survey of the Public Lands in the United States, latest edition The holder shall record such survey in the appropriate county and send a copy to the authorized officer. If the Bureau cadastral surveyors or other Federal surveyors are used to restore the disturbed survey monument, the holder shall be responsible for the survey cost.

7. Construction / Maintenance

   a. The holder shall conduct all activities associated with the construction, operation, and termination of the right-of-way within the authorized limits of the right-of-way.

   b. The holder shall construct, operate, and maintain the facilities, improvements, and structures within this right-of-way in strict conformity with the plan of development which was approved and made part of this grant. Any relocation, additional construction, or use that is not in accord with the approved plan of development, shall not be initiated without the prior written approval of the authorized officer. A copy of the complete right-of-way grant, including all stipulations and approved plan of development, shall be made available on the right-of-way area during construction, operation, and termination to the authorized officer. Noncompliance with the above will be grounds for an immediate temporary suspension of activities if it constitutes a threat to public health and safety or the environment.

   c. The holder shall provide for the safety of the public entering the right-of-way. This includes, but is not limited to barricades for open trenches, flagmen/women with communication systems for single-lane roads without intervisible turnouts, and attended gates for blasting operations.

   d. If any clearing is needed, the right-of-way will be brush-hogged to prevent unnecessary disturbance. Only those areas where safety, absolute need for construction or other regulations may warrant the use of topsoil removal by blading or scalping. This right-of-way clearing shall be limited to the limits of the right-of-way. Suitable topsoil material removed in conjunction with clearing and stripping shall be conserved in stockpiles within the right-of-way.

   e. All roads and parking areas shall be constructed to provide drainage and minimize erosion. Culverts shall be installed if necessary to maintain drainage. All areas to be used for roads and parking shall be surfaced with gravel (before the drilling rig or other drilling equipment moves onto the pad).

   f. The site shall be maintained in a sanitary condition at all times; all discarded matter including, but not limited to, human waste, trash, garbage, refuse, oil drums, petroleum products, ashes, and equipment shall be disposed of promptly at an appropriate waste disposal site.

   g. If during any phase of the construction, operation, or termination any oil or other pollutant should be discharged from containers or vehicles and impact Federal lands, the control and total removal, disposal, and cleanup of such oil or other pollutant, wherever found, shall be the responsibility of the holder, regardless of fault. Upon failure of holder to control, cleanup, or dispose of such discharge on or affecting Federal lands, or to repair all damages to Federal lands resulting therefrom, the authorized officer may take such measures as he deems necessary to control and cleanup the discharge and restore the area, including, where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the authorized officer shall not relieve the holder of any liability or responsibility.

   h. Fences, gates, brace panels and any other impacted range improvements shall be reconstructed to appropriate Bureau standards and/or specifications as determined by the authorized officer.

   i. When construction activity in connection with the right-of-way breaks or destroys a natural barrier used for livestock control, the gap, thus opened, shall be fenced to prevent the drift of livestock. The subject natural barrier shall be identified by the authorized officer and fenced by the holder as per instruction of the authorized officer.

   j. Construction-related traffic shall be restricted to routes approved by the authorized officer. New access roads or cross-country vehicle travel will not be permitted unless prior written approval is given by the authorized officer. Authorized roads used by the holder shall be rehabilitated or maintained when construction activities are complete as approved by the authorized officer.

   k. No construction or routine maintenance activities shall be performed during periods when the soil is too wet to adequately support construction equipment. If such equipment creates ruts in excess of four inches deep, the soil shall be deemed too wet to adequately support construction equipment.

l. The holder shall be responsible for weed control on disturbed areas within the limits of the right-of-way. The holder is responsible for consultation with the authorized officer and/or local authorities for acceptable weed control methods (within limits imposed in the grant stipulations).

m. Holder shall maintain the right-of-way in a safe, usable condition, as directed by the authorized officer.

8. Reclamation / Rehabilitation / Termination

a. Ninety (90) days prior to termination of the right-of-way, the holder shall contact the authorized officer to arrange a pre-termination conference. This conference will be held to review the termination provisions of the grant.

b. Upon grant termination by the Field Manager or other authorized officer, all improvements shall be removed from the public lands within 90 days or as directed by the authorized officer.

c. The holder shall restore drainages, to the greatest extent possible, to the original bank configuration, stream bottom width, and channel gradient. Loose soil, fill, and culverts shall be removed from drainage channels as directed by the authorized officer.

d. The holder shall re-contour the disturbed area and obliterate all earthwork by removing embankments, backfilling excavations, and grading to re-establish the approximate original contours of the land in the right-of-way.

e. The holder shall prepare a seedbed by scarifying the disturbed area, distributing topsoil uniformly, or disking the topsoil.

f. The holder shall seed all disturbed areas that have been or are being reclaimed with a seed mixture(s) submitted to and approved by the authorized officer.

IN WITNESS WHEREOF, The undersigned agrees to the terms and conditions of this right-of-way grant or permit.

B. S. Ellis
(Signature of Holder)

Senior VP & General Counsel
(Title)

8/4/15
(Date)

Steve Mohlenkamp
(Signature of BLM Authorized Officer)

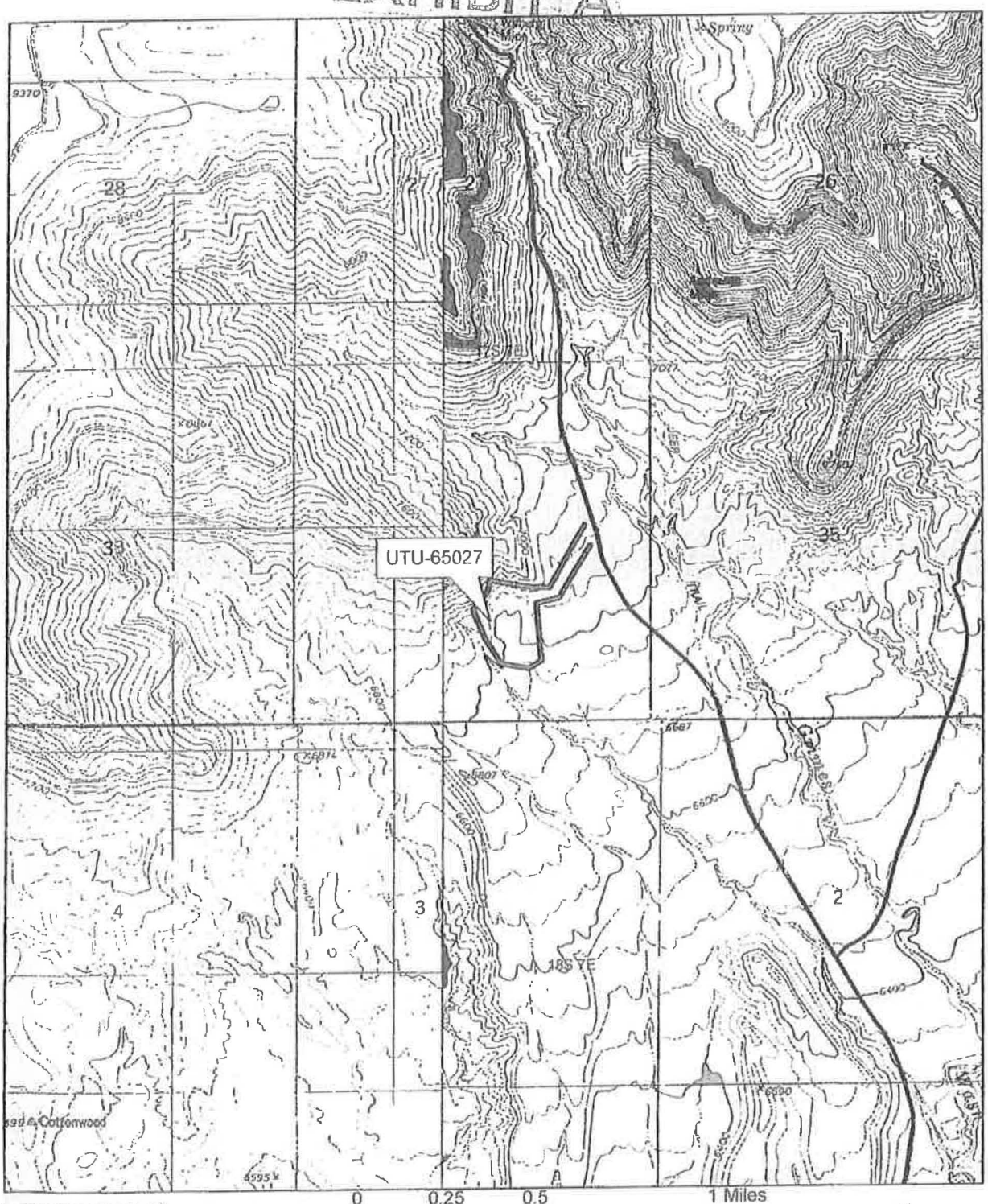
Field Manager, Price Field Office
(Title)

8/17/2015
(Effective Date of Grant)

UTU-65027

June 11, 2015

EXHIBIT A



BLM

Legend

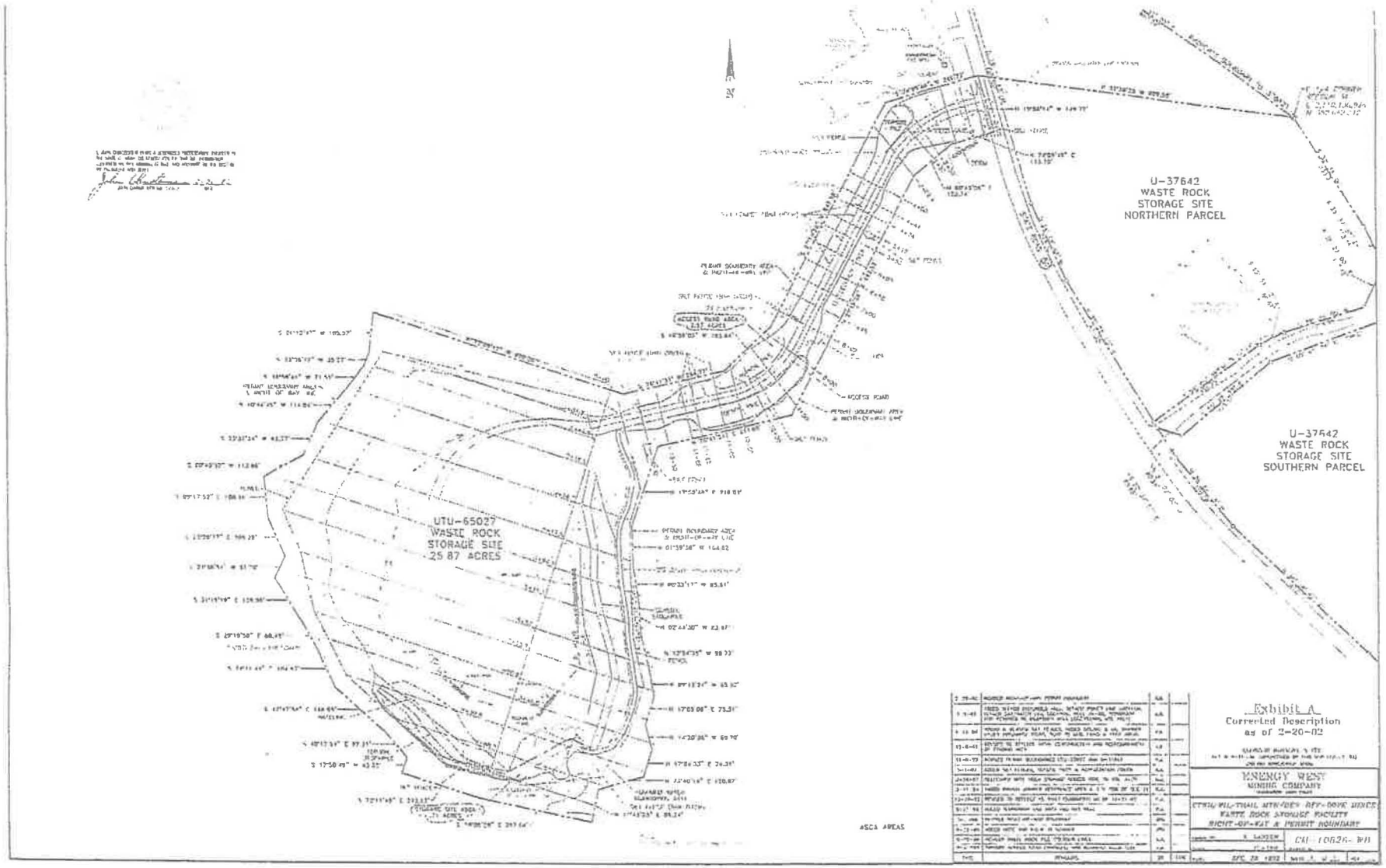

U-37642
WASTE ROCK
STORAGE SITE
NORTHERN PARCEL
U-37642
WASTE ROCK
STORAGE SITE
SOUTHERN PARCEL
UTU-65027
WASTE ROCK
STORAGE SITE
25.87 ACRES
ACCESS ROAD
ASCA AREAS
Exhibit A
Corrected Description
as of 2-20-02
ENERGY WEST
MINING COMPANY

EXHIBIT B

FEDERAL COAL LEASE - UTU-082996

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Utah State Office
440 West 200 South, Suite 500
Salt Lake City, UT 84101-1345
http://www.blm.gov/ut/st/en.html

IN REPLY REFER TO:
3453 / (UT-9223)
UTU-082996
UTU-49332
UTU-64375
UTU-73339 (LMU)

AUG 1 3 2015

CERTIFIED MAIL- Return Receipt Requested
91 7199 9991 7035 9001 7143
91 7199 9991 7031 4480 2164

DECISION

Assignor: PacifiCorp 1407 West North Temple Salt Lake City, Utah 84116	:	Federal Coal Leases: UTU-082996, UTU-49332 and UTU-64375 Federal Logical Mining Unit (LMU): UTU-73339
Assignee: Fossil Rock Resources, LLC Dutchmans Lane, 9th Floor Louisville, Kentucky 40205	:	

Assignments of Federal Coal Leases Approved

On June 9, 2015, Fossil Rock Resources, LLC submitted assignments of Federal coal leases UTU-082996, UTU-49332 and UTU-64375 with PacifiCorp as assignor, and Fossil Rock Resources, LLC, as assignee.

Satisfactory evidence of the qualifications and holdings of Fossil Rock Resources, LLC, has been filed, as required pursuant to the regulations at 43 CFR 3472. The Department of Justice has been forwarded information as to whether this transfer would create a situation inconsistent with the antitrust laws and no comments were received within the 30-day period. Therefore, the assignments meet the requirements of the regulations and are hereby approved effective August 1, 2015. Approval of the assignments does not constitute approval of any of the terms therein which may be in violation of the lease terms.

In addition PacifiCorp assigned their right as operator of the Trail Mountain Logical Mining Unit (LMU), serial number UTU-73339. Fossil Rock Resources, LLC, has agreed to assume all of the rights and responsibilities under the LMU including agreeing to the all stipulations and obligations of the LMU.

A LMU bond, No. SUR60000336, in the amount of $115,000 for LMU UTU-73339 with Fossil Rock Resources, LLC as principal, and Ironshore Indemnity, Inc. as surety, were filed on July 15, 2015. This bond has been examined, found to be satisfactory and is hereby accepted effective the date of filing. The regulations at 43 CFR 3474.2 does allow for the amount of any bond to be increased when additional coverage is determined to be appropriate. A written request must be submitted when you want to have the period of liability of this bond terminated.

If you have further questions call Bill Buge of this office at (801) 539-4086.

Jenna Whitlock
Acting State Director

Enclosure:
1. Assignment

cc: Price Field Office (UTG02)

Mr. John Baza, Director, Utah Division of Oil, Gas and Mining, P.O. Box 145801, Salt Lake City, Utah 84114-5801

KIM S COLTON
Direct Dial: 801.237.0316
email: kcolton@vancott.com

VANCOTT

June 9, 2015

VIA HAND DELIVERY

U.S. Bureau of Land Management
Utah State Office
Attn: Roger L. Bankert
P.O. Box 45155
Salt Lake City, Utah 84145-0155

Dear Mr. Bankert:

We represent Fossil Rock Resources, LLC, a Delaware limited liability company (the "Assignee"). The Assignee is a wholly-owned subsidiary of Bowie Resource Partners. Under the terms of the Assignment and Assumption of Coal Leases and Logical Mining Unit, Assignee acquired from PacifiCorp the leasehold and operating interest in and to the following federal coal leases at the Trail Mountain Mine in Emery County, Utah:

- **UTU-082996** (80 Acres located in Emery County, Utah)
- **UTU-49332** (380 Acres located in Emery County, Utah)
- **UTU-64375** (260 Acres located in Emery County, Utah)

The Assignee hereby requests approval of the assignment of the above-referenced coal leases. In accordance with 43 C.F.R. § 3453.2-2, this request filing is made in triplicate and includes a transfer filing fee of $195 ($65 per lease).

The three subject leases comprise all federal leases and lands within a Logical Mining Unit (**UTU-73339**), held by PacifiCorp. Assignee will be the sole operator of the LMU and acknowledges that it will be subject to the stipulations and obligations of the LMU.

In accordance with 43 C.F.R. § 3453 *et. seq.* and 43 C.F.R. § 3472 *et. seq.* the following items are enclosed:

- A Qualifications Statement-including Assignee's federal coal lease acreage holdings.
- Certificate of Good Standing and Certificate of Existence for Assignee.
- Documents evidencing transfer of record title interest:
  - Special Warranty Deed recorded June 5, 2015 in Emery County, Utah.
  - Assignment and Assumption Logical Mining Unit by and between PacifiCorp and Fossil Rock Resources, dated June 5, 2015.
- Sealed Envelope containing a completed Western Federal Coal Lease form for DOJ antitrust review. (43 C.F.R. § 3422.3-4)

VAN COTT, BAGLEY, CORNWALL & MCCARTHY, P.C.
ESTABLISHED 1874

36 S. STATE STREET
SUITE 1900
SALT LAKE CITY, UTAH
84111-1478 USA
T 801.532.3333
F 801.534.0058
WWW.VANCOTT.COM

LAW OFFICES
SALT LAKE CITY
OGDEN

VANCOTT

We ask that any information related to Fossil Rock Resources, LLC or its affiliates' federal coal acreage holdings, coal reserve estimates, production estimates, consideration/value paid for the subject federal lease rights, and any information related to the financing of Fossil Rock Resources, LLC's acquisition be kept confidential.

Pursuant to 43 C.F.R. § 3453.3, Fossil Rock Resources, LLC requests that if this lease transfer application is approved, the effective date of the lease shall be the first day of the month of the lease transfer application approval.

Pursuant to 43 C.F.R. § 3453.2-4, Assignee understands that it will be required to furnish bonds before your office can approve the requested transfer. We look forward to hearing from your office after you consult with the Price Field Office to confirm the bonds and bond amounts associated with the above referenced coal leases.

Please contact me if you have any questions regarding this request for approval, or need any additional information. On behalf of Fossil Rock Resources, LLC, we appreciate your assistance in this matter.

Very truly yours,

Kim S Colton

KSC: jds
Enclosures
cc: Brian S. Settles, General Counsel for Fossil Rock Resources, LLC

Qualification Statement and Certification

FOSSIL ROCK RESOURCES, LLC

Pursuant to the regulatory requirements outlined in 43 C.F.R. § 3453 *et seq.* (2015) and 43 C.F.R. § 3472 *et seq.* (2015), Fossil Rock Resources, LLC, a Delaware limited liability company makes the following statements:

1. Fossil Rock Resources, LLC is (i) duly organized in the State of Delaware; (ii) authorized to do business in the State of Utah; and (iii) authorized to hold leases or licenses to mine.[1]

2. The following people comprise the officers authorized to act on behalf of the corporation:

John Siegel –Executive Chairman
Johannes (Manie) Dryer – Chief Executive Officer
James Wolff – Chief Financial Officer
Gene DiClaudio – Chief Operating Officer
Brian Settles – Senior Vice President, Secretary and General Counsel
Grant Quasha – Chief Commercial Officer

None of Fossil Rock Resources, LLC's voting stock, units, or membership interests is owned by aliens or people who reside outside of the United States.

3. Fossil Rock Resources, LLC has not held any other federal coal lease for more than 10 years that is not producing coal in commercial quantities.

4. Fossil Rock Resources, LLC is the sole party in interest in this application.

5. Fossil Rock Resources, LLC has acquired, through the execution of an Assumption Agreement and a Special Warranty Deed (Recorded June 5, 2015 Entry No. 410236 in Emery County, Utah),[2] the following federal coal leases:

- UTU-082996
- UTU-49332
- UTU-64375

These three lease files are in good standing.

6. These three leases comprise all federal lands within a Logical Mining Unit (UTU-73339). Fossil Rock Resources, LLC will be the sole operator of this LMU and hereby acknowledges that it will be subject to all existing stipulations and obligations under the LMU.

---

[1] A Certificate of Good Standing from the Delaware Secretary of State and Certificate of Existence from the Utah State Department of Commerce, Division of Corporations and Commercial Code are included in this Lease Transfer Application.

[2] These two instruments of transfer are included in this Lease Transfer Application.

7. Fossil Rock Resources, LLC, as transferee, is not controlled by and is not under common control with PacifiCorp or Interwest Mining Company, as transferor.

8. Acreage Limitation. Fossil Rock Resources, LLC is a wholly-owned subsidiary of Bowie Resource Partners, LLC. Bowie Resource Partners, LLC holds, owns, or controls, indirectly through its subsidiaries, the following federal coal leases and federal acreage for coal production:

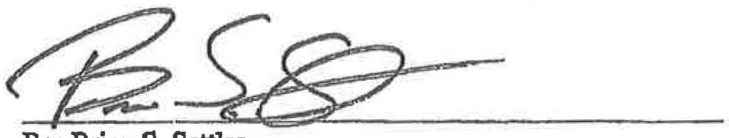
UTAH			COLORADO	
Lease Number	Acreage		Lease Number	Acreage
U-69635	2,177.52		COD-036955	440.00
U-07064-027821	2,881.15		COC-037210	5,274.66
UTSL-051279	1,548.31		COC-053356	521.78
U-50722	440.00		COC-061209	4,168.95
UTU-0147570	1,532.70		COC-027432	1,014.03
UTU-0020305	279.40		COC-025079	310.51
UTU-0142235	520.00		COC-075916	1,790.20
UTU-044076	2,489.32		*Total Colorado*	*13,520.13*
UTU-073120	557.22			
UTU-067939	4,832.04			
SL-062583	3,079.83			
UTU-28297	716.51			
UTU-062453	480.00			
UTU-47080	1,953.73			
UTU-63214	8,826.34			
UTU-0149084	240.00			
UTU-76195	5,694.66			
UTU-082996†	80.00		*Total Federal Coal Lease Acreage United States*	*52,488.86*
UTU-49332†	380.00			
UTU-64375†	260.00			
Total Utah	*38,968.73*			
† indicates subject to lease transfer				

PENDING LEASES BY APPLICATION	
UTU-77114	2,692.16
UTU-84102	5,636.79
Total Utah pending lease acreage	*8,328.95*

Fossil Rock Resources, LLC hereby certifies that the above information is correct, that it is qualified to hold the three new federal coal leases, and that it is in compliance with the Mineral Leasing Act and the requirements set forth in 43 C.F.R. Group 3400 (2015).

DATED as of June 1, 2015.

Fossil Rock Resources, LLC
a Delaware limited liability company



By: Brian S. Settles
Its: Senior Vice President, Secretary and General Counsel

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

COAL LEASE READJUSTMENT

Serial Number U-082996

Lease Date July 1, 1962

Part I. LEASE RIGHTS GRANTED

This lease, entered into by and between the United States of America, hereinafter called the lessor, through the Bureau of Land Management, and

Mountain Coal Company
555 Seventeenth Street
Denver, CO 80202

hereinafter called lessee, is readjusted, effective July 1, 1992, for a period of 10 years and for so long thereafter as coal is produced in commercial quantities from the leased lands, subject to readjustment of lease terms at the end of each 10 year lease period.

Sec. 1. This lease readjustment is subject to the terms and provisions of the:

[X] Mineral Lands Leasing Act of 1920, Act of February 25, 1920, as amended, 41 Stat. 437, 30 U.S.C. 181-287, hereinafter referred to as the Act;

[ ] Mineral Leasing Act for Acquired Lands, Act of August 7, 1947, 61 Stat. 913, 30 U.S.C. 351-359;

and to the regulations and formal orders of the Secretary of the Interior which are now or hereafter in force, when not inconsistent with the express and specific provisions herein.

Sec. 2. Lessor, in consideration of any rents and royalties to be paid, and the conditions and covenants to be observed as herein set forth, hereby grants to lessee the exclusive right and privilege to drill for, mine, extract, remove or otherwise process and dispose of the coal deposits in, upon, or under the following described lands:

T. 17 S., R. 6 E., SLM, Utah
Sec. 25, E½E½SW¼, SW¼SE¼.

containing 80.00 acres, more or less, together with the right to construct such works, buildings, plants, structures, equipment and appliances and right to use such on-lease rights-of-way which may be necessary and convenient in the exercise of the rights and privileges granted, subject the conditions herein provided.

PART II. TERMS AND C( )ITIONS

Sec. 1. (a) RENTAL RATE. Lessee shall pay lessor rental annually and in advance for each acre or fraction thereof during the continuance of the lease at the rate of $3.00 for each lease year.

(b) RENTAL CREDITS. Rental shall not be credited against either production or advance royalties for any year.

Sec. 2. (a) PRODUCTION ROYALTIES. The royalty shall be 12½ percent of the value of coal produced by strip or auger mining methods and 8 percent of the value of coal produced by underground mining methods. Royalties are due to lessor the final day of the months succeeding the calendar month in which the royalty obligation accrues.

(b) ADVANCE ROYALTIES. Upon request by the lessee, the authorized officer may accept for a total of not more than 10 years, the payment of advance royalties in lieu of continued operation, consistent with the regulations. The advance royalty shall be based on a percent of the value of a minimum number of tons determined in the manner established by the advance royalty regulations in effect at the time the lessee requests approval to pay advance royalties in lieu of continued operation.

Sec. 3. BONDS. Lessee shall maintain in the proper office a lease bond in the amount of $5,000. The authorized officer may require an adjustment in the amount of the bond to reflect changed conditions.

Sec. 4. DILIGENCE. This lease is subject to the conditions of diligent development and continued operation, except that these conditions are excused when operations under the lease are interrupted by strikes, the elements, or casualties not attributable to the lessee. The lessor, in the public interest, may suspend the condition of continued operation upon payment of advance royalties in accordance with the regulations in existence at the time of the suspension. Lessee's failure to produce coal in commercial quantities at the end of 10 years shall terminate the lease. If not submitted already, lessee shall submit an operation and reclamation plan pursuant to Section 7 of the Act not later than 3 years after the effective date of this lease readjustment.

The lessor reserves the power to assent to or order the suspension of the terms and conditions of this lease in accordance with, inter alia, Section 39 of the Mineral Leasing Act, 30 U.S.C. 209.

Sec. 5. LOGICAL MINING UNIT (LMU). Either upon approval by the lessor of the lessee's application or at the direction of the lessor, this lease shall become an LMU or part of an LMU, subject to the provisions set forth in the regulations.

The stipulations established in an LMU approval in effect at the time of LMU approval will supersede the relevant inconsistent terms of this lease so long as the lease remains committed to the LMU. If the LMU of which this lease is a part is dissolved, the lease shall then be subject to the lease terms which would have been applied if the lease had not been included in an LMU.

Sec. 6. DOCUMENTS, EVIDENCE AND INSPECTION. At such times and in such form as lessor may prescribe, lessee shall furnish detailed statements showing the amounts and quality of all products removed and sold from the lease, the proceeds therefrom, and the amount used for production purposes or unavoidably lost.

Lessee shall keep open at all times for the inspection of any duly authorized officer of lessor, the leased premises and all surface and underground improvements, works, machinery, ore stockpiles, equipment, and all books, accounts, maps, and records relative to operations, surveys, or investigations on or under the leased lands.

Lessee shall allow lessor access to and copying of documents reasonably necessary to verify lessee compliance with terms and conditions of the lease.

While this lease remains in effect, information obtained under this section shall be closed to inspection by the public in accordance with the Freedom of Information Act (5 U.S.C. 552).

Sec. 7. DAMAGES TO PROPERTY AND CONDUCT OF OPERATIONS. Lessee shall comply at its own expense with all reasonable orders of the Secretary, respecting diligent operations, prevention of waste, and protection of other resources.

Lessee shall not conduct exploration operations, other than casual use, without an approved exploration plan. All exploration plans prior to the commencement of mining operations within an approved mining permit area shall be submitted to the authorized officer.

Lessee shall carry on all operations in accordance with approved methods and practices as provided in the operating regulations, having due regard for the prevention of injury to life, health, or property, and prevention of waste, damage or degradation to any land, air, water, cultural, biological, visual, and other resources, including mineral deposits and formations of mineral deposits not leased hereunder, and to other land uses or users. Lessee shall take measures deemed necessary by lessor to accomplish the intent of this lease term. Such measures may include, but are not limited to, modification to proposed siting or design of facilities, timing of operations, and specification of interim and final reclamation procedures. Lessor reserves to itself the right to lease, sell, or otherwise dispose of the surface or other mineral deposits in the lands and the right to continue existing uses and to authorize future uses upon or in the leased lands, including issuing leases for mineral deposits, not covered hereunder and approving easements or rights-of-way. Lessor shall condition such uses to prevent unnecessary or unreasonable interference with rights of lessee as may be consistent with concepts of multiple use and multiple mineral development.

Sec. 8. PROTECTION OF DIVERSE INTERESTS, AND EQUAL OPPORTUNITY. Lessee shall: pay when due all taxes legally assessed and levied under the laws of the State or the United States; accord all employees complete freedom of purchase; pay all wages at least twice each month in lawful money of the United States; maintain a safe working environment in accordance with standard industry practices; restrict the workday to not more than 8 hours in any one day for underground workers, except in emergencies; and take measures necessary to protect the health and safety of the public. No person under the age of 16 years shall be employed in any mine below the surface. To the extent that laws of the State in which the lands are situated are more restrictive than the provisions in this paragraph, then the State laws apply.

Lessee will comply with all provisions of Executive Order No. 11246 of September 24, 1965, as amended, and the rules, regulations, and relevant orders of the Secretary of Labor.

Neither lessee nor lessee's subcontractors shall maintain segregated facilities.

Sec. 9(a) TRANSFERS

[X] This lease may be transferred in whole or in part to any person, association, or corporation qualified to hold such lease interest.

[ ] This lease may be transferred in whole or in part to another public body, or to a person who will mine the coal on behalf of, and for the use of, the public body or to a person who for the limited purpose of creating a security interest in favor of a lender agrees to be obligated to mine the coal on behalf of the public body.

[ ] This lease may only be transferred in whole or in pat to another small business qualified under 13 CFR 121.

Transfers of record title, working or royalty interest must be approved in accordance with the regulations.

(b) RELINQUISHMENT. The lessee may relinquish in writing at any time all rights under this lease or any portion thereof as provided in the regulations. Upon lessor's acceptance of the relinquishment, lessee shall be relieved of all future obligations under the lease or the relinquished portion thereof, whichever is applicable.

Sec. 10. DELIVERY OF PREMISES, REMOVAL OF MACHINERY, EQUIPMENT, ETC. At such time as all portions of this lease are returned to lessor, lessee shall deliver up to lessor the land leased, underground timbering, and such other supports and structures necessary for the preservation of the mine workings on the leased premises or deposits and place all workings in condition for suspension or abandonment. Within 180 days thereof, lessee shall remove from the premises all other structures, machinery, equipment, tools, and materials that it elects to or as required by t. authorized officer. Any such structures, machinery, equipment, tools, and materials remaining on the leased lands beyond 180 days, or approved extension thereof, shall become the property of the lessor, but lessee shall either remove any or all such property or shall continue to be liable for the cost of removal and disposal in the amount actually incurred by the lessor. If the surface is owned by third parties, lessor shall waive the requirement for removal, provided the third parties do not object to such waiver. Lessee shall, prior to the termination of bond liability or at any other time when required and in accordance with all applicable laws and regulations, reclaim all lands the surface of which has been disturbed, dispose of all debris or solid waste, repair the offsite and onsite damage caused by lessee's activity or activities incidental thereto, and reclaim access roads or trails.

Sec. 11. PROCEEDINGS IN CASE OF DEFAULT. If lessee fails to comply with applicable laws, existing regulations, or the terms, conditions and stipulations of this lease, and the noncompliance continues for 30 days after written notice thereof, this lease shall be subject to cancellation by the lessor only by judicial proceedings. This provision shall not be construed to prevent the exercise by lessor of any other legal and equitable remedy, including waiver of the default. Any such remedy or waiver shall not prevent later cancellation for the same default occurring at any other time.

Sec. 12. HEIRS AND SUCCESSORS - IN-INTEREST. Each obligation of this lease shall extend to and be binding upon, and every benefit hereof shall inure to, the heirs, executors, administrators, successors, or assigns of the respective parties hereto.

Sec. 13. INDEMNIFICATION. Lessee shall indemnify and hold harmless the United States from any and all claims arising out of the lessee's activities and operations under this lease.

Sec. 14. SPECIAL STATUTES. This lease is subject to the Federal Water Pollution Control Act (33 U.S.C. 1151 - 1175); the Clean Air Act (42 U.S.C. 1857 et seq.), and to all other applicable laws pertaining to exploration activities, mining operations and reclamation, including the Surface Mining Control and Reclamation Act of 1977 (30 U.S.C. 1201 et seq.)

Sec. 15. SPECIAL STIPULATIONS.

1. The Regulatory Authority shall mean the State Regulatory Authority pursuant to a cooperative agreement approved under 30 CFR Part 745 or in the absence of a cooperative agreement, Office of Surface Mining. The Authorized Officer shall mean the State Director, Bureau of Land Management. The Authorized Officer of the Surface Management Agency shall mean the Forest Supervisor, Forest Service. Surface Management Agency for private surface is the Bureau of Land Management. For adjoining private lands with Federal minerals and which primarily involve National Forest Service issues, the Forest Service will have the lead for environmental analysis and, when necessary, documentation in an environmental assessment or environmental impact statement.

2. The Authorized Officers of the Bureau of Land Management, Office of Surface Mining (Regulatory Authority), and the Surface Management Agency (Forest Service) respectively, shall coordinate, as practical, regulation of mining operations and associated activities on the lease area.

3. In accordance with Sec. 523(b) of the "Surface Mining Control and Reclamation Act of 1977," surface mining and reclamation operations conducted on this lease are to conform with the requirements of this Act and are subject to compliance with Office of Surface Mining Regulations, or as applicable, a Utah program equivalent approved under cooperative agreement in accordance with Sec. 523(c). The United States Government does not warrant that the entire tract will be susceptible to mining.

4. Federal Regulations 43 CFR 3400 pertaining to Coal Management make provisions for the Surface Management Agency, the surface of which is under the jurisdiction of any Federal agency other than the Department of Interior, to consent to leasing and to prescribe conditions to insure the use and protection of the lands. All or part of this lease contain lands the surface of which are managed by the United States Department of Agriculture, Forest Service Manti-LaSal National Forest.

The following stipulations pertain to the lessee responsibility for mining operations on the lease area and on adjacent areas as may be specifically designated on National Forest System lands.

5. Before undertaking activities that may disturb the surface of previously undisturbed leased lands, the lessee may be required to conduct a cultural resource inventory and a paleontological appraisal of the areas to be disturbed. These studies shall be conducted by qualified professional cultural resource specialists or qualified paleontologists, as appropriate, and a report prepared itemizing the findings. A plan will then be submitted making recommendations for the protection of, or measures to be taken to mitigate impacts for identified cultural or paleontological resources.

If cultural resources or paleontological remains (fossils) of significant scientific interest are discovered during operations under this lease, the lessee prior to disturbance shall, immediately bring them to the attention of the appropriate authorities. Paleontological remains of significant scientific interest do not include leaves, ferns, or dinosaur tracks commonly encountered during underground mining operations.

The cost of conducting the inventory, preparing reports, and carrying out mitigating measures shall be borne by the lessee.

6. If there is reason to believe that threatened or endangered (T&E) species of plants or animals, or migratory bird species of high Federal interest occur in the area the lessee shall be required to conduct an intensive field inventory of the area to be disturbed and/or impacted. The inventory shall be conducted by a qualified specialist and a report of findings will be prepared. A plan will be prepared making recommendations for the protection of these species or action necessary to mitigate the disturbance.

The cost of conducting the inventory, preparing reports, and carrying out mitigating measures shall be borne by the lessee.

7. The lessee shall be required to perform a study to secure adequate baseline data to quantify the existing surface resources on and adjacent to the lease area. Existing data may be used if such data is adequate for the intended purposes. The study shall be adequate to locate, quantify, and demonstrate the inter-relationship of the geology, topography, surface hydrology, vegetation, and wildlife. Baseline data will be established so that future programs of observation can be incorporated at regular intervals for comparison.

8. Powerlines used in conjunction with the mining of coal from this lease shall be constructed so as to provide adequate protection for raptores and other large birds. When feasible, powerlines will be locate at least 100 yards from public roads.

9. Consideration will be given to site selection to reduce adverse visual impacts. Where alternative sites are available, and each alternative is technically feasible, the alternative involving the least damage to the scenery and other resources shall be selected. Permanent structures and facilities will be designed, and screening techniques employed, to reduce visual impacts, and where possible achieve a final landscape compatible with the natural surroundings. The creation of unusual, objectionable, or unnatural land forms and vegetative landscape features will be avoided.

10. The lessee shall be required to establish a monitoring system to locate, measure, and quantify the progressive and final effects of underground mining activities on the topographic surface, underground and surface hydrology and vegetation. The monitoring system shall utilize techniques which will provide a continuing record of change over time and analytical method for location and measurement of a number of points over the lease area. The monitoring shall incorporate and be an extension of the baseline data.

11. The lessee shall provide for the suppression and control of fugitive dust on haul roads and at coal handling and storage facilities. On Forest Development Roads (FDR), lessees may perform their share of road maintenance by a commensurate share agreement if a significant degree of traffic is generated that is not related to their activities.

12. Except at specifically approved locations, underground mining operations shall be conducted in such a manner so as to prevent surface subsidence that would: (1) cause the creation of hazardous conditions such as potential escarpment failure and landslides, (2) cause damage to existing surface structures, and (3) damage or alter the flow of perennial streams. The lessee shall provide specific measures for the protection of escarpments, and determine corrective measures to assure that hazardous conditions are not created.

13. In order to avoid surface disturbance on steep canyon slopes and to preclude the need for surface access, all surface breakouts for ventilation tunnels shall be constructed from inside the mine, except at specifically approved locations.

14. The coal contained within, and authorized for mining under this lease, shall be extracted only by underground mining methods.

15. Existing Forest Service owned or permitted surface improvements will need to be protected, restored, or replaced to provide for the continuance of current land uses.

16. Support facilities, structures, equipment, and similar developments will be removed from the lease area within 2 years after the final termination of use of such facilities. This provision shall apply unless the requirement of Section 10 of the lease form is applicable. Disturbed areas and those areas previously occupied by such facilities will be stabilized and rehabilitated, drainages reestablished, and the areas returned to a premining land use.

17. The lessees at the conclusion of the mining operations, or at other times as surface disturbance related to mining may occur, will replace all damaged, disturbed, or displaced corner monuments (section corners, quarter corners, etc.) their accessories and appendages (witness trees, bearing trees, etc), or return them to their original condition and location, or at other locations that meet the requirements of the rectangular surveying system. This work shall be conducted at the expense of the lessee, by a professional land surveyor registered in the State of Utah and to the standards and guidelines found in the manual of surveying instruction, U.S. Department of Interior.

18. The lessee at his expense will be responsible to replace any surface water identified for protection, that may be lost or adversely affected by mining operations, with water from an alternate source in sufficient quantity and quality to maintain existing riparian habitat, fishery habitat, livestock and wildlife use, or other land uses.

19. The lessee shall assure that mine facilities, parking areas, and equipment do not encroach on the Cottonwood Canyon Road nor interfere with traffic on this road.

20. Reasonable stock driveway access must be provided and maintained to the Trail Mountain cattle and horse allotment.

21. The Cottonwood Canyon road shall be maintained to insure suitable forest access as well as coal haulage. Because of the narrow confines of Cottonwood Canyon, all future and existing facilities such as power, telephone, water, and sewer lines, coal conveyers, and similar facilities, hall be constructed and/or maintained by the lessee to prevent interference with the Cottonwood Canyon road or access provided thereby.

22. The lessee must comply with all the rules and regulations of the Secretary of Agriculture set forth at Title 36, Chapter II, of the Code of Federal Regulations governing the use and management of the National Forest System (NFS) when not inconsistent with the rights granted by the Secretary of the Interior in the lease. The Secretary of Agriculture's rules and regulations must be complied with for (1)all use and occupancy of the NFS prior to approval of a permit/operation plan by the Secretary of Interior, (2) uses of all existing improvements, such as Forest Development Roads, within and outside the area licensed, permitted or leased by the Secretary of Interior, and (3) use and occupancy of the NFS not authorized by a permit/operation plan approved by the Secretary of the Interior.

All matters related to this stipulation are to be addressed to:

Forest Supervisor
Manti-LaSal National Forest
599 West Price River Drive
Price, Utah 84501

Telephone No.: 801-637-2817

ıo is the authorized representative of the Secretary of Agriculture.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SERIAL NUMBER U-082096
DATE OF LEASE July 1, 1962

COAL LEASE READJUSTMENT

This lease between the United States of America (the lessor) through the Bureau of Land Management (BLM) and

Trail Mountain Coal Company
P. O. Box 356
Orangeville, Utah 84537

(lessee) is readjusted, effective as of July 1, 1983.

Sec. 1. STATUTES AND REGULATIONS. This lease readjustment is subject to the terms and provisions of the Mineral Leasing Act of February 25, 1920, as amended (41 Stat. 437, 30 U.S.C. §§ 181-263), hereinafter referred to as the Act, and of the Surface Mining Control and Reclamation Act of 1977. This lease is also subject to all regulations of the Secretary of the Interior (including, but not limited to, 30 CFR Part 211 and 43 CFR Group 3000) which are now or hereafter in force and which are made a part hereof. No amendment to the regulations made subsequent to the effective date hereof shall alter the rental and production royalty requirements in sections 5 and 6 of this lease until the next readjustment of this lease.

Sec. 2. RIGHTS OF LESSEE. The lessor, in consideration of the rents and royalty and other conditions hereinafter set forth, hereby grants to the lessee the exclusive right and privilege to mine and dispose of all coal in the following-described tracts (leased lands) situated in the State of Utah:

T. 17 S., R. 6 E., SLM, Utah
Sec. 25, E½E½SW¼, SW¼SE¼.

containing 80.00 acres, more or less, together with the right to construct all work, buildings, structures, equipment, and appliances which may be necessary and convenient for the mining and preparation of the coal for market, and subject to the conditions herein provided to use so much of the surface as may reasonably be required in the exercise of the rights and privileges herein granted for so long as this lease remains in full force and effect under any provisions of the law and the applicable regulations thereunder.

Sec. 3 DILIGENT DEVELOPMENT AND CONTINUED OPERATION. The lessee shall engage in the diligent development of the coal resources subject to the lease. After diligent development is achieved, the lessee shall maintain continued operation of the mine or mines on the leased lands. The terms diligent development and continued operation are defined in the applicable regulations in Titles 30 and 43 of the Code of Federal Regulations.

Sec. 4. BOND. The lessee shall file with the appropriate BLM office a lease bond in the amount of $5,000 for the use and benefit of the United States, to insure payment of rentals and royalties and to insure compliance with all other terms of this lease, the regulations and the Act. An increase in the amount of the bond may be required by the lessor at any time during the life of the lease to reflect changed conditions.

Sec. 5. RENTAL. An annual rental of $3.00 for each acre or fraction thereof shall be paid in advance on or before the anniversary date of this lease. Rentals under this lease shall be payable for each and every year during the continuance of the lease. Rentals paid for any lease year commencing prior to the effective date of this readjustment shall be credited against royalties for that year. Rentals due and payable for any lease year commencing on or after the effective date of this readjustment may not be credited against royalties (43 CFR 3473.3-1).

Sec. 6. PRODUCTION ROYALTY. The lessee shall pay a production royalty of 12½ percent of the value of coal produced by strip or auger mining methods and 8 percent of the value of coal produced by underground mining methods. The value of coal shall be determined as set forth in the regulations. Production royalties paid for a calendar month shall be reduced by the amount of any advance royalties paid under this lease to the extent that such advance royalties have not been used to reduce production royalties in a previous month. Production royalties shall be payable the final day of the month succeeding the calendar month in which coal is mined.

Sec. 7. ADVANCE ROYALTY. Upon request by the lessee the Mining Supervisor may accept, for a total of not more than ten years, the payment of advance royalties in lieu of the condition of continued operation for any particular year. Any payment of advance royalties in lieu of continued operation shall be pursuant to an agreement, signed by the lessee and the Mining Supervisor, which shall be made a part of this lease. The agreement shall include a schedule of payments and shall be subject to the advance royalty conditions set forth in the regulations. The advance royalty shall be based on a percent of the value of a minimum number of tons which shall be determined on a schedule sufficient to exhaust the leased reserves in 40 years from the date of approval of the mining and reclamation plans or from June 1, 1976, depending on effective date of the lease.

Sec. 8. METHOD OF PAYMENTS. The lessee shall make rental payments to the appropriate BLM office until either production royalties or advance royalties become payable. Thereafter, all rentals, production royalties and advance royalties shall be paid to the Mining Supervisor. All remittances to BLM shall be made payable to the Bureau of Land Management; those to the Minerals Management Service shall be made payable to the Minerals Management Service.

Sec. 9. EXPLORATION PLAN. As specified in the regulations, the lessee shall submit an exploration plan before conducting any exploration on the leased lands, except casual use, between the effective date of this lease and the date of approval of the mining plan. The lessee shall not commence exploration without an approved exploration plan. Thereafter, the lessee shall conduct all exploration in accordance with the approved exploration plan.

Sec. 10. MINING PLAN. In accordance with the regulations in 30 CFR 211, 700, and 800, if the Lessee has not yet submitted a mining plan, he must do so within three years after the effective date of this readjustment. Unless or until the mining plan has been approved, the Lessee shall not conduct any operations on the leased lands except casual use or exploration, if an exploration plan has been approved. Thereafter, the Lessee shall conduct all operations in accordance with the approved mining plan.

Sec. 11. LOGICAL MINING UNITS (LMU). This lease is automatically considered to be an LMU and may be combined with other land, including other Federal leaseholds and non-Federal interests in coal, to form a larger LMU. The mining plan for such enlarged LMU must include a production schedule that provides for the mining of all the LMU reserves, both Federal and non-Federal, in a period of not more than 40 years from the date of the approval of the plan. The definition of LMU and LMU reserves and other conditions applicable to them are set forth in the regulations (43 CFR 3400.0-5).

Sec. 12. OPERATIONS ON LEASED LANDS. In accordance with the conditions of this lease, the exploration and mining plans, the regulations and the Act, the lessee shall exercise reasonable diligence, skill and care in all operations on the leased lands. The lessee's obligations shall include, but not be limited to the following:

(a) The lessee shall conduct all operations on the leased lands so as to avoid injury to life, health, or property.

(b) The lessee shall conduct operations in such a manner as may be needed to avoid or, where avoidance is impracticable, to minimize and where practicable, to repair damage to: (1) any forage and timber growth on Federal lands; (2) crops, including forage and timber, or improvements of a surface owner; or (3) improvements, whether owned by the United States or by its permittees, licensees, or lessees. The lessor must approve the steps to be taken and the restoration to be made in the event of the occurrence of damage described in this subsection.

(c) The lessee shall minimize to the maximum extent possible wasting of the mineral deposits and other resources, including, but not limited to, surface resources which may be found in, upon, or under such lands.

Sec. 13. AUTHORIZATION OF OTHER USES AND DISPOSITION OF LEASED LANDS.

(a) The lessor reserves the right to authorize other uses of the leased lands by regulation or by issuing, in addition to this lease, leases, licenses, permits, easements or rights-of-way, including leases for the development of minerals other than coal under the Act. The lessor may authorize any other uses of the leased lands that do not unreasonably interfere with the exploration and mining operations of the lessee, and the lessee shall make all reasonable efforts to avoid interference with such authorized uses.

(b) The lessor reserves the right (1) to sell or otherwise dispose of the surface of the leased lands under existing law or laws hereafter enacted insofar as said surface is not necessary for the use of the lessee in the extraction and removal of the coal therein, or (2) to dispose of any resource in such lands if such disposal will not unreasonably interfere with the exploration and mining operations of the lessee.

(c) If the leased lands have been or shall hereafter be disposed of under laws reserving to the United State the deposits of coal therein, the lessee shall comply with all conditions as are or may hereafter be provided by the laws and regulations reserving such coal.

Sec. 14. EQUAL OPPORTUNITY CLAUSE. The lessee will comply with all provisions of Executive Order No. 11246 of September 24, 1965, as amended, and of the rules, regulations and relevant orders of the Secretary of Labor.

Sec. 15. CERTIFICATION OF NONSEGREGATED FACILITIES. By entering into this lease, the lessee certifies that he does not and will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not and will not permit his employees to perform their services at any location under his control where segregated facilities are maintained. The lessee agrees that a breach of this certification is a violation of the Equal Opportunity clause of this lease. As used in this certification, the term "segregated facilities" means, but is not limited to, any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise. Lessee further agrees that (except where the lessee has obtained identical certifications from proposed contractors and subcontractors for specific time periods) lessee will obtain identical certifications from proposed contractors and subcontractors prior to award of contracts or subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity Clause; that lessee will retain such certifications in lessee's files; and that lessee will

forward the following notice to such proposed contractors and subcontractors (except where proposed contractor or subcontractor has submitted identical certifications for specific time periods). Notice is to be provided by lessee to prospective contractors and subcontractors of requirement for certification of nonsegregated facilities. A Certification of Nonsegregated Facilities, as required by the May 9, 1967 Order (32 F. R. 7439, May 19, 1967) on Elimination of Segregated Facilities, by the Secretary of Labor, must be submitted prior to the award of a contract exceeding $10,000 which is not exempt from the provisions of the Equal Opportunity Clause. Certification may be submitted either for each contract and subcontract or for all contracts and subcontracts during a period (i.e., quarterly, semiannually, or annually).

Sec. 16. EMPLOYMENT PRACTICES. The lessee shall pay all wages due persons employed on the leased lands at least twice each month in lawful money of the United States. The lessee shall grant all miners and other employees complete freedom to purchase goods and services of their own choice. The lessee shall restrict the workday to not more than 8 hours in any one day for underground workers, except in case of emergency. The lessee shall employ no person under the age of 16 years in any mine below the surface. If the laws of the State in which the mine is situated provides for a minimum age restriction for mining below the surface, other than the requirements of Federal Law, the laws of the State shall prevail.

Sec. 17. MONOPOLY AND FAIR PRACTICES. The lessor reserves full authority to promulgate and enforce orders and regulations under the provisions of Sections 30 and 32 of the Act (30 U.S.C. §§ 187 and 189) necessary to insure that any sale of the production from the leased lands to the United States or to the public is at reasonable prices, to prevent monopoly, and to safeguard the public welfare, and such regulations shall upon promulgation be binding upon the lessee.

Sec. 18. ASSIGNMENT. This lease may be assigned, upon approval of the authorized officer in accordance with the provisions of 43 CFR Subpart 3453. An assignment will become effective on the first day of the month following approval by the authorized officer or, if the assignee requests, the first day of the month of approval.

Sec. 19. RELINQUISHMENT OF LEASE. The lessee may file a request to relinquish all or any legal subdivision of this lease. The request shall be filed in duplicate with the authorized officer. The authorized officer shall approve the relinquishment if he determines that the lessee has complied with the requirements of the lease, the exploration and mining plans, the regulations and the Act. Upon approval, the relinquishment shall be effective as of the date it is filed, subject to the continued obligation of the lessee and his surety to pay all accrued rentals and royalties and to comply with all other requirements of the lease, the regulations and the Act.

Sec. 20. NONCOMPLIANCE. Any failure to comply with the conditions of this lease, the exploration and mining plans, the regulations, or the Act shall be dealt with in accordance with the procedures set forth in the regulations.

Sec. 21. WAIVER OF CONDITIONS. The lessor reserves the right to waive any breach of the conditions contained in this lease, except the breach of such conditions as are required by the Act, but any such waiver shall extend only to the particular breach so waived and shall not limit the rights of the lessor with respect to any future breach; nor shall the waiver of a particular breach prevent cancellation of this lease for any other cause or for the same cause occurring at another time.

Sec. 22. READJUSTMENT OF TERMS AND CONDITIONS. (a) This lease is subject to reasonable readjustment of any conditions of the lease, including royalty rates, at the end of this readjustment period on July 1, 1992, and subject to readjustment at the end of each 10 year period thereafter. The lessor shall notify the lessee whether he intends to readjust conditions and, if he intends to readjust, the nature of the readjustments. The lessor shall give notice 120 days before the end of this readjustment period as to whether the lease terms will be readjusted. Unless the lessee, within 60 days after receipt of the proposed readjusted conditions files with the lessor an objection or relinquishes the lease as of the effective date of the readjustment, the lessee shall be deemed conclusively to have agreed to such conditions.

(b) If the lessee files objections to the proposed readjusted conditions with the lessor, and agreement cannot be reached between the lessor and the lessee within a period of 60 days after the filing of the objections, the lease may be terminated by either party upon giving 30 days' notice to the other party; however, the lessor's right to terminate the lease shall be suspended by the lessee's filing of a notice of appeal pursuant to section 29 of this lease, and if the lessee is ultimately successful in his appeal, the lease shall continue without the change in the provisions, the imposition of which, the lessee appealed. If the lessee is unsuccessful in his appeal and within 30 days after receipt of the decision on appeal notifies the lessor that he accepts the decision rendered upon such appeal, then the lease shall continue as amended by the decision.

(c) If the lessee files objections to the proposed readjusted conditions, the existing conditions, except those concerning royalties, shall remain in effect until there has been an agreement between the lessor and the lessee on the new conditions to be incorporated in the lease, or until the lease is terminated; however; the readjusted royalty provisions shall be effective until there is either agreement between the lessor and the lessee or until the lease is terminated. If the readjusted royalty provisions are subsequently rescinded or amended; the lessee shall be permitted to credit any excess royalty payments against royalties subsequently due to the lessor.

Sec. 23. DELIVERY OF PREMISES. Upon termination of this lease for any reason, or relinquishment of a part of this lease, the lessee shall deliver to the lessor in good order and condition all or the appropriate part of the leased lands. Delivery of the leased lands shall include underground timbering and such other supports and structures as are necessary for the preservation of the mine or deposit, and shall be in accordance with all other applicable provisions of the regulations for the completion of operations and abandonment.

Sec. 24. PROPRIETARY INFORMATION. Geological and geophysical data and information, including maps, trade secrets, and commercial and financial information which the lessor obtains from the lessee shall be treated in accordance with 43 CFR Part 2 and other applicable regulations.

Sec. 25. LESSEE'S LIABILITY TO LESSOR.

(a) The lessee shall be liable to the United States for any damage suffered by the United States in any way arising from or connected with the lessee's activities and operations under this lease, except where damage is caused by employees of the United States acting within the scope of their authority.

(b) The lessee shall indemnify and hold harmless the United States from any and all claims arising from or connected with the lessee's activities and operations under this lease.

(c) In any case where liability without fault is imposed on the lessee pursuant to this section, and the damages involved were caused by the action of a third party, the rules of subrogation shall apply in accordance with the law of the jurisdiction where the damages occurred.

Sec. 26. INSPECTIONS AND INVESTIGATIONS.

(a) All books and records maintained by the lessee showing information required by this lease or regulations must be kept current and in such manner that the books and records can be readily checked, upon request, by the Mining Supervisor or his representative at the place where they are customarily maintained.

(b) The lessee shall permit any duly authorized officer or representative of the lessor at any reasonable time (1) to inspect or investigate the leased lands and all surface and underground improvements, works, machinery, and equipment, and all books and records pertaining to the lessee's obligations to the lessor under this lease and regulations and (2) copy, and make extracts from any such books and records.

Sec. 27. UNLAWFUL INTEREST. No member of, or Delegate to, Congress, or Resident Commissioner, after his election or appointment, either before or after he has qualified and during his continuance in office, and no officer, or employee of the Department of the Interior, except as provided in 43 CFR 7.4 (a)(3), shall hold any share or part in this lease or derive any benefit therefrom. The provisions of Section 3741 of the Revised Statutes, as amended, 41 U.S.C. Section 22, and the Act of June 25, 1948, (62 Stat. 702, as amended, 18 U.S.C. §§ 431-433), relating to contracts, enter into and form a part of this lease insofar as they may be applicable.

Sec. 28. APPEALS. The lessee shall have the right to appeal (a) under 43 CFR 3000.4 from an action or decision of any official of the Bureau of Land Management (b) under 30 CFR Part 290 from an action, order, or decision of any official of the Minerals Management Service, or (c) under applicable regulations from any action or decision of any other official of the Department of the Interior arising in connection with this lease, including any action or decision pursuant to Section 23 of this lease with respect to the readjustment of conditions.

Sec. 29. SPECIAL STATUTES. This lease is also subject to the provisions of the Federal Water Pollution Control Act (33 U.S.C. 1151-1175) and the Clean Air Act (42 U.S.C. 1857).

Sec. 30. SPECIAL STIPULATIONS.

The District Mining Supervisor shall mean the authorized representative of the Minerals Management Service and the Regional Director shall mean the authorized representative of the Office of Surface Mining. The Authorized Officer shall mean the State Director, Bureau of Land Management. The Authorized Officer of the Surface Management Agency shall mean the Forest Supervisor, Forest Service. The surface management agency for private surface shall be the Forest Service.

1. The Lessee will be responsible to comply with applicable Federal, State, and local laws and regulations.

2. In accordance with Sec. 523(b) of the "Surface Mining Control and Reclamation Act of 1977," surface mining and reclamation operations conducted on this lease are to conform with the requirements of this Act and are subject to compliance with Office of Surface Mining Regulations, or as applicable, a Utah program equivalent approved under cooperative agreement in accordance with Sec. 523(c) and final determination of suitability for mining. The United States Government does not warrant that the entire tract will be susceptible to mining.

3. The coal contained within the lease area and authorized for mining under this lease shall be extracted only by underground mining methods.

4. All support facilities, structures, equipment, and similar developments will be removed from the lease area within two years after the final termination of use of such facilities. All disturbed areas and those areas occupied by such facilities will be rehabilitated in accordance with an approved reclamation plan, 30 CFR 211 and the "Surface Mining Control and Reclamation Act of 1977" or approved Utah program as applicable.

5. (a) Before undertaking any activities that may disturb the surface of the lease lands, the Lessee may be required to conduct a cultural resource intensive field inventory in a manner specified by the Regional Director and the Authorized Officer of the surface managing agency on portions of the mine plan area and adjacent areas, or exploration plan area, that may be adversely affected by lease-related activities and which were not previously inventoried at such a level of intensity. The inventory shall be conducted by a qualified professional cultural resource specialist (i.e., archaeologist, historian, or historical architect, as appropriate), approved by the Authorized Officer of the surface managing agency

and a report of the inventory and recommendations for protecting any cultural resources identified shall be submitted to the Regional Director (or the District Mining Supervisor if activities are associated with coal exploration outside an approved mining permit area) and the Authorized Officer of the surface managing agency. The Lessee shall undertake measures, in accordance with instructions from the Regional Director (or the District Mining Supervisor if activities are associated with coal exploration outside an approved mining permit area). to protect cultural resources on the leased land. The Lessee shall not commence the surface disturbing activities until permission to proceed is given by the Regional Director or the District Mining Supervisor as appropriate.

(b) The Lessee shall protect all cultural resource properties within the lease area from lease-related activities until the cultural resource mitigation measures can be implemented as part of an approved mining and reclamation plan or exploration plan.

(c) The cost of conducting the inventory, preparing reports, and carrying out mitigation measures shall be borne by the Lessee.

(d) If cultural resources are discovered during operations under this lease, the Lessee shall immediately bring them to the attention of the Regional Director, (or the District Mining Supervisor as appropriate), and the Authorized Officer, Surface Management Agency. The Lessee shall not disturb such resources except as may be subsequently authorized by the Regional Director (or the District Mining Supervisor). Within two (2) working days of notification, the Regional Director (or the District Mining Supervisor, as appropriate) will evaluate or have evaluated any cultural resources discovered and will determine if any action may be required to protect or preserve such discoveries.

(e) All cultural resources shall remain under the jurisdiction of the United States until ownership is determined under applicable law.

6. Before undertaking any activities that may disturb the surface of the leased lands, the Lessee shall contact the Regional Director and Authorized Officer of the Surface Management Agency to determine whether the Lessee will be required to conduct a paleontological appraisal of the mine plan and adjacent areas, or exploration plan areas, that may be adversely affected by lease-related activities. If the Regional Director and Authorized Officer, Surface Management Agency, determines that one is necessary, the paleontological appraisal shall be conducted by a qualified paleontologist approved by the Authorized Officer of the surface management agency, using the published literature and, where appropriate, field appraisals for determining the possible existence of fossils of scientific significance. A report of the appraisal and recommendations for protecting any fossils of significant scientific interest on the leased lands so identified shall be submitted to and approved by the Regional Director and the Authorized Officer, Surface Management Agency. When necessary to protect and/or collect the fossils of significant scientific interest on the leased lands, the Lessee shall undertake the measures provided in the approval of the mining and reclamation plan or exploration plan.

(a) The Lessee shall not knowingly disturb, alter, destroy, or take any fossils of significant scientific interest, and shall protect all such fossils in conformance with the measures included in the approval of the mining and reclamation plan or exploration plan.

(b) The Lessee shall immediately bring any such fossils that might be altered or destroyed by his operation to the attention of the Regional Director or the District Mining Supervisor, as appropriate. Operations may continue as long as the fossil specimen or specimens would not be seriously damaged or destroyed by the activity. The Regional Director or the District Mining Supervisor, as appropriate, shall evaluate or have evaluated such discoveries brought to his attention and, within five (5) working days, shall notify the Lessee what action shall be taken with respect to such discoveries.

(c) All such fossils of significant scientific interest shall remain under the jurisdiction of the United States until ownership is determined under applicable law. Copies of all paleontological resource data generated as a result of the lease term requirements will be provided to the Regional Director or the District Mining Supervisor, as appropriate.

(d) These conditions apply to all such fossils of significant scientific interest discovered within the lease area whether discovered in the overburden, interburden, or coal seam or seams. Fossils of significant scientific interest do not include those fossils commonly encountered during underground mining operations such as ferns and dinosaur tracks. Skeletal remains shall be considered significant.

7. The Lessee shall, prior to entry upon the lease, conduct an intensive field inventory for threatened and endangered plant and/or animal species, bald or golden eagles, or migratory species of high Federal interest on those areas to be disturbed and/or impacted including the access routes to the lease area. The inventory shall be conducted by a qualified specialist(s) approved by the Authorized Officer, Surface Management Agency, and a report of the inventory and recommendation for the protection of these species submitted to and approved by the Authorized Officer, Surface Management Agency, and Regional Director or District Mining Supervisor as appropriate. An acceptable report of any findings shall include the specific location, distribution, and habitat requirements of the species. The Lessee shall protect these species within the lease area from any activities associated with operations conducted under the terms of the lease and shall undertake such protective measures as may be required by the Authorized Officer, Surface Management Agency, and Regional Director, or District Mining Supervisor, as appropriate.

8. Powerlines used in conjunction with the mining of coal from this lease shall be constructed so as to conform with the publication, "Suggested Practices for Raptor Protection on Powerlines" (Edison Electric Institute, 1975). When feasible, powerlines will be located at least 100 yards from public roads.

9. The Lessee shall provide for the suppression and control of fugitive dust on all haul roads, and at coal hauling, transportation, and storage facilities. The migration of road surfacing materials shall be controlled by watering, chemical treatment, or hard surfacing. Loss of gravel courses shall be periodically replaced.

10. In order to avoid surface disturbance on steep canyon slopes and the need for surface access, all surface breakouts for ventilation tunnels shall be constructed from inside the mine, except at specific locations approved by the Regional Director with the concurrence of the Authorized Officer, Surface Management Agency and the District Mining Supervisor.

11. Prior to mining, the Lessee shall perform a study to secure adequate baseline data to quantify the existing surface resources on and adjacent to the lease area. The study will be established in consultation with and approved by the Authorized Officer, Surface Management Agency, the Regional Director, and the District Mining Supervisor and shall be adequate to locate, quantify, and demonstrate the interrelationship of the geology, topography, surface hydrology, vegetation, and wildlife. Baseline data will be established so that future programs of observation can be incorporated at regular intervals for comparison.

12. The Lessee shall establish a monitoring system to locate, measure, and quantify the progressive and final effects of underground mining activities on the topographic surface, underground and surface hydrology, and vegetation. The monitoring system shall utilize techniques which will provide a continuing record of change over time and an analytical method for location and measurement of a sufficient number of points over the lease area. The monitoring shall be an extension of the baseline data and shall be conducted by a method approved by the Regional Director in consultation with and concurrence by the Authorized Officer, Surface Management Agency and District Mining Supervisor.

13. Underground mining operations shall be conducted in such a manner so as to prevent surface subsistence that would (1) cause the creation of hazardous conditions such as potential escarpment failure and landslides. (2) cause damage to surface structures, and improvements, and (3) damage or alter the flow of perennial streams. The Lessee in his mining plan shall provide specific measures for the protection of escarpments. The Regional Director in consultation with and concurrence of the District Mining Supervisor and Authorized Officer, Surface Management Agency, shall approve such measures and may prescribe any additional measures to be employed such as mining methods, specify the amount of coal recovered, and determine any corrective measures considered necessary to assure that escarpment failure does not occur except at specifically approved locations, or that hazardous conditions are not created.

14. Existing surface improvements required for the surface uses of the lease area will need to be protected or maintained to provide for the post-mining continuance of the current land uses. Existing surface improvements whose utility may be lost or damaged as result of mining activities are to be replaced or restored.

15. The Lessee shall reclaim all areas disturbed as a result of mining and exploration operations to a land use capable of supporting the pre-mining levels of livestock grazing, big game winter range, and other wildlife habitat.

16. At the conclusion of the mining operation, or at the request of the Authorized Officer of the Surface Managing Agency, all damaged, disturbed, or displaced land monuments, accessories and appendages shall be replaced or restored in their original location (or at other locations that meet the needs of the land net, and as approved by the Authorized Officer of the Surface Managing Agency) and shall be done at the expense of the Lessee.

17. The Lessee will be responsible to replace any water lost or adversely affected by mining operations with water from an alternative source in sufficient quantity and quality to maintain existing riparian habitat, fishery habitat, and livestock and wildlife use.

18. The Lessee will be required to reconstruct the road in Cottonwood Canyon from the mine site to Highway 29 in a manner agreeable to Emery County and the authorized officer of the Surface Management agencies. In the interim, until reconstruction is completed, traffic management requirements will be imposed on the existing road commensurate with the season of use, road conditions, and volumes of traffic.

19. The Lessee shall assure that mine facilities, parking areas, and equipment do not encroach on the Cottonwood Canyon Road nor interfere with traffic on this road.

20. Reasonable stock driveway access must be provided and maintained to the Trail Mountain cattle and horse allotment.

21. The Cottonwood Canyon Road shall be maintained in such a manner so as to provide suitable forest access as well as coal haulage. Because of the narrow confines of Cottonwood Canyon, all future and existing facilities such as power, telephone, water and sewer lines, coal conveyors, and similar facilities, shall be constructed and/or maintained by the Lessee so as to not interfere with the Cottonwood Canyon Road or access provided thereby.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Serial Number

Utah 032936

MODIFIED COAL LEASE

This lease is entered into on Jan. Month, and , by the United States of America, the lessor, through the Bureau of Land Management, and

John Bell
P.O. Box 356
Orangeville, UT 84537

, the lessee,

and shall become effective on July 1, 1982, the effective date of the original lease.

Sec. 1. STATUTES AND REGULATIONS — This lease is issued pursuant and subject to the terms and provisions of the Mineral Leasing Act of February 25, 1920, 41 Stat. 437, as amended, 30 U.S.C. Sections 181–263, hereafter referred to as the Act. This lease is also subject to all regulations of the Secretary of the Interior (including, but not limited to, 30 CFR Part 211 and 43 CFR Group 3000) which are now or hereafter in force and which are made a part hereof, except that no amendment to the regulations made subsequent to the issuance of this lease shall alter the rental and production royalty requirements in Section 5 and 6 of this lease. (continued on page 3)

WITNESSETH:

Sec. 2. RIGHTS OF LESSEE - (a) The lessee is now the holder of coal lease Utah 032936, issued July 1, 1982, under the above-cited Act, which embraces 40 acres in Emery County, Utah.

(b) Upon application by the lessee for modification of the lease, it has been found that it would be in the interest of the United States to modify the lease under Sec. 3 of the Act cited to include as additional lands the following: Sec. 25, T. 17 S., R. 6 E., SLM, Utah, containing 40 acres.

(c) The lessor, in consideration of the bonus, rents, and royalties and other conditions hereinafter set forth hereby grants and leases to the lessee the exclusive right and privilege to mine and dispose of all coal in the following-described tracts (leased lands) situated in the State of Utah:

Tract #1: T. 17 S., R. 6 E., SLM, Utah
Sec. 25, SW¼SE¼.

Containing 40 acres.

Request for Approval of Assignment

Trail Mountain Coal Company hereby requests approval of Assignment of certain coal lands in the State of Utah:

Tract No. 1: T.17S., R.6E. SLM
Sec. 25, SW¼ SE¼
Containing 40 Acres

Tract No. 2: T.17S., R.6E. SLM
Sec. 25, E½ E½ SW¼
Containing 40 Acres

Trail Mountain Coal Company is a corporation authorized to do business in Utah. A statement of qualifications is on file under U-38700. Assignee's interests do not exceed allowable levels in Utah since Trail Mountain Coal Company holds no federal leases at this time. The Assignee is the sole party in interest in this Assignment. The $50.00 filing fee is attached.

President

AMENDED

ASSIGNMENT OF FEDERAL COAL LEASE

FOR GOOD AND VALUABLE CONSIDERATION, RECEIPT OF WHICH IS HEREBY ACKNOWLEDGED AND SUBJECT TO THE APPROVAL OF THE UNITED STATES BUREAU OF LAND MANAGEMENT, I, JOHN L. BELL OF 123 2nd AVE., SALT LAKE CITY, UTAH, 84103 THE SESSEE OF THAT CERTAIN FEDERAL COAL LEASE, SERIAL NO U-08[illegible]96, SITUATED IN THE STATE OF UTAH.

TRACT #1 T.17 S.,R.6 E.SLM, UTAH
SEC. 25, $SW\frac{1}{4}$ $SE\frac{1}{4}$
CONTAINING 40 ACRES

TRACT #2 T.17 S., R.6 E.SLM, UTAH
SEC. 25, $E\frac{1}{2}$ $E\frac{1}{2}$ $SW\frac{1}{4}$
CONTAINING 40 ACRES

DO HEREBY ASSIGN, TRANSFER AND CONVEY SAID LEASE UNTO TRAIL MOUNTAIN COAL COMPANY, A UTAH CORPORATION WITH ITS MINE OFFICE AT P.O.BOX 356, ORANGEVILLE, UTAH 84537 AND THE PRINCIPAL OFFICE AT P.O. BOX 84, SOMERSET, PENNSYLVANIA, 15501.

TO HAVE AND HOLD THE SAME FOR THE REMAINDER OF THE TERM OF SAID LEASE AND SUBJECT TO THE BONUS, RENTS, ROYALTIES, AND PROVISIONS THERE IN SPECIFIED.

WITNESS THIS 4TH DAY OF AUGUST, 1980 John L. Bell

STATE OF UTAH)
: SS.
COUNTY OF SALT LAKE)

PERSONALLY APPEARED BEFORE ME THIS 4th DAY OF AUGUST, 1980, JOHN L. BELL, THE SIGNER OF THE FOREGOING INSTRUMENT WHO DULY ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME.

Notary Public
NOTARY PUBLIC

MY COMMISSION EXPIRES:
7-9-82.

RESIDENCE: SLC, UT

SHARE PURCHASE AGREEMENT

THIS AGREEMENT is made and entered the 8th day of January, 1981, by and among the holders (the "Shareholders") of all the outstanding shares of common stock, without par value (the "Shares"), of TRAIL MOUNTAIN COAL COMPANY, a Utah corporation (the "Company"), and NATOMAS MINERALS OF UTAH, INC. and NATOMAS TRAIL MOUNTAIN COAL COMPANY, California corporations (the "Purchasers"), and provides for the purchase of the Shares by the Purchasers from the Shareholders.

In consideration of the mutual covenants, agreements, representations, warranties and other provisions contained herein, the parties agree as follows:

SECTION 1. PURCHASE AND SALE OF THE SHARES

A. Agreement to Purchase and Sell

Subject to the terms and conditions of this Agreement, on the Closing Date (as hereinafter defined) the Purchasers (in the respective portions indicated in Section 7 hereof) will purchase from the Shareholders, and the Shareholders will sell, transfer and convey to the Purchasers, the Shares, for an aggregate purchase price (the "Purchase Price") of [redacted] (including payment or assumption of the liabilities of the Company). In a simultaneous transaction, a designee of the Purchasers will acquire from the Estate of Myron F. Fetterolf (the "Estate") an assignment of the Estate's rights as lessee under the coal lease with the State of Utah as lessor known as the "McKinnon Lease" (more particularly described on Exhibit D hereto) for a consideration of [redacted]

B. Advance Payment

The Purchasers, upon the execution and delivery of this Agreement, have paid to The Fetterolf Group, Inc. as agent for the Shareholders the sum of [redacted] (the "Advance Payment"), as a payment in advance of a portion of the Purchase Price. The Advance Payment is secured by a statement authorizing confession of judgment of The Fetterolf Group, Inc., and shall be credited against the Purchase Price on the Closing Date (and any interest earned thereon shall be retained by The Fetterolf Group, Inc. on behalf of the Shareholders). In the event of termination of this Agreement pursuant to clause (a), (b), (d), (f), (g) or (h) of Section 20 hereof, the entire amount of the Advance Payment shall be returned to the Purchasers, with interest thereon at the prime rate of the Pittsburgh National Bank; provided, however, that if this Agreement is terminated pursuant to clause (b) of Section 20 hereof, one-half of the accrued interest shall be forgiven by the Purchasers. In the event of termination of this Agreement pursuant to clause (c) or (e) of Section 20 hereof, the Advance Payment (and any interest earned thereon) may be retained by The Fetterolf Group, Inc. on behalf of the Shareholders.

C. Escrow Deposit

The Purchasers, promptly after the execution and delivery of this Agreement, shall also deposit into the Escrow Account referred to in Section 8 hereof the sum of [redacted] (the "Escrow Deposit") as an additional payment in advance of a portion of the Purchase Price, to be held and disposed of in accordance with Section 8 and the Escrow Agreement referred to therein.

(iv) extraordinary loss (as defined in Opinion No. 30 of the Accounting Principles Board of the American Institute of Certified Public Accountants and in Financial Accounting Standards Board Statement No. 16) suffered by the Company which singly or in the aggregate is material to the Company, or any waiver by the Company of any rights of substantial value which singly or in the aggregate are material to the financial condition or the operations of the business of the Company;

(v) capital commitment or expenditure by the Company exceeding $10,000 not listed on Exhibit B to this Agreement;

(vi) issuance or commitment to issue capital stock of the Company, or declaration, setting aside or payment of a dividend or other distribution in respect of the capital stock of the Company, or any direct or indirect redemption, purchase or other acquisition by the Company of any of its capital stock; or

(vii) any other event, condition or state of facts of any character which materially and adversely affects, or threatens materially and adversely to affect, the results of operations or business or financial condition or prospects of the Company.

The Company has not since November 30, 1980, engaged in any transaction material to the Company not in the ordinary course of business. As used in this Section and elsewhere in this Agreement, "ordinary course of business" refers to ordinary day-to-day business activity conducted in a commercially reasonable and businesslike manner, having no unusual or special features, and being such as a corporation of a size similar to that of the Company and engaged in a similar business in the same community might reasonably be expected to conduct.

G. Tax Returns and Audits

Except as shown on Exhibit A to this Agreement, within the times and in the manner prescribed by law, the Company has filed all federal, state and local tax returns required by law and has paid all taxes, assessments and penalties shown thereon to be due and payable. The provisions for taxes reflected in the Balance Sheet are adequate for any and all federal, state and local taxes payable by the Company for the period ending on such date and for all prior periods, whether or not disputed. Except as shown on Exhibit A to this Agreement, there are no present disputes or claims or, to the knowledge of the Shareholders, threatened claims as to taxes of any nature payable by the Company and no waivers of statutes of limitations are in effect with respect to taxes that may be payable by the Company. The Company has not filed, and will not file on or before the Closing Date, any consent under Section 341(f) of the Internal Revenue Code of 1954, as amended. Except for satisfaction of the obligations shown on Exhibit E to this Agreement, no other consent or agreement is in effect which would restrict or adversely affect the right of the Company to transfer its assets, or of the transferee thereof to acquire such assets.

H. Real and Personal Property

There is set forth on Exhibits C or E to this Agreement (i) a complete and accurate legal description of each parcel of real property owned or held under lease by the Company or rights related thereto with a statement of the nature of

the Company's interest therein (including without limitation an indication of whether rights in such property are limited to the surface or to particular seams of coal, if the interest relates to less than the entire fee estate), (ii) a description of all buildings, fixtures and other improvements located on such property, (iii) the recording data necessary in order to locate the reference to any real property owned by Company in the records of the county where such property is located, and (iv) a schedule of all items of personal property owned or leased by, in the possession of, or used in connection with the business of the Company, with a statement of the nature of the Company's interest therein. There is set forth on Exhibit D to this Agreement a complete and accurate description of the McKinnon Lease between the State of Utah and the Estate under which the Company has been operating as a sublessee. Prior to the Closing Date the Company and the Estate shall execute the sublease under which the Company has operated since August 13, 1979 (including without limitation the 8% royalty which has been paid thereunder). The $50,000 limitation as to the indemnity obligation under Section 9 shall not apply to any claim by the Company's coal customers based on such Sublease. Exhibits C and D list all property ("the Mining Properties") owned by the Company, at any location, and by the Estate in Utah, and describe any areas or interests not owned or leased by the Company or the Estate within the confines of the Mining Properties, and all mortgages, royalties, overriding royalties, production payments, contingent or future interests and other burdens imposed upon any of the Mining Properties are shown on Exhibit E to this Agreement.

The leasehold interests held by the Company and the Estate in the Mining Properties are, and on the Closing Date will be, in full force and effect, and sufficient for the mining purposes contemplated thereunder, with all rentals, royalties and other obligations satisfied on a current basis and not subject to any jeopardy as to their continued existence by any actions or failure to take actions by the Company or the Estate. The fee interests held by the Company in the Mining Properties are sufficient for mining of coal, including without limitation exclusive access to such lands held by the fee interest for extracting coal and other minerals, use of the surface of such lands held by fee interest for uses compatible with mining and related purposes, rights to remove and sell coal and other minerals from such lands held by fee interest and exclusive access across and through such lands held by fee interest to the adjacent federal lands. The Mining Properties are free and clear of restrictions on or conditions to transfer or assignment, and of mortgages, liens, pledges, charges, encumbrances, security interests, equities, claims, easements, rights of way, covenants, conditions and restrictions, except (i) as listed on Exhibit E, (ii) the lien of current taxes not yet due and payable and (ii) possible minor matters that, in the aggregate, are not substantial in amount and do not materially detract from or interfere with the present or intended use of any of such assets or properties, or materially impair the Company's business operations. Notwithstanding the foregoing statement on current taxes, the Estate shall prior to the Closing Date have obtained all tax and other governmental approvals required for the transfer of the McKinnon Lease and shall indemnify Purchasers against claims attributable to the McKinnon Lease or the transfer thereof to the Purchasers, on the same basis as set forth in Section 9 hereof for the Shareholders, except that the $50,000 limitation shall not apply to such indemnity.

There are no currently pending or, to the knowledge of the Shareholders, threatened, condemnation or eminent domain proceedings, or sales in lieu thereof, involving partial or total taking of the Mining Properties. The

Shareholders and the Estate are not aware of any actual or threatened claim contrary to their title and interest in the Mining Properties or any basis for any such claim. Prior to the Closing Date, the Company and the Estate shall obtain the satisfactory evidence contemplated in Paragraph K of Section 5. All deeds, leases and other documents and instruments under which the Company or the Estate, in the case of the McKinnon Lease, claims title to or any interest in its real or personal property, copies of which have been made available to the Purchasers for their inspection, are valid and effective in accordance with their terms.

J. Contracts and Commitments

Except as set forth on Exhibit F to this Agreement, the Company has no (i) collective bargaining agreements or pending National Labor Relations Board petitions to represent any of its employees or any obligation to bargain with any labor organization which has been certified or recognized as a majority representative of any of its employees, (ii) agreements that contain any severance pay liabilities or obligations, (iii) bonus, deferred compensation, pension, profit-sharing, stock option, employee stock purchase or retirement plans, or any other employee benefit plans or arrangements, (iv) employment or consulting agreement, contract or commitment with an employee or individual consultant or any consulting agreement, contract or commitment with a consulting firm or other organization, (v) agreement of guarantee or indemnification running to any person or entity, (vi) agreement, contract or commitment containing any covenant limiting the freedom of Company to engage in any line of business or compete with any person or (vii) agreement, contract or commitment requiring the Company to utilize the services of any entity, firm or individual or to pay any commission, fee or other payment related to the business of the Company, including without limitation any payments in coal or other property. The Company has not received notice that any party to any agreement listed on Exhibit F intends to cancel or terminate any such agreement and the Shareholders know of no fact or circumstance which would entitle any party to any such agreement to cancel or terminate the same.

K. Trade Names, Trademarks, Copyrights, Patents and Trade Secrets

The Company does not own or have any right or license in any trade name (other than its corporate name), trademark, service mark, copyright, patent, invention, industrial model, process design, patent application or trade secret, nor is it now subject to a claim of infringement with regard to, or, to the knowledge of the Shareholders, infringing on, any trade name, trademark, service mark, copyright, patent or proprietary or personal right of any other person, firm or corporation.

L. Customers and Sales

The Shareholders have no information, nor are they aware of any facts, indicating that any customers of the Company intend to cease doing business with the Company or materially alter the amount of the business that they are presently doing with the Company, whether on account of the proposed acquisition of the Shares by the Purchasers or otherwise.

hereto prior to making any press release relating to this Agreement the transactions contemplated hereby, or termination hereof.

IN WITNESS WHEREOF, the parties hereto have duly executed this Agreement in multiple original copies on the day and year first above written.

SHAREHOLDERS — NO. OF SHARES

THE FETTEROLF GROUP, INC.
P.O. Box 84
Somerset, Pennsylvania 15501

By _____

_____
JOHN L. BELL
1351 Hogan Circle
Bloomington, Utah 84770

_____
CHARLES A. BASS
2022 N.W. Troost
Roseburg, Oregon 97470

NATOMAS MINERALS OF UTAH, INC.

By _____
Chairman & Chief Executive Officer

NATOMAS TRAIL MOUNTAIN COAL COMPANY

By _____
President

The representations regarding the Estate are true and correct and the McKinnon Lease shall be transferred as required herein, subject to the receipt of the necessary approvals.

THE ESTATE OF MYRON F. FETTEROLF

By _____
by Robert O. Williams
Attorney-in-fact

EXHIBIT C

Real and Personal Property

(1) Real estate owned in fee:

The following described land situated in Emery County, Utah:
Beginning at the southeast corner of the northwest quarter of the southeast quarter of Section 25, Township 17 South, Range 6 East, Salt Lake Base and Meridian, thence north 160 rods; thence east 44 rods, more or less, to the center line of Cottonwood Creek; thence in a southerly direction along the center line of said Cottonwood Creek to a point 76 rods, more or less, east of beginning; thence west 76 rods, more or less, to the point of beginning, containing 53.5 acres.

Subject to all reservations, restrictions, covenants, easements, conditions and rights of way appearing of record.

Mineral lease: Utah - 082996 covering the following described tracts each containing 40 acres in Emery County, Utah: the southwest quarter of the southeast quarter and the east half of the east half of the southeast quarter of Section 25, Township 17 South, Range 6 East, Salt Lake Base and Meridian.

(2) Buildings, fixtures and other improvements:

a) office building (including shop, bathhouse, dressing area, etc.),
b) tipple and adjacent building,
c) scale house,
d) scoop storage house,
e) switch house,
f) powder house,
g) fan house.

(3) Recording data for real estate owned in fee: Deed book volume 102, page 803.

(4) Personal property owned or leased:

(1) Allis Chalmers Shaker with 25 Horsepower Motor
(1) Belt Drive on Stacker Belt 25 Horsepower
(1) Big Sam Spray Machine
(1) Block Generator Building
(1) Bonanza Fan 8"
(1) Case Diesel High Lift Tractor
(3) Distribution Boxes
(1) Dodge Pickup 1979
(1) Emco Air Alert 300 Power Center
(1) Emco Air Alert 150 Power Center
(1) Emco Air Alert Section Power Center

ASSIGNMENT AND ASSUMPTION of COAL LEASES and LOGICAL MINING UNIT

THIS ASSIGNMENT AND ASSUMPTION of COAL LEASES and LOGICAL MINING UNIT (the "***Assignment***") is made and entered into as of the 5th day of June, 2015, by PACIFICORP, an Oregon corporation, having a mailing address of 1407 West North Temple, Suite 310, Salt Lake City, Utah 84116 ("***Lessor***") *and* INTERWEST MINING COMPANY, an Oregon corporation, having a mailing address of 201 South Main Street, Suite 2100, Salt Lake City, Utah 84111("***Operator***") (Lessor and Operator are collectively referred to herein as "***Assignor***"), as Assignor, to and for the benefit of FOSSIL ROCK RESOURCES, LLC, a Delaware limited liability company, (the "***Assignee***"), having a mailing address of 6100 Dutchmans Lane, 9th Floor, Louisville, Kentucky 40205, as Assignee. For Ten Dollars ($10.00) and other good and valuable consideration, receipt and sufficiency of which is hereby acknowledged, Assignee and Assignor hereby agree as follows:

1. To the extent assignable, Assignor assigns, transfers, and conveys to the Assignee and the Assignee hereby accepts, all right, title and interest, as Lessee, in and to all of those three certain federal coal leases described in the attached **Schedule 1** by and between Assignor, as Lessee, and the United States of America, as Lessor, (collectively, the "***Leases***"). Further, to the extent assignable, the Assignor hereby assigns, transfers, and conveys to the Assignee and the Assignee hereby accepts, all right title and interest, as Operator, in and to all of that certain logical mining unit described in the attached Schedule 2, by and between Assignor and the United States of America (the "***LMU***"). The Leases and the LMU affect that certain real property more particularly described in the attached **Exhibit A**.

2. Assignee accepts the foregoing assignment and assumes all of the Lessee's obligations under the Leases and all of the Operator's obligations under the LMU. Assignee also acknowledges that it will be the single operator of the LMU and accepts all stipulations and obligations of the LMU.

3. This Assignment shall be binding upon and inure to the benefit of Assignor, the Assignee, and their respective legal representatives, successors and assigns. Assignor will execute or cause to be executed such other documents or instruments as may be necessary or appropriate, in the Assignee's reasonable discretion, to effectuate this Assignment.

[Signatures on Following Page]

IN WITNESS WHEREOF, Assignor and Assignee have executed and delivered this Assignment by their duly authorized representatives as of June 5, 2015.

ASSIGNOR:

PACIFICORP,
an Oregon corporation

Cindy A. Crane
President/CEO - PacifiCorp dba Rocky Mountain Power

INTERWEST MINING COMPANY,
an Oregon corporation

By: CINDY A. CRANE
Its: PRESIDENT

ASSIGNEE:

FOSSIL ROCK RESOURCES, LLC,
a Delaware limited liability company

By: Johannes H. Dreyer
Its: CEO

SCHEDULE 1

(Leases)

1. Coal Lease UTU-64375 issued effective October 1, 1990, as amended and readjusted.
2. Coal Lease UTU-49332 issued effective March 1, 1983, as amended and readjusted.
3. Coal Lease UTU 0-082996 issued effective July 1, 1962, as amended and readjusted.

SCHEDULE 2

(LMU)

Trail Mountain Logical Mining Unit UTU-73339 issued effective September 13, 1988, as amended and readjusted.

EXHIBIT A

(Legal Description of Real Property)

UTU-64375

Township 17 South, Range 6 East SLB&M
Section 26: S½SW¼, W½SW¼SE¼;
Section 27: S½S½

260 acres more or less in Emery County, Utah

UTU-49332

Township 17 South, Range 6 East SLB&M
Section 25: S½NW¼, W½E½SW¼, W½SW¼;
Section 26: SE¼NE¼, E½SW¼NE¼, E½SE¼, E½W½SE¼

380 acres more or less in Emery County, Utah

UTU 0-082996

Township 17 South, Range 6 East SLB&M
Section 25: E½E½SW¼, SW¼SE¼

80 acres more or less in Emery County, Utah

TAX PARCEL NO. L3-11-1
SPECIAL WARRANTY DEED

Ent 410236 Page 1 of 3
Date: 05-Jun-2015 02:18PM
Fee: $14.00
Filed By: CJ
Connie Jensen, Recorder
EMERY COUNTY CORPORATION
For: FIRST AMERICAN TITLE INSURANCE

RECORDING REQUESTED BY AND WHEN RECORDED RETURN TO:

Stoel Rives, LLP
Attn: Richard R. Hall
201 S. Main St., Suite 1100
Salt Lake City, Utah 84111

FIRST AMERICAN TITLE #689406CP

(Space Above For Recorder's Use)

SPECIAL WARRANTY DEED

Tax Parcel No. L3-11-1
Trail Mountain Mine Parcel

PACIFICORP, an Oregon corporation, having a mailing address of 1407 West North Temple, Suite 310, Salt Lake City, Utah 84116, as "***Grantor***", hereby conveys and warrants, against all those claiming by, through or under Grantor, but not otherwise, to FOSSIL ROCK RESOURCES, LLC, a Delaware limited liability company, having a mailing address of 6100 Dutchmans Lane, 9th Floor, Louisville, Kentucky 40205, as "***Grantee***," for the sum of TEN AND NO/100 DOLLARS ($10.00) and other good and valuable consideration, that certain parcel of real property located in Emery County, State of Utah, together with any and all interests, rights and appurtenances thereto, as well as any and all improvements thereon (if any), as more particularly described in Exhibit A attached hereto (described hereinafter as the "***Real Property***").

Subject to: (i) any state of facts that an accurate and complete ALTA/ACSM Land Title Survey might disclose, (ii) all zoning regulations, restrictions, rules and ordinances, land use regulations, building restrictions, and other laws and regulations now in effect or hereafter adopted by any governmental authority having jurisdiction, and (iii) reservations, easements, rights-of-way, declarations, covenants, conditions, restrictions, encroachments, liens, and encumbrances and all other matters of record or enforceable at law or in equity.

IN WITNESS WHEREOF, the said Grantor has executed this Special Warranty Deed as of this 5th day of June, 2015.

PACIFICORP,
an Oregon corporation

Cindy A. Crane
President/CEO, PacifiCorp dba Rocky Mountain Power

STATE OF UTAH)
:ss
COUNTY OF SALT LAKE)

The forgoing instrument was acknowledged before me this 5th day of June, 2015, by Cindy A. Crane, the President/CEO of the PacifiCorp dba Rocky Mountain Power, an Oregon corporation.

Witness my hand and official seal.

CANDACE A. TIPPETTS
Notary Public State of Utah
My Commission Expires on:
June 4, 2017
Comm. Number: 666945

Notary Public

My Commission expires: 6/4/2017

Residing at: Midvale

79051361.1 0076000-02003

Exhibit A

Trail Mountain Parcel Legal Description

That certain parcel of land located in Emery County, State of Utah, as more particularly described as follows:

> Beginning at the Southwest corner of the Northwest quarter of the Southeast quarter of Section 25, Township 17 South, Range 6 East, SLB&M; thence North, 160 rods; thence East 44 rods, more or less, to the center line of Cottonwood Creek; thence in a Southerly direction along the centerline of said Cottonwood Creek to a point 76 rods, more or less East of beginning; thence West, 76 rods, more or less to the point of beginning.

Containing 53.50 acres, more or less.

GRANT OF TEMPORARY EASEMENT
TAX PARCEL NO. L3-0011-0003

Ent 410237 Page 1 of 3
Date: 05-Jun-2015 02:18PM
Fee: $14.00
Filed By: CJ
Connie Jensen, Recorder
EMERY COUNTY CORPORATION
For: FIRST AMERICAN TITLE INSURANCE

RECORDING REQUESTED BY AND WHEN RECORDED RETURN TO:

Stoel Rives, LLP
Attn: Richard R. Hall
201 S. Main St., Suite 1100
Salt Lake City, Utah 84111

FIRST AMERICAN TITLE #68940e CO

(Space Above For Recorder's Use)

GRANT of TEMPORARY EASEMENT

Tax Parcel No. L3-0011-0003

PACIFICORP, an Oregon corporation, having a mailing address of 1407 West North Temple, Suite 310, Salt Lake City, Utah 84116, as "***Grantor***", for good and valuable consideration, receipt and sufficiency of which is hereby acknowledged hereby GRANTS, BARGAINS, SELLS, and CONVEYS to FOSSIL ROCK RESOURCES, LLC, a Delaware limited liability company, having a mailing address of 6100 Dutchmans Lane, 9th Floor, Louisville, Kentucky 40205, as "***Grantee***," a non-exclusive temporary easement and right of way for vehicular and pedestrian ingress and egress (the "***Temporary Easement***") over and across that certain parcel of real property owned by Grantor located in Emery County, State of Utah, together with any and all interests, rights and appurtenances thereto, as well as access to and the right to utilize any and all improvements thereon, as more particularly described in Exhibit A attached hereto (described hereinafter as the "***Real Property***").

TO HAVE AND TO HOLD the Temporary Easement unto Grantee and its successors and assigns, until such time as Grantor amends its mine permit from the Utah Board of Oil, Gas and Mining for the Cottonwood Wilberg Mine (the "***Mine Permit***") and removes the Real Property from the Mine Permit.

Grantor covenants that as soon as practicable after amendment of the Mine Permit, Grantor will convey fee title for the Real Property to Grantee by Special Warranty Deed, and this Temporary Easement shall terminate.

IN WITNESS WHEREOF, Grantor has executed this Grant of Temporary Easement as of this 5th day of June, 2015.

PACIFICORP,
an Oregon corporation

Cindy A. Crane
President/CEO - PacifiCorp dba Rocky Mountain Power

79127646 I 0076000-02003

STATE OF UTAH)
:ss
COUNTY OF SALT LAKE)

The forgoing instrument was acknowledged before me this 5th day of June, 2015, CINDY A. CRANE, the President/CEO of the PacifiCorp dba Rocky Mountain Power, an Oregon corporation.

Witness my hand and official seal.

CANDACE A. TIPPETTS
Notary Public State of Utah
My Commission Expires on:
June 4, 2017
Comm. Number: 666945

Notary Public

My Commission expires: 6/4/2017 Residing at: Midvale, Utt

79127646 1 0076000-02003

Exhibit A

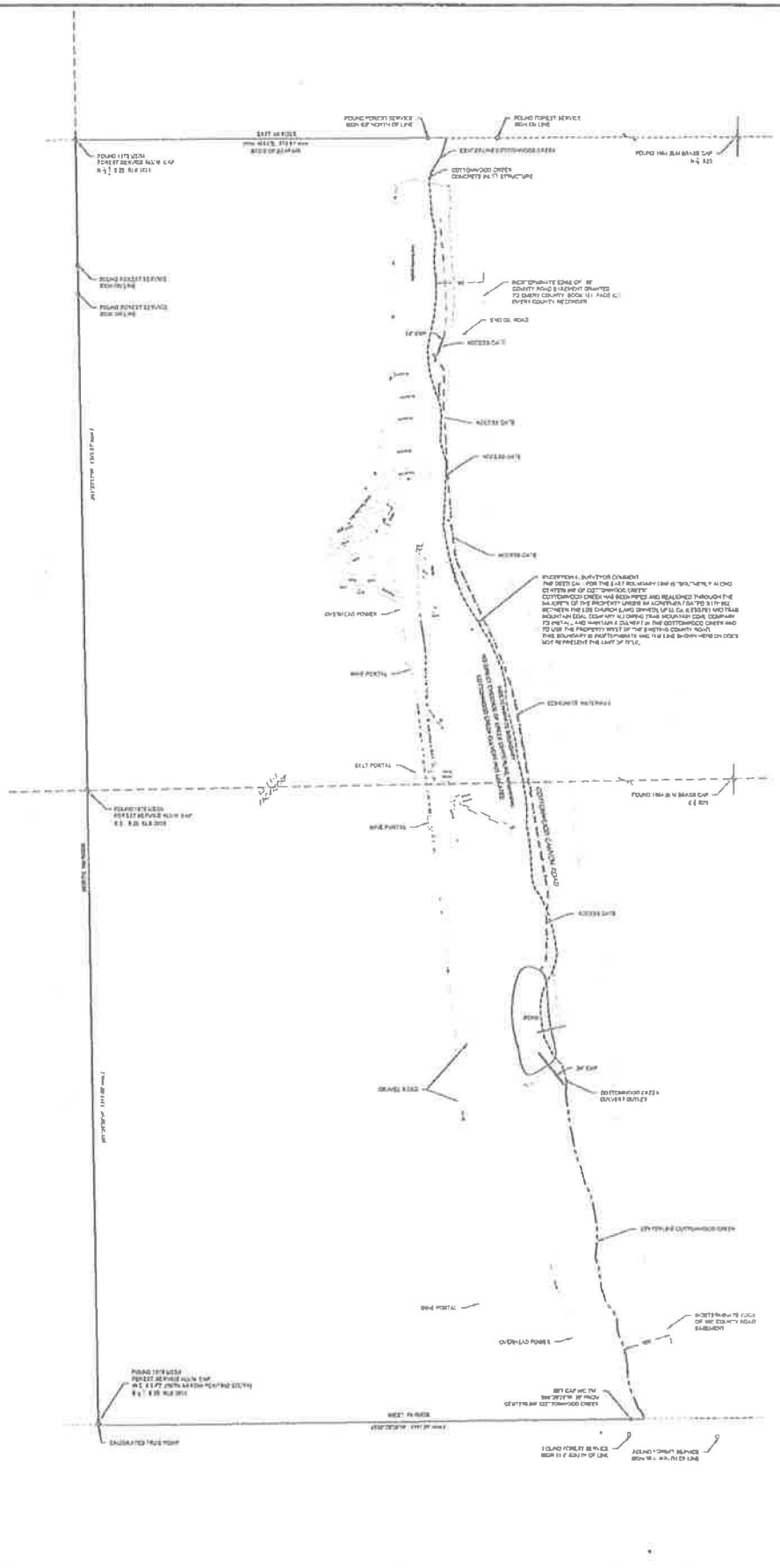
Parcel East of Cottonwood Creek and West of Cottonwood Canyon Road

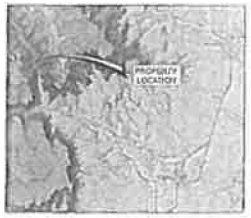
Legal Description

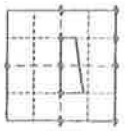
That certain parcel of land located in Emery County, State of Utah, as more particularly described as follows:

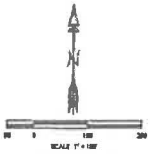
Beginning at a point which is West, 116 Rods, more or less from the Northeast corner of the Southeast quarter of the Northeast quarter of Section 25, Township 17 South, Range 6 East, SLB&M (S 89°46'01" W, 1898.88 feet along 40 acre line by survey), said point being at the center of Cottonwood creek and running thence in a Southerly direction along center of said Creek to a point 84 Rods more or less, West of the Southeast corner of the Northeast quarter of the Southeast quarter of said Section 25 (S 89°20'20" W, 1482.82 feet along 40 acre line by survey); thence N 89°20'20" E, 68.64 feet to the centerline of Cottonwood Canyon Road; thence N 18°32'22" W, 211.65 feet along centerline of said road; thence N 18°00'23" W, 236.55 feet along centerline of said road; thence N 13°36'45" W, 219.23 feet along centerline of said road; thence N 10°17'37" W, 104.54 feet along centerline of said road; thence N 08°20'49" W, 350.40 feet along centerline of said road; thence N 10°33'11" W, 476.22 feet along centerline of said road; thence N 24°01'08" W, 163.55 feet along centerline of said road; thence N 20°01'04" W, 87.46 feet along centerline of said road; thence N 10°00'01" W, 150.85 feet along centerline of said road; thence N 02°27'38" W, 152.52 feet along centerline of said road; thence N 01°54'03" E, 211.25 feet along centerline of said road; thence N 00°12'51" W, 242.02 feet along centerline of said road; thence N 10°41'22" E, 106.12 feet along centerline of said road to the north line of the South half of the Northeast quarter of said Section 25; thence S 89°46'01" W, 48.79 feet along 40 acre line to the point of beginning.

Containing 2.86 acres more or less.









EXCEPTION 4 SURVEYOR COMMENT
THE DEED CALL FOR THE EAST BOUNDARY LINE IS "SOUTHERLY ALONG CENTERLINE OF COTTONWOOD CREEK"
COTTONWOOD CREEK HAS BEEN PIPED AND REALIGNED THROUGH THE MAJORITY OF THE PROPERTY UNDER AN AGREEMENT DATED [illegible] BETWEEN THE LDS CHURCH (LAND OWNER), UP&L CO [illegible] AND [illegible] MOUNTAIN COAL COMPANY ALLOWING TRAIL MOUNTAIN COAL COMPANY TO INSTALL AND MAINTAIN A CULVERT IN THE COTTONWOOD CREEK AND TO USE THE PROPERTY WEST OF THE EXISTING COUNTY ROAD.
THIS BOUNDARY IS INDETERMINATE AND THE LINE SHOWN HEREON DOES NOT REPRESENT THE LIMIT OF TITLE.

CERTIFICATE

To PacifiCorp, Fossil Rock Resources, LLC and First American Title Insurance Company

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2011 Minimum Standard Detail Requirements for ALTA/ACSM Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes none of Table A thereof. The field work was completed on May 14, 2015

Date of Plat or Map: May 15, 2015

Lee M. Swasey
Utah PLS 163934

LEE M. SWASEY

LOCATION OF SURVEY

Located within the Northwest quarter of the Southeast quarter and the Southwest quarter of the Northeast quarter of Section 25, Township 17 South, Range 6 East, Salt Lake Base and Meridian

SCHEDULE A, AMENDMENT No. 3 PROPERTY DESCRIPTION

Beginning at the Southwest corner of the Northwest quarter of the Southeast quarter of Section 25, Township 17 South, Range 6 East, SLB&M; thence North, 150 rods; thence East 44 rods, more or less to the center line of Cottonwood Creek; thence in a Southerly direction along the centerline of said Cottonwood Creek to a point 58 rods, more or less East of beginning; thence West, 58 rods, more or less to the point of beginning.

Containing 54.28 acres more or less.

BASIS OF BEARING

For bearings shown as measured the basis of bearing is N 88°46'31" E along the North line of the South half of the Northeast quarter of Section 25, T 17 S, R 6 E, SLB&M

PURPOSE OF SURVEY

Surveyed at the request of PacifiCorp to perform an ALTA / ACSM Land Title Survey.

The survey was based on a Commitment for Title Insurance issued by First American Title Insurance Company National Commercial Services, Order number NCS-[illegible]-SLC1, Effective date May 5, 2015

NARRATIVE

The survey was based on found Section Corner monuments; the Section was subdivided in accordance with the BLM Manual of Instructions.

MONUMENTS FOUND

⌖ Denotes Section monument found

MONUMENTS SET

● Denotes a #5 rebar with a 1½" aluminum cap set on top marked LMS JET ENG LS 163934 and additionally stamped as shown on drawing

SCHEDULE B - SECTION 2 EXCEPTIONS AMENDMENT No. 3

Exception 1: Not applicable to survey
Exception 2: Any facts, rights, interest or claim which are not shown by the public records but which could be ascertained by an inspection of said land or by making inquiry of persons in possession of thereof.
Surveyor Comment: No rights, interests of claims were apparent at the time of this survey.
Exception 3: Easements, claims of easements or encumbrances which are not shown by the public record.
Surveyor Comment: No easements, claims of easements or encumbrances were apparent at the time of this survey.
Exception 4: Discrepancies, conflicts in boundary lines, shortage area, encroachments and any other facts which a correct survey would disclose, and which are not shown by the public records.
Surveyor Comment: See Exception 4 surveyor comment on plat. Exact area could not be determined because of indeterminate boundary along the East side of property. Unless shown hereon no encroachments where apparent at the time of this survey.
Exception 5, 6, 7, 8, 9, 10, 11: Not applicable to survey.
Exception 12: Any rights associated with the County Road or Cottonwood Canyon Road as disclosed on an aerial of said land and in the Acknowledgment of Right-of-Way by the USA, as recorded on May 1, 2006 as entry No. 380382.
Surveyor Comment: Document does not apply to private property.
Exception 14: Not applicable to survey.

VICINITY MAP

SEC. 25
SECTION 25, TOWNSHIP 17 SOUTH, RANGE 6 EAST

LEGEND

———	SECTION LINE
— — — —	QUARTER SECTION LINE
- - - - -	1/16 LINE
———	PROPERTY
—— - - ——	CENTERLINE COTTONWOOD CREEK
- - - - -	INDETERMINATE PROPERTY LINE
	BUILDINGS
	ROAD
	FENCE
— · — · —	DRAINAGE

SECTION	TOWNSHIP	RANGE	DATE	SCALE
25	17 S	6 E	5/15/15	1" = 100'
LOT	BLOCK	PLAT		DRAWN BY
				W.C.A.

ALTA/ACSM LAND TITLE SURVEY
PACIFICORP TRAIL MT. MINE

Johansen & Tuttle
P.O. Box 407, Castle Dale, UT 84513
(435) 381-2523 Fax (435) 381-2522 e-mail jt@etv.net

LEE M. SWASEY
PROFESSIONAL LAND SURVEYOR 163934

DESIGNED			CHECKED		
DRAWN	WCA	05-15	CHECKED		
SURVEYED	WCA	05-15	CHECKED	LMS	
REVIEW			CHECKED		
PROJECT FILE	[illegible]				

LEASE RELINQUISHMENT
ML 22603

State of Utah
School and Institutional
TRUST LANDS ADMINISTRATION

Michael O. Leavitt
Governor
David T. Terry
Director

355 West North Temple
3 Triad Center, Suite 400
Salt Lake City, Utah 84180-1204
801-538-5508
801-355-0922 (Fax)

February 7, 1996

Interwest Mining Company
Scott M. Child
One Utah Center, Suite 2000
Salt Lake City, UT 84140-0020

Dear Mr. Child:

RE: ML 22603--Coal

Please be advised that the Director on January 31, 1996, approved and accepted your request for relinquishment of the above-numbered lease.

I trust this information will be sufficient for your needs.

Sincerely,

JOHN T. BLAKE
MINERAL RESOURCES SPECIALIST

tdw

cc: D. BAKER
D. JENSE
D. LAURISKI
S. KOCHEVAR
C. POLLASTRO
[illegible]

One Utah Center, Suite 2000
Salt Lake City, Utah 84140-0020
(801) 220-4616 • FAX (801) 220-4725

INTERWEST MINING COMPANY

A Subsidiary of PacifiCorp

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

January 19, 1996

Mr. John T. Blake
Minerals Resources Specialist
State of Utah
School and Institutional Trust Lands Administration
355 West North Temple
3 Triad Center, Suite 400
Salt Lake City, Utah 84180-1204

RE: State Coal Lease ML-22603 - Trail Mountain Mine, Emery County, Utah

Dear John:

We're in receipt of your letter dated December 27, 1995, together with the lease readjustment originals of ML-22603. After our review of the readjusted lease terms and the overall disposition of this lease, Interwest Mining Company on the behalf of PacifiCorp, hereby declines the lease readjustment as there is no further interest in continuing the lease.

Therefore, this written notice is given in response to your letter of December 27, 1995, and in accordance with the provisions of Articles II and XI of the existing lease, wherein PacifiCorp, (1) does not accept the terms and conditions of the readjusted lease, and (2) hereby relinquishes state lease ML-22603 in its entirety effective as of December 31, 1995.

We have appreciated the opportunity to work with the School and Institutional Trust Lands Administration in connection with this lease and look forward to having the opportunity to work with you again in the future. Returned with this letter are the original lease readjustments. Should you have questions or concerns, please contact me at 801-220-4612.

Sincerely,

Scott M. Child
Property Management Administrator

Enclosures

SMC12\UTLAND96 002

cc: IMC w/o copy encl. - D.W. Jense, S. Kochevar, G. Takenaka
EWEST w/o copy encl. - L. LaFrentz, D. Lauriski, V. Payne, C. Pollastro

Appendix 4-2 (L)

Lease Documents

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Utah State Office
440 West 200 South, Suite 500
Salt Lake City, UT 84101-1345
http://www.blm.gov/ut/st/en.html

IN REPLY REFER TO:
3453 / (UT-9223)
UTU-082996
UTU-49332
UTU-64375
UTU-73339 (LMU)

AUG 1 3 2015

CERTIFIED MAIL- Return Receipt Requested
91 7199 9991 7035 9001 7143
91 7199 9991 7031 4480 2164

DECISION

Assignor: PacifiCorp 1407 West North Temple Salt Lake City, Utah 84116	:	Federal Coal Leases: UTU-082996, UTU-49332 and UTU-64375
Assignee: Fossil Rock Resources, LLC Dutchmans Lane, 9th Floor Louisville, Kentucky 40205	:	Federal Logical Mining Unit (LMU): UTU-73339

Assignments of Federal Coal Leases Approved

On June 9, 2015, Fossil Rock Resources, LLC submitted assignments of Federal coal leases UTU-082996, UTU-49332 and UTU-64375 with PacifiCorp as assignor, and Fossil Rock Resources, LLC, as assignee.

Satisfactory evidence of the qualifications and holdings of Fossil Rock Resources, LLC, has been filed, as required pursuant to the regulations at 43 CFR 3472. The Department of Justice has been forwarded information as to whether this transfer would create a situation inconsistent with the antitrust laws and no comments were received within the 30-day period. Therefore, the assignments meet the requirements of the regulations and are hereby approved effective August 1, 2015. Approval of the assignments does not constitute approval of any of the terms therein which may be in violation of the lease terms.

In addition PacifiCorp assigned their right as operator of the Trail Mountain Logical Mining Unit (LMU), serial number UTU-73339. Fossil Rock Resources, LLC, has agreed to assume all of the rights and responsibilities under the LMU including agreeing to the all stipulations and obligations of the LMU.

A LMU bond, No. SUR60000336, in the amount of $115,000 for LMU UTU-73339 with Fossil Rock Resources, LLC as principal, and Ironshore Indemnity, Inc. as surety, were filed on July 15, 2015. This bond has been examined, found to be satisfactory and is hereby accepted effective the date of filing. The regulations at 43 CFR 3474.2 does allow for the amount of any bond to be increased when additional coverage is determined to be appropriate. A written request must be submitted when you want to have the period of liability of this bond terminated.

If you have further questions call Bill Buge of this office at (801) 539-4086.

Jenna Whitlock
Acting State Director

Enclosure:
1. Assignment

cc: Price Field Office (UTG02)

Mr. John Baza, Director, Utah Division of Oil, Gas and Mining, P.O. Box 145801, Salt Lake City, Utah 84114-5801

KIM S COLTON
Direct Dial: 801.237.0316
email: kcolton@vancott.com

VANCOTT

June 9, 2015

VIA HAND DELIVERY

U.S. Bureau of Land Management
Utah State Office
Attn: Roger L. Bankert
P.O. Box 45155
Salt Lake City, Utah 84145-0155

Dear Mr. Bankert:

We represent Fossil Rock Resources, LLC, a Delaware limited liability company (the "Assignee"). The Assignee is a wholly-owned subsidiary of Bowie Resource Partners. Under the terms of the Assignment and Assumption of Coal Leases and Logical Mining Unit, Assignee acquired from PacifiCorp the leasehold and operating interest in and to the following federal coal leases at the Trail Mountain Mine in Emery County, Utah:

- **UTU-082996** (80 Acres located in Emery County, Utah)
- **UTU-49332** (380 Acres located in Emery County, Utah)
- **UTU-64375** (260 Acres located in Emery County, Utah)

The Assignee hereby requests approval of the assignment of the above-referenced coal leases. In accordance with 43 C.F.R. § 3453.2-2, this request filing is made in triplicate and includes a transfer filing fee of $195 ($65 per lease).

The three subject leases comprise all federal leases and lands within a Logical Mining Unit (**UTU-73339**), held by PacifiCorp. Assignee will be the sole operator of the LMU and acknowledges that it will be subject to the stipulations and obligations of the LMU.

In accordance with 43 C.F.R. § 3453 *et. seq.* and 43 C.F.R. § 3472 *et. seq.* the following items are enclosed:

- A Qualifications Statement-including Assignee's federal coal lease acreage holdings.
- Certificate of Good Standing and Certificate of Existence for Assignee.
- Documents evidencing transfer of record title interest:
  - Special Warranty Deed recorded June 5, 2015 in Emery County, Utah.
  - Assignment and Assumption Logical Mining Unit by and between PacifiCorp and Fossil Rock Resources, dated June 5, 2015.
- Sealed Envelope containing a completed Western Federal Coal Lease form for DOJ antitrust review. (43 C.F.R. § 3422.3-4)

VAN COTT, BAGLEY, CORNWALL & MCCARTHY, P.C.
ESTABLISHED 1874

36 S. STATE STREET
SUITE 1900
SALT LAKE CITY, UTAH
84111-1478 USA
T 801.532.3333
F 801.534.0058
WWW.VANCOTT.COM

LAW OFFICES
SALT LAKE CITY
OGDEN

VANCOTT

We ask that any information related to Fossil Rock Resources, LLC or its affiliates' federal coal acreage holdings, coal reserve estimates, production estimates, consideration/value paid for the subject federal lease rights, and any information related to the financing of Fossil Rock Resources, LLC's acquisition be kept confidential.

Pursuant to 43 C.F.R. § 3453.3, Fossil Rock Resources, LLC requests that if this lease transfer application is approved, the effective date of the lease shall be the first day of the month of the lease transfer application approval.

Pursuant to 43 C.F.R. § 3453.2-4, Assignee understands that it will be required to furnish bonds before your office can approve the requested transfer. We look forward to hearing from your office after you consult with the Price Field Office to confirm the bonds and bond amounts associated with the above referenced coal leases.

Please contact me if you have any questions regarding this request for approval, or need any additional information. On behalf of Fossil Rock Resources, LLC, we appreciate your assistance in this matter.

Very truly yours,

Kim S Colton

KSC: jds
Enclosures
cc: Brian S. Settles, General Counsel for Fossil Rock Resources, LLC

Qualification Statement and Certification

FOSSIL ROCK RESOURCES, LLC

Pursuant to the regulatory requirements outlined in 43 C.F.R. § 3453 *et seq.* (2015) and 43 C.F.R. § 3472 *et seq.* (2015), Fossil Rock Resources, LLC, a Delaware limited liability company makes the following statements:

1. Fossil Rock Resources, LLC is (i) duly organized in the State of Delaware; (ii) authorized to do business in the State of Utah; and (iii) authorized to hold leases or licenses to mine.[1]

2. The following people comprise the officers authorized to act on behalf of the corporation:

John Siegel –Executive Chairman
Johannes (Manie) Dryer – Chief Executive Officer
James Wolff – Chief Financial Officer
Gene DiClaudio – Chief Operating Officer
Brian Settles – Senior Vice President, Secretary and General Counsel
Grant Quasha – Chief Commercial Officer

None of Fossil Rock Resources, LLC's voting stock, units, or membership interests is owned by aliens or people who reside outside of the United States.

3. Fossil Rock Resources, LLC has not held any other federal coal lease for more than 10 years that is not producing coal in commercial quantities.

4. Fossil Rock Resources, LLC is the sole party in interest in this application.

5. Fossil Rock Resources, LLC has acquired, through the execution of an Assumption Agreement and a Special Warranty Deed (Recorded June 5, 2015 Entry No. 410236 in Emery County, Utah),[2] the following federal coal leases:

- UTU-082996
- UTU-49332
- UTU-64375

These three lease files are in good standing.

6. These three leases comprise all federal lands within a Logical Mining Unit (UTU-73339). Fossil Rock Resources, LLC will be the sole operator of this LMU and hereby acknowledges that it will be subject to all existing stipulations and obligations under the LMU.

---

[1] A Certificate of Good Standing from the Delaware Secretary of State and Certificate of Existence from the Utah State Department of Commerce, Division of Corporations and Commercial Code are included in this Lease Transfer Application.

[2] These two instruments of transfer are included in this Lease Transfer Application.

7. Fossil Rock Resources, LLC, as transferee, is not controlled by and is not under common control with PacifiCorp or Interwest Mining Company, as transferor.

8. Acreage Limitation. Fossil Rock Resources, LLC is a wholly-owned subsidiary of Bowie Resource Partners, LLC. Bowie Resource Partners, LLC holds, owns, or controls, indirectly through its subsidiaries, the following federal coal leases and federal acreage for coal production:

UTAH			COLORADO	
Lease Number	Acreage		Lease Number	Acreage
U-69635	2,177.52		COD-036955	440.00
U-07064-027821	2,881.15		COC-037210	5,274.66
UTSL-051279	1,548.31		COC-053356	521.78
U-50722	440.00		COC-061209	4,168.95
UTU-0147570	1,532.70		COC-027432	1,014.03
UTU-0020305	279.40		COC-025079	310.51
UTU-0142235	520.00		COC-075916	1,790.20
UTU-044076	2,489.32		*Total Colorado*	*13,520.13*
UTU-073120	557.22			
UTU-067939	4,832.04			
SL-062583	3,079.83			
UTU-28297	716.51			
UTU-062453	480.00			
UTU-47080	1,953.73			
UTU-63214	8,826.34			
UTU-0149084	240.00			
UTU-76195	5,694.66			
UTU-082996†	80.00		*Total Federal Coal Lease Acreage United States*	*52,488.86*
UTU-49332†	380.00			
UTU-64375†	260.00			
Total Utah	*38,968.73*			
† indicates subject to lease transfer				

PENDING LEASES BY APPLICATION	
UTU-77114	2,692.16
UTU-84102	5,636.79
Total Utah pending lease acreage	*8,328.95*

Fossil Rock Resources, LLC hereby certifies that the above information is correct, that it is qualified to hold the three new federal coal leases, and that it is in compliance with the Mineral Leasing Act and the requirements set forth in 43 C.F.R. Group 3400 (2015).

DATED as of June 1, 2015.

Fossil Rock Resources, LLC
a Delaware limited liability company

By: Brian S. Settles
Its: Senior Vice President, Secretary and General Counsel

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
UTAH STATE OFFICE
324 SOUTH STATE, SUITE 301
SALT LAKE CITY, UTAH 84111-2303

TAKE PRIDE IN AMERICA

IN REPLY REFER TO
3425
UTU-64375
(U-942)

SEP 18 1990

CERTIFIED MAIL--Return Receipt Requested

DECISION

Beaver Creek Coal Company :
1305 S. Carbon Avenue :
Price, Utah 84501 :

Coal Lease
UTU-64375

Bond Accepted
Lease Issued

On August 15, 1990, coal lease bond U 8001367 in the amount of $4,891,505 with Beaver Creek Coal Company, as principal, and United Pacific Insurance Company, as surety, was filed in this office to provide bond coverage for coal lease UTU-64375. The bond has been examined, found to be satisfactory, and is accepted effective August 15, the date of filing.

Pursuant to the Lease By Application Coal Sale held June 28, 1990, the bid of Beaver Creek Coal Company for the Trail Mountain Tract, assigned Serial No. UTU-64375, was determined to be the high bid. Satisfactory evidence of the qualifications and holdings of Beaver Creek Coal Company has been filed; therefore, coal lease UTU-64375 is hereby issued effective October 1, 1990.

Chief, Minerals
Adjudication Section

Enclosure
Coal Lease UTU-64375

Form 3400-12
(April 1986)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

COAL LEASE

Serial Number

UTU-64375

PART I. LEASE RIGHTS GRANTED

This lease, entered into by and between the UNITED STATES OF AMERICA, hereinafter called lessor, through the Bureau of Land Management, and (Name and Address)

Beaver Creek Coal Company
1305 S. Carbon Avenue
Price, Utah 84501

ereinafter called lessee, is effective (date) OCT 1 1990, for a period of 20 years and for so long thereafter as coal is produced in commercial uantities from the leased lands, subject to readjustment of lease terms at the end of the 20th lease year and each 10-year period thereafter.

ec. 1. This lease is issued pursuant and subject to the terms and provisions of the:

] Mineral Lands Leasing Act of 1920, Act of February 25, 1920, as amended, 41 Stat. 437, 30 U.S.C. 181-287, hereinafter referred to as the Act;

] Mineral Leasing Act for Acquired Lands, Act of August 7, 1947, 61 Stat. 913, 30 U.S.C. 351-359;

ıd to the regulations and formal orders of the Secretary of the Interior which are now or hereafter in force, when not inconsistent with the express ıd specific provisions herein.

ec. 2. Lessor, in consideration of any bonuses, rents, and royalties to be paid, and the conditions and covenants to be observed as herein set forth, ereby grants and leases to lessee the exclusive right and privilege to drill for, mine, extract, remove, or otherwise process and dispose of the coal posits in, upon, or under the following described lands:

T. 17 S., R. 6 E., SLM, Utah
Sec. 26, S½SW¼, W½SW¼SE¼;
Sec. 27, S½S½;
Sec. 34, all;
Sec. 35, lots 3 and 4, W½SW¼NE¼, S½NW¼, SW¼, W½W½SE¼.

T. 18 S., R. 6 E., SLM, Utah
Sec. 1, lots 1-8, S½N½, E½NE¼SW¼, E½NW¼NE¼SW¼, N½NW¼NE¼SE¼, N½NW¼SE¼;
Sec. 2, lots 1-8, S½N½, N½NE¼SW¼, N½SW¼NE¼SW¼, SE¼NE¼SW¼, NW¼NE¼SE¼, N½SW¼NE¼SE¼, N½NW¼SE¼, N½S½NW¼SE¼;
Sec. 3, lots 1, 2, and 8, NE¼SE¼NE¼.
T. 18, S., R. 7 E., SLM, Utah
Sec. 6, lots 4-7, W½SE¼NW¼, W½E½SW¼.

taining 2,630.81 acres, more or less, together with the right to construct such works, buildings, plants, structures, equipment and appliances the right to use such on-lease rights-of-way which may be necessary and convenient in the exercise of the rights and privileges granted, subject to conditions herein provided.

T II TERMS AND CONDITIONS

1. (a) RENTAL RATE - Lessee shall pay lessor rental annually and dvance for each acre or fraction thereof during the continuance of ease at the rate of $ 3.00 for each lease year.

IENTAL CREDITS - Rental shall not be credited against either uction or advance royalties for any year.

2. (a) PRODUCTION ROYALTIES - The royalty shall be 12½ & 8 per- of the value of the coal as set forth in the regulations. Royalties are o lessor the final day of the month succeeding the calendar month ıich the royalty obligation accrues.

DVANCE ROYALTIES - Upon request by the lessee, the authorized :r may accept, for a total of not more than 10 years, the payment of nce royalties in lieu of continued operation, consistent with the ...ns. The advance royalty shall be based on a percent of the ... a minimum number of tons determined in the manner ...ed by the advance royalty regulations in effect at the time the ...uests approval to pay advance royalties in lieu of continued tion.

BONDS - Lessee shall maintain in the proper office a lease bond amount of $ ** The authorized officer may require an ise in this amount when additional coverage is determined priate.

** $4,891,505.00

Sec. 4. DILIGENCE - This lease is subject to the conditions of diligent development and continued operation, except that these conditions are excused when operations under the lease are interrupted by strikes, the elements, or casualties not attributable to the lessee. The lessor, in the public interest, may suspend the condition of continued operation upon payment of advance royalties in accordance with the regulations in existence at the time of the suspension. Lessee's failure to produce coal in commercial quantities at the end of 10 years shall terminate the lease. Lessee shall submit an operation and reclamation plan pursuant to Section 7 of the Act not later than 3 years after lease issuance.

The lessor reserves the power to assent to or order the suspension of the terms and conditions of this lease in accordance with, inter alia, Section 39 of the Mineral Leasing Act, 30 U.S.C. 209.

Sec. 5. LOGICAL MINING UNIT (LMU) - Either upon approval by the lessor of the lessee's application or at the direction of the lessor, this lease shall become an LMU or part of an LMU, subject to the provisions set forth in the regulations.

The stipulations established in an LMU approval in effect at the time of LMU approval will supersede the relevant inconsistent terms of this lease so long as the lease remains committed to the LMU. If the LMU of which this lease is a part is dissolved, the lease shall then be subject to the lease terms which would have been applied if the lease had not been included in an LMU.

Sec. 6. DOCUMENTS, EVIDENCE AND INSPEC[illegible] - At such times and in such form as lessor may prescribe, lessee shall furnish detailed statements showing the amounts and quality of all products removed [illegible]d sold from the lease, the proceeds therefrom, and the amount used [illegible]oduction purposes or unavoidably lost.

[illegible] shall keep open at all reasonable times for the inspection of any d[illegible] authorized officer of lessor, the leased premises and all surface and underground improvements, works, machinery, ore stockpiles, equipment, and all books, accounts, maps, and records relative to operations, surveys, or investigations on or under the leased lands.

Lessee shall allow lessor access to and copying of documents reasonably necessary to verify lessee compliance with terms and conditions of the lease.

While this lease remains in effect, information obtained under this section shall be closed to inspection by the public in accordance with the Freedom of Information Act (5 U.S.C. 552).

Sec. 7. DAMAGES TO PROPERTY AND CONDUCT OF OPERATIONS - Lessee shall comply at its own expense with all reasonable orders of the Secretary, respecting diligent operations, prevention of waste, and protection of other resources.

Lessee shall not conduct exploration operations, other than casual use, without an approved exploration plan. All exploration plans prior to the commencement of mining operations within an approved mining permit area shall be submitted to the authorized officer.

Lessee shall carry on all operations in accordance with approved methods and practices as provided in the operating regulations, having due regard for the prevention of injury to life, health, or property, and prevention of waste, damage or degradation to any land, air, water, cultural, biological, visual, and other resources, including mineral deposits and formations of mineral deposits not leased hereunder, and other land uses or users. Lessee shall take measures deemed necessary by lessor to accomplish the intent of this lease term. Such measures may include, but are not limited to, modification to proposed [illegible] design of facilities, timing of operations, and specification of [illegible]nd final reclamation procedures. Lessor reserves to itself the [illegible]... to lease, sell, or otherwise dispose of the surface or other mineral deposits in the lands and the right to continue existing uses and to authorize future uses upon or in the leased lands, including issuing [illegible]ses for mineral deposits not covered hereunder and approving [illegible]ements or rights-of-way. Lessor shall condition such uses to prevent unnecessary or unreasonable interference with rights of lessee as may be consistent with concepts of multiple use and multiple mineral [illegible]elopment.

Sec. 8. PROTECTION OF DIVERSE INTERESTS, AND EQUAL OPPORTUNITY - Lessee shall: pay when due all taxes legally assessed and levied under the laws of the State or the United States; accord all employees complete freedom of purchase; pay all wages at least twice each month in lawful money of the United States; maintain a safe working environment in accordance with standard industry practices; restrict each workday to not more than 8 hours in any one day for underground workers, except in emergencies; and take measures necessary to protect the health and safety of the public. No person under the age of 16 years shall be employed in any mine below the surface. To the extent that the laws of the State in which the lands are situated are more restrictive than the provisions in this paragraph, then the State laws apply.

Lessee will comply with all provisions of Executive Order No. 11246 of September 24, 1965, as amended, and the rules, regulations, and relevant orders of the Secretary of Labor. Neither lessee nor lessee's contractors shall maintain segregated facilities.

5. SPECIAL STIPULATIONS -

Sec. 9. (a) TRANSF[illegible]

☒ This lease may be transferred in whole or in part to any person, association or corporation qualified to hold such lease interest.

☐ This lease may be transferred in whole or in part to another public body or to a person who will mine the coal on behalf of, and for the use of, the public body or to a person who for the limited purpose of creating a security interest in favor of a lender agrees to be obligated to mine the coal on behalf of the public body.

☐ This lease may only be transferred in whole or in part to another small business qualified under 13 CFR 121.

Transfers of record title, working or royalty interest *must* be approved in accordance with the regulations.

(b) RELINQUISHMENT - The lessee may relinquish in writing at any time all rights under this lease or any portion thereof as provided in the regulations. Upon lessor's acceptance of the relinquishment, lessee shall be relieved of all future obligations under the lease or the relinquished portion thereof, whichever is applicable.

Sec. 10. DELIVERY OF PREMISES, REMOVAL OF MACHINERY, EQUIPMENT, ETC. - At such time as all portions of this lease are returned to lessor, lessee shall deliver up to lessor the land leased, underground timbering, and such other supports and structures necessary for the preservation of the mine workings on the leased premises or deposits and place all workings in condition for suspension or abandonment. Within 180 days thereof, lessee shall remove from the premises all other structures, machinery, equipment, tools, and materials that it elects to or as required by the authorized officer. Any such structures, machinery, equipment, tools, and materials remaining on the leased lands beyond 180 days, or approved extension thereof, shall become the property of the lessor, but lessee shall either remove any or all such property or shall continue to be liable for the cost of removal and disposal in the amount actually incurred by the lessor. If the surface is owned by third parties, lessor shall waive the requirement for removal, provided the third parties do not object to such waiver. Lessee shall, prior to the termination of bond liability or at any other time when required and in accordance with all applicable laws and regulations, reclaim all lands the surface of which has been disturbed, dispose of all debris or solid waste, repair the offsite and onsite damage caused by lessee's activity or activities incidental thereto, and reclaim access roads or trails.

Sec. 11. PROCEEDINGS IN CASE OF DEFAULT - If lessee fails to comply with applicable laws, existing regulations, or the terms, conditions and stipulations of this lease, and the noncompliance continues for 30 days after written notice thereof, this lease shall be subject to cancellation by the lessor only by judicial proceedings. This provision shall not be construed to prevent the exercise by lessor of any other legal and equitable remedy, including waiver of the default. Any such remedy or waiver shall not prevent later cancellation for the same default occurring at any other time.

Sec. 12. HEIRS AND SUCCESSORS-IN-INTEREST - Each obligation of this lease shall extend to and be binding upon, and every benefit hereof shall inure to, the heirs, executors, administrators, successors, or assigns of the respective parties hereto.

Sec. 13. INDEMNIFICATION - Lessee shall indemnify and hold harmless the United States from any and all claims arising out of the lessee's activities and operations under this lease.

Sec. 14. SPECIAL STATUTES - This lease is subject to the Clean Water Act (33 U.S.C. 1252 et. seq.), the Clean Air Act (42 U.S.C. 4274 et. seq.), and to all other applicable laws pertaining to exploration activities, mining operations and reclamation, including the Surface Mining Control and Reclamation Act of 1977 (30 U.S.C. 1201 et. seq.).

Sec. 15. SPECIAL STIPULATIONS (Cont'd.) -

This coal lease is subject to termination if the lessee is determined at the time of issuance to be in noncompliance with Section 2(a)2(A) of the Mineral Leasing Act.

- SEE ATTACHED STIPULATIONS -

THE UNITED STATES OF AMERICA

Beaver Creek Coal Company
any or Lessee Name

President (Signature of Lessee)

(Title)

AUG 13 1990
(Date)

By DEPARTMENT OF THE INTERIOR
Bureau of Land Management

(Signing Officer)

Chief, Minerals Adjudication Section
(Title)

SEP 18 1990
(Date)

U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any ctitious or fraudulent statements or representations as to any matter within its jurisdiction.

rm does not constitute an information collection as defined by 44 U.S.C. 3502 and therefore does not require OMB approval.

1. The Regulatory Authority shall mean the State Regulatory Authority pursuant to a cooperative agreement approved under 30 CFR Part 745 or in the absence of a cooperative agreement, Office of Surface Mining. The authorized officer shall mean the State Director, Bureau of Land Management. The authorized officer of the Surface Management Agency shall mean the Forest Supervisor, Forest Service. Surface Management Agency for private surface is the Bureau of Land Management. For adjoining private lands with Federal minerals and which primarily involve National Forest Service issues, the Forest Service will have the lead for environmental analysis and, when necessary, documentation in an environmental assessment or environmental impact statement.

2. The authorized officers of the Bureau of Land Management, Office of Surface Mining (Regulatory Authority), and the Surface Management Agency (Forest Service) respectively, shall coordinate, as practical, regulation of mining operations and associated activities on the lease area.

3. In accordance with Sec. 523(b) of the "Surface Mining Control and Reclamation Act of 1977," surface mining and reclamation operations conducted on this lease are to conform with the requirements of this Act and are subject to compliance with Office of Surface Mining regulations, or as applicable, an equivalent Utah program approved under a cooperative agreement in accordance with Sec. 523(c). The United States Government does not warrant that the entire tract will be susceptible to mining.

4. Federal Regulations 43 CFR 3400 pertaining to Coal Management make provisions for the Surface Management Agency, the surface of which is under the jurisdiction of any Federal agency other than the Department of the Interior, to consent to leasing and to prescribe conditions to insure the use and protection of the lands. All or part of this lease contain lands the surface of which are managed by the United States Department of Agriculture, Forest Service Manti-LaSal National Forest.

The following stipulations pertain to the lessee responsibility for mining operations on the lease area and on adjacent areas as may be specifically designated on National Forest System lands.

5. Before undertaking activities that may disturb the surface of previously undisturbed leased lands, the lessee may be required to conduct a cultural resource inventory and a paleontological appraisal of the areas to be disturbed. These studies shall be conducted by qualified professional cultural resource specialists or qualified paleontologists, as appropriate, and a report prepared itemizing the findings. A plan will then be submitted making recommendations for the protection of or measures to be taken to mitigate impacts for identified cultural or paleontological resources.

If cultural resources or paleontological remains (fossils) of significant scientific interest are discovered during operations under this lease, the lessee prior to disturbance shall immediately bring them to the attention of the appropriate authorities. Paleontological remains of significant scientific interest do not include leaves, ferns, or dinosaur tracks commonly encountered during underground mining operations.

The cost of conducting the inventory, preparing reports, and carrying out mitigating measures shall be borne by the lessee.

6. If there is reason to believe that threatened or endangered (T&E) species of plants or animals, or migratory bird species of high Federal interest occur in the area, the lessee shall be required to conduct an intensive field inventory of the area to be disturbed and/or impacted. The inventory shall be conducted by a qualified specialist and a report of findings will be prepared. A plan will be prepared making recommendations for the protection of these species or action necessary to mitigate the disturbance.

The cost of conducting the inventory, preparing reports, and carrying out mitigating measures shall be borne by the lessee.

7. The lessee shall be required to perform a study to secure adequate baseline data to quantify the existing surface resources on and adjacent to the lease area. Existing data may be used if such data is adequate for the intended purposes. The study shall be adequate to locate, quantify, and demonstrate the inter-relationship of the geology, topography, surface hydrology, vegetation, and wildlife. Baseline data will be established so that future programs of observation can be incorporated at regular intervals for comparison.

8. Powerlines used in conjunction with the mining of coal from this lease shall be constructed so as to provide adequate protection for raptors and other large birds. When feasible, powerlines will be located at least 100 yards from public roads.

9. The limited area available for mine facilities at the coal outcrop, steep topography, adverse winter weather, and physical limitations on the size and design of the access road, are factors which will determine the ultimate size of the surface area utilized for the mine. A site specific environmental analysis will be prepared for each new mine site development and for major modifications to existing developments to examine alternatives and mitigate conflicts.

10. Consideration will be given to site selection to reduce adverse visual impacts. Where alternative sites are available, and each alternative is technically feasible, the alternative involving the least damage to the scenery and other resources shall be selected. Permanent structures and facilities will be designed and screening techniques employed to reduce visual impacts and, where possible, achieve a final landscape compatible with the natural surroundings. The creation of unusual, objectionable, or unnatural land forms and vegetative landscape features will be avoided.

11. The lessee shall be required to establish a monitoring system to locate, measure, and quantify the progressive and final effects of underground mining activities on the topographic surface, underground and surface hydrology and vegetation. The monitoring system shall utilize techniques which will provide a continuing record of change over time and an analytical method for location and measurement of a number of points over the lease area. The monitoring shall incorporate and be an extension of the baseline data.

12. The lessee shall provide for the suppression and control of fugitive dust on haul roads and at coal handling and storage facilities. On Forest Development Roads (FDR), lessees may perform their share of road maintenance by a commensurate share agreement if a significant degree of traffic is generated that is not related to their activities.

13. Except at specifically approved locations, underground mining operations shall be conducted in such a manner so as to prevent surface subsidence that would: (1) cause the creation of hazardous conditions such as potential escarpment failure and landslides, (2) cause damage to existing surface structures, or (3) damage or alter the flow of perennial streams. The lessee shall provide specific measures for the protection of escarpments, and determine corrective measures to assure that hazardous conditions are not created.

14. In order to avoid surface disturbance on steep canyon slopes and to preclude the need for surface access, all surface breakouts for ventilation tunnels shall be constructed from inside the mine, except at specifically approved locations.

15. If removal of timber is required for clearing of construction sites, etc., such timber shall be removed in accordance with the regulations of the surface management agency.

16. The coal contained within, and authorized for mining under this lease, shall be extracted only by underground mining methods.

17. Existing Forest Service owned or permitted surface improvements will need to be protected, restored, or replaced to provide for the continuance of current land uses.

18. In order to protect big game wintering areas, elk calving and deer fawning areas, sagegrouse strutting areas, and other critical wildlife habitat and/or activities, specific surface uses outside the mine development area may be curtailed during specific periods of the year.

19. Support facilities, structures, equipment, and similar developments will be removed from the lease area within 2 years after the final termination of use of such facilities. This provision shall apply unless the requirement of Section 10 of the lease form is applicable. Disturbed areas and those areas previously occupied by such facilities will be stabilized and rehabilitated, drainages reestablished, and the areas returned to a premining land use.

20. The lessee at the conclusion of the mining operations, or at other times as surface disturbance related to mining may occur, will replace all damaged, disturbed, or displaced corner monuments (section corners, quarter corners, etc.), their accessories and appendages (witness trees, bearing trees, etc.), or restore them to their original condition and location, or at other locations that meet the requirements of the rectangular surveying system. This work shall be conducted at the expense of the lessee by a professional land surveyor registered in the State of Utah and to the standards and guidelines found in the manual of surveying instruction, U.S. Department of the Interior.

21. The lessee at his expense will be responsible to replace any surface water identified for protection that may be lost or adversely affected by mining operations with water from an alternate source in sufficient quantity and quality to maintain existing riparian habitat, fishery habitat, livestock and wildlife use, or other land uses.

22. The lessee must comply with all the rules and regulations of the Secretary of Agriculture set forth at Title 36, Chapter II, of the Code of Federal Regulations governing the use and management of the National Forest System (NFS) when not inconsistent with the rights granted by the Secretary of the Interior in the lease. The Secretary of Agriculture's rules and regulations must be complied with for (1) all use and occupancy of the NFS prior to approval of a permit/operation plan by the Secretary of the Interior, (2) uses of all existing improvements, such as Forest Development Roads, within and outside the area licensed, permitted or leased by the Secretary of the Interior, and (3) use and occupancy of the NFS not authorized by a permit/operation plan approved by the Secretary of the Interior.

All matters related to this stipulation are to be addressed to:

Forest Supervisor
Manti-LaSal National Forest
599 West Price River Drive
Price, Utah 84501

Telephone No.: 801-637-2817

who is the authorized representative of the Secretary of Agriculture.

ASSIGNMENT AND ASSUMPTION
of COAL LEASES and LOGICAL MINING UNIT

THIS ASSIGNMENT AND ASSUMPTION of COAL LEASES and LOGICAL MINING UNIT (the "*Assignment*") is made and entered into as of the 5th day of June, 2015, by PACIFICORP, an Oregon corporation, having a mailing address of 1407 West North Temple, Suite 310, Salt Lake City, Utah 84116 ("*Lessor*") *and* INTERWEST MINING COMPANY, an Oregon corporation, having a mailing address of 201 South Main Street, Suite 2100, Salt Lake City, Utah 84111("*Operator*") (Lessor and Operator are collectively referred to herein as "*Assignor*"), as Assignor, to and for the benefit of FOSSIL ROCK RESOURCES, LLC, a Delaware limited liability company, (the "*Assignee*"), having a mailing address of 6100 Dutchmans Lane, 9th Floor, Louisville, Kentucky 40205, as Assignee. For Ten Dollars ($10.00) and other good and valuable consideration, receipt and sufficiency of which is hereby acknowledged, Assignee and Assignor hereby agree as follows:

1. To the extent assignable, Assignor assigns, transfers, and conveys to the Assignee and the Assignee hereby accepts, all right, title and interest, as Lessee, in and to all of those three certain federal coal leases described in the attached **Schedule 1** by and between Assignor, as Lessee, and the United States of America, as Lessor, (collectively, the "*Leases*"). Further, to the extent assignable, the Assignor hereby assigns, transfers, and conveys to the Assignee and the Assignee hereby accepts, all right title and interest, as Operator, in and to all of that certain logical mining unit described in the attached Schedule 2, by and between Assignor and the United States of America (the "*LMU*"). The Leases and the LMU affect that certain real property more particularly described in the attached **Exhibit A.**

2. Assignee accepts the foregoing assignment and assumes all of the Lessee's obligations under the Leases and all of the Operator's obligations under the LMU. Assignee also acknowledges that it will be the single operator of the LMU and accepts all stipulations and obligations of the LMU.

3. This Assignment shall be binding upon and inure to the benefit of Assignor, the Assignee, and their respective legal representatives, successors and assigns. Assignor will execute or cause to be executed such other documents or instruments as may be necessary or appropriate, in the Assignee's reasonable discretion, to effectuate this Assignment.

[Signatures on Following Page]

IN WITNESS WHEREOF, Assignor and Assignee have executed and delivered this Assignment by their duly authorized representatives as of June 5, 2015.

ASSIGNOR:

PACIFICORP,
an Oregon corporation

Cindy A. Crane
President/CEO - PacifiCorp dba Rocky Mountain Power

INTERWEST MINING COMPANY,
an Oregon corporation

By: CINDY A. CRANE
Its: PRESIDENT

ASSIGNEE:

FOSSIL ROCK RESOURCES, LLC,
a Delaware limited liability company

By: Johannes H. Dreyer
Its: CEO

SCHEDULE 1

(Leases)

1. Coal Lease UTU-64375 issued effective October 1, 1990, as amended and readjusted.
2. Coal Lease UTU-49332 issued effective March 1, 1983, as amended and readjusted.
3. Coal Lease UTU 0-082996 issued effective July 1, 1962, as amended and readjusted.

SCHEDULE 2

(LMU)

Trail Mountain Logical Mining Unit UTU-73339 issued effective September 13, 1988, as amended and readjusted.

EXHIBIT A

(Legal Description of Real Property)

UTU-64375

Township 17 South, Range 6 East SLB&M
Section 26: S½SW¼, W½SW¼SE¼;
Section 27: S½S½

260 acres more or less in Emery County, Utah

UTU-49332

Township 17 South, Range 6 East SLB&M
Section 25: S½NW¼, W½E½SW¼, W½SW¼;
Section 26: SE¼NE¼, E½SW¼NE¼, E½SE¼, E½W½SE¼

380 acres more or less in Emery County, Utah

UTU 0-082996

Township 17 South, Range 6 East SLB&M
Section 25: E½E½SW¼, SW¼SE¼

80 acres more or less in Emery County, Utah

CHAPTER 5
HISTORICAL AND CULTURAL RESOURCES

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HISTORICAL AND CULTURAL RESOURCES

5.1 SCOPE

This chapter reviews the existence and potential for historical, archeological, and paleontological resources in the area of ~~Trail Mountain~~ the Mine. Also discussed is the potential effect the mining activities will have on the cultural resources.

5.2 METHODOLOGY

The cultural evaluations of the existence and potential of historical, archeological, and paleontological resources contains information from a record and archival examination and intensive surveys of the mine plan area and all development zones.

Evaluation of cultural resources for historic and prehistoric sites is done by the use of site quality indicators. Assessment of significance of the sites discovered utilizes the Cultural Resource Rating System (CRRS). CRRS is best explained by quoting the Bureau of Land Management definition sheet:

Cultural Resource Rating System

The following criteria are established as guidelines. The Bureau recognizes that the assignment of a particular rating is a professional judgment; however, the rationale of these judgments will be explicitly documented as part of the evaluation process.

> Assign an evaluation rating (S1, S2, S3, S4) to each site according to the following guidelines and record on the BLM Form 6400-3:
>
> > S1. S1 sites are those sites which are worthy of preservation in situ. In general they are sites in relatively good condition with integrity (both internal and external); and the unique or representative; and/or have associations with important events or personages; and/or have yielded, or have a clear potential for yielding, highly significant scientific or educational information.

S2. S2 sites are those sites which contain important scientific or educational data but yet are not worthy of preservation in situ. They are not generally not particularly unique, representative, nor do they have important associations. Many contemporary sites may be S2 sites because, they cannot be clearly and immediately assessed as such, and they may become highly significant when evaluated from a future historical perspective.

S3. S3 sites are those sites whose main worth is their potential for contributing data in regard to solving larger problems, such as reconstruction of paleo-environments and human use patterns. These kinds of sites generally show little concentration of artifacts, few features, no important associations, and little or no uniqueness or representativeness.

S4. S4 sites are those sites which have minimal information retrieval possibilities, or which have no integrity, uniqueness, representativeness, or no important associations.

5.3 HISTORIC RESOURCES

5.3.1 Historical Inventory

No historical resources are known to exist within the mine plan area. A study performed by Archeological Environmental Research Corporation (AERC) in July, 1979 showed no historic sites in the canyon bottom (see Plate 5-1 and Appendices 1 & 2, for a copy of Plate 5-1 and Appendix 1 [including Figure 5-1] ~~refer to PacifiCorp Confidential and Private Information Volume: Trail Mountain tab).~~

5.3.2 History of Mining

Mining activities existed on or near the site of the Trail Mountain Mine since 1898 (Doelling, 1972). The first large scale operation on the site, the Johnson Mines, opened in 1909. A series of three mines, the Johnson property operated from 1909 through 1948. The amount of coal produced during that period and the extent of the workings is unknown.

In 1946 three additional operations started in Cottonwood Canyon. Two prospects operated for a short time (1946-1952) (Doelling, 1972). Activity at the Trail Mountain Mine started in 1946 and lasted until 1967. The mine was then shut down for 10 years and reopened under the ownership for Mr. John Bell of Orangeville, Utah. Mr. Bell operated the mine until 1979. The Fetterolf Group then operated the mine until 1981, when it was purchased by Natomas Trail Mountain Coal Company. The property was subsequently purchased by Diamond Shamrock, later by Arch Minerals Corp., by Beaver Creek Coal Company (1987), and finally by PacifiCorp (1992) who presently operates the mine.

5.3.3 Effects of Mining on Historical Resources

There are no sites listed or eligible for listing in the National Register of Historic Places located within the mine plan area. Therefore, no effect will occur due to the mining.

5.4 ARCHEOLOGICAL RESOURCES

5.4.1 Archeological Inventory

Five archeological sites (279E/1 through 279E/5) and four isolated artifacts (279E/x1 through 279E/x4) were identified by AERC in the lower section of Cottonwood Canyon (see Plate 5-1: Refer to PacifiCorp Confidential and Private Information Volume: Trail Mountain tab). Two of the archeological sites, 279E/3 and 279E/5 have important data remains. Some vandalism had occurred at these sites. "The abundance of charcoal and the lack of ceramics, suggests possible datable archaic habitation. Site depths of up to a meter of fill evidently contain important statigraphic data. Both sites have register potential (CRRS: S-2) because of the scientific information potential". (AERC, 1979.)

Site 279E/2, located north of 279E/4 is something of an enigma. The site consists of a rectangular stone foundation, but the lack of other surface materials, and apparent depth, make it difficult to determine whether the site was historic or an unusual, perhaps an uncompleted prehistoric structure. Because of the stone alignments, and its pinon-juniper bench location, the site is suspected as prehistoric. It was judged not to have National Register potential and rated CRRS: S-4.

The two remaining sites 279E/1 and 2 were both CRRS: S-4 lithic scatters. No diagnostic tools were found upon them or any of the other previously described sites (for a complete discussion related to the cultural resources of Cottonwood Canyon refer to "A Preliminary Report on the Cultural Resources and Test Excavations in Cottonwood Canyon, Emery County, Utah [UP&L-79-5A, B, C]", 1979, report prepared for Utah Power & Light Company by Archeological Environmental Research Corporation, Salt Lake City, Utah).

5.4.2 Effects of Mining on Archeological Resources

The Cottonwood Creek area seems to have been the scene of limited but significant prehistoric activities. Two of the isolated artifact locations 279E/X1 and X2 had every appearance of having been sites long since eroded. These isolates compliment the two other lithic scatters and indicate limited hunting activities along the drainage. The depth of charcoal in the rock shelters indicates that their prehistoric occupation could involve a considerable chronological period.

In the area the artifacts were located, little impacts from the mining activities will occur. The sites located near the roadside will be and have been subject to vandalism. Future improvements to the road suggested by Emery County and the Forest Service may significantly impact the sites.

If such improvements occur then an intensive study will need to be undertaken to determine mitigation procedures. At the present time no significant impacts are expected.

5.5 PALEONTOLOGICAL RESOURCES

5.5.1 Paleontologic Inventory

Fossils are found on the mine plan area in nearly all of the geologic units. With the exception of dinosaur footprints found in the coal seams of the Blackhawk Formation, no significant paleontologic specimens are known to be present (US Forest Service, 1978).

5.5.2 Effects of Mining on Paleontologic Resources

No significant effects to the paleontologic resources are expected by the mining activities. The occurrence of dinosaur foot prints in the coal seams is not a unique occurrence.

5.6 PUBLIC PARKS

5.6.1 Inventory of Public Facilities

No public facilities are located within the permit area. A public road provides access to the site and the upper canyon.

5.6.2 Effect of Mining on Public Facilities

No effect on public facilities is expected from the mining operation. Access on the public road will not be affected.

5.7 BIBLIOGRAPHY

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Utah Power & Light, 1980. Mining and Reclamation Plan, Wilberg Mine-Cottonwood Modification. Salt Lake City, Utah.

A Preliminary Report on the Cultural Resources and Test Excavations in Cottonwood Canyon, Emery County, Utah (UP&L-79-5A, B, C)" , 1979, report prepared for Utah Power & Light Company by Archeological Environmental Research Corporation, Salt Lake City, Utah.

CHAPTER 7
HYDROLOGY

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HYDROLOGY

7.1 GROUNDWATER HYDROLOGY

7.1.1 Scope

The scope of the groundwater section of this report is to describe the existing groundwater hydrologic conditions of the mine plan area and adjacent areas and to describe the methods that have been and will be used to predict and monitor the impacts from mining (see Figure 7-1 for location of the Permit Area). Sections within the groundwater section of this report will cover the following major topics: methodology, existing groundwater resources, groundwater hydrologic balance, mitigation and control plans, and groundwater monitoring plans.

7.1.2 Methodology

Information used in preparing the groundwater hydrologic section of this report has been gathered by field investigations conducted on the ground and in the mine. Water quality samples have been collected and analyzed. Pertinent literature has been examined. In addition, experience of personnel working in the mine has been utilized to obtain estimates of the quantity of water encountered in the mine.

A seep and spring survey was conducted on October 29, 1985 in the vicinity of lease UTU-64375 (previously referred to as Tract 2). Data collected from this survey are supplemental to data collected in June 1981 as part of the investigation conducted for leases U-49332, U-082996, ML-22603 (previously referred to as Tract 1) for the PAP.

All water quality samples have been and will continue to be analyzed by a certified laboratory. Water rights were determined by examining current records of the Utah Division of Water Rights.

7.1.3 Existing Groundwater Resources

This section of the report deals with the groundwater resources of the mine plan area as well as the region as a whole.

7.1.3.1 Regional Groundwater Hydrology

Geology, an important factor in the groundwater hydrology, is discussed briefly in this section to provide a basis for better understanding of the groundwater hydrologic regime.

Geology - The Mine plan area is located in the central portion of the Wasatch Plateau coal field (Doelling, 1972). The dip of the strata is generally toward the southwest, ranging from approximately five to eleven percent (three to six degrees) over the mine plan area. The geologic formations exposed on or adjacent to the mine plan area are Cretaceous members of the Mesaverde group, overlain by the North Horn and Flagstaff Limestone formations, which are Tertiary Formations (see Plate 6-2).

Star Point Sandstone - The Star Point Sandstone, the basal formation of the Mesaverde group (Doelling, 1972), is a light colored, massive, medium to fine-grained sandstone (Spieker, 1931). The Star Point ranges in thickness from 250 to 450 feet (Doelling, 1972, and Spieker, 1931). The sandstone is relatively impermeable with groundwater movement occurring mainly in fractures.

Blackhawk Formation - Overlying the Star Point is the Blackhawk Formation which is the middle and coal-bearing division of the Mesaverde group. The Blackhawk consists of alternating sandstone, shale and coal beds and is approximately 700 to 800 feet thick with the valuable coal seams located within the lower 400 feet (Doelling, 1972).

The sandstone beds are fine to medium-grained (Spieker, 1931) and yellow-gray to tan in color (Doelling, 1972). The sands of the Blackhawk are cemented by calcium carbonate or silica with the exception of a few localized areas in which the cement consists almost entirely of clay. Iron is also present in the cement of all but the pure

white sandstones (Spieker, 1931). The generally discontinuous nature of the Blackhawk and apparent low specific yield (Cordova, 1964) indicates that the water yielding capabilities of the Blackhawk are only of local importance.

Spieker (1931) identifies three general types of shale in the Blackhawk Formation: ordinary clay shale, carbonaceous shale, and smoke-gray shale (all continental in origin). The ordinary clay shale is gray to green, granular and normally soft at the outcrop; the carbonaceous shale is brown to black, massive and laminated; and the smoke-gray shale is tough and leathery, and in its unweathered state is hard and homogeneous (Spieker, 1931). The presence of shale acts as a significant barrier to the vertical movement of water within the Blackhawk Formation.

Castlegate Sandstone - The Castlegate Sandstone, generally considered a member of the Price River Formation (Spieker, 1931), consists of massive, medium to coarse-grained sandstone beds, containing conglomerate with a matrix of grit (Doelling, 1972) in places. The Castlegate overlies the Blackhawk Formation, and its beds are occasionally broken by sandy, hard, gray shale and at times by thin lenses of coal (Doelling, 1972).

Price River Formation - The lithologic characteristics of both the Price River Formation and the underlying Castlegate Sandstone are similar. The Castlegate member is separated from the Price River due to its cliff-forming characteristics (Spieker, 1931). Like the Castlegate, the Price River Formation consists of medium- to coarse-grained sandstone beds with occasional lenses of shale. Although the unit has a high porosity, its apparent low permeability (Cordova, 1964) reduces its water-yielding capabilities except through fractures.

North Horn Formation - The North Horn is the lowermost member of the Wasatch Group, consisting of variegated shales, irregular beds of gray, brown or cream-colored sandstone of various texture and thin beds of steel gray and cream-colored limestone (Spieker, 1931). Like the Blackhawk Formation, the shales in the Castlegate, Price River, and North Horn formations act as significant barriers to the vertical movement of water within the formations; therefore, a significant portion of

the water which reaches these underlying formations percolates downward until encountering a shale layer, which then causes horizontal movement to the surface or another "drain," i.e., sandstone finger within the formation.

Flagstaff Limestone - Although not located within the mine plan area, erosional remnants of the Flagstaff Limestone are located on summits and ridges adjacent to the Trail Mountain Mine (Davis and Doelling, 1977). The unit forms a white cliff, consisting of white, light gray and thin-bedded lacustrine limestone with some thin beds of gray shale and white volcanic ash. On top of Trail Mountain in the NW 1/4 of Section 22, T17S, R6E the thickness of the Flagstaff Limestone was measured at 105 feet (Davis and Doelling, 1977).

Faults - No major faults have been found to extend into the mine plan area. The Joe's Valley fault zone, trending north to south, is located approximately three miles to the west of the PHI area; therefore, no major faults are anticipated to be encountered in the Trail Mountain Mine.

Groundwater - The principal factor controlling the occurrence and availability of groundwater in any area is geology. As noted by Price and Waddell (1973), nearly all of the region surrounding the mine plan area is underlain by rocks of continental and marine origin, consisting predominantly of interbedded sandstones and shales. Although some of the sandstones in the region serve as the principal water-bearing strata, their ability to yield water for extended periods of time is largely controlled by the existence of the relatively impermeable interbedded shale layers, which prevent the downward movement of a significant amount of water.

According to the US Geological Survey (1979), groundwater in the region exists under water table, artesian, and perched conditions. Water table conditions exist primarily in shallow alluvial deposits along larger perennial streams and in relatively flat lying sedimentary rocks. Artesian conditions exist at greater depths where a confining layer overlies a more permeable member; however, pressures are generally not sufficient to produce flowing wells. Perched or impeded conditions exist where the confining layer lies beneath the water-bearing stratum.

As noted by Lines (1985), the Blackhawk Formation and the Star Point Sandstone are considered together in the region as an aquifer. These formations are typically saturated where they exist sufficiently far from the edges of canyons; however, the Blackhawk Formation tends to be drained near the canyons, as is the case in the existing Trail Mountain Mine workings.

Strata that overly the Blackhawk Formation are not completely saturated but do contain perched aquifers (Lines, 1985), which provide water locally to springs and base flow to some streams.

Investigations in the vicinity of the Trail Mountain Mine by Danielson et al (1981) indicated that most, if not all, groundwater in the region is derived from snowmelt. Recharge tends to be limited in areas underlain by younger rocks due to slope steepness and relative imperviousness, both of which promote runoff rather than infiltration of snowmelt.

The predominant chemical constituents in most springs in the region are calcium, magnesium, and bicarbonate (Lines, 1985). Dissolved solids concentrations generally range from about 250 to 750 milligrams per liter. Regionally, the concentrations of major dissolved constituents in water from individual geologic units are highly variable, due to lithologic complexity in the area.

Spring inventories of the mine plan areas were conducted in 1981 and 1985. The springs within and adjacent to the mine plan areas, shown in Plate 7-1, exist under perched conditions because of the existence of relatively impermeable interbedded shales within the North Horn, Price River, Castlegate and Blackhawk Formations. Springs issue from a sandstone layer underlain by shale adjacent to and downslope from a local recharge basin where more than average snow can accumulate. Recharge zones for these local springs are nearby flats along ridges. Springs generally do not occur along narrow ridges with steep side slopes where little opportunity for groundwater recharge exists.

Another interesting groundwater characteristic deals with the origin of springs with regard to geologic formations. The springs sampled on Trail Mountain were associated with the North Horn Formation. As mentioned previously, the North Horn Formation consists of variegated shale, sandstone, and thin-bedded limestone. The shale layers act as impeding members to deep percolation, diverting a significant portion of water which percolates through the soil mantle and forcing it to move somewhat horizontally to be discharged at the surface as spring water. Most of the springs are located at higher elevations. The North Horn Formation lacks distinct and persistent lithologic units (Spieker, 1931); therefore, the sandstone of water-bearing lenses of the formation is somewhat discontinuous. This fact, coupled with the fact that recharge zones for the springs are in the nearby flats along the ridges, implies that springs are local in extent as opposed to a larger more regional system.

7.1.3.2 Mine Plan Area Aquifers

Seeps and Springs - As indicated previously, springs and seeps within and adjacent to the mine plan area have been inventoried. The mine plan area was walked over and springs and seeps identified. Water quality samples were collected from the springs associated with the mine plan area and analyzed.

Springs on Trail Mountain generally issue from sandstone overlying a shale layer. Lines (1985) found that the laboratory hydraulic conductivity of the sandstone and shale units within the Blackhawk Formation varies by four to six orders of magnitude. The relative magnitude of the hydraulic conductivity of local sandstones compared with siltstones and shales indicates that the finer grained sediments of the formations serve as barriers to the downward movement of water.

Recharge into local formations, either through snowmelt, rainfall, or subsurface seepage from an adjacent formation, percolates downward within the sandstone beds; however, upon reaching a less-permeable siltstone or shale layer, the water is forced to flow downdip to the surface, issuing at the interface between the two units. Four wells have been drilled to monitor groundwater conditions in the Star Point Sandstone. The following table lists the well completion data and the status of each well:

WELL ID.	DRILL DEPTH (ft)	STRATA MONITORED	POTENTIMETRIC ELEVATION (ft)	MONITORING STATUS
TM-1	650	Star Point Sandstone (See Notes Below)	7259	Abandoned Relocated to TM-1B (See Notes Below)
TM-1B	480	Star Point Sandstone (See Notes Below)	7272	Monthly See Monitoring Plan
TM-2	60	Spring Canyon Member Star Point Sandstone	7151	Abandoned In-Mine Well Area Sealed
TM-3	560	Spring Canyon Member Star Point Sandstone	6900	Monthly See Monitoring Plan

Well TM-1: Well TM-1 was drilled outside the mine near the main manway portal. The hole was drilled to a total depth of 650 feet, beginning at a point 5.0 feet below the top of the Star Point Sandstone. At this location the Star Point was encountered to a depth of 350 feet, with a transition from the Star Point to the Mancos Shale existing from a depth of 350 feet to 500 feet. Below the 500-foot depth, the Mancos shale is present. The elevation of the ground surface at TM-1 is 7276.0 feet. On September 17, 1993 the static water level in TM-1 was at a depth of 17.4 feet below the surface; hence, the elevation of the potentiometric surface at TM-1 is 7258.6 feet. During routine monitoring on December 20, 1993 the bailer utilized to retrieve the quality samples became lodged in the casing at a depth of approximately forty feet. Several unsuccessful attempts were made to retrieve the bailer. Well TM-1 has been permanently abandoned using Division of Water Rights specifications. Monitoring potential impacts to the Star Point Sandstone at the mine facility was transferred to Well TM-1B on June 22, 1994.

Well TM-1B: Beaver Creek Coal developed a surface well located near the bathhouse (designated as well TM-1B on the enclosed Surface Facilities map 3-1)

with the intended purpose of supplying water to the water treatment plant (see Volume 2 Appendix 7-7). During well development it was determined that the well production was insufficient to supply the water treatment plant (production was less than five gallons per minute) and the well was temporarily abandoned. Well TM-1B was drilled in October 1987 to a depth of 480 feet, which fully penetrated the Star Point Sandstone formation. Development included setting 480 feet of 6 inch steel casing, perforating the casing from 380-460, and setting a Grundfos 5-10 GPM pump at 420 feet with a 1 inch galvanized discharge line. Monitoring of well TM-1B was initiated in June 1994 with depth on a monthly basis and quality collected quarterly.

Well TM-2: Well TM-2 was an in-mine well drilled at crosscut 54 in the south mains. The hole was drilled to a total depth of 60 feet, beginning at the top of the Star Point. Only the Spring Canyon Member of the Star Point Sandstone was penetrated in this hole. The elevation of the mine floor and the top of the Star Point Sandstone at TM-2 is 7167.0 feet. On October 24, 1985 the static water level in TM-2 was at a depth of 16.5 feet below the mine floor. Hence, the elevation of the potentiometric surface at this location is 7150.5 feet.

Well TM-3: PacifiCorp drilled and developed well TM-3 on September 28, 1993 to satisfy a special condition request from the mid-term permit review. Results of an aquifer test conducted April 28, 1994 can be found in Appendix 7-14. Well TM-3 was drilled in Straight Canyon, approximately 11 miles northwest of Orangeville, Utah (SW1/4 NW1/4 of Section 3, Plate 7-2). Well TM-3 was drilled to a total depth of 560 feet. At this location, the Star Point was encountered to a depth of 455 feet, with a transition from the Star Point - Spring Canyon Member to the Mancos Shale existing from a depth of 555 feet to 560 feet. The elevation of the ground surface at TM-3 is 6750 feet. Water in the Star Point Sandstone is under artesian pressure, with the static pressure on June 22, 1994 of 65 psi. Hence, the elevation of the potentiometric surface at TM-3 was 6900.2 feet when the well was completed.

Results of complete chemical analyses from Well TM-1B are presented with other water monitoring data in the Annual Reports (pre-2015). Plate 7-1 also shows the

elevation of the potentiometric surface in the greater Mine area. This data is taken from Lines (1985) and modified using data from Wells TM-1, TM-1B, TM-2 and TM-3. As noted, the potentiometric surface surmised by Lines should be shifted to the south in the vicinity of Cottonwood Creek. Plate 7-1 indicates that the flow of groundwater in the Star Point Sandstone in the vicinity of the Mine is to the south-southwest toward Straight Canyon.

Springs in the vicinity of the Trail Mountain Mine are used by cattle, deer, elk and other wildlife. Five of the springs (T-4, T-6, T-8, T-9, T-11, T-15) have been developed with watering troughs or ponds.

Data presented by Lines (1985) indicate that the total dissolved solids concentrations of water from springs in the North Horn Formation tend to increase in the direction of groundwater flow, i.e., in the south-southwest direction according to Lines, (1985). A review of TDS data collected from springs monitored by PacifiCorp substantiates this observation (review Annual Hydrologic Monitoring Reports (pre-2015), Springs T-8, T-15 and T-6). The pattern of increasing TDS in a southerly direction could possibly be due to increased leaching of the bedrock in the down gradient direction or contact with altered strata associated with natural burning along the southern outcrop. Insufficient springs were available to determine if such a trend exists within other formations in the vicinity of the mine; however, Lines (1985-Appendix 7-B) found that the pattern did not exist in the Blackhawk-Star Point aquifer.

The pH of water issuing from springs in the survey area showed no trends. Values varied from 7.3 to 8.5, generally falling in the range of 7.3 to 7.6; hence, spring water in the study area is slightly alkaline.

Groundwater Quality - Water quality samples have been collected from seepage within the Trail Mountain Mine (pre-2015) to determine the groundwater hydrologic conditions within the Blackhawk Formation in which the coal-bearing zone is located. Water quality samples have also been collected from springs to provide an index of groundwater hydrologic conditions within other overlying formations of the mine plan area.

~~All~~ Samples were collected and preserved as previously outlined. The results of the chemical analyses for samples taken from within the mine are presented in Table 7-1.

Mining occurs in the lower Blackhawk Formation, which consists of interbedded layers of sandstone and mudstone separated by mineable and non-minable coal seams. The sandstone beds-fluvial channel systems are generally massive while the mudstone layers are fine textured and have a tendency to swell when wet and decompose into an impervious clay. Because of the aquiclude formed by mudstone layers in the North Horn Formation, recharge to the Blackhawk Formation is limited, even along major fault systems. Due to the lithologic characteristics of the Blackhawk, both vertical and horizontal migration is constricted. ~~Refer to Chapter 7, Hydrology, for a detailed discussion of the Hydrologic Balance.~~

The interception of groundwater varies and is dependent on several factors. One of the most significant is that when the mine enters virgin country, a significant amount of water is liberated. In virtually all cases the amount of water which flows into the mine exceeds the recharge and, in time, the water inflow decreases in volume. If new areas are not mined, the discharge from the mine will decrease accordingly.

Groundwater chemical quality is very good in strata above the Mancos Shale. The USGS reports a range in dissolved solids from 50 to 750 mg/l for samples from 140 springs in the region issuing from the Starpoint Sandstone and overlying formations (Danielson et al., 1981). Danielson et al. (1981) identified the regional trends of decreasing water quality from north to south and west to east across the Wasatch Plateau. Waters percolation through the underlying Mancos Shale quickly deteriorate, with total dissolved solids concentrations frequently exceeding 3000 mg/l.

The quality also decreases vertically because of the influence of marine sediments along with the trend of decreasing quality from north to south. The predominant dissolved chemical constituents of the groundwater from both surface springs and samples collected in the mine are calcium, bicarbonate, magnesium and sulfate. Concentrations of magnesium are normally about one-half the concentration of calcium. Sulfate concentrations are typically higher in water from springs issuing from the Starpoint-Blackhawk aquifer zone or confined aquifers intersected by mine workings. As mentioned earlier water quality degrades from the north to the south and also vertically.

Although the analysis of the overburden samples tested has shown that no toxic or hazardous materials are present, groundwater quality will be protected by handling earth materials and runoff in a manner that minimizes infiltration to the groundwater system. Mine water encountered in the mine, which is not needed for dust suppression or mining, will be discharged according to stipulations in UPDES Permit ~~No. UT-0023728~~.

State and federal regulations (R645-301-727) require that an alternate water supply be provided to replace any water source disrupted, degraded, or diminished by the mining operation. Though the mining operation is unlikely to affect the water supplies in the Trail Mountain area, the permittee will provide this alternate supply if needed.

In the unlikely event of mining adversely affecting a water source, the permittee will review

and select an alternative after considering ~~all~~ the possibilities of each site-specific circumstance. ***Moved from Section 3.4.3.1, 3.4.3.2***

Wells and Users - As indicated previously, no wells are known to exist within or adjacent to the mine plan area except for the wells drilled to monitor potential impacts to the Star Point Sandstone aquifer. Principal groundwater use in the general area is restricted to use of wildlife and for stock watering from springs or seeps. Groundwater produced within the mine is used for dust suppression and equipment operation within the mine or discharged under an approved UPDES permit (see Appendix 7-11).

7.1.4 Groundwater Development and Mine Dewatering

This section of the report discusses the groundwater supply and usage in the mine plan and adjacent areas as well as the dewatering taking place in the Trail Mountain Mine.

7.1.4.1 Water Supply

Water required for underground mining operations is supplied from two sources:

1. Underground water from the mine is collected in a sump and recirculated for mining purposes; and

2. Supplemental mine water needs can also be supplied by pumping water from Cottonwood Creek.

Culinary water is supplied from underground sources pumped to a water treatment plant located near the main portal.

Water Rights - A search of water rights from the Utah Division of Water Rights within and adjacent to the mine plan area showed no claimed groundwater rights within two miles.

7.1.4.2 Mine Dewatering

Generally water encountered within the mine has been in the form of roof leakers through bolt holes and tension cracks positioned parallel to the working face of the mine. As mining progresses downdip, leakers further than 500 feet updip of the working face generally dry up. Only a limited amount of water is made within the mine. Water produced within the mine is used for dust suppression and fire protection within the mine and for the operation of in-mine machinery. Occasionally mine water production will exceed usage because of inactivity of the mine operation, short-lived surges of inflow, etc. As a result, a system has been constructed to allow for discharge of the mine water from the sump to Cottonwood Creek, with an option of routing the discharge through the sediment pond if necessary. This discharge point is approved under an UPDES Discharge Permit and is fitted with a flow meter for accurate quantity measurement. Intercepted groundwater will be monitored, quantified and reported annually in the Hydrologic Monitoring Report (pre-2015).

7.1.5 Effects of Mining on the Groundwater Hydrologic Balance

As has been noted, the occurrence and quality of water in any region is highly controlled by geology. A structural feature known as the Straight Canyon Syncline may influence the groundwater hydrology in the northwestern corner of the permit area. The axis of the syncline, plunging NE-SW at approximately 3.5°, passes just to the northwest of the permit boundary and is visible on outcrop at the Joes Valley dam. The syncline is a prominent feature and could provide a conduit from

groundwater migration from NE-SW. The only data for this area has been obtained from exploration holes which have been drilled near the syncline axis. No unusual or persistent sources of groundwater at the coal seam horizon were noted in holes TMX-2, TMX-6, and TMX-7 (see Appendix 7). As with any syncline structure, increased amounts of intercepted groundwater could be expected as mining approaches the syncline axis. Rather than rapid inundation which can occur along fault zones, a gradual increase in the amount groundwater entering the mine should be anticipated as mining proceeds down dip below the potentiometric surface toward the syncline axis. Since excess water in the mine is stored in sumps, settled and pumped out into Cottonwood Canyon Creek, the net loss to the general hydrologic regime would be minor or zero. The entire permit area is within the Cottonwood drainage system. Interbasin transfer will not occur from the interception and discharging of groundwater.

Springs - As noted previously, springs within and surrounding the mine plan area were inventoried in June, 1981 and October 1985. Experience gained from the data collected at nearby mines and from the general area has provided vital information regarding the possible effect of mining on springs.

Plate 7-1 shows the location of all water sources found during the hydrologic inventory of the mine plan and adjacent area. As shown, only a limited number of springs/seeps were found on the east face of Trail Mountain. The springs located were mainly confined to the west slopes of the mountain.

Based on the data collected by PacifiCorp and the Bureau of Mines on the adjacent East Mountain property, mining induced impacts have not been identified. As discussed in Chapter 11, subsidence is expected to have no impact on bedrock-aquifer springs in the vicinity of the Mine.

Four run off fed ponds were also identified during the October 29, 1985 survey. Their locations are shown on Plate 7-1. These ponds, numbered 35-1P, 26-1P, 26-2P and 26-3P, were sampled for water quality during the 1981 survey and occur within the area of potential subsidence. The subsidence effects on the ponds may result in changes in retention capacity if subsidence fractures intercept them; however, water quality is not likely to be adversely affected. Inflows to the mine are projected to be insufficient to require other than occasional dewatering; hence, impacts due to dewatering are projected to be minimal. The water supply for use at the mine (culinary and domestic) is obtained from in-mine sources. Lines (1985) states that mining is not expected to adversely impact water quality in the vicinity of the Trail Mountain Mine.

7.1.6 Mitigation and Control Plans

As was previously discussed, no significant impacts to the groundwater system are expected from the mining operation. The groundwater monitoring plan (discussed in the following section) will provide a means to follow the possible effect of mining activities on the groundwater system.

Any roads, fences, stock ponds, earth dams, or water troughs which are materially damaged by subsidence will be repaired and regraded to restore them to their pre-subsidence usefulness. Should significant subsidence impacts occur, the applicant will restore to the extent technologically and economically feasible those surface lands that were reduced in reasonably foreseeable use as

a result of such subsidence to a condition capable of supporting reasonable foreseeable uses that such lands were capable of supporting before subsidence.

7.1.6.1 Alternative Water Supply

In order to restore any land affected by Applicant's mining operations to a condition capable of supporting the current and post-mining land uses stated herein, the Applicant will replace water determined to have been lost or adversely affected as a result of Applicant's mining operations if such loss or adverse impact occurs prior to final bond release. The water will be replaced from an alternative source in sufficient quantity and quality to maintain the current and post-mining land uses as stated herein.

During the course of regular monitoring activities required by the permit, or as the Applicant otherwise acquires knowledge, the Applicant will advise the Division of the loss or adverse occurrence discussed above, within ten working days of having determined that it has occurred. Within ten days after the Division notifies Applicant in writing that it has determined that the water loss is the result of the Applicant's mining operation, the Applicant will meet with the Division to determine if a plan for replacement is necessary and, if so, establish a schedule for submittal of a plan to replace the affected water. Upon acceptance of the plan by the Division, the plan shall be implemented. Applicant reserves the right to appeal the Division's water loss determinations as well as the proposed plan and schedule for water replacement as provided by Utah Code Ann. 40-10-22(3)(a).

7.1.7 Groundwater Monitoring Plan

An inventory of the springs adjacent to the mine plan area was conducted during the spring of 1981 and the fall of 1985. Water quality and quantity data were collected at springs throughout the mine plan and adjacent area. After the quantity and quality data was assembled, representative springs were selected for the groundwater monitoring program. These springs are shown in Plate 7-2.

Groundwater monitoring for the permit area will also consist of collecting water quality and quantity from points of significant inflow to the underground workings. An inventory of the active portion of the mine will be conducted on a quarterly basis to identify the location and geologic occurrence of mine

inflows that exceed three gallons per minute. Certain of these inflows, if they occur, will be selected, in consultation with DOGM, for continued monitoring. Samples from all monitoring stations will be collected and analyzed according to Appendix 7-1. Groundwater monitoring data collected during a calendar year will be summarized and submitted to DOGM in the Annual Report (pre-2015). Monitoring parameters will be in accordance with DOGM Guidelines for Groundwater Monitoring. Monitoring schedule and reporting will be in accordance with Appendix 7-1.

7.1.7.1 Baseline Monitoring

Baseline monitoring will be conducted on new sites for a two year period, after which monitoring will revert to the operational parameters list in the Division's guidelines. In addition, all sites, both groundwater and surface water, will be sampled and analyzed for baseline parameters every fifth year (see Appendix 7 for groundwater and surface water locations and frequencies).

7.1.7.2 Operational Monitoring

When two years of baseline data have been collected, the monitoring frequency will be adjusted according to DOGM's guidelines and as shown in Appendix 7-1 for Operational Phase Monitoring.

Mine water and sediment pond discharge will be monitored in accordance with the approved UPDES permit.

7.1.7.3 Post-Mining Monitoring

Post-mining monitoring of groundwater will continue on representative springs, which will be determined with the aid and approval of the UDOGM. Quantity and quality monitoring and analysis will be accomplished biannually for the time period associated with the reclamation bond or until post-mining data approaches preliminary standards. Parameters to be monitored will be selected following consultation with the State and Federal agencies.

7.2 SURFACE WATER HYDROLOGY

As was explained under Section 7.1, OSM and DOGM regulations require that water monitoring programs be established in areas of underground coal mining to monitor the effects of mining activities and protect the hydrologic balance of such area. This section outlines the surface water hydrologic investigation conducted on the permit area.

7.2.1 Scope

The scope of the surface water section of this report is to describe the existing hydrologic conditions of the mine plan and adjacent areas and to describe the methods that have been and will be used to predict, monitor and mitigate the impacts of mining. Sections within this section will cover the following major topics: methodology, existing surface water resources, surface water development, control and diversions, effects of mining on the surface water hydrologic balance, mitigation and control plans, and surface water monitoring plans.

7.2.2 Methodology

Information used in preparing the surface water hydrologic section of this report has been gathered by field investigations. Pertinent literature has been examined. Numerous water quality samples have been and will continue to be analyzed by a certified laboratory. Water rights have been determined by examining current records of the Utah Division of Water Rights.

The mean annual water yield from areas of Trail Mountain that could impact the Mine was calculated by two separate methods and compared with an estimate of the mean annual water yield given in Jeppson et al. (1968) to increase the level of confidence. The first method of calculation, referred to

as "Grunsky's Rule," was originally developed by Grunsky (1908) and later adapted by Sellars (1965). In accordance with this method, the average annual water yield can be determined from:

$Q = \propto P^2$ [for $P \leq 1/(2)$] (7-1) or

$Q = P - 1/4(\propto)$ [for $P \geq 1/(2)$] (7-2)

Where "Q" is the mean annual water yield, in inches; "P" is the normal annual precipitation, in inches; and "$\propto$"is the runoff coefficient, in inches $^{-1}$. Alpha ($\propto$) was determined from guidelines set forth by Hawkins (1976). The second method of calculation is known as Ol'deKop's formula (Sellars, 1965). According to this method, the mean annual water yield is determined from:

$$Q = P - E_o \tanh\left(\frac{P}{E_o}\right)$$

where " Q" and "P" are as previously defined and "E_o" is the annual potential evapotranspiration, in inches.

Estimates of peak flow recurrence intervals for ephemeral streams in the mine plan area were determined from techniques presented by Fields (1975). According to Fields (1975), the 25 and 50 year recurrence interval flood discharge of Utah streams is related to channel geometry characteristics. In this USGS investigation Utah was subdivided into three areas, which were defined from information collected at 85 gaging stations. The locations of the sites used to develop the three appropriate equation sets were of similar streamflow characteristics. Thirty-three sites were studied at mountainous locations in east central Utah [see Figure 2, Fields (1975)] designated as Area 2. Analysis of the data provided reliable estimating equations for flood flows with 25 and 50 year recurrence intervals. Specifically, for the mine plan area, the following relationships were found to apply:

$q_{25} = 3.7W^{1.57}$ (7-4) and

$q_{50} = 3.9W^{1.58}$ (7-5)

where "W" is the width of the channel bar cross-section in feet, and 25 and 50 are the 25 and 50-year recurrence interval flood discharges in cfs, respectively. The respective standard errors associated with Equations 7-4 and 7-5 are 28 and 33 percent.

The runoff volume resulting from a particular rainfall depth was determined using the runoff curve number technique, as defined by the US Soil Conservation Service (1972). According to the curve number methodology, the algebraic and hydrologic relationship between storm rainfall, soil moisture storage, and runoff can be expressed by the equations;

$$S = \frac{1000}{CN} - 10 \quad \text{(7-6)}$$

and

$$Q = \frac{(P - 0.2S)^2}{P + 0.8S} \quad \text{(7-7)}$$

where "Q" is the direct runoff volume in inches, "P" is the storm rainfall depth in inches, "S" is a watershed storage factor in inches (defined as the maximum possible difference between "P" and "Q"), and "CN" is a dimensionless expression of "S" referred to as the curve number. Curve number values were chosen using information supplied by the U.S. Soil Conservation Service (1972), Hawkins (1973), and personal hydrologic judgment following field observations. Weighted curve numbers were used for heterogeneous areas. Kent (1973) gives CN values for the four different hydrologic soil groups and different land use descriptions. The mine site disturbed area has soil characteristics with average runoff potential, i.e., between groups B and C. Land use consists of 70% fair condition range land at CN avg. = 74, 25% industrial area at CN avg. - 89.5, and 5% dirt road at CN avg. = 84.5 (see Table 7-2). The disturbed area weighted CN was found to be 78.5 [from (0.70) (74) = (0.25) (89.5) = (0.05) (84.5)]. The side canyon has soil characteristics with moderately high runoff potential, group C, because of shallow soils and ledges. The area is 85% fair condition range land at CN=79 and 15% poor condition range land at CN=86. This yields a weighted CN for the side canyon of 80 [from (0.85 (79) + (0.15(86)]. This drainage area of North Cottonwood Canyon is moderately low runoff potential soil, group B, and 2/3 good woods and 1/3 good range which are characterized by CN's of 55 and 61 respectively. The weighted CN is 57 [from (0.67)(55) + (0.33) (61)]. Values of "P" were obtained for selected durations and return periods from Miller et. al. (1973). A 24-hour storm was used for design purposes.

The undisturbed area draining to the sediment pond is predominantly from the soil types classified as Rockland and Stony Sandy Loam, which contain the Grassland Shrub Community. Although

these areas do have rock ledges, they are located nearer to the canyon bottom and have slightly flatter slopes and more vegetation between rock outcrops. Based on the soil types (Sandy Loam) and vegetation (Grassland-Shrub), the runoff curve number of 72 is selected based on range land in fair condition, hydrologic soil group between B&C and forest land, thin stand, poor cover, no mulch hydrologic soil group between B&C.

Equation 7-6 is based upon the assumption $I_a = 0.2S$, where I_a is the initial abstraction from storm rainfall, defined as the rainfall which must fall before runoff begins, (i.e., to satisfy interception, evaporation and soil-water storage; therefore, determination of runoff from Equation 7-6 is valid only when $P \geq I_a$ or $P \geq 0.2S$. No runoff can occur below this point.

Estimates of the peak discharge to be expected from various precipitation events were made using the unit hydrograph procedure developed by the US Soil Conservation Service 1972). Figure 7-2 shows a runoff hydrograph and the associated terminology.

A hyetograph of a single block of rainfall excess with duration D is shown in the upper portion of the figure. The lower portion of the figure contains the resultant runoff hydrograph. For runoff from excess rainfall, the area under the hydrograph curve and the area enclosed by the rainfall hyetograph represent the same volume of water (Q). The peak flow rate for the hydrograph is represented by "Q_p", while "t_p" represents the time to peak flow from the start of the hydrograph to "Q_p". The base time (t_b) is the duration of the hydrograph. The time from the center of mass of rainfall excess to the peak of the runoff hydrograph is the lag time (t_L).

The time of concentration (t_c), not shown on Figure 7-2, is defined as the time for flow from the hydraulically most remote point in a basin to reach the basin outlet.

Time to peak, t_p, is assumed to be a function of watershed lag (t_L) which is determined according to the equation:

$$t_L = \frac{(l^{0.8})(S+1)^{0.7}}{1900Y^{0.5}} \qquad (7\text{-}8)$$

where t_L is the watershed lagtime in hours, l is the hydraulic length or the length of the main stream to the farthest divide in feet, "S" is as previously defined, and "Y" is the average watershed slope in percent. Values of "Y" were obtained by using methods outlined by Craig and Rankl (1977). The hydraulic length, *l*, was taken from an appropriate topographic map while "S" was determined from Equation 7-7 once the runoff curve number was estimated. According to the US Soil Conservation Service (1972), the watershed lag time is equal to $0.6t_C$ and the time of concentration (t_C) is equal to 1.5 t_p.

Combining these two expressions, it can be seen that:

$$t_p = 1.11\ t_L \qquad (7\text{-}9)$$

where both variables are as previously defined.

The peak discharge constant used in the dimensionless unit hydrograph method is determined according to the equation:

$$q_p = \frac{484AQ}{t_p} \qquad (7\text{-}10)$$

where "q_p" is the unit hydrograph peak flow rate in cubic feet per second, "A" is the drainage area in square miles, "Q" is the runoff volume in inches (as determined by Equation 7-6), "t_p" is as previously defined in hours, and 484 is a conversion factor. The rainfall distribution for the 24-hour storm duration was generated from the theoretical NOAA Type II storm distribution shown in Figure 7-3.

Dimensionless unit hydrographs are developed by simulating many natural unit hydrographs using the time to peak and the peak discharge constant. Haan (1970) proposed a dimensionless unit hydrograph based on the gamma function:

$$\frac{q(t)}{q_p} = \frac{rt \times e^{1-t/t_p} C_3 t_p}{t_p} \qquad (7\text{-}11)$$

where "q(t)" is the hydrograph ordinate at time "t", "q_p" and "t_p" are as previously defined, and "C_3" is a parameter defined by:

$$Q = q_p t_p \left[\frac{e}{C_3 t_p}\right]^{C_3 t_p} \times T\left(C_3 t_p\right) \qquad (7\text{-}12)$$

where "Q" is the runoff volume (one inch for a unit hydrograph) and represents the gamma function.

Figure 7-4 shows how the shape of the hydrograph defined by equation 7-11 changes as "C_3t_p" changes. The higher the value of "C_3t_p", the sharper the peak of the hydrograph. The hydrograph for the disturbed area runoff of 0.75 inches was determined to have a shape with characteristics t_L = 0.08 hr., t_p = 0.09 hr., and q_p = 20.1 cfs. These results are associated with a "$C_3\ t_p$" factor of 3.0 or a "C_3" of 43. Similar evaluations were made for the hydrograph of Cottonwood and Side Canyon runoffs and are given in Table 7-7.

The dimensionless unit hydrograph method involves the development of a runoff hydrograph from a complex rainstorm. The storm is divided into blocks of uniform intensity of duration D. Values of D must be less than or equal to t_p. Practically, the selection of D as a multiple of t_p will ensure that the peak will be encountered. Rainfall excess is generated from the rainfall depths of duration D and the rainfall-runoff relationship expressed in equation 7-6. The rainfall excess from each increment D is then multiplied by the unit hydrograph ordinates to produce a component hydrograph. Each of the component hydrographs are then lagged by a time increment D and are concurrently summed to produce the synthetic runoff hydrograph. A more complete discussion of the unit hydrograph method can be found in Chow (1964) or Haan and Barfield (1977).

Following the determination of a given peak discharge, design sizes for culverts used for runoff diversions and conveyance were determined using methods derived by the US Soil Conservation Service (1972) and illustrated in Figure 7-5.

Sedimentation storage requirements were determined using a disturbed acreage factor of 0.05 ac-ft. of sediment per acre disturbed.

This factor was determined from the Universal Soil Loss Equation as defined by the Agricultural Research Service (ARS) at Purdue University[1]. The equation for soil loss A in tons/acre-year is:

$$A = R K L S C P$$

where "R" is the rainfall erosivity factor, "K" is the soil erodibility factor, "L" and "S" are slope length and gradient factors given as one variable.

$LS = (X/72.6)^m (430 x^2 + 30x + 0.43)/6.57415$ with "X" being slope length, "m" a function of slope, and "x" the size of the slope angle, "C" is the cover factor, and "P" is the erosion-control practice factor.

Appropriate constants for each factor were obtained for the disturbed area from curves and tables given by the ARS. "R" for the Trail Mountain Mine region of Utah is 25. "K" for the loam to sandy loam soil texture class with > 4% organic matter content is 0.25. For a slope length of 250 feet, and average slope angle of 1.75° (since 17.5° = 0.3), and an "m" of 0.5 for gradients > 5%, "LS" is 13.6. The cover factor "C" is 1.0 for essentially no cover and practice factor is also 1.0 for no control measures presently. With these values "A" is 85 tons/acre-year. This soil type 1.0 ton per 0.95 yd^3 and converting to acre feet gives an annual soil loss factor of 0.050 acre feet per acre disturbed.

Open channel flow capacities were determined using the Manning equation. According to this method:

$$V = \frac{1.486 R^{0.67} S^{0.5}}{n} \quad (7\text{-}13)$$

where "V" is the velocity in feet per second, "n" is the Manning roughness coefficient, "R" is the hydraulic radius in feet, (defined as the area divided by the wetted perimeter), and "S" is the hydraulic slope, in feet per feet. Estimates of the roughness coefficient were determined from tabular information presented by the US Department of Transportation (1979). The velocity obtained by equation 7-13 was converted to a flow rate using the continuity equation which states that:

1 *Wanielista, Martin P., Stormwater Management Quantity and Quality, Ann Arbor Science Publishers, Inc., Ann Arbor, Michigan, pp. 305-318, 1979.*

$$q = AV \quad (7\text{-}14)$$

where "q" is the discharge, in cubic feet per second; "A" is the cross-sectional area of flow in square feet; and "V" is velocity in feet per second. A maximum permissible velocity of 5 feet per second for unlined channels was assumed.

Those sections of diversion channels having velocities in excess of 5 feet per second were designed with rock riprap linings in accordance with methodologies presented by the US Department of Transportation (1975). In accordance with this methodology, the maximum permissible depth of flow for a channel lined with rock riprap is determined by:

$$d_{max} = \frac{63.5(D_{50})}{S_0} \quad (7\text{-}15)$$

where "d_{max}" is the maximum permissible depth of flow, in feet; "D_{50}" is the mean rock diameter (or the particle size gradation for which 50 percent of the mixture is finer by weight) in feet, 63.5 is the unit weight of water in pounds per cubic feet, and "S_o" is the channel slope, in feet per feet. The mean rock diameter (D_{50}) in each case was assumed from which the maximum permissible depth was determined. The channel configuration was then determined such that the maximum permissible depth at the design flow would not be exceeded.

7.2.3 Existing Surface Water Resources

This section of the report deals with the region in general and the Trail Mountain area more specifically. Watershed and stream characteristics are both described.

7.2.3.1 Regional Surface Water Hydrology

The Mine is located immediately adjacent to Cottonwood Canyon Creek, one of the major tributaries of the San Rafael River. Near Orangeville, Cottonwood Creek has had an annual flow of 70,700 acre-feet during the period of record that extends intermittently from 1909 through the present (US Geological Survey, 1984). Approximately 50 to 70 percent of stream flow in the mountain streams of the region

occurs during May through July (Waddell et al., 1981). Stream flow during this late spring/early summer period is the result of snowmelt runoff.

Snowmelt is the primary source of water for the perennial streams in the San Rafael River Basin with summer precipitation usually producing little runoff (US Geological Survey, 1979). Ephemeral streams are also abundant in the San Rafael River Basin, existing primarily at lower elevations where evapotranspiration significantly exceeds precipitation.

Water use upstream from Castle Valley, the valley containing most of the agricultural land noted in Figure 7-6, is primarily for stockwatering and industrial purposes (coal mining and electrical power generation). Within Castle Valley agriculture and power production utilize nearly all of the inflowing water (Mundorff, 1972), with minimum flows in the gaged streams and rivers in the basin occasionally approaching zero. Storage reservoirs are common at higher elevations throughout the region. Transbasin diversions occur throughout the area.

The quality of water in Cottonwood Creek and other similar streams in the area varies significantly with distance downstream. Waddell et. al. (1981) found that concentrations of dissolved solids varied from 125 to 375 milligrams per liter in major streams in the region in reaches above major diversions to 1600 to 4025 milligrams per liter in reaches below major irrigation diversions and population centers. The major ions at the upper sites were calcium, magnesium, and bicarbonate, whereas sodium and sulfate were more dominant at the lower sites. They attributed the changes to (1) diversion of water containing low dissolved solids concentrations, (2) subsequent irrigation and return drainage from moderate to highly saline soils, (3) groundwater seepage, and (4) inflow of sewage and pollutants from population centers. Average annual sediment yields within the Cottonwood Creek drainage basin range from approximately 0.1 acre-feet per square mile in the headwaters area to about 3.0 acre-feet per square mile near the confluence with the San Rafael River (Waddell et al., 1981).

Quantity

Cottonwood Creek above Straight Canyon drains approximately 21.9 square miles. The average channel gradient of Cottonwood Creek above Straight Canyon is 300 feet/mile (5.7 percent). Only a short period of record (October 1978 to present is available for the USGS stream gaging station (09324200) on Cottonwood Creek above Straight Canyon. Danielson et al. (1981) estimate the average annual precipitation to be on the order of twenty two (22) inches, or 26,000 acre-feet, on the Cottonwood Creek drainage above Straight Canyon. Danielson et al. (1981) also estimate that only two percent of the precipitation on Cottonwood Creek above Straight Canyon leaves the basin as stream flow compared to thirty percent for Huntington Creek above Huntington. The suggested reasons for the wide difference in percent of precipitation contributing to stream flow are: 1) Cottonwood Creek Basin has a greater portion of area with southern exposure with more gradual slopes than Huntington Creek Basin and 2) possible subsurface movement of water through fractures associated with Joe's Valley Fault. About seventy percent of the total discharge at the Cottonwood Creek station above Straight Canyon for the water year 1979 occurred during the snow melt period (April-July).

Sixty years of data are available for the gaging station on Cottonwood Creek near Orangeville (9324500). The drainage area above Orangeville contributing to Cottonwood Creek is approximately 208 square miles. Cottonwood Creek has an average discharge near Orangeville of about ninety-five (95) cfs, or 69,000 acre-feet per year. The maximum and minimum discharges of record on Cottonwood Creek near Orangeville are 7,220 cfs (August 1, 1964) and 1.2 cfs (April 8, 1966), respectively.

The mine adjacent and permit area is drained by minor drainage systems associated with Cottonwood Canyon Creek. Cottonwood Canyon Creek is a major drainage system which borders the eastern limit of the mine plan area. Based on data collected by PacifiCorp, (see 1992 Annual Hydrologic Report) Cottonwood Canyon Creek is an ephemeral stream from its headwaters to the northeast quarter of Section 24 Township 17 South, Range 6 East and intermittent from that point to its confluence with Cottonwood Creek at Straight Canyon. During periods of drought, flow in Cottonwood Canyon Creek is limited to flow emanating from the alluvial deposits at the intersection with Roans Canyon. From the intersection with Roans Canyon to Section 36 the stream loses water to alluvial deposits. The drainage is dry from Section 36 to Section 6 except during spring runoff which normally occurs from late April through June or during precipitation events. Flow in the channel re-emerges in Section 6 and continues to the confluence with Cottonwood Canyon at Straight Canyon.

The construction and upgrading of surface facilities utilized in conjunction with the Mine (yard areas, road, etc.) may result in temporary increases in the suspended sediment concentration of the adjacent stream. However, because of the regulatory requirement that sediment control be provided for ~~all~~ areas of surface disturbance, concentrations should be quickly normalized. ***Moved from Section 3.4.3.4***

Sediment control measures include a curb and gutter system that conveys surface water to a sedimentation pond. All surface water that crosses the mine property is diverted to this structure.

~~The quality of flow from the headwaters of the San Rafael River Basin is excellent. However, this quality rapidly deteriorates downstream as streams cross shale formations~~

~~and receive irrigation return flow from Mancos-derived soils. The impact of the mining on this system will be quite limited. The existence of runoff and sediment control structures should minimize the potential for degradation of the quality of stream waters due to runoff from disturbed areas of the Mine.~~ (repeat)

7.2.3.2 Mine Plan Area Watersheds and Streams, Stream Characteristics, and Watershed Characteristics

A portion of the Cottonwood Creek watershed receives drainage from within the mine plan area. Stream channels from the mine plan area flow to the east toward the Cottonwood Canyon Creek and to the south toward Straight Canyon Creek, a tributary of Cottonwood Creek. Cottonwood Creek is a perennial stream.

The Cottonwood Canyon Creek is a major drainage system where evidence of glaciation exists. From the headwaters to Section 24, Township 17 South, Range 6 East, the canyon is characterized by U-shaped valleys with associated lateral and terminal moraine deposits. Lateral moraine deposits most commonly occur at the intersection with side canyons. Terminal moraine deposits occur at the northwest corner of Section 24 and from this point to near the confluence with Straight Canyon the canyon can be characterized as a V-shaped valley with little evidence of glaciation.

Based on data collected by PacifiCorp, Cottonwood Canyon Creek is an ephemeral stream from its headwaters to Section 24, Township 17 South, Range 6 East, and intermittent from that point to its confluence with Cottonwood Creek at Straight Canyon. The stream becomes intermittent near the intersection of Roans Canyon just below the terminal moraine deposits discussed above. During drought conditions which have been experienced since 1985, flow in Cottonwood Canyon is limited to flow emanating from the Roans Canyon Spring located in Section 24 near the confluence with Roans Canyon. Prior to the drought, flow occurred along the entire reach of Cottonwood Canyon and had to be forded to access East Mountain at the Mill Canyon dugway located in Section 2.

Along with Roans Canyon Spring, another spring referred to as Cottonwood Spring (TM-23) is also associated with the alluvial (glacial) deposits. Cottonwood Spring is located in the canyon bottom within the area of terminal moraine deposits at an elevation higher than that of Roans Spring. With normal precipitation, especially in the form of winter snowpack, runoff would saturate the alluvial deposits and a portion of groundwater would discharge at the location of Cottonwood Spring. During the period of the drought recharge to the alluvial deposits has been limited and the level of groundwater has been reduced to a point below the elevation of the Cottonwood Spring. To verify the extent of the alluvial deposits and to define the hydrologic characteristics, PacifiCorp conducted a hydrologic research project in 1992 which included a series of resistivity lines and the drilling of three surface sites (see Deer Creek/Cottonwood/Des-Bee-Dove Permit, Volume 9 - Appendix F for complete details). At each of the surface sites two wells were completed (except for CCCW-2, see Plate 6-2 for well locations); one in the alluvial deposits and one in the Spring Canyon member of the Star Point Sandstone Formation. Wells completed in the alluvial deposits will be utilized to compare the well hydrographs to those of

Cottonwood Canyon Creek and the Star Point Sandstone. Monitoring data will be included in future Annual Hydrologic Monitoring Reports (pre-2015).

Surface water-quality data collected from Cottonwood Canyon Creek by PacifiCorp indicate that the dominant ions are: calcium, magnesium, and bicarbonate. Water quality and quantity data collected during the year are presented in the Annual Report (pre-2015). Total dissolved solids concentrations in the stream vary from about 250 to 300 milligrams per liter in the mine area, with the lower concentrations normally occurring during the high-flow season. Slight variations have been noted between stations located upstream and downstream from the permit area (SW-1, SW-2 and SW-3).

As expected, total suspended solids concentrations in Cottonwood Canyon Creek tend to vary inversely with the flow rate. Concentrations have varied during the period of record from less than 1 milligram per liter to greater than 1000 milligrams per liter.

Topography in the area is very rugged, with elevation varying from 6800 to over 9000 feet above sea level. Slopes within the mine plan area vary from near vertical cliffs to less than 4 percent (2 degrees) on Trail Mountain. Major escarpments occur to the east and south of the mine plan area.

7.2.4 Surface Water Development, Control and Diversion

Because of the remoteness and the limited amount of surface water in and adjacent to the mine plan area, essentially no development of the surface water has occurred except from some possible stock watering. Cottonwood Creek water is used downstream for irrigation and for power generation. This section deals with the surface water supply in the area as well as the specific runoff and sedimentation control measures planned for the Mine.

7.2.4.1 Water Supply

Surface water in the mine plan and adjacent area is utilized primarily for stock watering purposes. A listing of surface water rights within the permit and adjacent areas is provided in Table 7-6. (Also see Appendix 7-8 Cottonwood Irrigation Shares.) A review of the files of the Utah Division of Water Rights indicated that additional rights have not been added to the area since that original submittal.

Flow Characteristics - According to Jeppson et al. (1968) the mean annual water yield for the mine plan area is approximately 1.5 inches. Other hydrologic methods (described in Section 7.2.1) were used to determine the mean annual water yield to increase the confidence level of the estimate. According to Grunsky's Rule the mean annual water yield from the mine plan area is 2.0 inches. This was determined using an alpha value of 0.008/in. Water yield studies have found values of 0.007 to 0.009 for un-gaged areas with medium elevations, medium summer rainfall, medium temperature, medium soil, moderate slopes and east exposure. Gaged areas such as Black Mesa and Holbrook Creek, Colorado, and Black Hills, South Dakota, which are similar to the Trail Mountain Mine site, have values ranging from 0.0068 to 0.0090.

According to Ol'deKop's formula (Sellars, 1965), the mean annual water yield from the mine plan area is 2.9 inches. The two methods utilize the information that mean

annual precipitation and evapotranspiration over the mine plan area are 16 to 19 inches, respectively (Jeppson et al., 1968).; therefore, estimates of the mean annual water yield from both Ol'deKop's and Grunsky's formulas compare favorably with the estimate from the Hydrologic Atlas of Utah prepared by Jeppson et al. (1968).

Monthly flows from Cottonwood Canyon Creek were computed as a percentage of annual flow for the water year 1979 (October 1978 to September 1979) to determine the seasonal distribution of flows for streams within and adjacent to the mine plan area. The results are illustrated in Figure 7-7. Although actual monthly percentages will change, the distribution pattern of stream flow is characteristic of watersheds in the western highlands where the majority of annual water yield occurs in the spring and early summer as a result of snowmelt runoff.

Daily discharge measurements for the Cottonwood Canyon Creek were taken only during the three years 1979, 1980 and 1981. Within those years flow varied from 0 to 22 cfs with an average of 1.64 cfs. The average discharges for the respective three years of record were 0.87, 3.33 and 0.72 cfs. The USGS gauging station monitoring was discontinued in September 1981 (additional information on flow characteristics of Cottonwood Canyon Creek, review annual Hydrologic Reports (pre-2015)).

Surface Water Quality - Three surface water sites (referred to as SW-1, SW-2 and SW-3 in Plate 7-2) have been sampled since 1979. Table 7-3 contains a list of the water quality parameters analyzed along with the results of the chemical analyses of surface water samples collected at these three sites. As illustrated in Plate 7-2, SW-1 is located approximately one mile above the mine, SW-2 is located immediately below all mine surface facilities, and SW-3 is located approximately 2 miles below the mine near the confluence of Cottonwood Canyon Creek and Straight Canyon. Additional water quality data have been collected by the USGS at a gaging station on the Cottonwood Canyon Creek located in the SE1/4NE1/4, Section 36, T17S, R6E. This data is compiled and reported in Table 7-4. This station was discontinued in 1981; however, an additional monitoring station, SW-3, was added by the applicant to monitor Cottonwood Creek below the permit area. Results from all the monitoring stations are summarized in the Annual Report (pre-2015).

As depicted in Tables 7-3 and 7-4 surface waters of the mine plan area are of a mixed chemical type (Calcium-magnesium, bicarbonate) and seasonally vary from a stronger magnesium-bicarbonate to a stronger calcium-bicarbonate. A sample

collected by the USGS in November 1978 was a calcium-bicarbonate type; whereas, those collected in July and September of 1979 were of a stronger magnesium-bicarbonate type.

Total dissolved solids concentrations varied from 226 to 976 milligrams per liter at stations SW-1, SW-2, USGS gaging station, and SW-3. Measurements were taken during all periods of the year, therefore, this range represents both high and low TDS values to be expected during low and high flow periods of the year. From April to June, when stream discharges are highest due to direct snowmelt, a diluting effect usually occurs in surface waters, resulting in a lower total dissolved solids concentrations. Later in the year as flow decreases and the majority of the flow is derived from groundwater, the dilution effect becomes less pronounced and total dissolved solids concentrations increase.

Suspended solids concentrations during the inventory period were found to vary from less than 0.5 milligrams per liter to 5024 milligrams per liter in Cottonwood Canyon Creek. It is known that suspended solids concentrations tend to vary somewhat proportionately with flow rate (Vaughn Hansen Associates, 1979); therefore, during the snowmelt runoff period, suspended solids concentrations are expected to be generally higher than values from low flow periods. The Utah Division Environmental Quality has classified Cottonwood Creek within the mine plan area as; 1C - protected for domestic purposes with prior treatment by standard complete treatment processes, 3A - protected for cold water species of game fish and other cold water aquatic life, and Class 4 - protected for agricultural uses including irrigation of crops and stock watering. Table 7-5 contains the numerical water quality standards applicable to the various classifications. Few samples collected by either Beaver Creek Coal Company or the USGS were noted to exceed the chemical standards. One sample collected at the USGS gaging station contained a lead concentration of 0.13 milligrams per liter in excess of the standard set in all three applicable state classifications for the waters of Cottonwood Creek.

Water Rights - Surface water rights within and adjacent to the mine plan area have been obtained from the Utah Division of Water Rights and are presented in Table 7-

6 and Plate 7-4. In conjunction with the location and permit number, other information included is owner, source of supply, quantity of right, purpose of use, and period of use. As indicated on Table 7-6, the majority of rights in the area are for stockwatering, with only a minor percentage allotted to irrigation.

7.2.4.2 Sedimentation Control Structures and Diversions

One sedimentation pond with corresponding runoff control facilities is constructed to provide sediment control for the Mine. The layout of the sedimentation control plan, including pond location, pond drainage area boundary, ditches and berms, are illustrated on Plate 7-5.

A sedimentation pond exists on site. Specific design details for the sedimentation pond and channels conveying runoff to the pond are described in this section. All conveyance facilities associated with the runoff control plan have been constructed.

Conveyance Facilities Design - The sedimentation pond is sized to contain runoff from the areas draining onto the mine site. As shown in Plate 7-5, no diversion ditches for undisturbed area runoff are proposed. Only runoff from the side canyon above the operation will be bypassed through a culvert. The side canyon culvert was designed to pass runoff from the 10-year, 24-hour storm (2.4 inches). As stated earlier, Miller et al. (1973) gives values for precipitation. Their Figure 27 indicates a 10-year, 24-hour storm precipitation isopluvial at the mine site of 2.4 inches.

A diversion culvert and curb and gutter system conveys runoff from the disturbed area to the sedimentation pond. The culvert and gutter system were designed to pass runoff from the 10-year, 24-hour storm [2.4 inches - from Miller et al. (1973), Figure 27 as above]. The diversion culverts for Cottonwood Creek were designed and sized by the U.S. Forest Service and the Division of Oil, Gas and Mining to pass runoff from the 50 year, 24-hour storm [3.2 inches - from Miller et al. (1973), Figure 39, page 41]. The culvert was extended 300 feet upstream in the fall of 1990.
(See Appendix 7-3 for Culvert Specifications.)
(See Appendix 7-13 for Culvert Extension Details.)

Diversion with riprap has a higher roughness coefficient. Peak flows and peak flow design related information for the diversion ditch and culverts are contained in Table 7-7.

The soil conservation service equation for calculation of watershed lag times (t_L) was used in this analysis:

$$t_L = \frac{(l^{0.8})(S+1)^{0.7}}{1900Y^{0.5}} \quad \text{and} \quad S = \frac{1000}{CN} - 10$$

Where l = the hydraulic length (ft)

Y = the average water shed slope (%)

S = the storage at saturation

CN = curve number

The drainage basin characteristics are given in Table 7-7 along with the resultant: T_L values: canyon = $(6375)^{0.8}$ $(2.5 + 1)^{0.7}/1900$ $(49.12)^{0.5}$ = 0.2.

Drainage areas for the side canyon 48-inch culvert and Cottonwood Canyon 66-inch culvert are shown on Plate 7-6. Drainage areas for the disturbed and undisturbed drainage to the sediment pond are shown on Plate 7-5. It should be noted that diversion culvert designs for Cottonwood Canyon were originally developed by the U.S. Forest Service and subsequently verified by Vaughn Hansen and Associates as shown in Appendix 7-3. As indicated, the culvert was originally designed with a capacity of 535 cfs, based on the USFS design flood of 450 cfs and the Vaughn Hansen and Associates design flood of 510 cfs. The culvert was extended in 1990, and the design was verified for the 510 cfs flow as shown in Appendix 7-13.

The design flood includes <u>all</u> of the Cottonwood Canyon runoff, down to and including the side drainage and the three culvert inlets from the opposite side of the highway, as shown on Plates 3-1, 7-5 and 7-6.

Design criteria and calculation results for sizes and flows in the diversion system at maximum discharge are presented in Table 7-8. Also contained in Table 7-8 is the

required mean rock diameter (D_{50}) for cross sections (with velocities in excess of five feet per second) which would require a rock riprap lining; however, the maximum flow does not result in velocities significantly larger than 5 fps on the non-metal surfaces.

Two other minor inlets to the sediment pond exist at this time. The first inlet is from a small road and pad area at the top of the switchback above the pond. It drains into a vegetated ditch and enters the pond at the point where the dam meets the hillside. The second inlet is from a 24-inch culvert which picks up a small amount of road drainage below the gate. The culvert was installed in 1988 to catch runoff below the gate which may contain dust or mud carried onto the highway by the haul trucks. A third minor inlet was the 4" mine water discharge line. The 4" discharge line located in the 2nd portal south of ROM belt portal was optionally used to channel mine water discharge through the sediment pond in lieu of discharging directly to Cottonwood Canyon Creek. Due to increased volume of flow from the shift in mining from the east to west side of the mine, a replacement 8" line now discharges mine water to the 100,000 gallon storage tank. From the storage tank, water can be discharged to an existing 48" culvert as discussed in section 7.2.4.2. Inflows to the 8" line vary according to routing as well as volume of water to be discharged. The existing 4" line is disconnected within the mine but remains in place on the surface for emergency backup measures and can be easily reconnected if needed. All inlets are shown on Plates 3-1 and 7-5. Design criteria and sizing are shown in Table 7-8.

"BTCA" Areas - It should be noted that two small areas of disturbance do not drain to the pond. The first "BTCA" area consists of approximately 0.21 acres located just south of the sediment pond. The calculated runoff from this area is 0.013 acre feet, based on the 0.21 acres and a 10-year, 24-hour event. The area is vegetated, and all drainage from the site passes through straw bales, the approved sediment control measure. The realigned stream channel is entirely protected with large (approved size) riprap. Riprap will be maintained at this site until bond release or earlier release by the Division. The straw bales or other sediment control measures, approved by the Division, will be maintained at the site until vegetation is determined

adequate by the Division. Adequacy will be based on comparison of the site with the riparian reference area.

The second "BTCA" area consists of approximately 0.04 acres located on the northern extent of the parking lot. The area, which drains to Cottonwood Canyon Creek, is an outslope of the parking lot and cannot be diverted to the pond. The BTCA is riprapped with rock to control erosion and vegetated which filters sediment. This area will be maintained until bond release (see Plate 7-11 for Typical Sediment Control Measures). Runoff from the area for a 10-year, 24-hour event is calculated to 0.004 acre feet.

The above described "BTCA" areas are shown on Plates 3-1 and 7-5. It should be noted that these areas are included in the total disturbed area for the site ~~(10.39 acres)~~ but are not included in the runoff calculations for disturbed area draining to the pond (Note: 0.16 acres of disturbed area on the new ventilation portal access road drain into the mine, not to the pond).

Sedimentation Pond Design - As mentioned previously, one sedimentation pond is constructed to provide sediment control for the surface facilities of the Mine. The sedimentation pond was designed to contain sediment storage volume from 0.05 acre-feet of sediment per acre to disturbed area. Sediment will be cleaned out at 60 percent of the sediment storage level.

Spillway capacity requirements for the sedimentation pond were based on runoff from the 25-year, 24-hour storm (2.9 inches). Table 7-9 contains the volume and spillway capacity requirements for the pond as well as additional design related information.

The sedimentation pond will be inspected quarterly, and a copy of the inspection report will be kept at the mine site. A certified annual inspection report will also be done yearly, with a copy kept at the mine site and one sent to the Division quarterly. The above inspections will be performed in accordance with requirements of R645-301-514.330 and R645-301-514.310, respectively.

The pond design details for the sedimentation pond are illustrated on Plates 7-7 and 7-8 with the stage-capacity curve for the pond given in Figure 7-9. The sedimentation pond consists of a sediment storage pool, a dead pool, and a runoff control pool equal to the inflow volume from a 10-year, 24-hour storm (2.4 inches). A dewatering device is placed in the pond to draw the pond level down to the bottom of the runoff control pool in anticipation of a future runoff event. The Utah Division of Environmental Quality requires that no dewatering device be placed within three feet of the top of the sediment cleanout level (60 percent); therefore, a dead storage pool has been created in order to meet the requirements of both agencies. The proposed principal and emergency spillway system consists of a corrugated metal riser and conduit with an anti-vortex device, trash rack, and anti-seep collars. Utilizing Equation 7-16, which defines orifice flow, the discharge capacity of the riser-conduit combination with a diameter of 48 inches was found adequate in passing the peak inflow resulting from the 25-year, 24-hour storm (see Figure 7-10).

Orifice flow occurs when the flow is restricted by the opening and can be determined as;

$$q = CA\,(2gH)^{1/2} \qquad (7\text{-}16)$$

where q is as previously defined; C is a coefficient dependent upon the orifice geometry (0.6 in this case); A is the cross sectional area of the opening, in square feet; g is the gravitational constant (32.2 feet per second squared); and H is the head above the orifice inlet, in feet. The orifices considered are the riser inlet and the inlet of the conduit leading from the riser through the pond embankment.

The total embankment height was obtained by adding the stage at full storage capacity, the head of water over the spillway under design flow conditions, the required freeboard height (1.0 feet), and a five percent settlement allowance. The embankment top width will not be less than (H + 35)/5 where H is the height of the embankment, in feet. Table 7-10 summarizes the design specifications for the sedimentation pond.

The sedimentation pond is constructed between the excavated slope of the old pond and a new embankment constructed over the 66-inch culvert. The excavated slope of the old pond was approximately equal to 1.06H:1V. To obtain the necessary pond storage capacity, the remaining inside slopes of the pond was designed at 2h:1V. The pond is lined with 18 inches of a 10:1 mixture of the embankment material and bentonite, respectively, to prevent seepage and piping.

The dewatering device consists of a 12-inch corrugated metal riser and an 8-inch conduit drainline, antivortex device, trash rack, and anti-seep collars. The anti-vortex also acts as a skimming device by not allowing water to be pulled directly from the surface of the pond. A water control gate valve is located at the end of the 8-inch diameter corrugated metal conduit within the 48-inch spillway within the pond embankment to allow efficient water release.

This was necessitated by the facts that:

1) The water control gate valve must be installed in the manhole/spillway to allow access to the valve;

2) The location of the riser does not allow access to the gate if placed at the extreme inlet;

3) Gates were apparently not available which could be attached between two culverts in a watertight manner; and

4) It was desirable to allow access to the control gate for maintenance purposes.

The control gate operator mechanism is located above the spillway cover. Access to the gate for maintenance can be made via a ladder or rebar rungs which have been welded to the spillway side. A walkway has been installed to allow access to the control gate for purposes of dewatering and inspection. Sufficient space must be available in the pond to completely detain the runoff resulting from the 10-year, 24-hour storm. At the same time, sufficient settling time must be allowed in order to meet applicable effluent standards in the discharged water. It is therefore suggested that water in the pond be released through the dewatering device after 14 days unless there is a good probability of occurrence of a runoff producing storm prior to

that time, under which condition the water should be released before the storm occurrence. This would allow sufficient time for all but the fine clay and colloidal particles to settle (U.S. Environmental Protection Agency, 1976).

Anti-seep collars have been used based on methods outlined by the U.S. Environmental Protection Agency (1976). Figure 7-11 outlines details of the proposed anti-seep collars with spacing requirements shown Plate 7-7.

Riprap was placed in the inlet channels and below the outlet conduit of the pond to dissipate energy and reduce erosion potential. Riprap was placed on the inside slope of the pond embankment to a width of five feet on both sides of the spillway and dewatering device up the full height of the embankment to protect the embankment from erosion.

The outlet culvert from the pond discharges onto the riprap protection on the main channel as described in Appendix 7-3.

Sediment Disposal Plans - Federal and State regulations require that sediment, which has accumulated in the pond, be removed when 60 percent of the design sediment storage volume has been filled. The point at which cleanout becomes necessary is 11.2 feet below the top of the riser and can be measured directly with a tape. Sediment removed from the pond will be temporarily stored within the drainage basin to the pond. Removed sediment is disposed of at the Cottonwood Waste Rock Facility.

The procedure for sedimentation pond cleaning is as follows:

1. Decanting of the pond water:
   a. Discharge through the primary spillway, according to UPDES requirements, and/or;
   b. Pumping the water behind abandoned, sealed mine workings, and/or;
   c. Hauling to the Cottonwood Waste Rock Storage Facility's sedimentation pond.

2. Sediment disposal at the Cottonwood Waste Rock Facility.

3. Division's "Title V Coal Program Policy for Disposal of Sediment Pond Waste" guideline will be followed for sediment samples and testing.

4. Division will be contacted at the beginning of the sludge transport process.

Pond Reclamation - The disturbed area of the pond has been seeded with the interim (contemporaneous) seed mix. Permanent reclamation of the pond is discussed under Section 7.4.

7.2.5 Effect of Mining on the Surface Water Hydrologic Balance

As has been previously mentioned, the occurrence and quality of water in any region is highly controlled by geology. Section 7.1.3.1 Regional Groundwater Hydrology of this chapter describes in detail the influence geology has on the hydrologic regime. Major drainages conveying runoff away from the permit area are Cottonwood Canyon Creek and Straight Canyon. With the exception of the upper headwater regions of these drainage basins, mining and, therefore, subsidence will not occur beneath the major stream channels of these canyons. In the majority of cases, cracking due to subsidence is not anticipated to extend to the surface; therefore, surface runoff patterns will not be significantly affected. Data collected by PacifiCorp over a thirty-year period on the East Mountain permit area concerning subsidence and surface drainages has not detected any surface stream impacts. Consequently, subsidence should not cause significant impacts to the surface water system.

7.2.5.1 Quantity

As mentioned earlier in the report, the major drainage carrying runoff away from the mine facility area is Cottonwood Canyon Creek. All surface facilities are located adjacent to Cottonwood Canyon Creek, and surface runoff from disturbed areas is passed through the sedimentation pond prior to discharging in the creek.

Water intercepted within the mine is either: 1) used within the mine and therefore retained within the groundwater hydrologic system, or 2) is discharged into Cottonwood Canyon Creek. Discharge from the mine will vary depending on localized mining conditions. Underground sumps are installed for storage, settling and recirculation of water. When the sumps become full, water is pumped outside,

either to the sediment pond for additional settling or directly to the creek if the quality meets effluent standards. Discharge quantity and quality will be reported in the Annual Hydrologic Reports (pre-2015).

The quality of flow from the headwaters of the San Rafael River Basin is excellent; however, the quality rapidly deteriorates downstream as streams cross shale formations and receive irrigation return flows from Mancos derived soils. The impact of mining on this system will be quite limited.

The existence of runoff and sediment control structures should minimize the potential for degradation of the quality of stream waters due to runoff from disturbed areas of the Trail Mountain Mine.

7.2.6 Mitigation and Control Plans

Runoff from all disturbed areas will be passed through sediment control facilities with the exception of two small "BTCA" areas as discussed in Section 7.2.4.2. Any discharge from facilities will be monitored in accordance with UPDES permit standards and State and Federal regulations. The effects of the mining operation on the surface water system will be analyzed through the surface water monitoring plan described in the next section. In the unlikely event that monitoring shows that the surface water system is being adversely affected by mining activities, additional steps will be taken to rectify the situation in consultation with State and Federal regulatory agencies.

7.2.7 Surface Water Monitoring Plan

An ongoing hydrologic monitoring program will be conducted at each of the stations shown in Plate 7-2 and as described in Appendix 7-1. Stations have been established to monitor water quality and quantity above and below the mine plan areas. Monitoring parameters will be in accordance with Table 7-2a in Appendix 7-1. Monitoring schedule and reporting will be in accordance with Appendix 7-1.

7.2.7.1 Baseline Monitoring

All surface water monitoring stations are presently on operational status. Baseline will be conducted every fifth year and compared to historical data.

7.2.7.2 Operational Monitoring

All surface water monitoring stations will be monitored quarterly for flow (when flowing) to delineate seasonal variation and correlate discharge with changes in water quality. The water quality parameters and sampling frequency will be as listed in Appendix 7-1. Surface monitoring stations will be monitored quarterly for water quality. Results of water quality data will be submitted quarterly.

7.2.7.3 Postmining Monitoring

Representative surface water stations will be monitored biannually during high and low flow conditions. The representative stations will be determined with the aid and approval of the Utah State Division of Oil, Gas and Mining. Duration of monitoring and parameter selection will be as per DOGM guidelines listed in Appendix 7-1.

7.3 ALLUVIAL VALLEY FLOOR DETERMINATION

Utah regulations (R645-302-320) require that the presence of alluvial valley floors in or adjacent to the mine permit area be identified. The regulations (R645-100-200) define an alluvial valley floor as "unconsolidated stream-laid deposits holding streams with water availability sufficient for sub-irrigation or flood irrigation agricultural activities but does not include upland areas which are generally overlain by a thin veneer of colluvial deposits composed chiefly of debris from sheet erosion, deposits formed by un-concentrated runoff or slope wash together with talus, or other mass-movement accumulations, and windblown deposits". The existence of an alluvial valley floor is, therefore, determined to exist if:

1) Unconsolidated stream-laid deposits holding streams are present, and

2) There is sufficient water to support agricultural activities as evidenced by:
   a) The existence of flood irrigation in the area in question or its historical use;

b) The capability of an area to be flood irrigated, based on stream-flow water yield, soils, water quality, topography, and regional practices; or

c) Sub-irrigation of the lands in question, derived from the groundwater system of the valley floor.

7.3.1 Scope

The purpose of this section is to examine the potential existence of alluvial valley floors in and adjacent to the areas to be affected by surface operations associated with the Trail Mountain Mine, an underground coal mine located ten miles northwest of Orangeville, Emery County, Utah.

This section is divided into three parts. First, a general description of the surface operations and site disturbances associated with the Mine is presented. Next, a discussion of geomorphic and irrigability characteristics and the water quality and availability of Cottonwood Canyon drainages as a possible alluvial valley floor are presented. Finally, the conclusions of the alluvial valley floor determination are summarized.

7.3.2 Site Description

Surface facilities associated with the Mine plan area consist of the portal area located in Cottonwood Canyon and an access road up Cottonwood Canyon.

The climate of the general area is semi-arid and continental. Mean monthly temperatures range from about 8° F to the mid-70's. Temperatures in the region tend to be inversely related to elevation. Average annual precipitation is approximately 16 inches. Seventy percent of the annual precipitation falls during the winter as snow with most of the remainder coming as summer thunderstorms.

7.3.3 Alluvial Valley Floor Characteristic

The various criteria for determining the existence of an alluvial valley floor are examined in relation to the Mine.

7.3.3.1 Geomorphic Criteria

Alluvial deposits in and adjacent to the mine permit area are shown on Plate 7-9. Plate 7-9 shows the extent of the alluvium as presented by Doelling (1972) and shows that the alluvium is found primarily along Lower Cottonwood Creek and at the mouth of the Cottonwood Canyon Creek. Only very narrow bands of alluvium are found along the Cottonwood Canyon Creek above the canyon mouths.

7.3.3.2 Water Quality and Availability

The potential for flood and subirrigation are now evaluated in conjunction with the alluvial valley floor determination.

Flood Irrigation - Flood irrigation near the mine plan area is currently, and has historically been, confined to the alluvial areas of Lower Cottonwood Creek. Water is diverted at the mouth of the Cottonwood Canyon Creek to irrigate fields on the alluvium.

No flood irrigation has historically been practiced on the narrow alluvium land upstream in the canyon opening to lower Cottonwood Creek. A reconnaissance survey of the surrounding region indicates that flood irrigation is also absent in other areas of similar hydrologic, geologic, and biotic characteristics. The historic lack of flood irrigation in these steep, narrow canyons suggests that such activities are not feasible in the region. In addition, the topography is very steep and consequently not conducive to agricultural activities.

Cottonwood Canyon Creek water quality is good. A detailed review of the surface water quality has been presented previously in this report.

Subirrigation - Some subirrigation of vegetation does occur on the alluvial valley floors shown in Plate 7-9. The subirrigated species, mainly cottonwoods and willows, are found along the channels of Cottonwood Creek suggesting that subirrigation is confined to the channel areas where the water table is near the surface.

7.3.4 Alluvial Valley Floor Identification

Based on the foregoing reconnaissance analysis, the canyon of Cottonwood Canyon Creek cannot be considered an alluvial valley floor due to the lack of area for supporting an agriculturally useful crop. The valley floor of Lower Cottonwood Creek, however, can be classified as an alluvial valley floor due to the presence of both flood irrigation and limited subirrigation on the alluvium. The flood or sub-irrigated alluvial areas are located over two miles from the mine permit area and are used for pasture and hay production.

7.3.5 Potential Impacts to the Alluvial Valley Floors

Plate 7-9 shows that the Mine permit area is over two miles from the alluvial valley floor at Cottonwood Creek. Little potential exists for the mine operation to impact the alluvial valley floor. Access to the mine is by existing county road across a minimal amount of alluvial area. All surface disturbances in the portal area will be protected by sediment control facilities and will be designed and constructed according to the Utah Coal Regulations in an environmentally sound manner.

The hydrologic monitoring program will help determine the actual impact of surface activities and aid in selecting mitigating measures, if necessary. However, it is the permittee's position that the Mine and associated activities will have no significant hydrologic impacts to the alluvial valley. Details concerning this monitoring program are outlined in a previous section of this report.

7.4 CLIMATOLOGICAL INFORMATION

PacifiCorp operates a network of weather stations, including two at low elevations (Hunter and Huntington power plants) and two at high elevations (Electric Lake and East Mountain).

7.4.1 Precipitation

The climate of the permit area has been described by the U.S. Geological Survey, which states that it is semi-arid to sub-humid and precipitation generally increases with altitude. The average annual precipitation ranges from about ten (10) inches in the lowest parts of the permit area (southeast) to more than twenty-five (25) inches in the highest parts (northwest). PacifiCorp's weather station, located in Section 26, Township 17 South, Range 7 East, has provided data which shows that the summer precipitation in the form of thundershowers averages about the same as the winter precipitation in the form of snowfall. Because much of the summer precipitation runs off without infiltration, the winter precipitation has the greatest impact on groundwater.

Precipitation amounts have been recorded at the Hunter and Huntington power plants, at Electric Lake Dam, and on East Mountain. Precipitation data can be found in the annual Hydrologic Monitoring Report (Table 7-12 for East Mountain data) (pre-2015)).

7.4.2 Temperatures

Air temperatures vary considerably both diurnally and annually throughout the region. Midsummer daytime temperatures in lower areas commonly exceed 100° F, and midwinter nighttime temperatures throughout the area commonly are well below 0° F. The summer temperatures are accompanied by large evaporation rates. Although not recorded, there probably also is significant sublimation of the winter snowpack, particularly in the higher plateaus which are unprotected from dry winds common to the region. Temperature information is collected at the UP&L weather stations at each power plant, at Electric Lake, and on East Mountain. These data will continue to be included in the annual Hydrologic Monitoring Report (pre-2015) (see Table 7-12 for East Mountain data).

7.4.3 Winds

The winds in the area are generally variable. The wind rose diagram presented in Figure 7-13 displays the variability for the Meetinghouse Ridge area for January to December 1978.

7.5 RECLAMATION HYDROLOGY

7.5.1 General

Reclamation hydrology will take place in two phases. Phase I reclamation will consist of removal of all diversions and the majority of the culverts, restoration of the main and side canyon channels, and redirection of the reclaimed area runoff to the sediment pond. Phase II reclamation will consist of the removal of the sediment pond and all remaining culverts after revegetation standards have been reached.

It is proposed to use a 2-Phase reclamation program with a sediment pond remaining through Phase I because of the close proximity of the site to an intermittent stream and the resulting difficulty in controlling both runoff and sediment by other means. Another advantage to this approach is that by leaving some culverts in place, access is provided for required maintenance by equipment.

The following sections will describe each of the major hydrologic items involved in reclamation, along with details on design, operation and final disposition.

7.5.2 Cottonwood Canyon Channel

During Phase I of the reclamation, the 66-inch culvert that presently carries the main canyon drainage beneath the site will be removed. The 96-inch to 66-inch transition and trash rack will be relocated to a point just above the sediment pond, as shown on Plate 3-5. The stream channel will be reconstructed through the property, down to the new culvert inlet near the pond.

It is expected that the reconstructed channel will be on bedrock and, for that reason, it was proposed that only the channel sides be protected by riprap. Since the bottom conditions are unknown, the permittee commits to place an appropriately sized riprap and filter blanket on the channel side and bottom, unless the bottom is found to be on bedrock.

Riprap, filter blanket and flow designs and calculations are detailed in Appendices 7-3 and 7-4. Design criteria are summarized in Table 7-11 in this Chapter. See Plate 3-5 for structure locations. The reclaimed main channel slope is projected to be a consistent 6% as shown in Table 7-11 and on Plates 3-5 and 3-5A.

The reclaimed area runoff will be prevented from reaching the restored channel by installation of an earthen berm on the reclamation side of the channel. The berm will direct disturbed runoff to the sedimentation pond. A typical section of the restored channel (and berm) is shown on Figure 7-12.

When the revegetation standards have been met, the second phase of reclamation will begin. It will consist of removal of the sedimentation pond and all remaining culvert sections. The remaining channel area will be restored as in Phase I, and all newly disturbed areas will be reseeded. Additional sediment and/or erosion controls, such as strawbales, silt fence, berms, etc., will be installed if necessary to protect the restored channel and stream.

During reconstruction of the main channel, it is proposed to divert the Cottonwood Creek flow around the mine site. This will be accomplished by installation of a small, temporary dam in the channel with a pump diverting the flow into a flexible culvert (or other conveyance structure), which will discharge either back into the culvert below or into the channel below the pond.

Existing Culverts Associated with Emery County Road

With the separation of the Trail Mountain Mine (renamed Fossil Rock 2015) from the PacifiCorp/Energy West operations it has been brought to the permittees attention that three culvert with inlets on the east side of the Emery County Road adjacent to the Fossil Rock Mine and Deer Creek Mine have outlets on the west side of the County Road. The outlets are not visible and are assumed to connect into the 66-inch undisturbed water bypass culvert. The culvert construction information was not in the permitting transferred from PacifiCorp to the permitee. The ability to determine where and at what elevation the outlet of the three culverts enter the channel is unknown. Engineered designs and details would be conjecture and could therefore be commitments that are not possible to meet. For that reason and following consultation with a permitting supervisor at the Division the permittee commits at reclamation to use the BTCA to place an appropriately sized outlet and erosion protection in the channel at the outlet location of each of the three culverts.

Assumed dates of construction:

- The 96-inch to 66-inch transition and trash rack were constructed in (1981 – 1982)
- Culvert installation when road constructed (assumed 1986-1987) -Easement Documents dated January and July 1986 between US Forest Service, Emery County and the LDS Church

A perpetual discharge from the sealed Cottonwood Mine portals is located on the east side of the mine site. This discharge flows under the county road via a culvert and connects to the bypass culvert. Emery County accepts ownership and all accompanied maintenance of this culvert (See Appendix 3-11). At reclamation, the permittee will install an outfall catchment to accept the discharge from the culvert into the creek (See Plate 7-12). Due to the lack of information regarding the exact location and orientation of the culvert, it is assumed that the culvert projects exactly perpendicular to the road and is exactly level with the effluent entry point. The design accounts for these assumptions. The permittee accepts no responsibility for the quality of the discharge water at this location. It is assumed that the UPDES permit holder of this discharge point takes all responsibility for the quality of the discharge according to their permit.

7.5.3 Side Canyon Channel

During Phase I of the reclamation, the 48-inch culvert will be removed from the side channel down to its confluence with the restored main channel. The side channel will also be restored and riprapped as described in Appendix 7-3. At the intersection of the side and main channels, 40 feet of 48-inch culvert will be left in place in the side channel. The inlet section and trash rack will also be installed at this location. The reclaimed area will be separated from the restored channels by installation of an earthen berm on the reclamation side of the channels, providing for reclaimed area drainage to the north of the side canyon to flow over the culverted area and to the sediment pond.
During Phase II, the remaining 48-inch culvert will be removed along with the sediment pond and remaining main channel culverts when revegetation standards have been met. The remaining disturbed area will then be reseeded in accordance with the plan.

Design parameters are summarized in Table 7-11 of this Chapter. Riprap, filter blanket and flow designs and calculations are detailed in Appendices 7-3 and 7-4. A typical section of the restored side channel is shown in Figure 7-12, and the overall plan and structure locations are shown on Plates 3-5 and 3-6.

7.5.4 Sedimentation Pond

The sedimentation pond will remain in place during Phase I of reclamation. There will be no change in pond size, operation or configuration. The reclaimed area runoff will be directed to the pond at the existing inlet location by earthen berms as described in the previous sections. Runoff area will be less than the operational design area by the amount of area involved in the channel restoration; therefore, the pond capacity is more than adequate to contain the reclaimed area runoff from a 10-year, 24 hour event.

The sedimentation pond will continue to be operated, maintained, and inspected, as required until such time as it can be removed.

When revegetation standards have been reached on the reclamation, the sedimentation pond and all remaining culverts will be removed. Any sediment removed from the pond will be hauled to the

Cottonwood Waste Rock Facility for disposal. The main channel will be restored through the former pond area, and all remaining disturbed areas will be reseeded.

Pond design details can be found in Section 7.2.4.2 of this Chapter. Structure locations for Phases I and II of reclamation are shown in Plates 3-5 and 3-6.

7.5.5 Post-Mining Water Monitoring

Upon completion of Phase I of the reclamation, all water monitoring locations with the exception of the UPDES sampling point for the sediment pond discharge will enter reclamation status. Post-mining monitoring will take place at the locations and frequencies described in Appendix 7-1. The UPDES (pond discharge) point will continue to be monitored in accordance with requirements of the permit until such time as the permit is cancelled and/or the pond is removed.

7.6 BIBLIOGRAPHY

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CHAPTER 8
SOIL RESOURCES

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SOIL RESOURCES

8.1 SCOPE

The Mine is a previously disturbed site, having been in operation since l948. As such, no pre-mining conservation or reclamation measures were taken and little stockpiling of soil from areas to be disturbed were done. Likewise, no pre-mining studies were conducted in the disturbed area. Accordingly, future reclamation plans will have to rely on existing soil to provide a suitable medium in which to establish new vegetation. The existing disturbed site has been compacted by heavy equipment and automobiles. Some sections have also been subjected to years of oil, gasoline, and diesel fuel spillage. Moreover, coal piles have existed at the site, causing crushed coal and coal dust to be mixed and compacted into the existing soil. Revegetation test plots will be set up to determine whether the existing soil can result in a successful revegetation program or a supplemental soil will be required.

As supplemental soil may be required for future reclamation, and because the mining property to be reclaimed was already disturbed, it was necessary to characterize the soil from adjacent reference areas. These were chosen in two locations; as near as possible to the disturbed area and in areas determined, as well as could be done, to correspond in both soil type and vegetative community type to that of the disturbed area. Future supplemental soils would likely have to equal or exceed the quality of these two reference soils.

8.2 METHODOLOGY

Revegetation test plots have been set up to determine the suitability of the existing disturbed soil as a growth medium. (See Vegetation Test Plots, Appendix 9-l).Soil sample data is also included in Appendices 9-1 and 9-2, along with the vegetation test plot data.

In the event that the soils on site cannot be used for revegetation, supplemental soil will be required. The supplemental soils would likely have to equal or exceed the quality of the existing soil prior to disturbance. An estimate of this quality can be obtained from soil samples taken from two soil pits dug in soil types which have been disturbed previously by the Trail Mountain operations. The soil pits were sampled at each recognizable horizon down to sixty inches or to bedrock, whichever came first. Each horizon was described in the field according to thickness, color and soil structure.

These soil pits were located in the Riparian (streamside) and Grassland-Shrub plant communities. Only soil types similar to those already disturbed or expected to be disturbed were sampled to serve as a basis for the reclamation plan to be developed.

After collection, the soil samples were air dried and passed through a two millimeter screen (Tyler #l0 mesh). Rock percentages were obtained by weighing separately the total soil sample and the rocks separated out by the 2 mm screen.

Soil textural analysis was performed in the lab using the Boyoucos hydrometer method with 50 gram samples. A sample of each soil horizon was sent to the Utah State University's Soil and Water Testing Laboratory in Logan, Utah for selected chemical analyses. These analyses included a standard fertility test (pH, salinity by probe, phosphorus, potassium, texture, and lime); exchangeable cation percentage (CEC, Na, K, Ca, and Mg, extractable ion, saturation percent, and the water soluble ions listed above); and sodium absorption ratios (SAR) where the salinity was found to be high.

8.3 SOIL RESOURCE INFORMATION

8.3.1 Soils Identification and Descriptions.

Four main soil types occur in the mine plan area, plus various thin soils among rocky outcrops and on talus slopes, which are designated as rockland (map symbols RoG and RY, see Plate 8-1). Two of the four developed soil types are dry stony soils of steep mountain slopes. These are designated by the map symbols AbG (Very stony sandy loam complex) and CoG (Stony sandy loam complex). A third soil type, designated SN (shaly colluvial land), is located on the top of Trail Mountain in areas that will not be disturbed by mining activities and therefore will not be considered further. The fourth soil type, here designated by the map symbol R (for Riparian), is the principal soil type found in the disturbed area. In the soil pit located north of the Mine disturbed area, it would be classified as an azonal soil or entisol, and probably an arent (from ar, L., to plow, meaning mixed horizons). However, the soil is also located within a mapping unit called the Kenilworth Series, which is also defined as a Xerollic Calciorthid Ardidisol.

This is the soil of the canyon bottom along the stream. It is characterized by numerous gravelly, silty, and sandy layers; but in the Reference Area it does not exhibit any soil profile development. It

is in alluvial soil that has developed from gravelly outwash brought down by the canyon stream during infrequent floods plus collected finer fractions deposited by wind and talus erosion. It is a deep soil, exceeding 5 feet and often attaining I0 or more feet, as may be seen at some eroded banks along Cottonwood Creek. The soil pit dug in the Riparian Community reference area showed eight horizons (but no classic soil profile) including what appeared to be a buried soil profile from an earlier time.

The streamside, or canyon-bottom soils were referred to as the Kenilworth Series in a prior classification (USDA, USDI, and UAES, I970), specifically to the KeE2 mapping unit. This was called the Kenilworth very stony sandy loam of 0 to 20 percent slopes. This soil is stony, well-drained, and moderately coarse textured. In its broader distribution, this soil type occupies high benches on old dissected outwash plains below very steep mountains. It forms in thick deposits of strongly calcareous (high lime) stony alluvium and supports a vegetative cover mostly of juniper and pinion. The land use is mainly for wildlife, recreation, and limited grazing.

In Cottonwood Canyon, at the site of the Mine plan area, the presence of the canyon stream has led to a well-developed streamside plant community of narrow leaf cottonwood trees and a lush understory of grasses and forbs. This community is narrowly distributed along the stream course. Higher up, it transitions into the Pinion-Juniper Community of the east-facing steep slopes of Trail Mountain. Probably 25% or less of the Mine disturbed area is located on soils of this canyon-bottom type within the Riparian Plant Community and its transition zone away from the stream, but still in the canyon bottom.

Three of the above four soils that were found in the approved Mine Plan were also found on the Tract 2 Mine Plan Area. They were RoG (rocklands), CoG (stony sandy loam complex), and AbG (very stony sandy loam complex).

In addition, five other soil types were found within the boundaries of the Tract 2 Mine Plan Area (data taken from the Soil Conservation Service and U.S. Forest Service, Price, Utah). The map symbols and soil types are: ACI (Argic Pachic Cryoborolls), TU (Typic Ustorthents), TC (Typic Cryorthents), AC3 (Argic Pachic Cryoborolls), and AC2 (Argic Pachic Cryoborolls). Refer to Soils

Map 8-I for locations of these soil types. These soils are also located in areas that will be undisturbed by mining, and therefore will not be considered further.

8.3.2 Present and Potential Productivity of Existing Soils

The soils in the disturbed area support a streamside plant community of dominant narrow leaf cottonwood trees plus lesser numbers of Rocky Mountain Juniper, Chokecherry, Elderberry, and numerous understory species of shrubs, grasses, and forbs. The transition zone on the same soil, but away from the stream and not yet on the steep Pinion-Juniper covered canyon slopes, has more juniper and pinion pine and is more open. The understory is mostly grasses and sagebrush.

The area is useful mainly for wildlife, recreation, limited grazing and mining. No cultivation could be established because of the steepness of the canyon.

8.4 PRIME FARMLAND

No farmland exists in the area. The capability unit category in the canyon bottom is VIIs-SX (non-irrigated), which is soil near steep mountains on recently formed flood plains of streams. These soils are suited for range.

8.5 SOILS: PHYSICAL AND CHEMICAL PROPERTIES

Two soil pits were dug. The results of textural analysis from the Riparian Reference Area soil pit are shown in Table 8-1. Chemical tests are shown in Table 8-2.

This is the soil of mapping unit RI. The top layer, which is not necessarily an A horizon, is 9 to l0 inches thick and is mainly a sandy clay loam texture having only about 5% rock over 2 mm diameter and 95% fine soil particles. The finer soil fraction is 48% sand, 30% silt, and 22% clay. Deeper layers show increasing percentages of rock (mainly gravel) down to layer 5, which suddenly reverts to less than one percent rock. This layer is also thick (7 inches) suggesting an older soil A horizon buried by the present developing soil surface.

Table 8-2 shows pH values ranging from 8.0 to 8.4 and slight salinity at the surface, increasing with depth. It is highly calcareous soil, with an average phosphorus content of p = 2.0 ppm and a

potassium content of K = 217 ppm by the standard soil fertility test.

The second soil pit was located in the Grassland Shrub Community on a steep northeast facing slope uphill from the coal loading piles of the disturbed area. This is the mapping unit CoG or RoG. It is a soil type that has been disturbed by the Mine operations, but only slightly. Some of the lower steep hillside has been cut away to provide clean mine entrances and room for a coal pile. Probably only about 75% or more of the disturbed area is represented by this soil type.

The results of textural analysis are shown in Table 8-3 and of chemical analysis in Table 8-4. The Grassland Shrub soil was relatively shallow, bedrock being encountered at only 19 inches. The A horizon was 5 inches deep and consisted of 71.5% fine soil and 28% larger rock fragments by weight. The fine soil fraction was a loam soil of 40% sand, 35% silt, and 25% clay. Deeper layers increased rapidly in rocky material, silt, and clay fractions. The pH ranged from 8.2 to 8.7 and the salinity from .3 to 4 mmho/cm2. Phosphorus and potassium levels were much lower than the streamside soil of the canyon bottom.

8.6 USE OF SELECTED OVERBURDEN

Since the site is a previously disturbed site since 1948, and no further disturbance is proposed, no overburden will be handled.

8.7 PLANS FOR REMOVAL, STORAGE AND PROTECTION OF SOILS

~~Since the site has was previously disturbed no soils were removed, stored, or protected prior to 1982. Compliance work in 1982 - 1983, involved the use of an on site borrow area and resulting topsoil storage pile. For any future disturbances, any soils encountered will be removed, stored, and protected.~~

The mine was operational before the 1979 State Act or the 1977 Federal Act. Having been constructed prior to the requirement to save and stockpile topsoil, the soils on the site were used in construction of the roads and pads.

A post-law borrow pit was utilized on site to obtain fill material for the 66" culvert for Cottonwood Creek. Topsoil was salvaged from the pit area, and is stockpiled in a protected area just northwest

of the intake portal for the mine. The pile has been revegetated, and is further protected by installation of a silt fence around the bottom end. Please refer to Appendix 8-1 for details on the borrow area.

No additional area is planned for disturbance, therefore, it is unlikely that any topsoil will be encountered. However, if in the future, during upgrading operations or facility modifications, any salvageable topsoil is found, it will be tested in accordance with the "UDOGM Guidelines for Management of Topsoil and Overburden, Table 1, 2, 3 & 7", and if found satisfactory, will be saved and stockpiled in a location acceptable to the regulatory authority.

8.8 PLANS FOR REDISTRIBUTION OF SOILS

In the event that the existing soil cannot be revegetated, supplemental soil will have to be hauled in for regrading of the disturbed site. Such soil should be tested for similarity to the existing soils and should equal or exceed the quality of the Riparian soil of Tables 8-1 and 8-2. This is the soil type of 25% or less of the disturbed area.

Once the buildings, mine equipment, coal piles and other structures and disturbances are removed, the existing disturbed area must be graded to the final configuration. If the existing soil is unsuitable for revegetation and supplemental soil must be brought in, a depth of not less than six inches should then be applied and graded in preparation for seeding. Existing soil should prove adequate for plant growth. Refer to Section 3.5.4 for Backfilling and Grading Plan and Section 3.5.5.1 for Soil Preparation.

8.9 NUTRIENTS AND SOIL AMENDMENTS

Existing soil or soils hauled in for the restoration of the disturbed soils will have to be supplemented with commercial fertilizers containing nitrogen, phosphorus, and potassium. The exact mixture will have to be determined following tests on the actual soil used, but a broadcast rate of about 50 pounds of phosphorus, 80 pounds nitrogen and 80 pounds of potassium per acre can be expected. Stabilization will be obtained by the use of an erosion control mat.

8.10 EFFECTS OF MINING OPERATIONS ON SOILS

The existing disturbed site has been compacted by heavy equipment and automobiles. Some sections have been subjected to oil, gasoline, and diesel fuel spillage. Crushed coal and coal dust from the coal piles have been mixed and compacted in the existing soil.

8.11 MITIGATION AND CONTROL PLANS

As a previously disturbed site, no soils had originally been saved for protection of the resource. A small amount of topsoil was salvaged during the hydrologic reconstruction on site, and has been stored and protected as shown on Figure 3-1. Should any future disturbance of undisturbed soils of good potential occur, the soils will be removed, stored, and protected.

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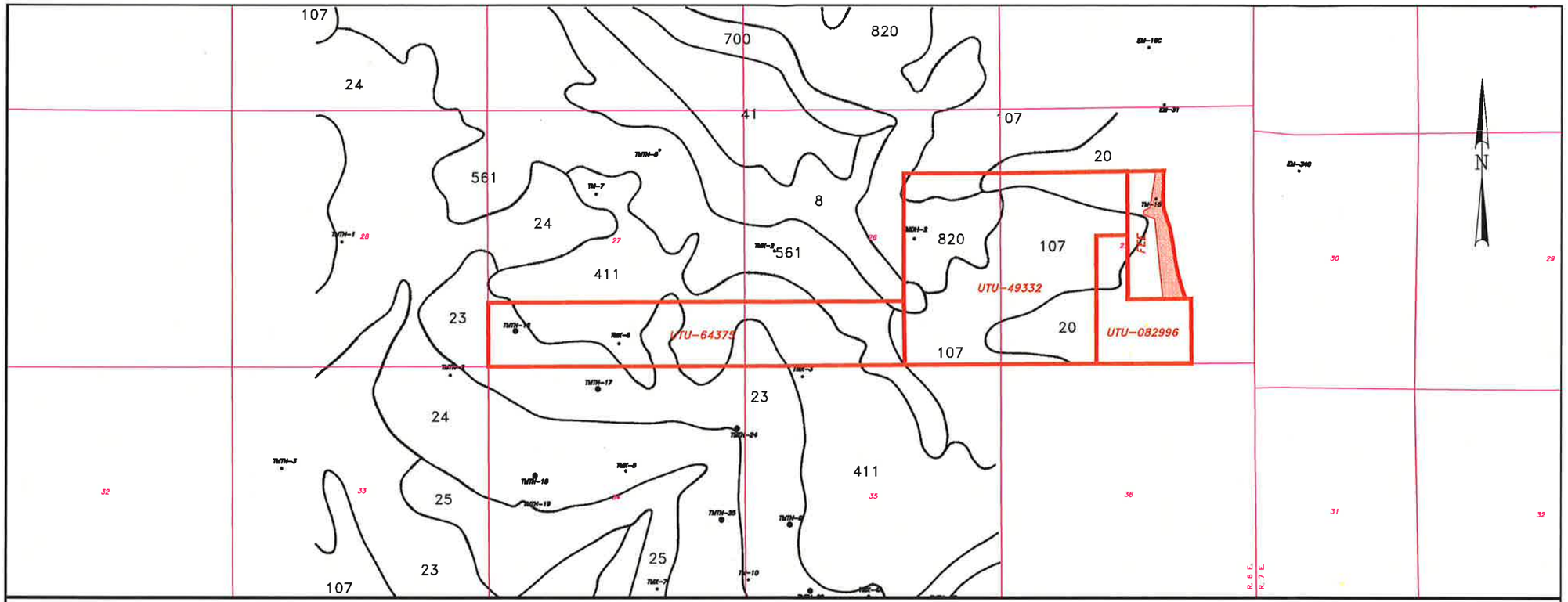

NUMERICAL CLASSIFICATION OF SOILS IN THE LBA B

MAP UNIT	FAMILY–COMPLEX
8	Greyback family–Cryorthents complex,
20	Strych–Pathead–Pods families–Rubbleland complex
23	Trag–Curecanti families complex
24	Rabbitex–Repp–Reva families complex
25	Frandsen–Altens Park–Repp families complex
41	Castino family
100	Gralic–Behanin–Elwood families complex
107	Curecanti–Elwood–Duchesne families complex
402	Roxal–Merino–Gralic families complex
411	Clayburn–Falm families complex
560	Clayburn–Broad Canyon families
561	Clayburn–Falm–Behanin families complex
700	Heliotrope(t)–Willow Lake(t)–Dateman families complex
820	Lucky Star–Bundo–Adel families complex

LEGEND

- LEASE BOUNDARY
- PERMIT AREA
- DRILL HOLE
- EM-12C EAST MOUNTAIN DRILL HOLE NO. 12 (C=CORED)
- TM-10 TAWL MOUNTAIN DRILL HOLE NO. 10

PROFESSIONAL ENGINEER
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STATE OF UTAH

I CERTIFY THE ITEMS SHOWN ON THIS DRAWING ARE ACCURATE TO THE BEST OF MY KNOWLEDGE

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Soils Map

SCALE: 1" = 2000'	DATE: 9/14/2016	DRAWN BY: B.R.	ENGINEER: J.S.	CHECKED BY: V.M.
FILE NAME: -----				PROJ:

REVISIONS				
NO.	DATE	REQ. BY	DWG. BY	REMARKS

SHEET NO.

Plate 8-1

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VEGETATION RESOURCES

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VEGETATION RESOURCES

9.1 SCOPE

A preliminary survey of the mine plan area indicated that four plant community types were in the boundaries of the area which had been disturbed or might be disturbed by any further expansion of the mine. Sites for concentrated sampling were chosen. The following methods were utilized.

9.2 METHODOLOGY

9.2.1 Trees

The point-quarter method was used to determine tree density and frequency. Ten points along a 500 foot transect were used. The four nearest trees to each point (one in each of four quadrants) were measured for diameter and distance from the point. Four saplings were also measured for distance but not diameter at each point. Thus 40 trees and 40 saplings were measured in each of the four plant communities. Pinion and juniper trees were measured at one foot height for diameter, and all other trees were measured at breast height (diameter-breast-height = DBH). These tree measurements yielded tree and sapling density and frequency. Tree dominance in terms of basal area was obtained from DBH. Sapling data provided estimates of tree reproduction. Tree (canopy) cover was estimated by the line-intersect method along a 500-foot transect with in-out measurements having a 6-inch resolution.

9.2.2 Understory Vegetation

Cover, density, and frequency of understory plants plus non-living cover of litter, rock, and soil were measured by the quadrate method. The one-meter-square quadratus were spaced every ten feet along the selected transects. The Riparian and Conifer Communities were sampled with 30 quadratus each, the Grassland-Shrub Community was sampled with 50 quadratus, and the Pinion-Juniper Community was sampled with 50 quadratus, and the Pinion-Juniper Community was sampled with 5l quadratus. Living plants were determined to species and their percent of total area in each quadrate (cover) was estimated. The number of separate plants was also counted (density). These data were grouped by growth form into trees; shrubs and vines; grasses, sedges, and rushes; forbs; and cryptograms.

9.2.3 Reference Areas

Two reference areas are designated to be permanently marked and protected. One is in the Riparian Community, and one is in the Grassland Shrub Community. Their locations are marked on the vegetation map, Map A, Appendix 9-1.

9.2.4 Vegetation Map

A vegetation map was compiled with the aid of aerial photographs printed in a scale of approximately 528 feet-to-the-inch (1:6, 3346), assisted by ground-truthing surveys. The most recent available aerial survey (I977) was used. The final map was later transferred to a contour map at the same scale. Area measurements were made for each community type by cutting up one of the maps and weighing the various pieces according to the community type. This gave percentages for each community type in the mine plan area and permitted calculating the acreages involved.

9.2.5 Sampling Adequacy

The date summarized for each sampled plant community was subjected to precision analysis using the statistic:

$$N = \left(\frac{ts}{px} \right)^2 \qquad (9\text{-}1)$$

in which:

- N = number of points, trees, quadratus, etc. which are necessary to sample within certain prescribed precision and confidence limits.
- t = student's t-value for two-tailed tests and N-1 degrees of freedom. Various confidence limits were tested, but the minimum acceptable level was 80%.
- s = standard deviation
- $\bar{x}$ = the mean or average of a group of values
- p = sampling precision, entered as a decimal but representing the percent variability around the true population mean.

In this test, N, the number of samples required to adequately sample the population at 80% confidence, and p = ±20% was calculated for each parameter (DBH, tree distance (density), sapling

density, total plant cover, non-living cover, etc.). Precision was also calculated for these data using the actual number of samples used. This was done for 95%, 90%, and 80% confidence limits.

The interpretation of these precision tests is given in the following example. If N is calculated using the results of 30 samples, the 30 measurements are summed to obtain the mean (x) and standard deviation (s). The proper value of t is obtained from a t-table for N-I = 29 degrees of freedom under the desired confidence limit column (95%, 90%, 80%, etc.). The value of p is also selected; assume p = .20 (which means the true population is to be estimated within ±20% precision). Assuming the example yielded an answer of N = 26, we could say that the 30 actual measurements constituted an adequate sample since only 26 were required to meet the criteria of ±20% with 80% confidence level. If we then said that x was the mean for the population, we would be within ±20% of the true mean in 80 out of l00 times that we sampled the population in the same way.

The true precision for our 30 samples could also be calculated by using

$$p = \frac{ts}{Nx} \qquad (9\text{-}2)$$

In the above example it would be less than .20 (±20% precision) because only 26 samples were needed to obtain p = ± .20; in fact, it would be p = ± .l8 and the true precision is ±l8% with 80% confidence.

Vegetation sampling is done within various confidence limits to suit different requirements. Higher values require more samples and increase costs. The value of 80% is accepted by the U.S.Bureau of Land Management for estimating vegetation, productivity, etc. Likewise, p = (±20% precision) is normally accepted in vegetation sampling work.

9.3 EXISTING RESOURCES

9.3.1 General Site Description

The following discussion treats four of the five plant communities mapped within the Mine plan area boundaries. (See Plate 9-1). The fifth, consisting of aspen communities located on top of Trail Mountain, will not come under direct disturbance by coal mining activities unless subsidence occurs when the mine is finally closed. Although this might alter drainages, it is very unlikely because of the

extent of relief above the coal seam.

Grassland-Shrub and Conifer communities on top of Trail Mountain are quite similar to those sampled below and are not expected to undergo perturbation from mining activities. The four sampled communities will be discussed in order of elevational scale; i.e. Riparian (streamside) in the bottom of the canyon, Pinion-Juniper above the Riparian, Grassland-Shrub above the mine mouth, and the Conifer Community directly west of the mine mouth and contiguous with the Grassland-Shrub Community. Discussions of these community types will be followed by a short treatment of the results of mapping, threatened and endangered species, and sampling adequacy.

9.3.2 Riparian (Streamside) Plant Community

9.3.2.1 General Description

The Riparian Community was sampled just north of the Mine offices in Cottonwood Canyon beginning about 200 feet upstream from the office building. A 500 foot transect was run from that point along the west side of the stream to avoid the disturbances caused by the canyon road on the east side of the stream. Steep banks on each side of the stream are 10 to 30 feet high with slopes ranging from 40% to 90% where the stream has cut through old stream bed material. Vegetation is comparatively dense with a heavy understory of grasses, forbs, and scattered shrubs. Some 86 plant species were encountered in a survey of the stand. These are listed in Table 9-1 by life form (trees, shrubs, grasses, forbs) with scientific and common names. The greatest species diversity occurred among the forbs, which have 48 species. Shrubs and vines were represented by 19 species, grasses and sedges by 10, and trees by 9. Narrow leaf cottonwood (Populous angustifolia) dominates the canopy layer and is reproducing vigorously with many seedlings and saplings appearing also in the understory. The total canopy cover measured on the line intercept was 40%, leaving 60% open space in this area next to the stream.

9.3.2.2 Riparian Tree Data

Table 9-2 summarizes the data taken by the point quarter method for 10 points along a 500 foot transect. A total of 40 trees and 40 additional saplings were measured. Three tree species came into the sample plus one large chokecherry (Prunus

viginiana) reached tree size (DBH of 4 inches or more) in this case in the fourth quadrant of point I0. Tree density estimated from the sample was 87.8 trees per acre with 97.5% of these being narrowleaf cottonwood. Narrowleaf cottonwood dominated in all parameters of density, basal area, cover, and frequency with an importance value (IV) of 397.7 out of a possible 400 IV points for trees. Basal area and percent cover was not measured for seedlings and saplings, but narrowleaf cottonwood dominated the understory also with an importance value of I78.3 out of a possible 200 points for 89.2% of relative IV. The C x F index (cover x frequency), another measure of relative importance, also shows similar traits for the trees. Saplings of three species occurred in this community at a density of 892 per acre. Since fully grown trees occur at 88 per acre, it appears there is a natural mortality rate of about 90% among established tree seedlings in this community.

9.3.2.3 Riparian Understory Data

Table 9-3 summarizes the streamside species sampled in the understory with 30 one meter square quadratus. Forbs proved to be the most important life form followed by grasses, as may be seen by the importance values and the C x F index at the right of Table 9-3. Out of a possible 300 IV points, forbs had I42.3 (47.4%) to III.8 (37.3%) for grasses; and of a possible total of 10,000 C x F index points, forbs had 606.6 compared to 26I for grasses. Counts of the stems for each species show that grasses have higher density counts with about twice the number of stems as forbs (66.7% density for grasses and 3I.5% for forbs). The most important species can be picked out by the IV values listed in Table 9-3. Poa pratensis (Kentucky bluegrass) had the highest individual IV value (80). This was followed by 47 for (Aster chilensis) 43.4 for scouring rush (Equisetum ervense), 3I8 for orchard grass (Doctylis glomerata), I6.4 for narrow leaf cottonwood seedlings, I5.2 for dandelion (Taraxacun afficionale)(, and II.7 for western virgin's bower (Clematis ligusticifolia). The C x F index, however, shows that (Aster Chilensis) (CxF = 3I2.4 and scouring rush (C x F = 266.4) are very important compared to C x F = I76.8 for Kentucky bluegrass. This is based mainly on the high cover values measured for (Aster) and for scouring rush, as well as a high frequency of occurrence in the quadratus.

The overall average living understory cover was measured at 35.5% of total cover,

and it ranged from 0.6% to 67% with litter contributing about 5l% of non-living cover. Rock and exposed soil were of rather minor importance (2.6% and 8.6% of total cover respectively.

9.3.3 Pinion-Juniper Plant Community

9.3.3.1 General Description.

This stand is located just north of the Mine office on steep south- and east-facing slopes above the Riparian Community reference area. The measured transect was 500 feet long, running in a south-north direction along a l68° bearing line (magnetic). The slope in the sampling area is about 42% with an exposure of 78 ± EEN. Large boulders are scattered among the trees, which causes a variety of relief and abrupt changes in percent slope. There are 62 plant species in this community, as listed in Table 9-4. The dominant tree is pinion pine (Pinus edulis). Significant percentages of Rocky Mountain juniper (Juniperus acopulorum), limber pine (Pinus flexilis), and Douglas fir (Pseudotsuga menziesii) also occur. The greatest species diversity occurs among the forbs (36 species) followed by shrubs (l3 species), grasses (7 species), and trees (6 species).

9.3.3.2 Pinion-Juniper Tree Data

Table 9-5 summarizes the data for four species of trees occurring in the point quarter and line intercept sampling data. Density of trees was estimated from tree distance at 99.2 trees per acre. Seedlings and saplings are present at l33.9 trees per acre. The combined total for both trees and young trees is 233.l trees per acre. Since full size trees represent about 43% of the combined total, a natural mortality rate of about 57% is suggested for tree seedlings in this community. Pinion pine showed the greatest values for density, basal area (dominance), cover, and frequency. The importance value (IV) of 239.6 for pinion pine far exceeds the other trees, as does the C x F value of 2,380.5. Rocky Mountain juniper is the next most important tree species with an IV of 70.8 and C x F index of 447. These dominant species are followed by Douglas fir with an IV score of 59.3 and a C x F value of 240.

Tree reproduction indicates that seedlings and saplings of pinion juniper still

dominate at an IV of 85.6 out of a possible 200; but Douglas fir, with an IV of 56.I, is more important than juniper at 43.8. Perhaps Douglas fir is increasing in this community. When both trees and reproduction are considered together, the density values show that Douglas fir is slightly more important than juniper and may indicate trends in successional directions, as do the importance values cited above.

9.3.3.3 Pinion-Juniper Understory Data

The data on understory vegetation for the Pinion-Juniper Community are summarized in Table 9-6. Grass species dominate the understory vegetation with a life form total importance value of I57.4 or 52.5% importance. Slender wheatgrass (Agropyron trachycaulum) was the most important species in the understory, with an importance value of I32.4 or 44.1% importance in comparison to the other understory species. On the basis of cover and frequency, this translates to a C x F index of I067.7 and a total C x F index of I067.7 and a total C x F index for grasses of II04.6.

Lichens are the next most abundant life form in terms of cover and frequency (but not biomass or forage value), with an importance value of 30.4. This is followed by Utah serviceberry (A, e; amejoer utahensis) at 24.5. Hood's (Phlox hoodii) at I7.5, and Sandberg's bluegrass (Poa secunda) at I5.3.

Generally, the understory vegetation is rather sparse in density except for patches of slender wheatgrass. The average cover value for living plants was 23.4%, and ranged from 7.5% where mostly rock was exposed in the quadrate to 85% under bushes of Utah serviceberry. This leaves non-living cover averaging approximately 75% and consisting of rock (27.3% cover), litter (26%), and soil (22.6%).

9.3.4 Grassland-Shrub Community Data

9.3.4.1 General Description

This stand is located immediately above the Mine mouth and loading areas on the steep, generally east-facing mountain slope. The stand runs around the brow of the hill and has exposures ranging from north-northeast to east. The soils are rather heavy, being silty clay to loamy silty clay soils dotted with many boulders and rocks

caused by talus from the rocky cliffs above. The slopes range from 43% to about 48%, measured by clinometer.

The vegetation forms are mainly grasses with scattered shrubs and an occasional tree here and there, especially at the west end of the sampled stand.

Table 9-7 lists plant species observed in this plant community. A total of 37 species are recorded, consisting of 3 trees, 11 shrubs, 6 grass and sedge species, and l7 forb species. Of the forbs, only one annual was observed (Lappula aredowskii). No extensive tree canopy exists except for the isolated trees, so no tree data was taken in this community.

9.3.4.2 Grassland-Shrub Understory Data

The summary data listed in Table 9-8 provide estimates from the vegetative sampling of cover, frequency, and density for two sites. Grasses and sedges were the most abundant as is indicated by the importance value (IV) and the C x F index on the right side of Table 9-8. The IV value is obtained by adding up the relative percentages of cover, frequency and density. The C x F index is obtained by multiplying the cover and frequency together. Thus, it is possible to obtain a total C x F value of 10,000. The higher the IV or the C x F index is, the more abundant and, consequently, the more important is the plant species or life form listed.

Based on these indices, grasses had an IV of about l46 out of a possible 300, or 53% importance. Slender sheatgrass, like the pinion-juniper stand discussed above, had the highest IP value (IP = l3l plus C x F = l383.3). Slender wheatgrass was followed in importance by a forb called shrubby bedstraw (Galium multiflorum) at an IV of about 32, and the shrub called shadscale (Atriplex confertifolia) at an IV of about 20. Other species of somewhat less importance were sticky rabbitbrush (Chrysothamnus visidiflarus), snakeweed (Gutierrezia sarathrae), Sandberg's bluegrass (Poa secunda), Hood's phlox (phlos hoodii), and buckwheat (Eriogonum carymboxum).

Total cover (54.4%) was rather high due to the heavy grass cover (33.4%). Because

of this high cover, there was less soil and rock exposed without living cover or litter above it.

9.3.5 Conifer Plant Community

9.3.5.1 General Description

This plant community is located west of the mine mouth on north-facing slopes of a rather large draw trending east and west up Trail Mountain's east slopes. The slopes range from 50 to 60% with an exposure to the north. The sampling transect extended along a line bearing 260° west. The forest-covered steep slopes are at the base of steep cliffs which have contributed talus to the forest soil below. The soil is very rocky as with the contiguous Grassland-Shrub Community further east already described. The understory vegetation is sparse. A species list with a total of 43 species was compiled and appears in Table 9-9. Six trees, 9 shrubs, 6 grasses and sedges, and 22 forbs were found in the stand, of which some 26 species came into the sample transect.

9.3.5.2 Conifer Tree Data

Table 9-10 summarizes the tree data for the conifer stand. It shows White fir and Douglas fir to be co-dominant, with an IV value of 169 for white and 162 for Douglas fir. These accounted for almost 83% of the tree dominance and almost all of the total C x F index, as can be seen on the right side of Table 9-10. Douglas fir had the greatest amount of basal area, but white fir contributed the greater amount of canopy cover and was 10% more frequent.

Total density of trees was about 74 per acre, and Douglas fir and White fir were even although Douglas fir had almost twice as many seedlings and saplings. Both trees are reproducing themselves so this stand can be considered a climax community for this exposure, elevation and other static factors of soil, etc. Mountain red juniper showed good reproduction, but there were few tree-size individuals in the samples.

9.3.5.3 Conifer Understory

As in the Grasslands-Shrub Community immediately east of this stand, grass was

the most important species in the understory (see Table 9-ll). Forbs were next in importance. Here again slender wheatgrass proved to be most ubiquitous, with an IV value of l06 and a C x F index of 446. The most important forbs were shrubby bedstraw (Galium multiflorum) and Hood's phlox at scores of 28 and 27 on the IV index respectively. The two shrubs of most importance were creeping barberry (Mahonia repens) and Utah serviceberry at IV scores of l5 and l4 respectively. The grass blue wildrye (Elymus glauca) and the sedge (Carex geyeri) were also of minor importance at IV 23l and IV l5, in that order. Density count was the factor that provided much of the dominance for the grasses, however, with 833 stems counted in 30 quadratus.

As was mentioned earlier, the understory cover was described as rather sparse. This observation is supported by the measured low total cover value of about 23%. Litter was abundant at 23%, but soil had about 34% of absolute cover exposure under the trees. With a tree canopy of 60.4% it is understandable that understory cover is meager. This, coupled with comparatively low precipitation in this area, influences the lower understory values.

9.3.6 Vegetative Productivity

Productivity data from the two plant communities adjacent to the disturbed area are shown in Tables 9-l2 (Riparian) and 9-l3 (Grassland-Shrub). These two communities have been disturbed in the past operations of the Mine and are the only ones likely to receive any future disturbance. The data are shown for freshly cut or green weights and for air dry weights too. The following discussion concerns only the air dry weights. The Riparian community produced a total of 1,516 pounds per acre (air dry), while the Grassland-Shrub Community produced 9l0 lb/acre. Moisture in these productivity measurements accounted for 64 and 49 percents of the totals in the two communities so that the corresponding fresh weights were 4,236 and 1,774 lb/acre of total plant productivity. Since only understory plants were measured, tree data is for seedlings and saplings only. Even so, the Riparian Community out produced the Grassland-Shrub Community by a factor of about two. The most abundant life form in both communities was grass with 36% of total productivity in the Riparian and 79% in the Grassland-Shrub Community. Forbs and shrubs were about equal in the Riparian Community at 30 and 3l% (455 and 464 lb/acre) respectively. In the Grassland-Shrub Community, shrubs were the second most productive life form at 9% of the air dry total while forbs represented

only about l%.

In the present study several methods were used to obtain estimates of vegetation growth in the vicinity of the Mine. These methods involved sampling and using the results to estimate the population values. Adequate sampling ensures that the population parameter will be estimated with acceptable precision. Any degree of precision can be obtained by increasing the sample size. Perfection can be achieved by measuring every member of the population. This is, of course, impractical and a compromise is always struck between the level of precision and the expense and time required to attain it.

9.3.7 Sampling Adequacy

The sampling adequacy and actual precision obtained for the various data obtained in the present study are summarized in Table 9-l4. The minimum criterion for adequate sampling in these date is ±20% precision at the 80% statistical confidence level. This means that the true population mean has been estimated to within ±20% or better, and that if we say this is true we would be wrong only twenty times in a hundred from random causes alone.

Table 9-l4 shows that in many cases the actual precision obtained in this study is much better than ±20%. These values are shown in Part B of the table where 29 of the 36 precision tests meet or exceed the ±20% precision standard. Three of the seven inadequate samples are very close to the acceptance level and the remaining four involve two density estimates of understory grasses and two estimates of tree canopy (% cover). The difficulty of counting grass stems is obvious and accounts for the one problem. The tree canopy estimates, which could benefit from additional sampling, are poorest in the two plant communities least likely to be disturbed by mining activities, the Conifer and Pinion-Juniper Communities. We believe no essential conclusions or recommendations advance in this vegetation report would be changed by additional sampling in these areas.

9.3.8 Reference Area Supporting Data

Two vegetation communities were assigned reference areas. These have been permanently marked, and are shown on Map A, Appendix 9-1. The riparian reference area represents the pre-disturbance condition of the parking area, coal loading facilities, and mine buildings area. (See Vegetation Map A, Appendix 9-1.) The grassland-shrub reference area represents the pre-mining

grassland-shrub community--part of which still exists above the mine mouth. Both reference areas were sampled quantitatively. Data are included in Vegetation Resources, Chapter Nine.

9.4 THREATENED AND ENDANGERED SPECIES

No threatened or endangered species are observed in the mine lease area. However, Hedysarum ocidentale var Canone is known to occur in areas to the south and east of the mine plan area in the Miller Canyon vicinity. Heydysarum Ocidentale var Canone does not occur on the mine plan area (Bob Thompson, USFS I987). Several other species have been proposed to be listed in the past that occur in areas to the south and east in the Mancos Shale and Morrison Formation derived soils, and one species of grass (Festuca dasyclada) is found in Joe's Valley to the west; but are not known to occur in or contiguous to the mine plan area. Many of the species reported by Welsh, et al (I975) have since been delisted or dropped from the possibly threatened or endangered list by Welsh (I978).

9.5 EFFECTS OF MINING OPERATIONS ON VEGETATION

The mine has been in existence since I948 and has undergone expansion in the last few years, which has removed vegetation and redistributed soil to its present location as fill for the parking lot and coal loading areas. This has had the effect of removing the Riparian and part of a stand of a Grassland-Shrub Community.

9.6 MITIGATION AND MANAGEMENT PLANS

The mine site was disturbed during development activities from I948-I967. As such, no vegetative protection activities are planned for the disturbed areas. Any future disturbance will require the verification that threatened and endangered species do not exist on the site. If any threatened and endangered species are found, the appropriate authorities will be contacted.

To mitigate the loss of approximately 2,000 feet of riparian community that was damaged when a portion of the North Fork of the Cottonwood Creek adjacent to the disturbed area of the Mine was culverted, Trail Mountain (During April, I986) cut and collected approximately 3,500 I2-I8 inch long willow stems from local stock and cold storage them. During the latter of part of May, I986 these

willow stems were planted at intervals of approximately six feet apart on both sides of the North Fork of the Cottonwood Creek for a distance of two miles below the disturbed area of the mine site. This willow shoot enhancement project was conducted by Trail Mountain with the technical supervision of Mr. Larry Dalton of the Division of Wildlife Resources (I986).

9.7 REVEGETATION METHODS AND JUSTIFICATIONS

After cessation of coal mining activities at the Mine, disturbed areas will be revegetated. The revegetation plan contains one option; to use the existing soils with amendments. The plan assumes that the existing buildings will be removed, the mine entrances sealed, and the site regraded to the final surface configuration. Refer to Section 3.5.5 Revegetation Plan for additional information.

Seeding for the Riparian area will follow the rates and species listed in Table 3, Appendix 9-I and seeding for the Grassland-Shrub area is listed in Table 2A, Appendix 9-1. (See Reclamation Plan Seedbed Preparation: Grassland and Riparian Appendix 9-1.)

9.8 REVEGETATION MONITORING

The vegetation composition of the reseeded areas will be compared to that in the reference areas. Ninety percent stocking rate is acceptable under the present regulations. Subsequent reseeding for each year will be done until cover and productivity are within 90% of the approved reference areas. Refer to Section 3.5.5.4 for additional information.

9.9 BIBLIOGRAPHY

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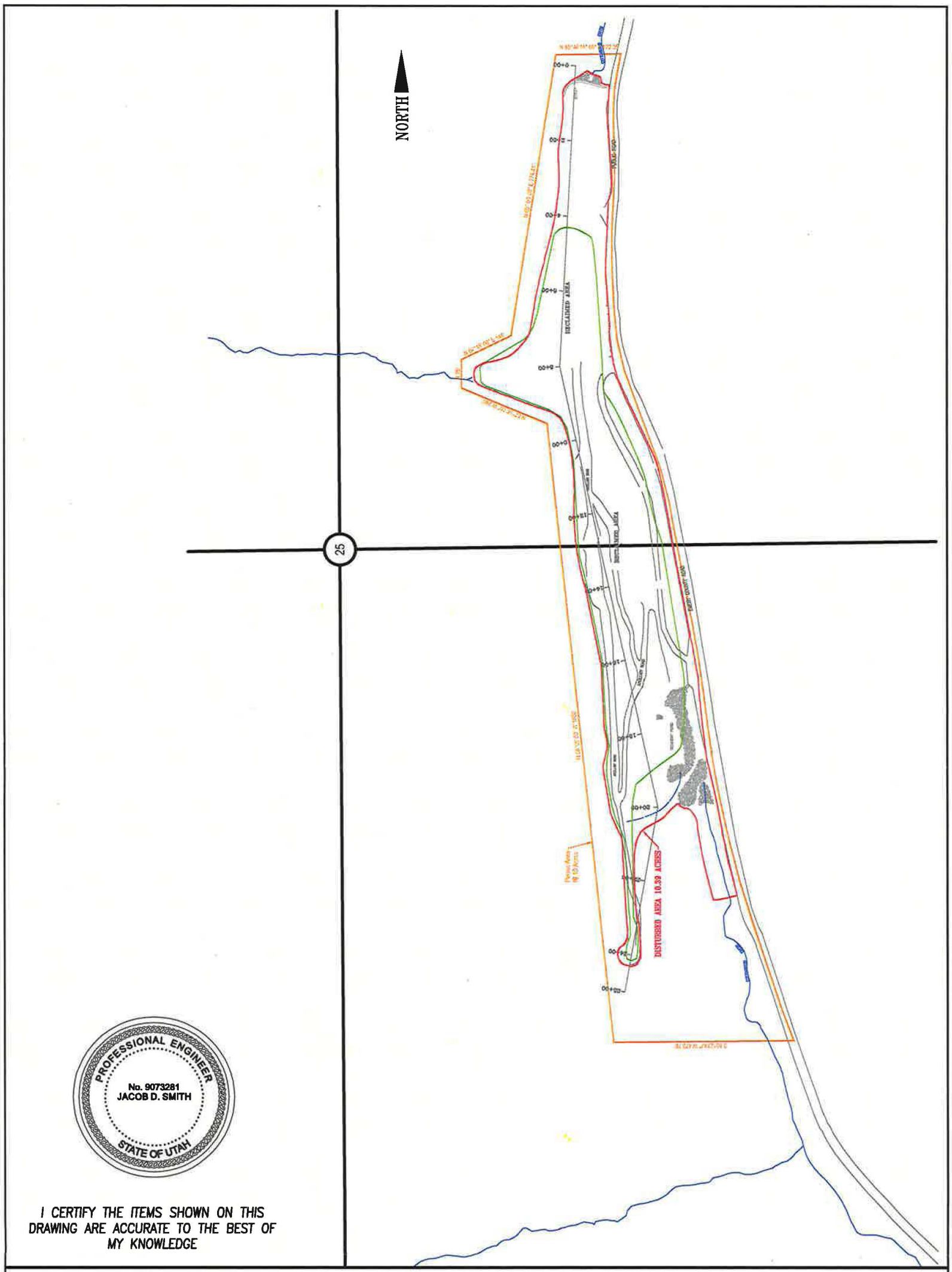

I CERTIFY THE ITEMS SHOWN ON THIS DRAWING ARE ACCURATE TO THE BEST OF MY KNOWLEDGE

LEGEND:

- DISTURBED AREA PERIMETER
- RESTORED CHANNEL
- PRE 1977 DISTURBANCE
- 16+00 CROSS SECTION STATION
- PERMIT AREA

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Fossil Rock Mine

Post Mining Contour Map Reclamation Phase 1

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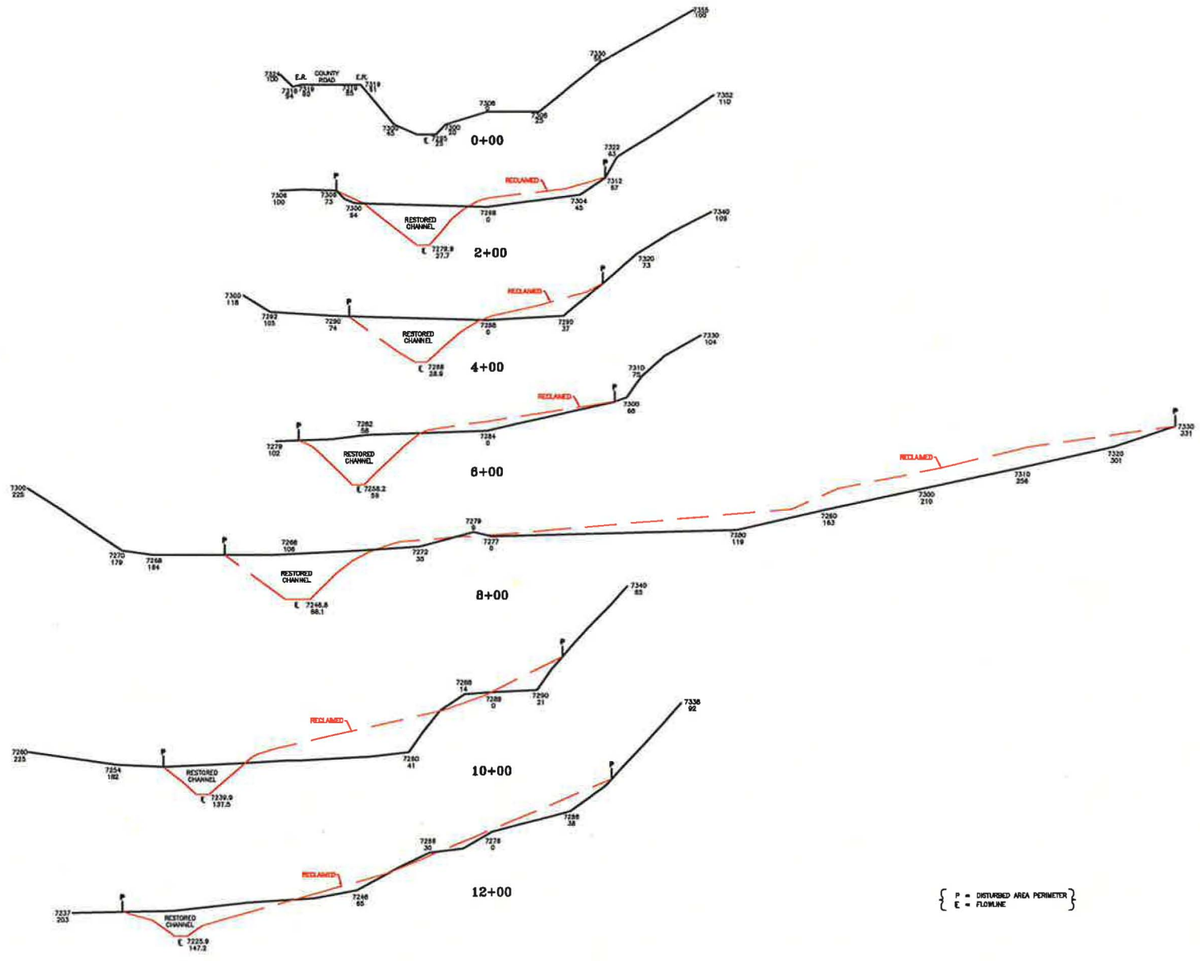
Plate 3-5



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Existing and Post-Mining Cross Sections

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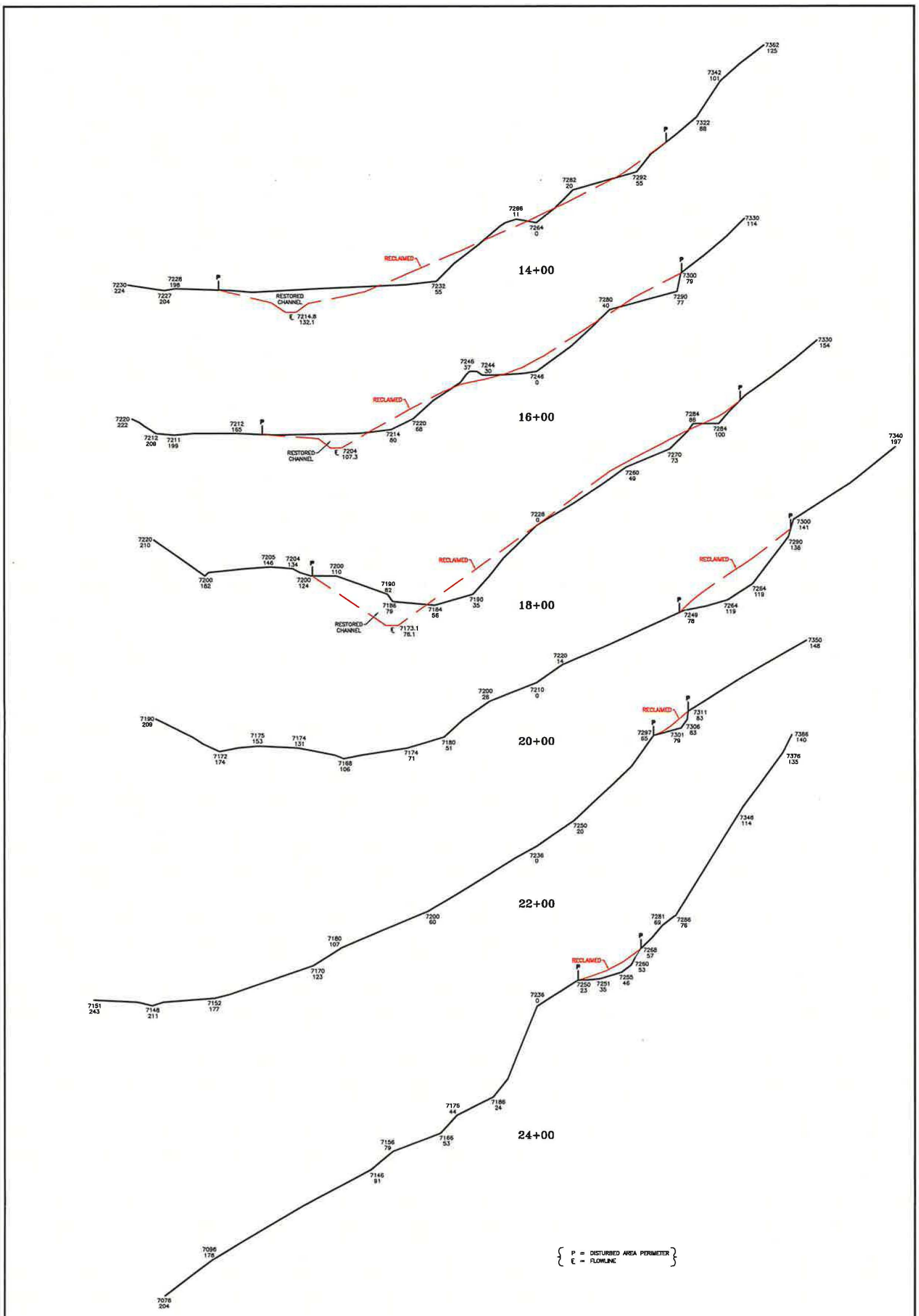

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Existing and Post-Mining Cross-Sections

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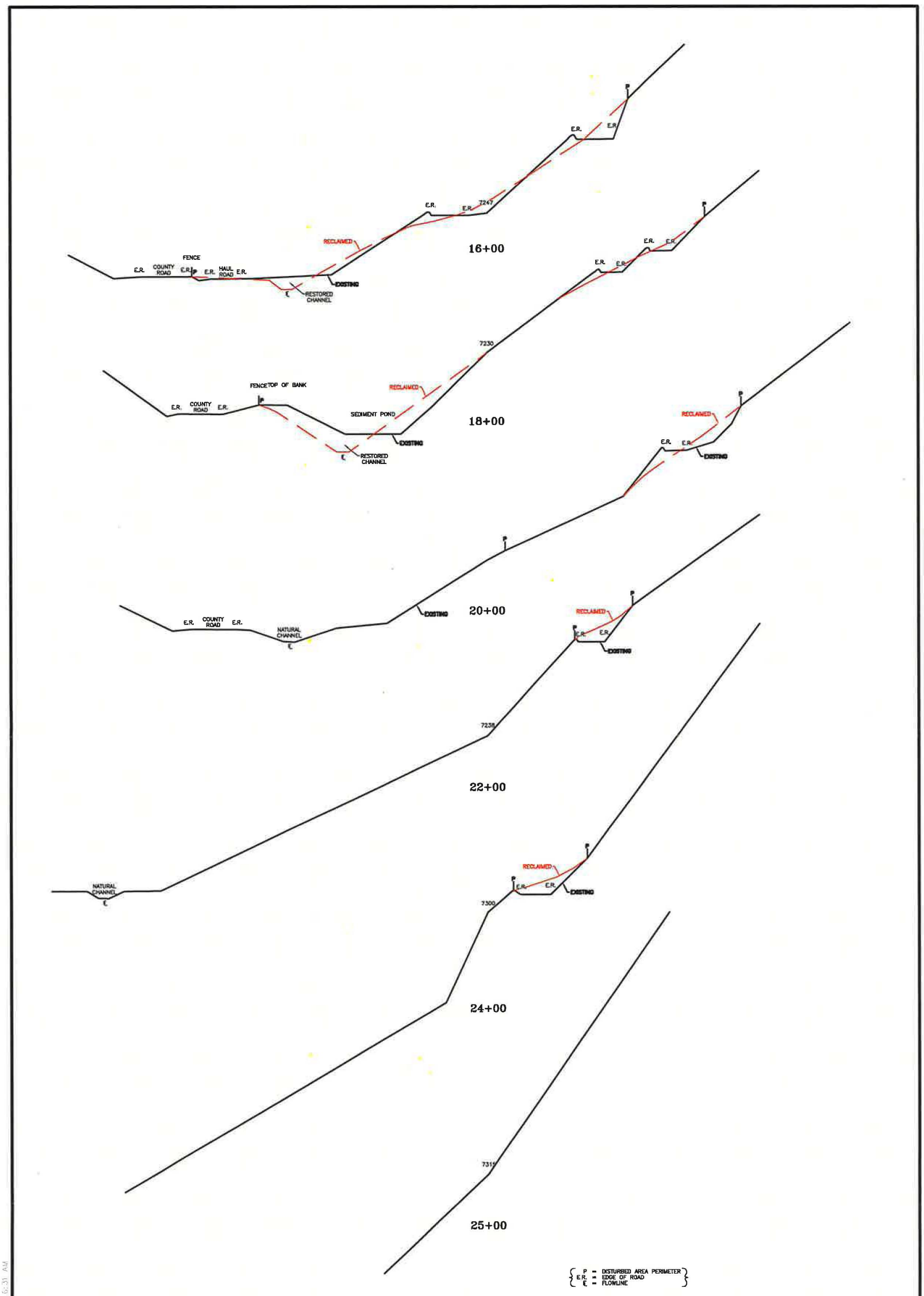
Plate 3-6B



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Existing and Post-Mining Cross-sections

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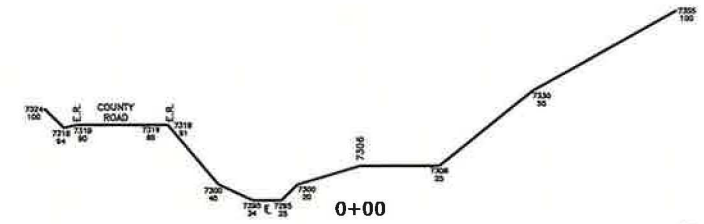
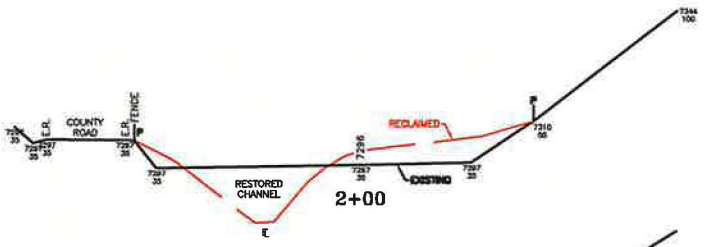
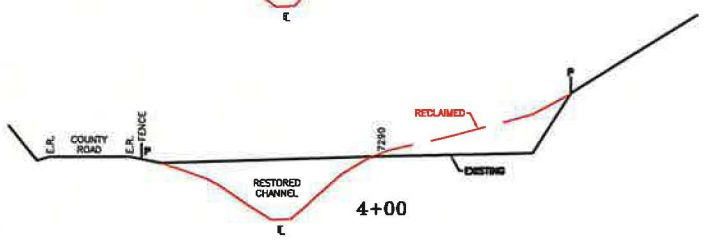
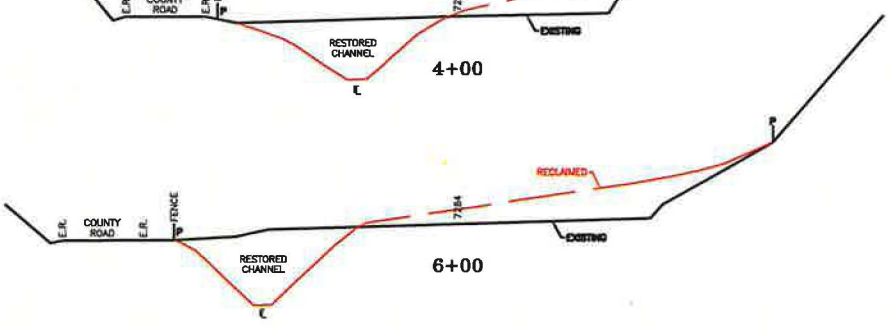
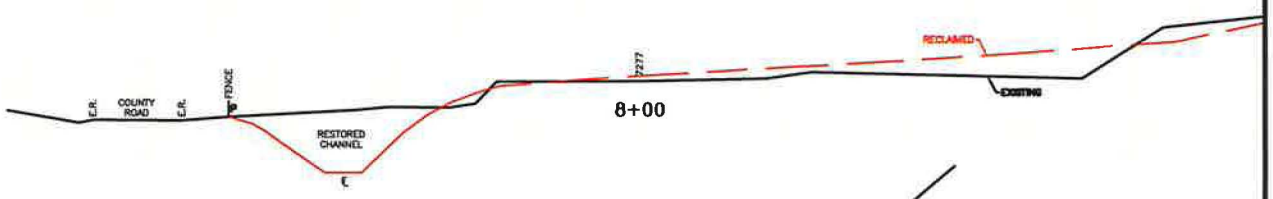
Plate 3-6C

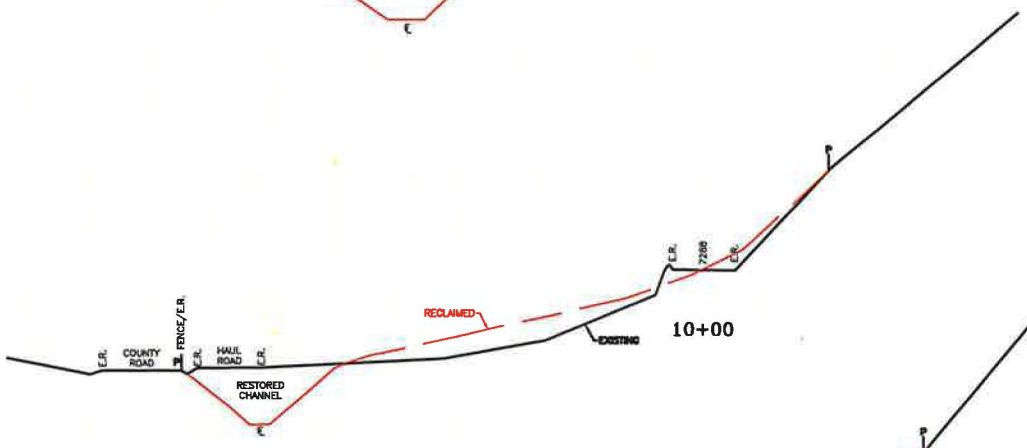


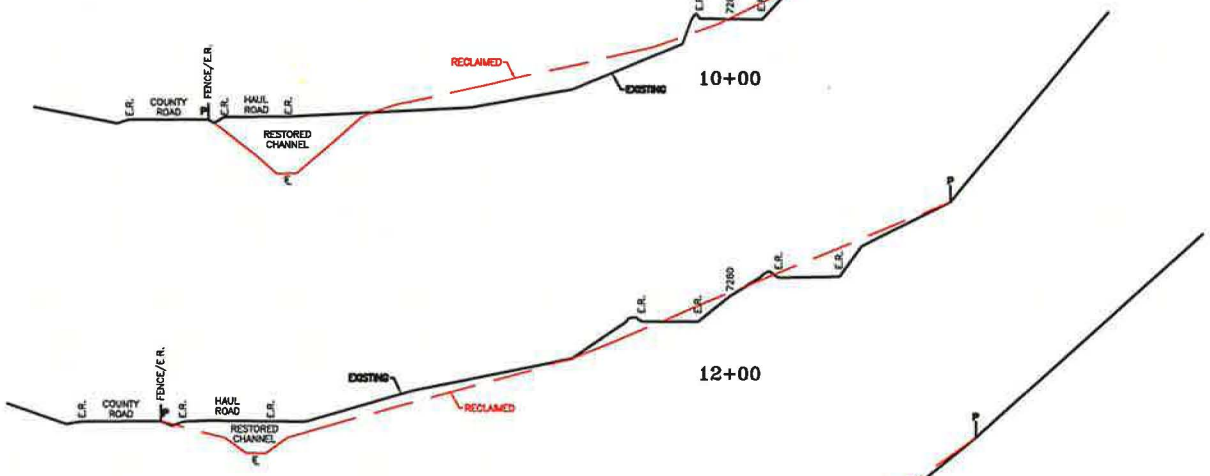


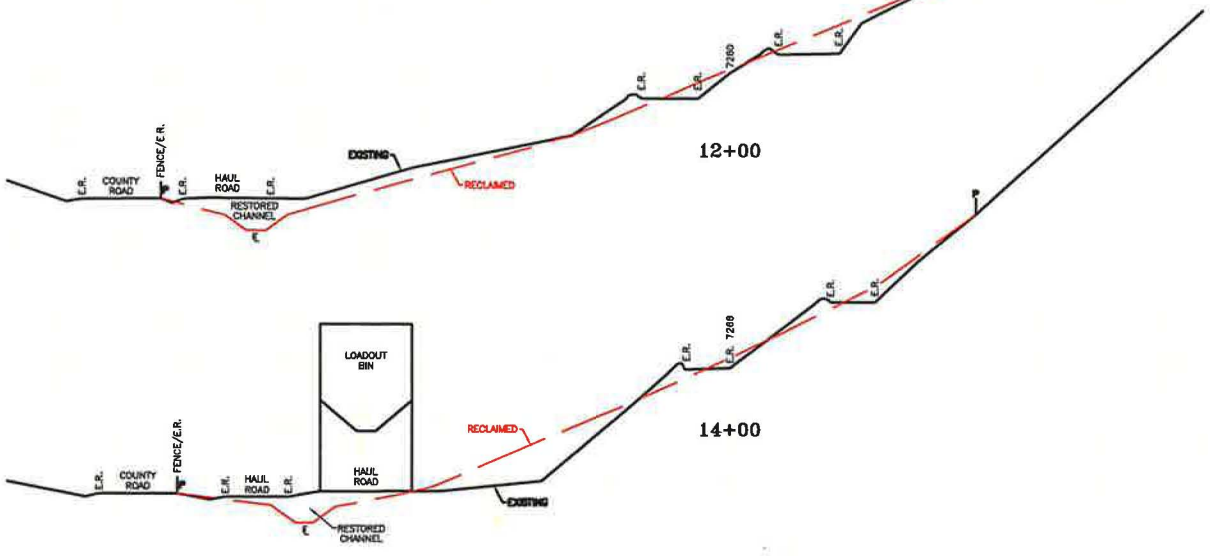












P = DISTURBED AREA PERIMETER
E.R. = EDGE OF ROAD
℄ = FLOWLINE

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Existing and Post-Mining Cross-sections

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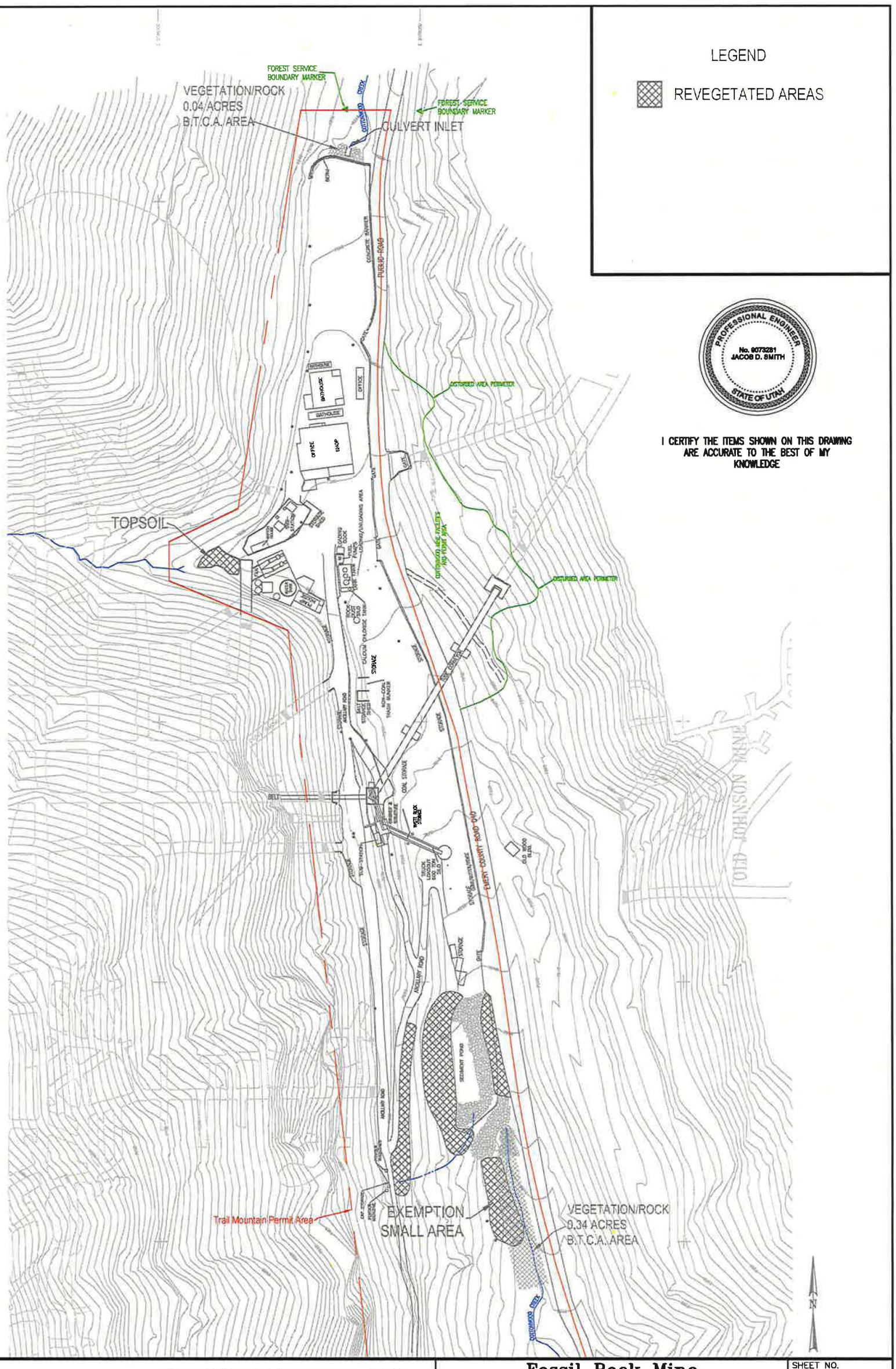
Plate 3-6D



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Fossil Rock Mine
Contemporaneous Reclamation

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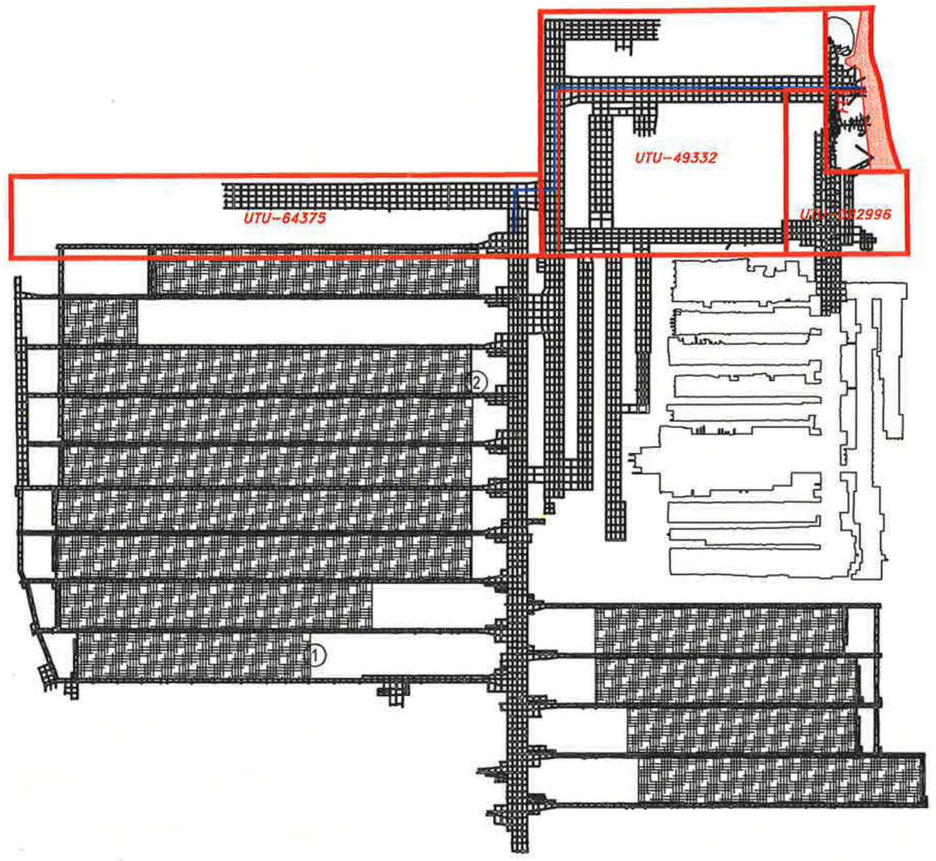
Plate 3-7



LEASE BOUNDARY

PERMIT AREA

① 10th Right Longwall (148 shields & Face conveyor) February 26, 2001 BLM approved the abandonment of Longwall shields due to safety concerns.

② 3rd Right Longwall (3 shields) December 11, 2000 BLM approved the abandonment of Longwall shields due to safety concerns.

Temporary Cessation : Abandoned Materials
Water Pipelines
6" Steel
12" PVC

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Abandoned Equipment & Discharge Water Pipelines

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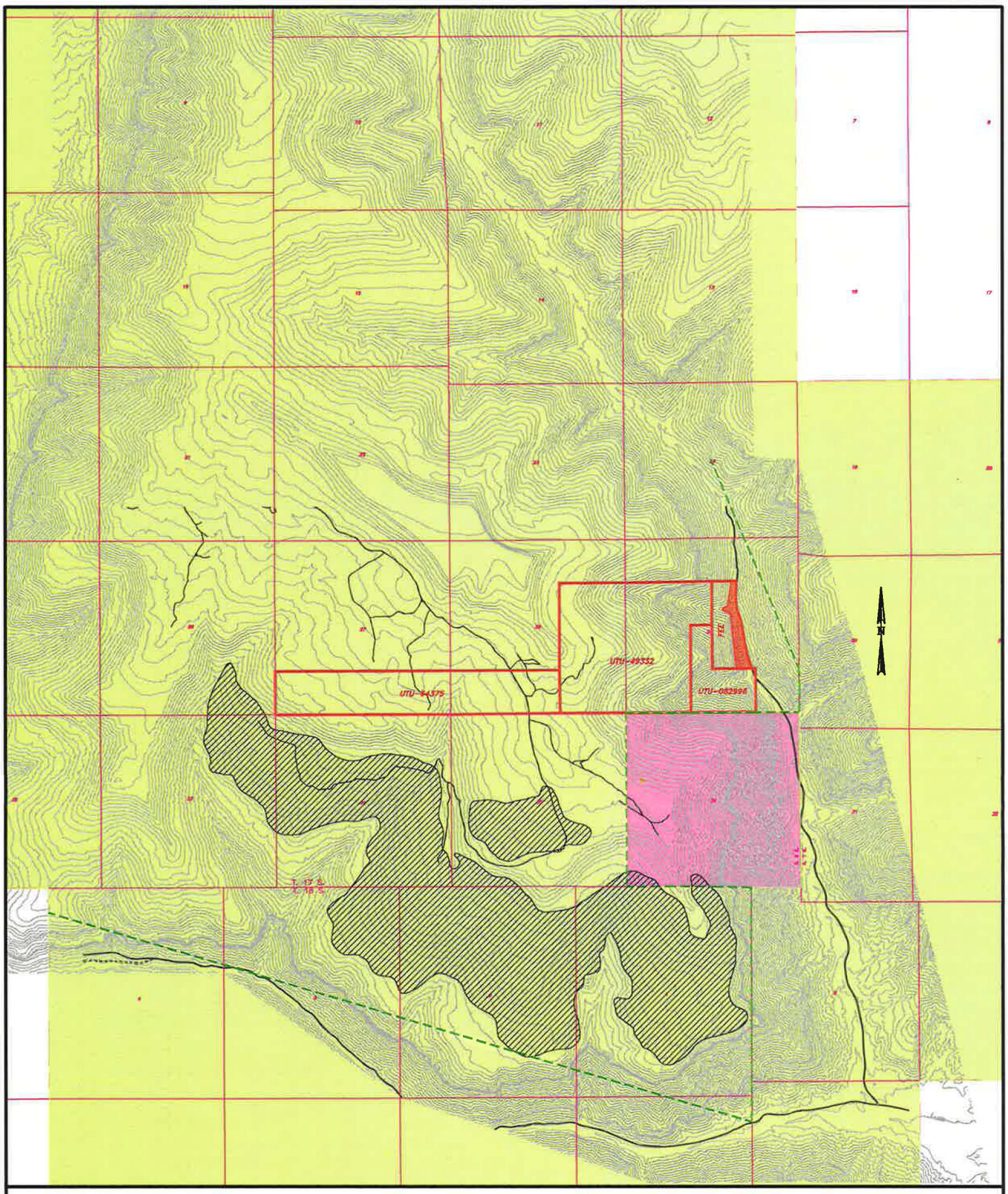


LEGEND

- LEASE BOUNDARY
- PERMIT AREA
- ALLOTMENT BOUNDARY
- WATERSHED IMPROVEMENT AREA (CONTOUR FURROWS)
- MANTI-LA SAL FOREST
- STATE LANDS

PROFESSIONAL ENGINEER
No. 9073281
JACOB D. SMITH
STATE OF UTAH

I CERTIFY THE ITEMS SHOWN ON THIS DRAWING ARE ACCURATE TO THE BEST OF MY KNOWLEDGE

Fossil Rock Resources, LLC
Fossil Rock Mine
597 South SR 24 - Salina, UT 84654
(435) 286-4880 Phone
(435) 286-4499 Fax

Fossil Rock Mine
Land Use Map

SCALE: 1" = 3000'	DATE: 8/30/2016	DRAWN BY: B.R
ENGINEER: J.S.	CHECKED BY: V.M.	PROJ: TMS1458C
FILE NAME:		

SHEET NO.

Plate 4-2

Bryant Burnett 6/1/2017 7:20 AM

CORRELATION OF MAP UNITS

Qal		QUATERNARY
Tf	Eocene and Paleocene	TERTIARY
TKn	Paleocene and Upper Cretaceous	
Unconformity		
Kpr	Mesaverde Group / Upper Cretaceous	CRETACEOUS
Kc		
Kb		
Ksp		
Kmm		

DESCRIPTION OF MAP UNITS

TKn NORTH HORN FORMATION (PALEOCENE AND UPPER CRETACEOUS)-Shale, variegated with shades of gray, purple red, and brown; limestone, light to medium gray; sandstone gray and grayish orange, conglomeratic. Thickness about 400 m

Kpr PRICE RIVER FORMATION (UPPER CRETACEOUS)-Sandstone, gray to light gray, coarse grained to conglomeratic, some interbedded shale. Thickness about 90 m

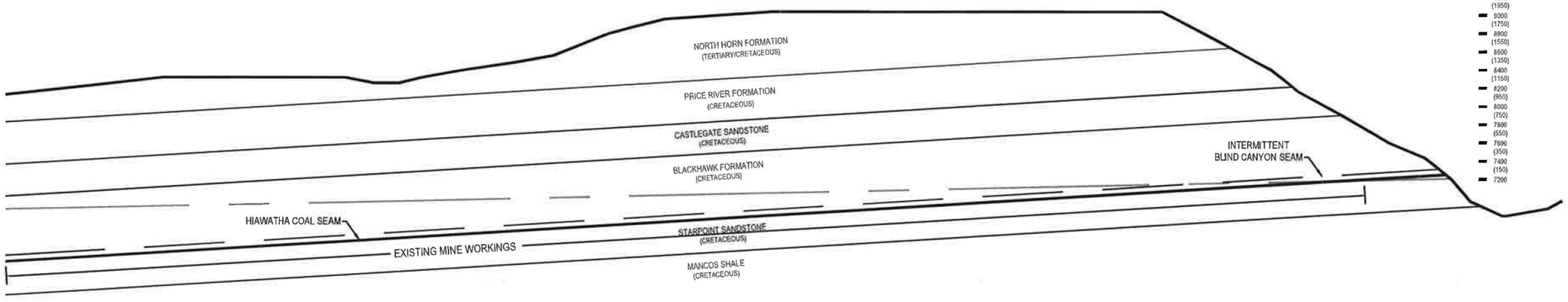
Kc CASTLEGATE SANDTSONE (UPPER CRETACEOUS)-Sandstone weathers grayish orange, coarse grained, massive, cliff forming; some oxidation on surface. Thickness 75 m

Kb BLACKHAWK FORMATION (UPPER CRETACEOUS)-Sandstone, grayish orange to medium gray, medium to fine grained, most in lenticular bodies with erosional base; shale silty gray; coal. Locally intertongues with Star Point Sandstone (Ksp). Thickness 225-245 m

Ksp STAR POINT SANDSTONE (UPPER CRETACEOUS)-Sandstone, siltstone, and shale, gray to grayish orange, cliff forming. Thickness 75-95 m

Kmm MANCOS SHALE (UPPER CRETACEOUS)-Masuk Member-Shale, medium to dark gray, weathers yellowish gray, sandy in part. Thickness about 260 m

A (WEST) A' (EAST)



REFER TO PLATE 6-2 FOR CROSS SECTION LOCATION

APPROXIMATE POSITION PIEZIOMETRIC SURFACE OF BLACKHAWK-STAR POINT AQUIFER

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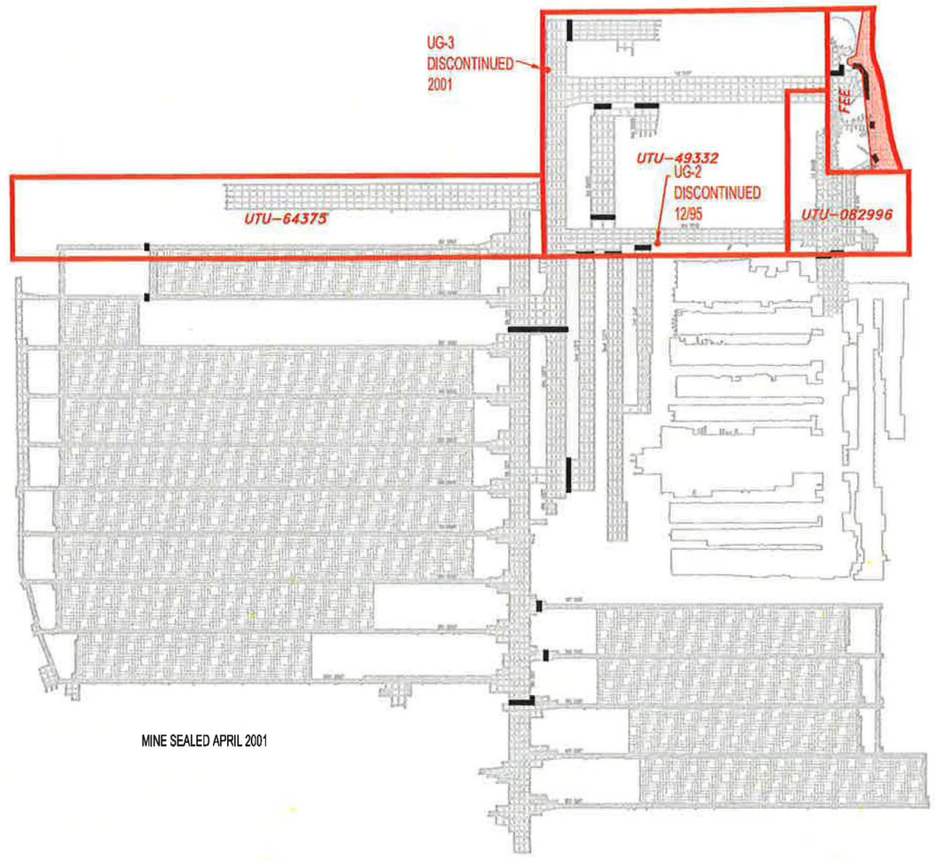
(435) 286-4880 Phone
(435) 286-4499 Fax

Fossil Rock Mine
Cross Section A-A

SCALE: Not to Scale	DATE: 08/12/2016	DRAWN BY: B.R.
ENGINEER: J.S.	CHECKED BY: V.M.	PROJ: TMS1503D
FILE NAME:		

SHEET NO.

Plate 6-1



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JACOB D. SMITH
STATE OF UTAH

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LEASE BOUNDARY
PERMIT AREA
SEALS

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Fossil Rock Mine
597 South SR 24 - Salina, UT 84654
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(435) 286-4499 Fax

Fossil Rock Mine

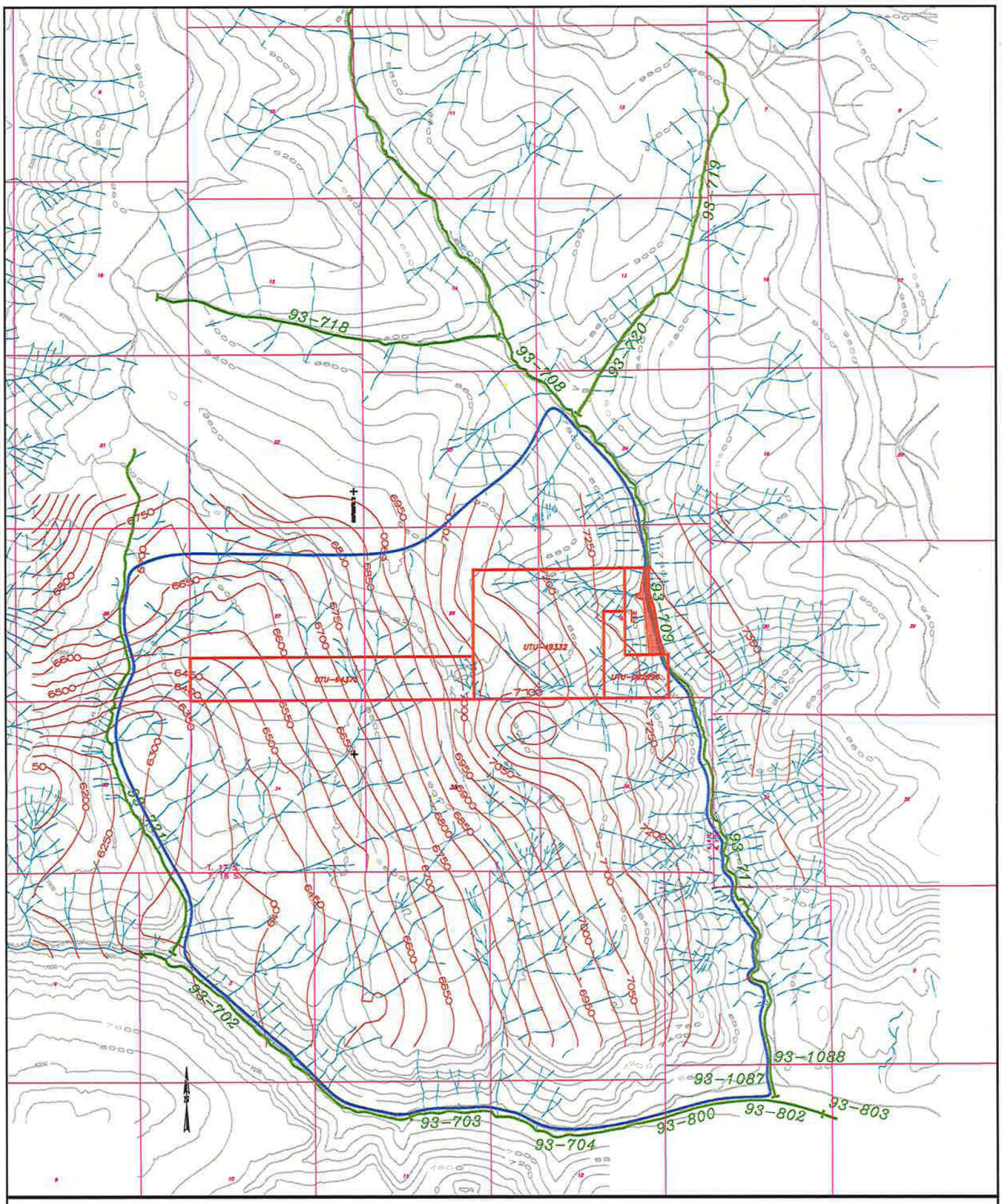
UNDERGROUND WATER MONITORING LOCATIONS

SCALE: 1" = 2000'	DATE: 9/14/2016	DRAWN BY: B.R.	ENGINEER: J.S.	CHECKED BY: V.M.
FILE NAME: ----				PROJ:

REVISIONS				
NO.	DATE	REQ. BY	DWG. BY	REMARKS

SHEET NO.

PLATE 7-3



LEGEND

93–1088 WATER USE CLAIM NUMBER

STREAM SEGMENT

POTENTIAL HYDROLOGIC IMPACT AREA

PERMIT AREA

LEASE BOUNDARY

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STATE OF UTAH

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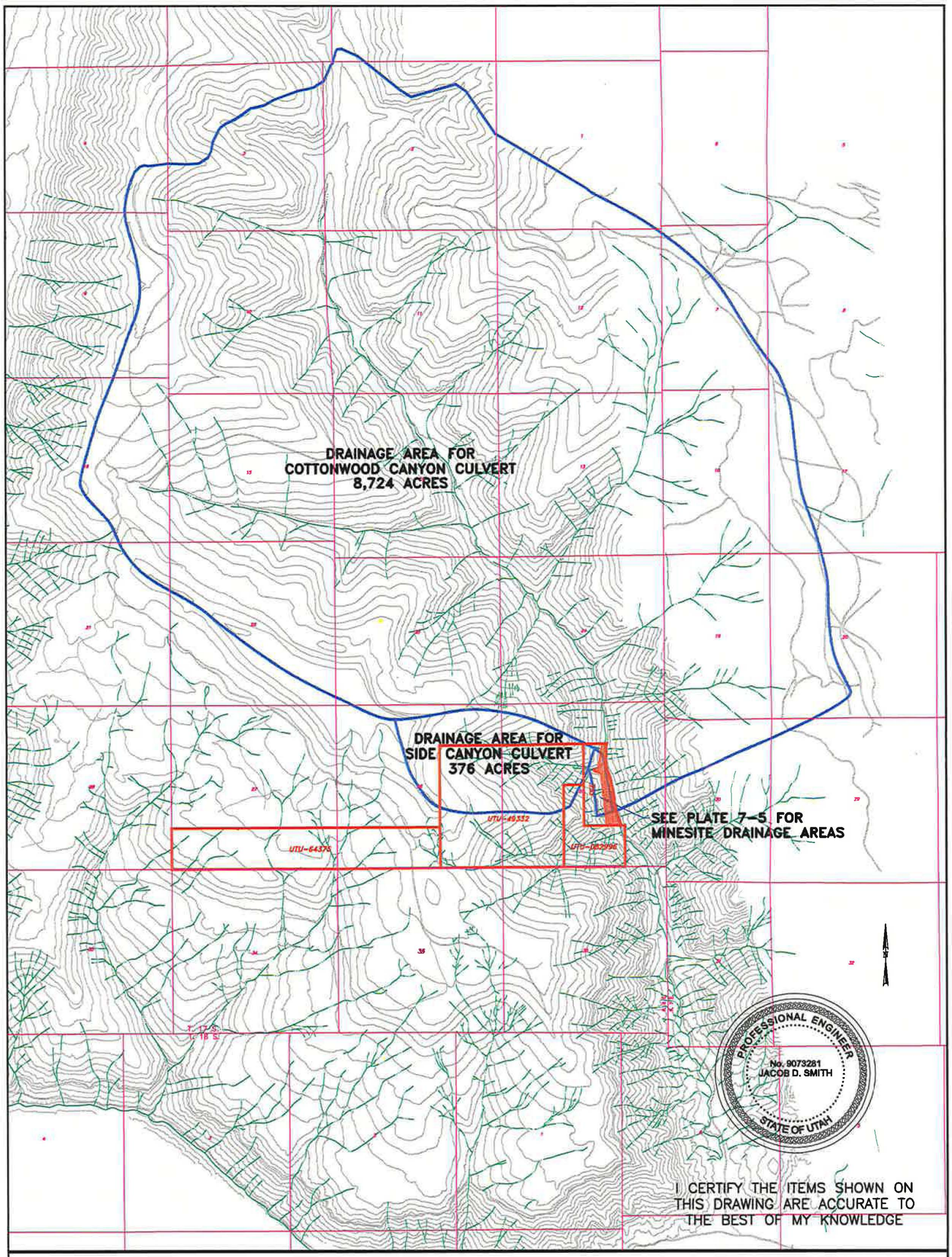
Fossil Rock Mine
597 South SR 24 - Salina, UT 84654
(435) 286-4880 Phone
(435) 286-4499 Fax

Fossil Rock Mine
Surface Water Rights

SCALE: 1" = 3000'	DATE: 9/21/2016	DRAWN BY: B.R.
ENGINEER: J.S.	CHECKED BY: V.M.	PROJ: TMSC1456C
FILE NAME: ----		

SHEET NO.

Plate 7–4



LEGEND

POTENTIAL HYDROLOGIC IMPACT AREA/DRAINAGE AREA

PERMIT AREA

LEASE BOUNDARY

Fossil Rock Resources, LLC
Fossil Rock Mine
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(435) 286-4880 Phone
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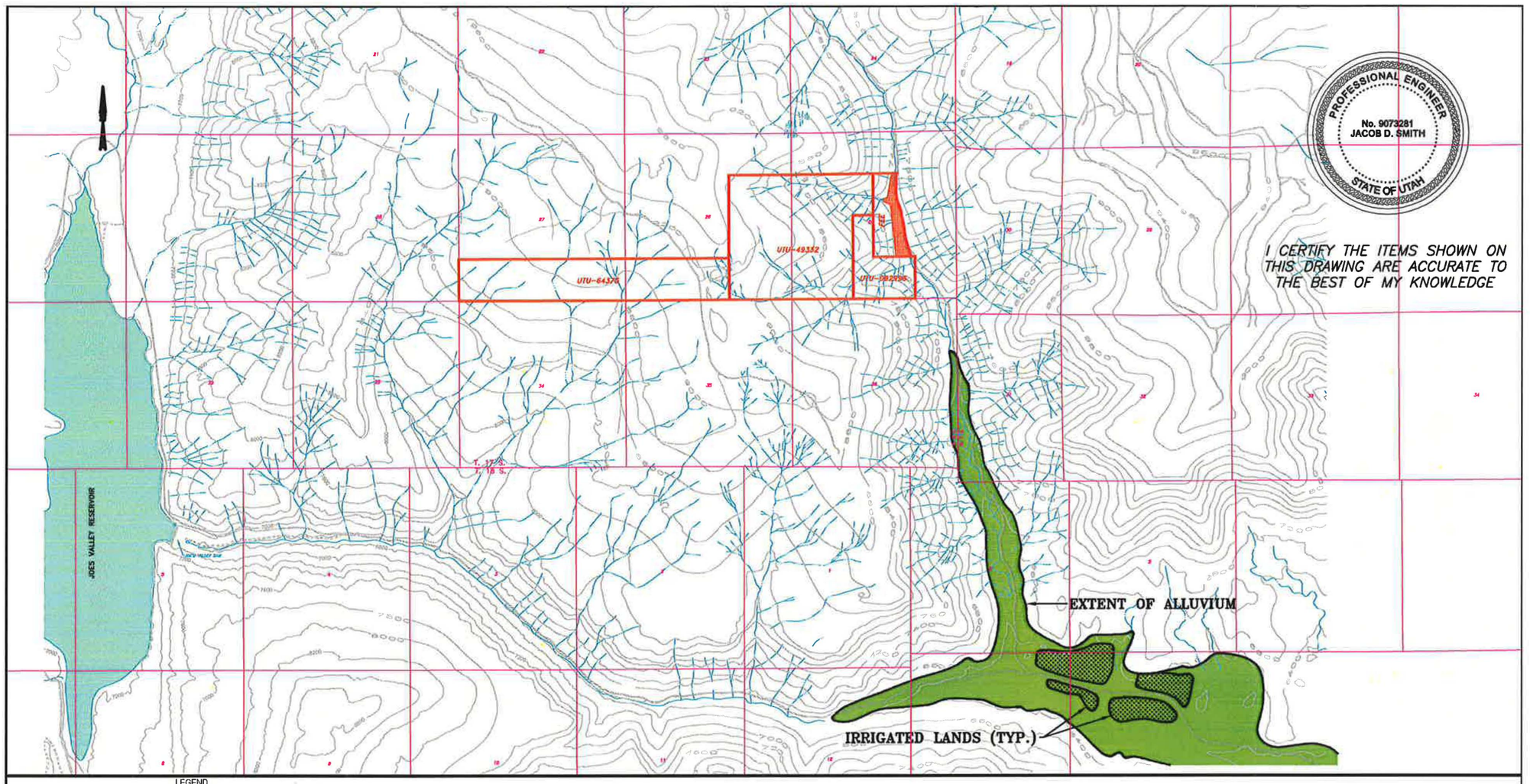
Fossil Rock Mine
Drainage Areas

SCALE: 1" = 3000'	DATE: 9/14/2016	DRAWN BY: B.R.
ENGINEER: J.S.	CHECKED BY: V.M.	PROJ: TMS1686C
FILE NAME: ----		

SHEET NO.

Plate 7-6



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JACOB D. SMITH
STATE OF UTAH

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LEGEND

DRAINAGE
ROADS
LEASE BOUNDARY
PERMIT AREA

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Fossil Rock Mine
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(435) 286-4499 Fax

Fossil Rock Mine

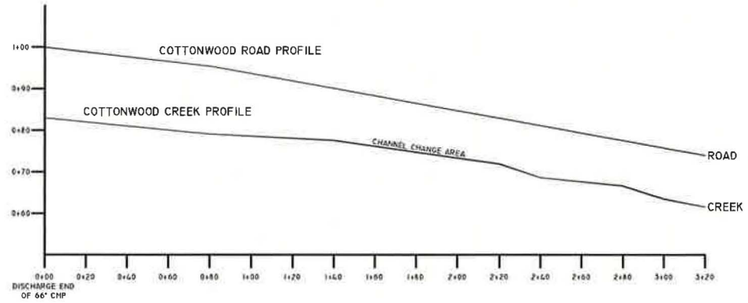
Trail Mountain Mine Extent Of Allumvium

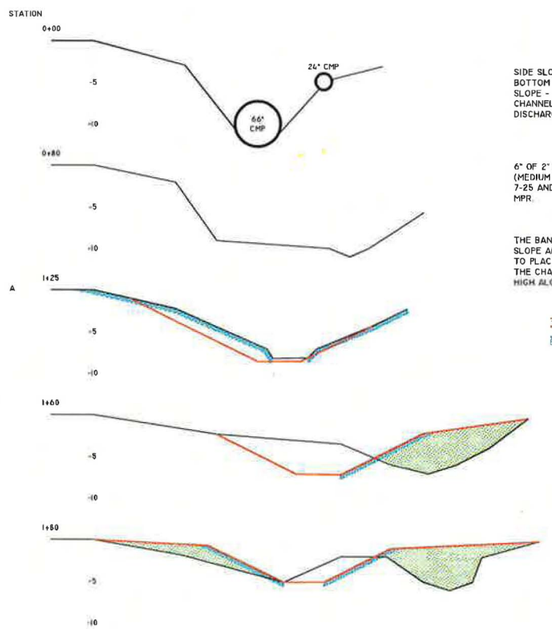
SCALE: 1" = 3000'	DATE: 9/14/2016	DRAWN BY: B.R.	ENGINEER: J.S.	CHECKED BY: V.M.
FILE NAME: ----				PROJ: TMS1459C

REVISIONS				
NO.	DATE	REQ. BY	DWG. BY	REMARKS

SHEET NO.

Plate 7-9





NOTES

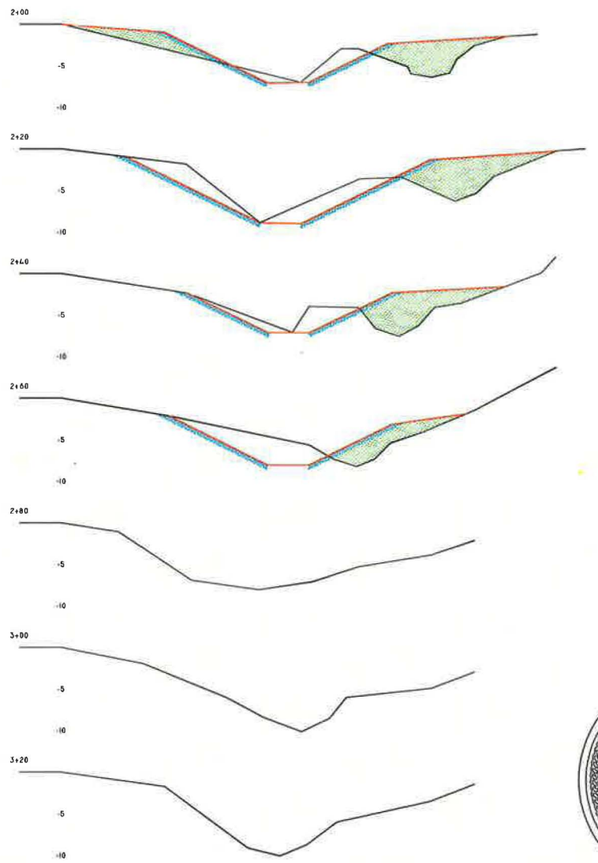
SIDE SLOPES -	2:1
BOTTOM WIDTH -	MINIMUM OF 5.0'
SLOPE -	NATURAL .07'
CHANNEL DEPTH -	MINIMUM OF 4.0'
DISCHARGE -	MINIMUM OF 5.35 CFS

RIPRAP

6" OF 2" ROAD BASE ON SLOPES (D_{50}) -1.4 FEET (MEDIUM DIAMETER) FOR METHODOLOGY SEE APPENDIX 7-25 AND 7-27 (4-5) OF THE TRAIL MOUNTAIN TRACT 1 MPR.

THE BANKS WILL BE CONTOURED TO APPROXIMATELY 2:1 SLOPE AND WILL BE COMPACTED WITH A BACKHOE PRIOR TO PLACING RIPRAP. RIPRAP WILL BE DISTRIBUTED ALONG THE CHANNEL BANKS. RIPRAP WILL BE PLACED 4.5 FEET HIGH ALONG THE BANKS.

FILL
RIPRAP



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Fossil Rock Mine
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(435) 286-4880 Phone
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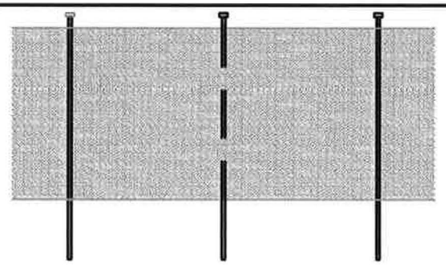
Fossil Rock Mine

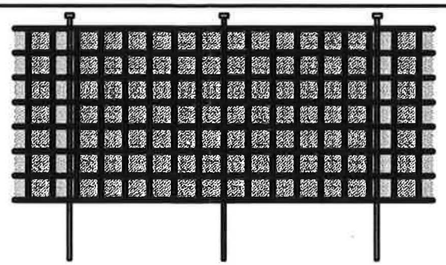
Cottonwood Creek Channel Change Cross Sections

SCALE: 1" = 15'	DATE: 9/21/2016	DRAWN BY: B.R.	ENGINEER: J.S.	CHECKED BY: V.M.
FILE NAME: ----				DRAWING TMS1770D

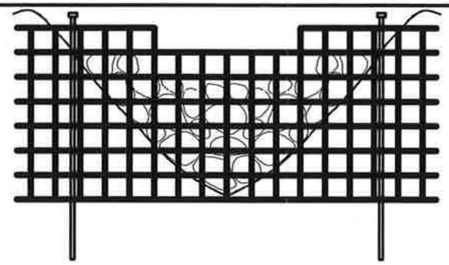
REVISIONS					SHEET NO.
NO.	DATE	REQ. BY	DWG. BY	REMARKS	
					Plate 7-10



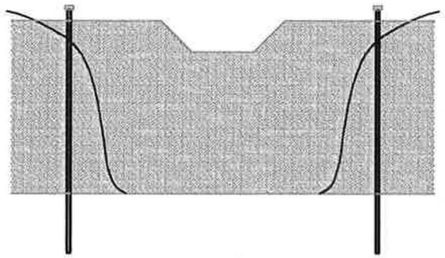
SILT FENCE
(SEDIMENT CONTROL/RUNOFF CONTROL
WIDTH AND HEIGHT VARIES)
BOTTOM KEYED IN TO PREVENT BYPASS
SIDES KEYED IN WHEN NECESSARY



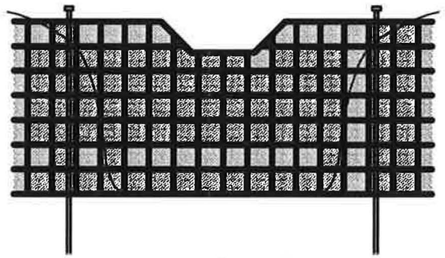
SILT FENCE & MESH
(SEDIMENT CONTROL/RUNOFF CONTROL
WIDTH AND HEIGHT VARIES)
BOTTOM KEYED IN TO PREVENT BYPASS
SIDES KEYED IN WHEN NECESSARY



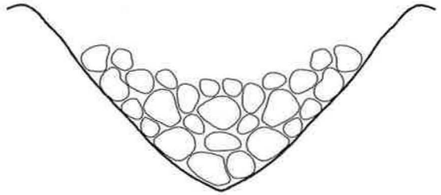
ROCK GABION
(SEDIMENT CONTROL/ENERGY DISSIPATER
WIDTH AND HEIGHT VARIES)



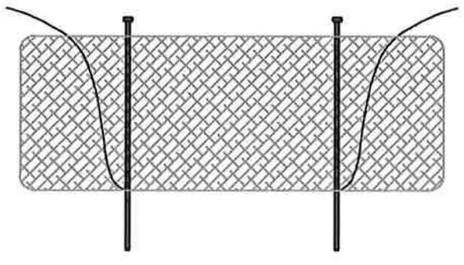
SILT FENCE OR OTHER FLOW
CONTROLLING DEVICE WITH NOTCH
(SEDIMENT CONTROL/RUNOFF CONTROL
WIDTH AND HEIGHT VARIES)
SIDES AND BOTTOM KEYED IN
TO PREVENT BYPASS



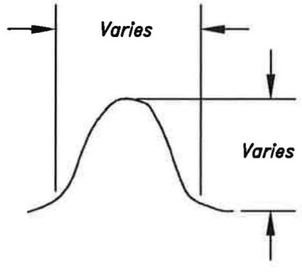
SILT FENCE & MESH WITH NOTCH
(SEDIMENT CONTROL/RUNOFF CONTROL
WIDTH AND HEIGHT VARIES)
SIDES AND BOTTOM KEYED IN
TO PREVENT BYPASS



ROCK GABION
(SEDIMENT CONTROL/ENERGY DISSIPATER
WIDTH AND HEIGHT VARIES)
WIRE MESH PLACED ON TOP
OF ROCK WHEN NECESSARY



STRAW BALE INSTALLATION
(SEDIMENT CONTROL/RUNOFF CONTROL
WIDTH AND HEIGHT VARIES)
SIDES AND BOTTOM KEYED IN
TO PREVENT BYPASS



DIRT BERM
(SEDIMENT CONTROL/RUNOFF CONTROL)

Fossil Rock Resources, LLC
Fossil Rock Mine
597 South SR 24 - Salina, UT 84654
(435) 286-4880 Phone
(435) 286-4499 Fax

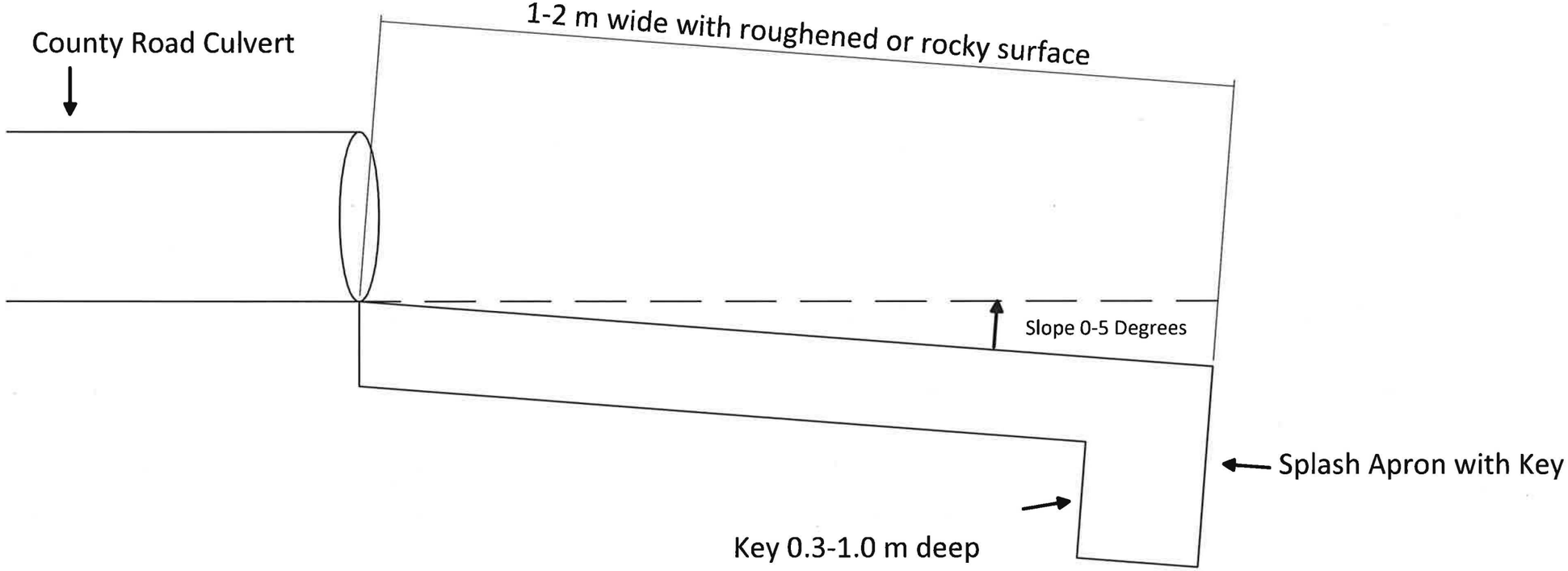
Fossil Rock Mine

Typical Alternative Sediment Control Measures

SCALE: Not to Scale	DATE: 9/14/2016	DRAWN BY: B.R.
ENGINEER: J.S.	CHECKED BY: V.M.	DRAWING: GENS1555A
FILE NAME: ----		

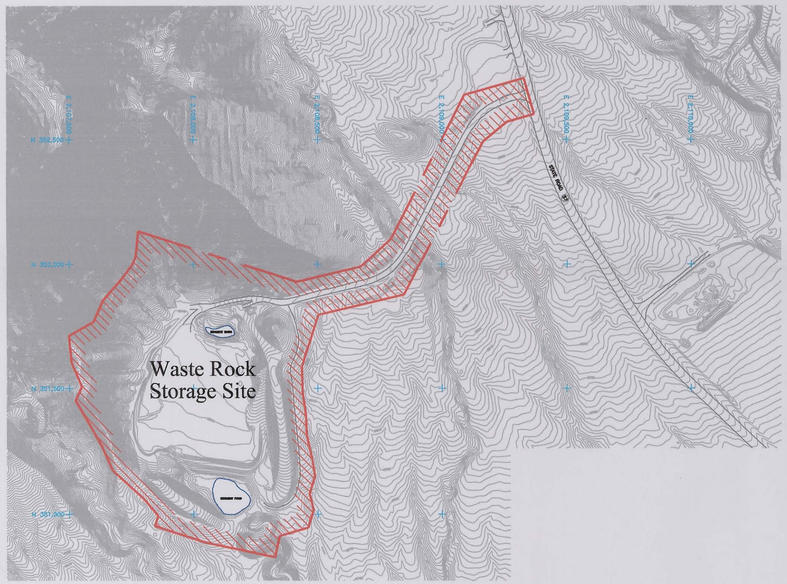
SHEET NO.

Plate 7-11

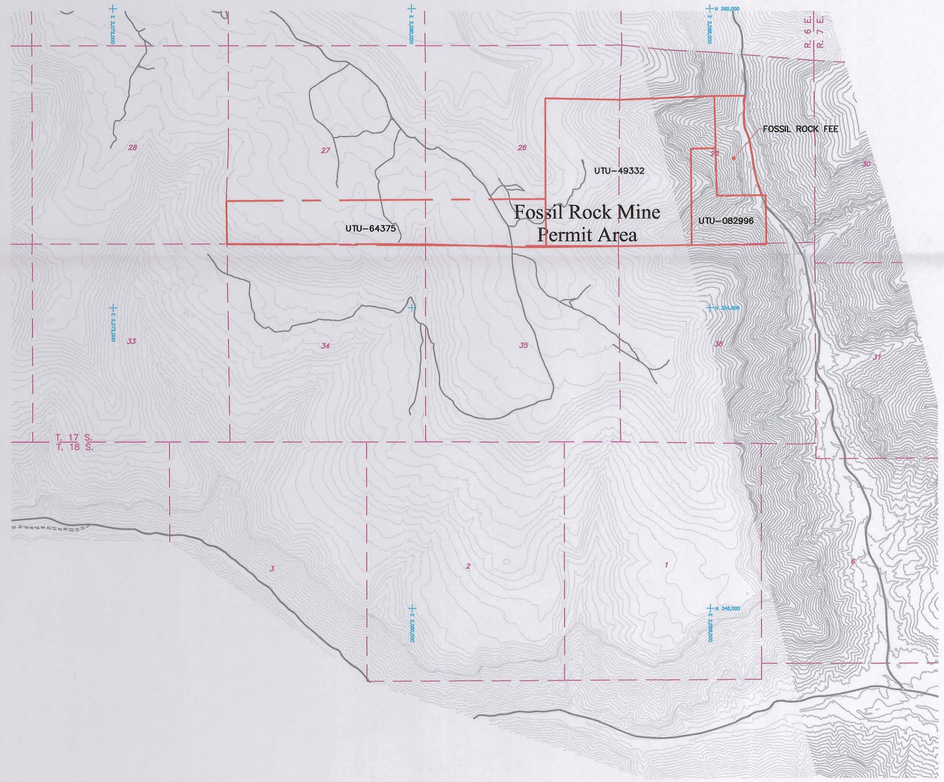


Fossil Rock Resources, LLC *Fossil Rock Mine* *597 South SR 24 - Salina, UT 84654* *(435) 286-4880 Phone* *(435) 286-4499 Fax*	**Cottonwood Mine Discharge Water Catchment** **Detail of Splash Apron with Scour Cutoff Key**					REVISIONS				SHEET NO.
						NO.	DATE	REQ. BY	DWG. BY	REMARKS	**Plate 7-12**
	SCALE:	DATE: 6/23/17	DRAWN BY: BB	ENGINEER: BB	CHECKED BY: JS						
					PROJ:						

Bryant Runnells 6/27/2017 12:30 PM

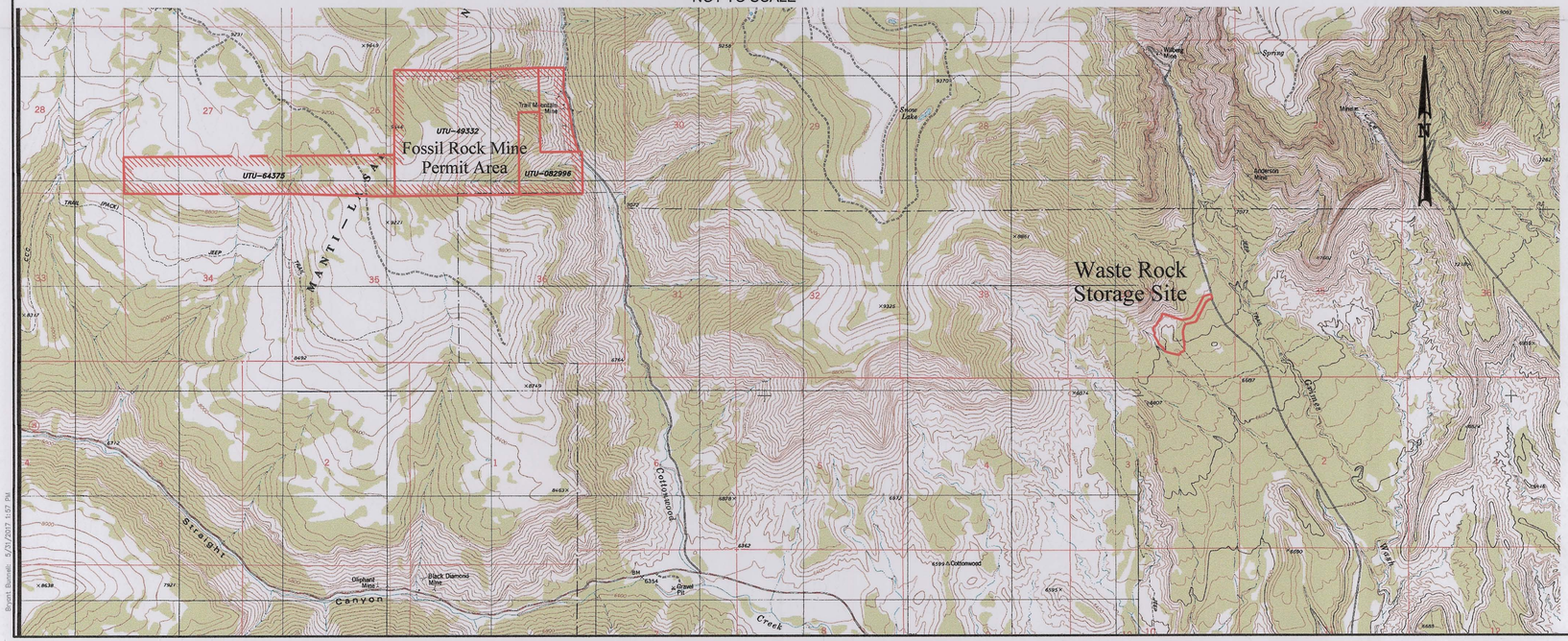


WASTE ROCK STORAGE SITE
1" = 300 '



FOSSIL ROCK MINE PERMIT AREA
1" = 2000'

GENERAL LOCATION MAP
NOT TO SCALE



LEGEND

93-1088 FEDERAL COAL LEASE NUMBER

PERMIT AREA

LEASE BOUNDARY

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JACOB D. SMITH
STATE OF UTAH

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REVISIONS

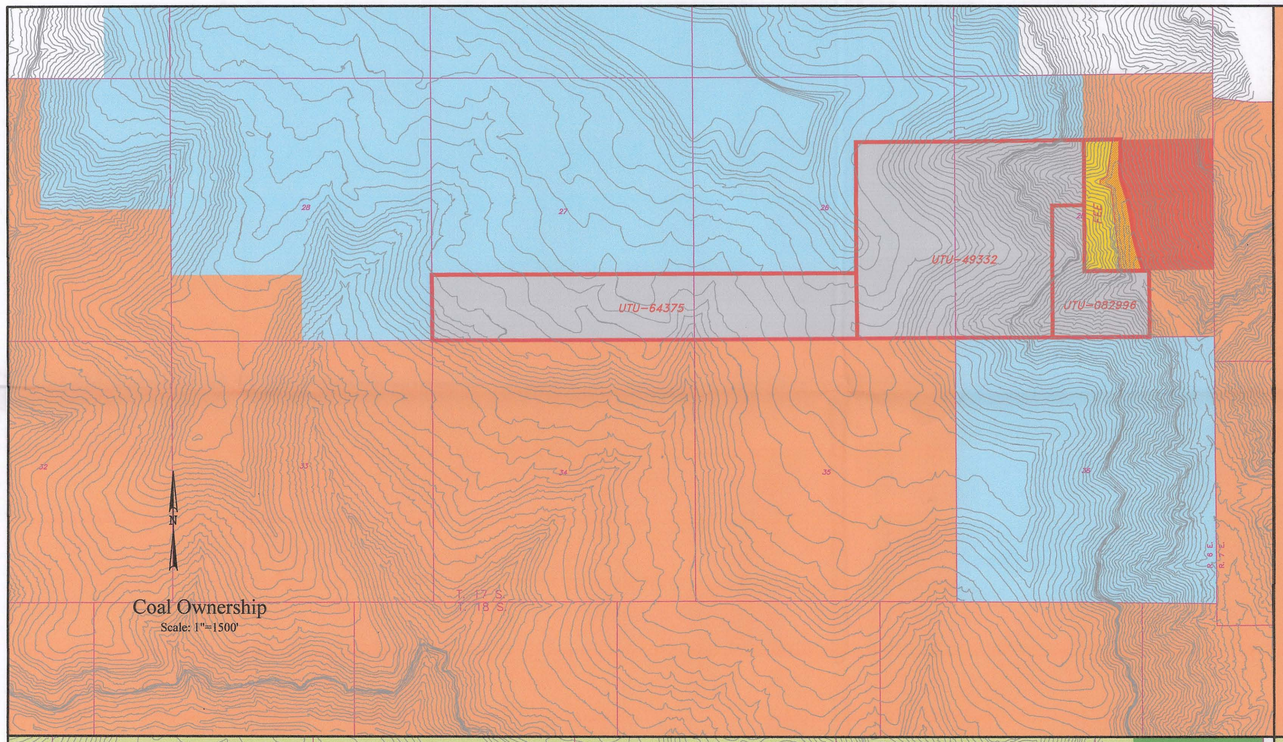
NO.	DATE	REQ. BY	DWG. BY	REMARKS

FOSSIL ROCK RESOURCES, LLC
A SUBSIDIARY OF BOWIE RESOURCE PARTNERS, LLC

MINE PERMIT AREA

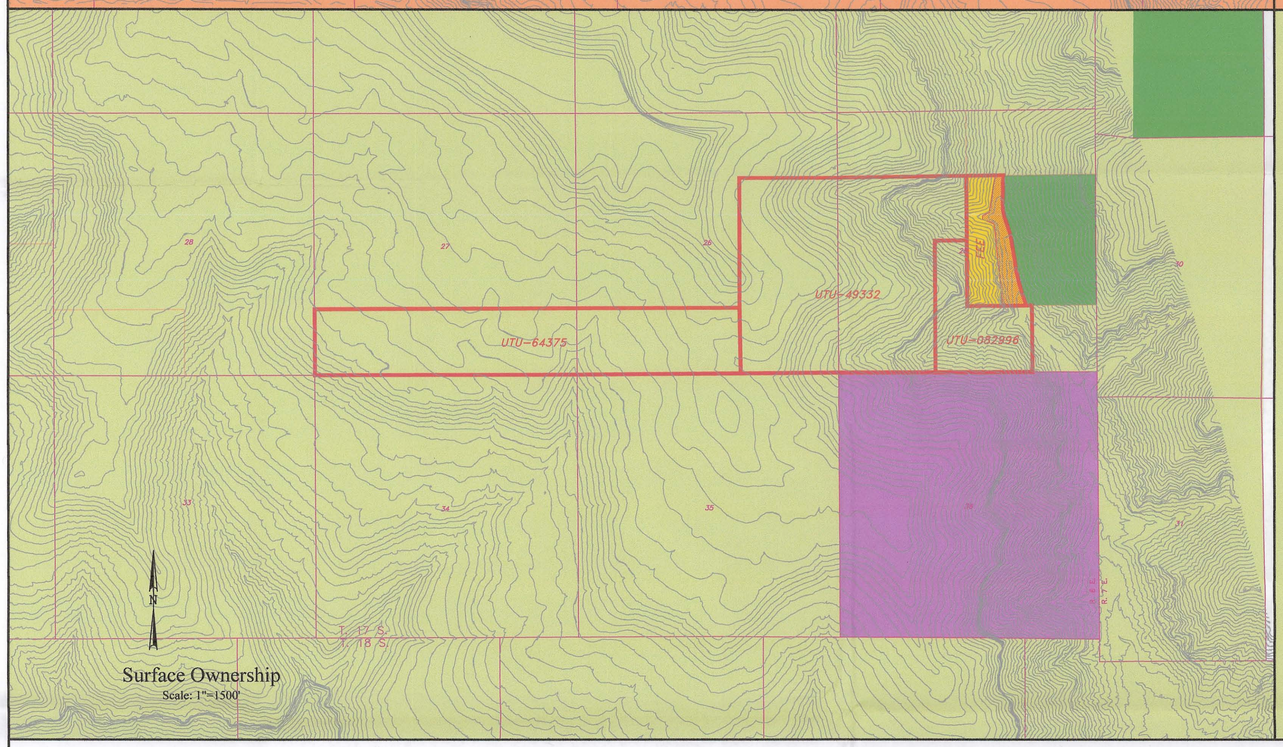
PEN TBL:	SCALE:	DATE:	DRAWN BY:	ENGINEER:	CHECKED BY:	SHEET NO.
_1Stndrd-SUFENP1.ctb	VARIES	9/21/2016	J.K.M.	C.H.		Plate 3-4
SHT SET: . PROJECT NUMBER: 0715-001	FILE NAME:					

Bryce Bunge 6/21/2017 1:57 PM

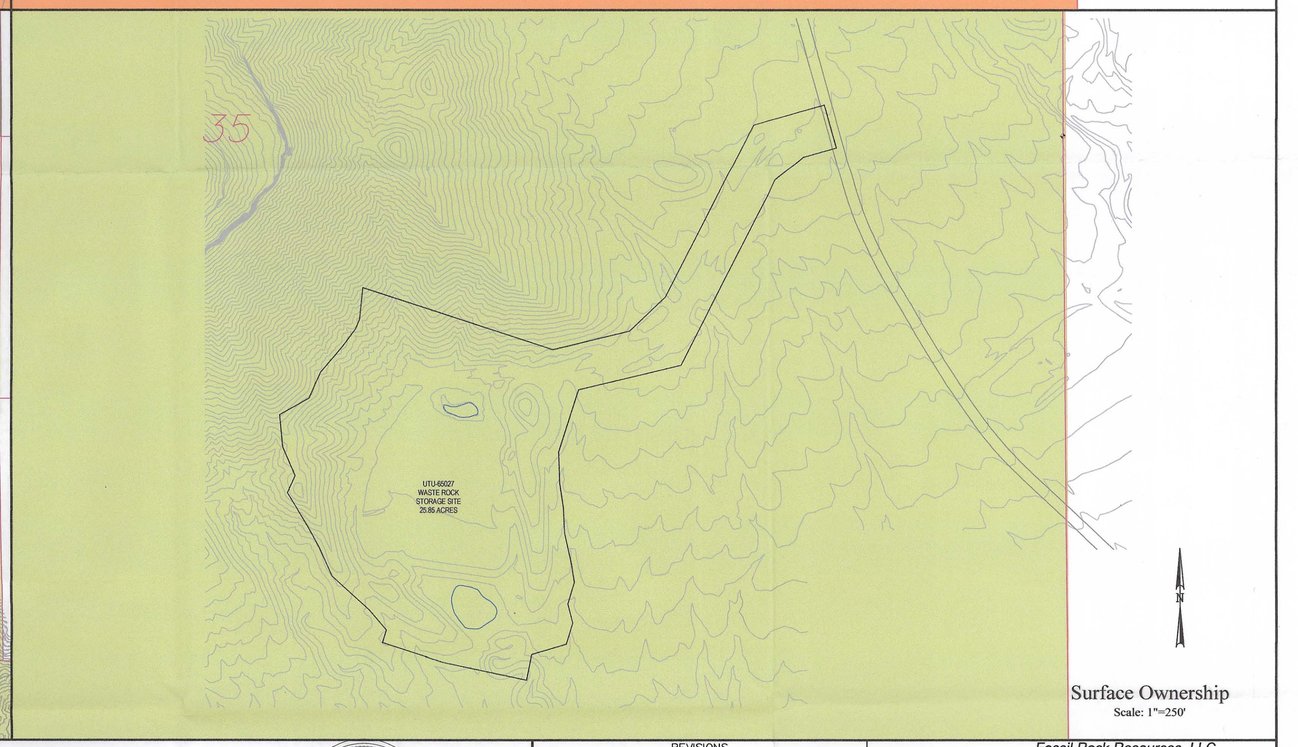


Coal Ownership
Scale: 1"=1500'

Coal Ownership
Scale: 1"=250'



Surface Ownership
Scale: 1"=1500'



Surface Ownership
Scale: 1"=250'

LEGEND

- LEASE BOUNDARY
- UNITED STATES OF AMERICA
- FOSSIL ROCK RESOURCES LLC
- STATE COAL LEASE
- FOSSIL ROCK FEDERAL COAL LEASE
- UNLEASED FEDERAL COAL
- PERMIT AREA
- STATE SURFACE OWNERSHIP
- PACIFICORP SURFACE OWNERSHIP
- LDS COAL LEASE
- WASTE ROCK BOUNDARY

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TMS

PEN TBL: _1Stndrd-SUFENP1.ctb
SHT SET: ####
PROJECT NUMBER: TMS1454C

Fossil Rock Resources, LLC
Fossil Rock Mine
597 South SR 24 – Salina, UT 84654
(435) 286-4880 Phone
(435) 286-4499 Fax

Fossil Rock Mine
Surface & Coal Ownership Maps

SCALE:	DATE:	DRAWN BY:	ENGINEER:	CHECKED BY:	SHEET NO.
AS NOTED	9/21/2016	B.R.	J.S.	V.M.	Plate 4-1

FILE NAME: ----

Bryant Burnett, 5/1/2017 6:48 AM

T. 16 S.
T. 17 S.
T. 17 S.
T. 18 S.

JOES VALLEY FAULT
MILL FORK GRABEN
IGNEOUS DIKE
ROAN'S CANYON FAULT GRABEN
JOES VALLEY RESERVOIR
JOE'S VALLEY DAM

UTU-64375
UTU-49332
UTU-DB2996

LEGEND

- LEASE BOUNDARY
- PERMIT AREA
- FAULT (DASHED WHERE INFERRED)
- GAS WELL
- DRILL HOLE
- EM-100 EAST MOUNTAIN DRILL HOLE NO. 12 (C=CORED)
- TM-10 TRAIL MOUNTAIN DRILL HOLE NO. 10

- UTU-64375 FEDERAL COAL LEASE NUMBER
- Tf FLAGSTAFF FORMATION
- TKnh NORTH HORN FORMATION
- Kpr PRICE RIVER FORMATION
- Kcg CASTLE GATE SANDSTONE
- Kbh BLACK HAWK FORMATION
- Ksp STARPOINT SANDSTONE
- Km MANCOS SHALE

PROFESSIONAL ENGINEER
No. 9073281
JACOB D. SMITH
STATE OF UTAH

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TMS1510D

PEN TBL:
SHT SET:
PROJECT NUMBER: TMS1510D

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Fossil Rock Mine
597 South SR 24 – Salina, UT 84654
(435) 286-4880 Phone
(435) 286-4499 Fax

Geology Base Map

SCALE:	DATE:	DRAWN BY:	ENGINEER:	CHECKED BY:	SHEET NO.
1" = 2000'	9/21/16	BR	JS	VM	Plate 6-2

FILE NAME: ----

Bryant Bunnell: 6/1/2017 7:48 AM

DEER CREEK MINE

COTTONWOOD MINE

JOES VALLEY FAULT

IGNEOUS DIKE

MILL FORK GRABEN

ROAN'S CANYON FAULT GRABEN

JOES VALLEY RESERVOIR

UTU-64375

UTU-49332

UTU-72996

LEGEND

- LEASE APPLICATION BOUNDARY
- PERMIT AREA
- FAULT (DASHED WHERE INFERRED)
- GAS WELL
- DRILL HOLE
- EM-12C EAST MOUNTAIN DRILL HOLE NO. 12 (C=CORED)
- TM-10 TRAIL MOUNTAIN DRILL HOLE NO. 10
- UTU-64375 FEDERAL COAL LEASE NUMBER
- HIAWATHA COAL SEAM
- BLIND CANYON COAL SEAM
- OUTCROP
- STRUCTURAL CONTOUR

N

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REVISIONS

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(435) 286-4880 Phone
(435) 286-4499 Fax

Hiawatha Seam
Structural Contour Map

PEN TBL:		SCALE:	DATE:	DRAWN BY:	ENGINEER:	CHECKED BY:	SHEET NO.
		1" = 2000'	9/21/2016	BR	JS	VM	Plate 6-3
SHT SET:	PROJECT NUMBER: TMS1681D	FILE NAME: ----					

TMS1681D

Bryant Bunnell: 6/1/2017 7:50 AM

DEER CREEK MINE

COTTONWOOD MINE

ROAN'S CANYON FAULT GRABEN

MILL FORK GRABEN

JOES VALLEY FAULT

IGNEOUS DIKE

JOES VALLEY RESERVOIR

UTU-64375

UTU-49332

UTU-72896

T. 16 S.
T. 17 S.
T. 17 S.
T. 18 S.

R. 6 E.
R. 7 E.

LEGEND

- LEASE APPLICATION BOUNDARY
- PERMIT AREA
- FAULT (DASHED WHERE INFERRED)
- * GAS WELL
- • DRILL HOLE
- EM-12C EAST MOUNTAIN DRILL HOLE NO. 12 (C=CORED)
- TM-10 TRAIL MOUNTAIN DRILL HOLE NO. 10
- UTU-64375 FEDERAL COAL LEASE NUMBER
- HIAWATHA COAL SEAM
- BLIND CANYON COAL SEAM
- OUTCROP
- COAL OVERBURDEN

N

PROFESSIONAL ENGINEER
No. 9073281
JACOB D. SMITH
STATE OF UTAH

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REVISIONS

NO.	DATE	REQ. BY	DWG. BY	REMARKS

TMS1682D

PEN TBL: _1Stndrd-SUFENP1.ctb
SHT SET:
PROJECT NUMBER: TMS1682D
FILE NAME: ----

SCALE: 1" = 2000' | DATE: 9/21/2016 | DRAWN BY: BR | ENGINEER: JS | CHECKED BY: VM

SHEET NO. Plate 6-4

Fossil Rock Resources, LLC
Fossil Rock Mine
597 South SR 24 – Salina, UT 84654
(435) 286-4880 Phone
(435) 286-4499 Fax

Hiawatha Seam Overburden Isopach Map

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T. 16 S.
T. 17 S.
R. 6 E
R. 7 E

JOES VALLEY FAULT
ROAN'S CANYON FAULT GRABEN
MILL FORK GRABEN
IGNEOUS DIKE

UTU-64375
UTU-49332
UTU-SL2996

COTTONWOOD MINE

JOES VALLEY RESERVOIR

RECEIVED
JUL 03 2017
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LEGEND

- LEASE BOUNDARY
- PERMIT AREA
- FAULT (DASHED WHERE INFERRED)
- GAS WELL
- DRILL HOLE
- EM-100 EAST MOUNTAIN DRILL HOLE NO. 12 (C=CORED)
- TM-10 TRAIL MOUNTAIN DRILL HOLE NO. 10
- UTU-64375 FEDERAL COAL LEASE NUMBER
- HIAWATHA COAL SEAM
- BLIND CANYON COAL SEAM
- OUTCROP
- COAL ISOPACH

PROFESSIONAL ENGINEER
No. 9073281
JACOB D. SMITH
STATE OF UTAH

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NO.	DATE	REQ. BY	DWG. BY	REMARKS

TMS1683D

PEN TBL:
SHT SET:
PROJECT NUMBER: TMS1683D

Fossil Rock Resources, LLC
Fossil Rock Mine
597 South SR 24 – Salina, UT 84654
(435) 286-4880 Phone
(435) 286-4499 Fax

Hiawatha Seam
Coal Isopach Map

SCALE:	DATE:	DRAWN BY:	ENGINEER:	CHECKED BY:	SHEET NO.
1" = 2000'	9/21/2016	BR	JS	VM	Plate 6-5

FILE NAME: ----

Bryant Bunnell: 6/1/2017 7:53 AM

23-1P
22-1P
23-1P
E 2,080,000
17-21-3 (T-0)
17-21-4
17-22-2 (T-1)
17-27-1 (T-2)
D 17-22-1 (T-9)
17-27-2 (T-3)
TMTN-5
TM-7
TMTN-1
17-26-1 (T-4)
TMX-2
17-26-2 (T-5)
TMTN-16
17-28-4
TMX-6
UTU-64375
17-26-3
TMTN-2
26-3P
26-2P
26-1P
UTU-49332
UTU-82996
COTTONWOOD CANYON CREEK WELL EM-31
EM-34C
UPDES AND 002
TMTN-27
TMTN-10
TMTN-21
UGMS-5 TM3WM
TMTN-12
TMTN-11
SW-3
R. 6 E.
R. 7 E.
T. 17 S.
T. 18 S.
RECEIVED
JUL 03 2017
DIV. OF OIL, GAS & MINING

LEGEND

- LEASE BOUNDARY
- DEVELOPED SPRING (WITH STOCK WATERING TROUGH)
- POND RUNOFF FED
- POND SPRING FED - CONSIDERED DEVELOPED BY THE USFS
- SPRING: TOWNSHIP-SECTION-SPRING NO. (MTN. COAL I.D.) WATER RIGHTS NO.
- WATER MONITORING STATION WITH FLUME
- WATER MONITORING STATION
- UPDES DISCHARGE LOCATION
- STRUCTURE CONTOUR LINES (BASE OF HIAWATHA, TOP OF STARPOINT SANDSTONE)
- MONITORING WELL
- WATER WELL
- SPRING (REQUIRES MONITORING)
- POTENTIAL HYDROLOGIC IMPACT AREA
- PERMIT AREA
- EM-12C EAST MOUNTAIN DRILL HOLE NO. 12 (C=CORED)
- TM-10 TRAIL MOUNTAIN DRILL HOLE NO. 10
- DRILL HOLE

PROFESSIONAL ENGINEER No. 9073281 JACOB D. SMITH STATE OF UTAH

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REVISIONS				
NO.	DATE	REQ. BY	DWG. BY	REMARKS

TMS1684C

PEN TBL:

SHT SET:

PROJECT NUMBER: TMS1684C

FILE NAME: ----

SCALE:	DATE:	DRAWN BY:	ENGINEER:	CHECKED BY:
1" = 1000'	9/21/2016	BR	JS	VM

SHEET NO. Plate 7-1

Fossil Rock Resources, LLC
Fossil Rock Mine
597 South SR 24 - Salina, UT 84654
(435) 286-4880 Phone
(435) 286-4499 Fax

Location of Seeps/Relationship of The Blackhawk-Starpoint Aquifer to Proposed Mine Workings

Bryant Bunnell 6/1/2017 7:56 AM

17-22-1 (T-9) WR 93 2117
17-23-1
17-23-2
23-1P
22-1P
23-1P
17-21-3 (T-0)
17-21-4
17-22-2 (T-1)
17-27-1 (T-2)
17-22-1 (T-9) WR 93 696
17-27-2 (T-3)
TMTN-5
TM-7
TMTN-1
17-26-1 (T-4)
TMX-2
TMDH-2
26-3P
26-2P
26-1P
TMTN-6
EM-29
WR 93 699/700 SW-1
COTTONWOOD CANYON CREEK WELL EM-31
EM-34C
UPDES 001 AND 002 UT-0022896-002
MILLER CANYON MINE DISCHARGE UT-0022896-004 WM004
UTU-49332
UTU-64375
UTU-082996
17-28-4
TMTN-16
TMTN-2
TMTN-17
26-4P
17-26-4 (T-10)
WR 93 1594
17-25-1 (T-14)
TMTN-24
17-35-1 (T-15) WR 93 685
17-35-2 (T-16) WR 93 687
TMX-5
TMTN-18
TMTN-19
17-35-3
TMTN-25
TMTN-9
17-35-4 (T-12)
35-2P
36-1P
TM-10
17-35-5 (T-11)
TMX-7
TMTN-28
TMX-4A
TMTN-27
R.16 E. R.17 E.
U.S.G.S. FLUME
T. 17 S.
T. 18 S.
TMTN-20
TMTN-10 18-2-1 (T-6)
TMTN-23
TMTN-21
TMTN-22
TMX-8
TMTN-13
TMTN-15
TMX-1
TMTN-12
TMX-9
1-1P
TMTN-14
TMTN-26
TMTN-11
UGMS-5 TM3WM 18-3-1 (T-19)
SW-3
OLIPHANT MINE 18-1-1V (T-18)
E 2,080,000

LEGEND

- LEASE BOUNDARY
- DEVELOPED SPRING (WITH STOCK WATERING TROUGH)
- POND RUNOFF FED
- POND SPRING FED - CONSIDERED DEVELOPED BY THE USFS
- SPRING: TOWNSHIP-SECTION-SPRING NO. (MTN. COAL I.D.) WATER RIGHTS NO.
- WATER MONITORING STATION WITH FLUME
- WATER MONITORING STATION
- UPDES DISCHARGE LOCATION
- MONITORING WELL
- WATER WELL
- SPRING (REQUIRES MONITORING)
- PERMIT AREA
- EM-12C EAST MOUNTAIN DRILL HOLE NO. 12 (C=CORED)
- TM-10 TRAIL MOUNTAIN DRILL HOLE NO. 10
- DRILL HOLE

PROFESSIONAL ENGINEER
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JACOB D. SMITH
STATE OF UTAH

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TMS1450C

PEN TBL:
SHT SET:
PROJECT NUMBER: TMS1450C

SCALE:	DATE:	DRAWN BY:	ENGINEER:	CHECKED BY:
1" = 1000'	9/21/2016	BR	JS	VM

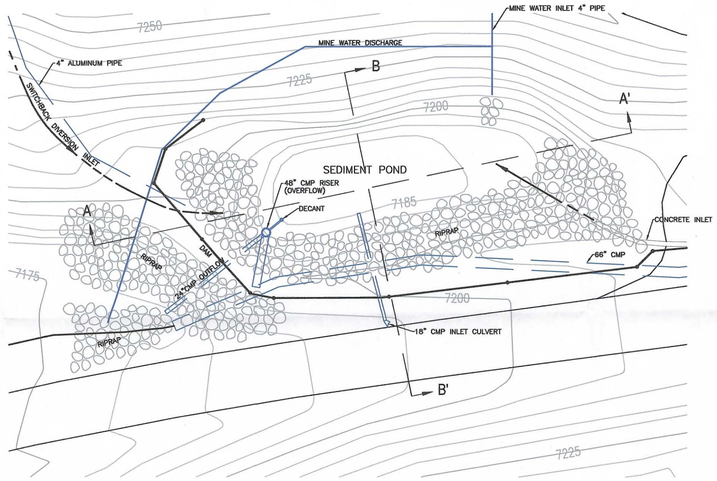
FILE NAME: ----

SHEET NO. Plate 7-2

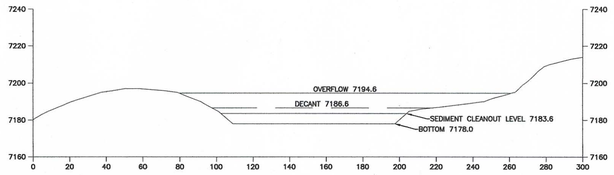
Fossil Rock Resources, LLC
Fossil Rock Mine
597 South SR 24 – Salina, UT 84654
(435) 286-4880 Phone
(435) 286-4499 Fax

Water Monitoring Location Discharge Locations

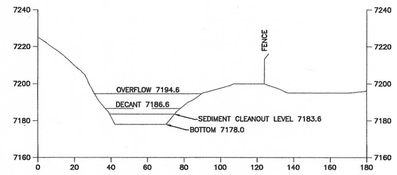
Bryant Bunnell: 6/1/2017 7:58 AM



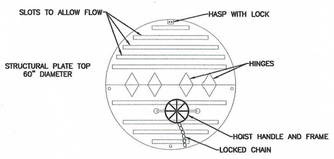
PLAN VIEW
CAPACITY 2.24 ACRE FEET



SECTION A-A'



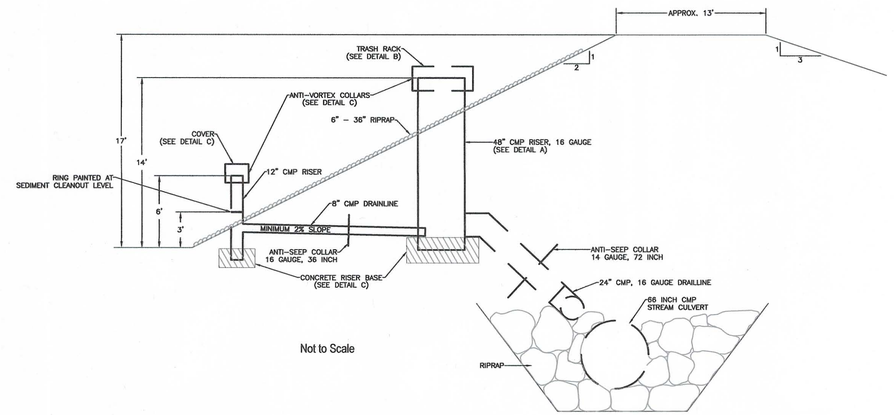
SECTION B-B'



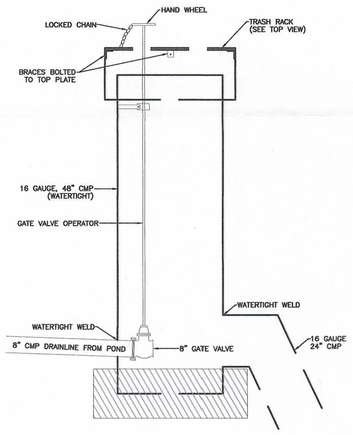
TOP VIEW

NOTES:

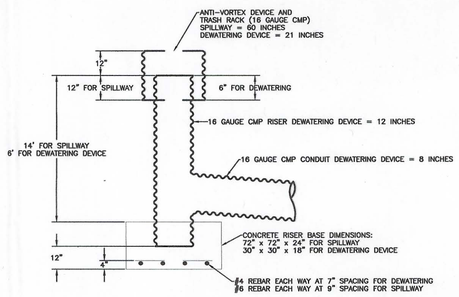
1. EMBANKMENT FILL MATERIAL SHALL BE LAID IN 6 TO 8 INCH CONTINUOUS LAYERS AND MACHINE COMPACTED.
2. EMBANKMENT FILL MATERIAL SHALL HAVE A WELL DISTRIBUTED PARTICLE SIZE GRADATION WITH A MINIMUM OF 30 PERCENT PASSING THE NO. 66 MESH SIEVE AND A MINIMUM OF 12 PERCENT AND MAXIMUM SIZE OF 50 PERCENT PASSING THE NO. 200 MESH SIEVE.
3. EMBANKMENT FILL MATERIAL SHALL BE COMPACTED TO A MINIMUM OF 95 PERCENT OF THE MAXIMUM DRY DENSITY (STANDARD PROCTOR).
4. FILL MATERIAL AROUND CONDUITS SHALL BE HAND COMPACTED.
5. RIPRAP SHALL BE PLACED AT POINT OF INFLOW AND OUTFLOW.
6. EMBANKMENT AND DISTURBED AREAS SHALL BE REVEGETATED FOLLOWING CONSTRUCTION.
7. REFERENCE ELEVATION IS BOTTOM OF POND (7187.5 FT. MSL).
8. WATERTIGHT CONNECTIONS SHALL BE USED.
9. RIPRAP SHALL BE PLACED 5 FEET ON BOTH SIDES OF SPILLWAY AND DEWATERING DEVICE UP FULL HEIGHT OF EMBANKMENT.
10. THE FOUNDATION SHALL BE CLEARED OF DEBRIS AND SCARIFIED PRIOR TO EMBANKMENT CONSTRUCTION.
11. THE INSIDE OF THE POND SHALL BE LINED WITH 18 INCHES OF EMBANKMENT MATERIAL MIXED WITH 10 PERCENT BENTONITE.
12. EMBANKMENT SHOULD BE COMPACTED WITHIN ±2 PERCENT OF OPTIMAL MOISTURE CONTENT AS DETERMINED BY THE STANDARD PROCTOR TEST.



Not to Scale

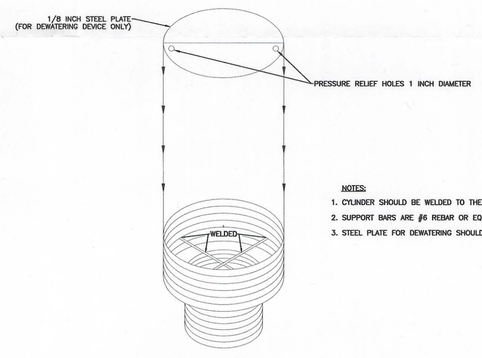


CROSS SECTION
Not to Scale



Not to Scale

DESIGN DETAIL OF SPILLWAY AND DEWATERING DEVICE
DETAIL A



NOTES:

1. CYLINDER SHOULD BE WELDED TO THE TOP OF THE RISER.
2. SUPPORT BARS ARE #6 REBAR OR EQUIVALENT.
3. STEEL PLATE FOR DEWATERING SHOULD BE WELDED TO CYLINDER.

Not to Scale

CLOSE UP ANTI-VORTEX DEVICE AND TRASH RACK

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No. 8073281
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Fossil Rock Resources, LLC
Fossil Rock Mine
597 South SR 24 – Salina, UT 84654
(435) 286-4880 Phone
(435) 286-4499 Fax

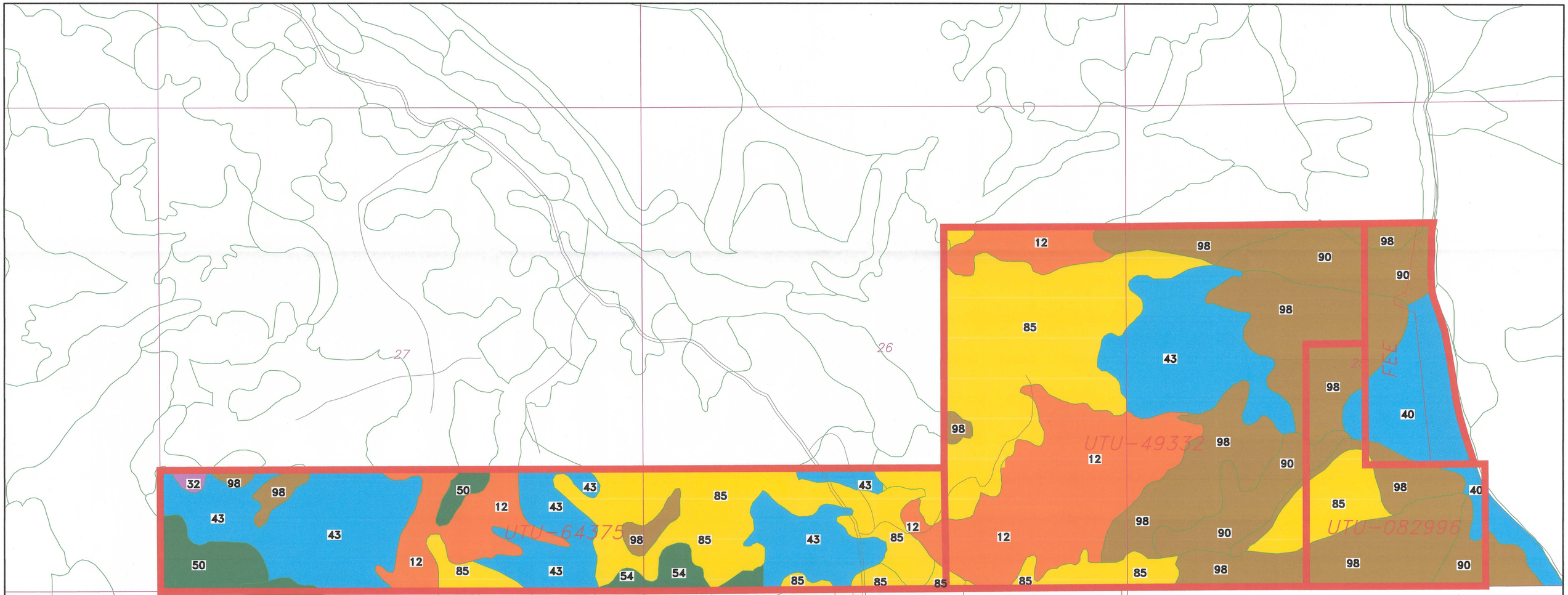
Fossil Rock Mine

Sedimentation Pond Details As Constructed

PEN TBL:	SCALE:	DATE:	DRAWN BY:	ENGINEER:	CHECKED BY:	SHEET NO.
_1Stndrd-SUFENP1.ctb	NONE	9/14/2016	BR	JS	VM	Plate 7-7
SHT SET: #### / PROJECT NUMBER: TMS1452D	FILE NAME: ----					

TMS1452D

Bryant Bonnett 9/1/2017 8:14 AM



Manti La Sal National Forest Vegetation Covering Map

Grasslands
10. Grassland Unclassified
11. Perennial Grassland (High Elevations)
12. Perennial Grassland (Mid to Low Elevations)
13. Desert Grasslands

Riparian Lands
20. Perennial Wet Lands and Meadows
21. Tree Dominated Riparian Areas
22. Intermittent Wet/Dry Meadow
23. Willow Dominated Riparian Areas
24. Other Shurb Dominated Riparian Areas
25. Lakes, Ponds & Reservoirs

Perennial Forb Lands
31. Perennial Forb Lands (High & Mid Elevations)
32. Perennial Forb Lands (Alpine & Sub-Alpine Elevations)
33. Perennial Forb Lands (Mid & Low Elevation)
34. Active Land Slides-With Little or No Vegetation Cover

Sagebrush Lands
40. Black Sagebrush
41. Wyoming Big Sagebrush
42. Basin Big Sagebrush
43. Big Mountain Sagebrush
44. Silver Sagebrush
45. Rabibit Brush (Rubber & Yellow Brush

Mountain Brush Lands
50. Mountain Brush
51. Oakbrush
52. Mountain Maple
53. Curleaf Mountain Mahogany
54. True Mountain Mahogany
55. High Mountain Brush
56. Manzanita

Coniferous Forest Lands
60. White Fir Forest
61. Ponderosa Pine Forest
62. Douglas Fir Forest
63. Spruce-Aplpine-Fir Forest
64. Blue Spruce Forest
65. Limber Pine & Bristle Cone Forest

Aspen Forest Lands
80. Aspen Forest Lands
81. Aspen Snowberry
82. Aspen Big Sagebrush
83. Aspen Creeping Barberry
84. Aspen Mixed Mountain Brush
85. Aspen Mixed Conifer

Pinyon Juniper Woodlands
90. Pinyon Juniper Woodlands
91. Utah Juniper Woodlands
92. Pinyon Woodlands
93. Rocky Mountain Juniper Woodlands
98. Barren Rock Outcrops & Ledges

Data Content and Use Disclaimers. The USDA Forest Service, Manti-La Sal National Forest, Manages Much of the data as a service to users of digital geographic data. The USFS is in no way condoning user to determine whether or not the data are suitable for the intended purpose. It is also the obligation of the user to apply those data in an appropriate and conscientious manner. The USFS provides no warranty, nor accepts any liability occurring from from any incorrect, incomplete, or misleading use of these data. Much of the USFS data are based on and maintained with ARC/INFOR software developed by Environmental Systems Research Institute (ESRI). Much of the information presented uses conventions and terms popularized by ARC/INFO and its user community. USFS in no way represents the interests of ESRI nor acts or on agent for them.

Vegetation information recreated with the use of USFS GIS Mapping.

Roads

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STATE OF UTAH

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1	7/22/16	V.M.	B.R.	Updated tittle block to Fossil Rock
				Updated the Lease Lines

Fossil Rock Resources, LLC
Fossil Rock Mine
597 South SR 24 – Solina, UT 84654
(435) 286-4880 Phone
(435) 286-4499 Fax

Fossil Rock Vegetation Map

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_1Stndrd-SUFENP1.ctb	1" = 500'	9/21/2016	B.R.	V.M.	V.M.	Plate 9-1
SHT SET:	PROJECT NUMBER:	FILE NAME:				
TMS1690C		-----				

Bryant Burnett 6/1/2017 8:28 AM