

July 16, 2004

Rick Olsen, General Manager  
Canyon Fuel Company / Dugout Canyon Mine  
P.O. Box 1029  
Wellington, Utah 84542

Re: Conditional Approval, Degasification Wells G-4, G-5, and G-6, Canyon Fuel Company, Dugout Canyon Mine, C/007/039, Task ID #1943, Outgoing File

Dear Mr. Olsen:

The above-referenced amendment is conditionally approved upon receipt of five clean copies. Please submit these copies as soon as possible but by no later than July 30, 2004. Once we receive these copies, final approval will be granted, at which time you may proceed with your plans.

A stamped incorporated copy of the approved plan will also be returned to you at that time. A copy of our Technical Analysis is enclosed.

If you have any questions, please call me at (801) 538-5268 or Peter Hess at (435) 613-1146, Ext. 203.

Sincerely,

Pamela Grubaugh-Littig  
Permit Supervisor

PHH/sed  
Enclosure  
cc: Price Field Office  
O:\007039.DUG\FINAL\CONDAPP1943.DOC

# State of Utah



## Utah Oil Gas and Mining

### Coal Regulatory Program

Dugout Canyon Mine  
Methane Degasification Amendment  
Wells G-4, G-5, G-6  
C/007/039  
Task ID #1943  
Technical Analysis  
July 15, 2004



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## TECHNICAL ANALYSIS

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

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

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

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

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



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## INTRODUCTION

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## INTRODUCTION

The permittee submitted a proposal to the Division on June 7, 2004 to permit the potential drilling of one to three methane degasification boreholes at the Dugout Canyon Mine. The purpose of the holes is to enhance the coal extraction process from the longwall panel that is located in Sections 18 and 24 of Township 13 South Ranges 12 and 13 East. The wells will provide additional venting/dilution potential for the mine's ventilation system. The permittee's intent is to drill hole G-6 first, and then proceed, if needed for additional venting capability, with the drilling of G-5 and G-4.

All surface lands are leased by the permittee from the Milton and Ardith Thayn Trust. Coal ownership is under the U.S. Department of the Interior, Bureau of Land Management (Federal lease U-07064) in Section 18 as well as in Section 24.

Well site G-3 was developed in November 2003 and well site G-2 was developed in February 2004. Site G-1 will likely never be developed. It is anticipated well sites G-5 and G-6 will be developed soon after approval with well site G-4 likely never being developed.

De-gas drill holes G-4, G-5, and G-6 are in T 13 S, R 12 E, Section 24 and T 13 S, R 13 E, Section 18, as shown on Figure 1-1 and Plate 1-4. The three new wells will add an estimated total of 2.65 acres of disturbed area to the permit area (Table 1-2). Each well will disturb approximately 1 acre. The following technical memo addresses only geologic and hydrologic regulations germane to the current application. The information provided adequately addresses the minimum requirements of the regulations and incorporation into the currently approved MRP is recommended.

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## **INTRODUCTION**

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## GENERAL CONTENTS

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# GENERAL CONTENTS

## IDENTIFICATION OF INTERESTS

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

### Analysis:

The Identification of Interest information is in the Mining and Reclamation Plan, Chapter 1, page 1-2. This information was revised in January of 2000. The information has not changed.

The corporate officers have not changed.

All surface ownership in Sections 18 and 24 relative to the three proposed well locations is held by the heirs of the Milton and Ardith Thayn Trust (See Plate 1-1 of the approved Dugout Mine MRP).

A review of Plate 1-2, as contained in the approved mining and reclamation plan for the Dugout Canyon Mine, indicates that the coal ownership in Sections 18 and 24 where the three degasification wells are being proposed is by the United States of America (USA).

The wells are located within the currently approved mine permit area. The owners of record for the surface lands where the three wells are being proposed are the heirs of the Milton and Ardith Thayn Trust.

The U.S. Department of Labor, Mine Safety and Health Administration has issued three identification numbers relative to the Dugout Canyon Mine; these are:

- 1) MSHA No. 42-01890 for the Gilson seam on the west side of the Canyon,
- 2) MSHA No. 42-01888 for the Gilson seam on the west side of the Canyon, and
- 3) MSHA No. 1211-UT-09-01890-01 Dugout Canyon Mine Refuse Pile.

All are contained in **Chapter 1**, page **1-19**, Section **112.700 MSHA Numbers** of the approved mining and reclamation plan.

**Chapter 1**, page **1-4**, section **112.800 Interest in Contiguous Lands** of the methane well submittal indicates that Canyon Fuel Company, LLC has no interest in contiguous lands other than those currently owned as shown on Plate 1-1 of the approved M&RP.

**Findings:**

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

**VIOLATION INFORMATION**

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

**Analysis:**

The permittee submitted new corporate violation information to address the requirements of this section on September 10, 2003. The new information has been submitted for incorporation into the Dugout Canyon Mine mining and reclamation plan. The required information is contained in Chapter 1, pages 1-21, 1-22, and 1-23A-R of the MRP. The information was previously updated in January of 2003.

The newly submitted information contains the violation information for all of the ARCH Coal, Incorporated operations. All corporate violations that are pending exist at ARCH operations in the States of West Virginia or Virginia. There are no outstanding violations relative to ARCH's Canyon Fuel Company operations in the State of Utah.

**Findings:**

The submitted information meets the minimum regulatory requirements.

**RIGHT OF ENTRY**

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

**Analysis:**

The permittee submitted new corporate violation information to address the requirements of this section on September 10, 2003. The new information has been submitted for incorporation into the Dugout Canyon Mine mining and reclamation plan. The required information is contained in Chapter 1, pages 1-21, 1-22, and 1-23A-R of the MRP. The information was previously updated in January of 2003.

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## GENERAL CONTENTS

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The newly submitted information contains the violation information for all of the ARCH Coal, Incorporated operations. All corporate violations that are pending exist at ARCH operations in the States of West Virginia or Virginia. There are no outstanding violations relative to ARCH's Canyon Fuel Company operations in the State of Utah.

### **Findings:**

The submitted information meets the minimum regulatory requirements.

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

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

### **Analysis:**

The permittee submitted new corporate violation information to address the requirements of this section on September 10, 2003. The new information has been submitted for incorporation into the Dugout Canyon Mine mining and reclamation plan. The required information is contained in Chapter 1, pages 1-21, 1-22, and 1-23A-R of the MRP. The information was previously updated in January of 2003.

The newly submitted information contains the violation information for all of the ARCH Coal, Incorporated operations. All corporate violations that are pending exist at ARCH operations in the States of West Virginia or Virginia. There are no outstanding violations relative to ARCH's Canyon Fuel Company operations in the State of Utah.

The permittee submitted new corporate violation information to address the requirements of this section on September 10, 2003. The new information has been submitted for incorporation into the Dugout Canyon Mine mining and reclamation plan. The required information is contained in Chapter 1, pages 1-21, 1-22, and 1-23A-R of the MRP. The information was previously updated in January of 2003.

The newly submitted information contains the violation information for all of the ARCH Coal, Incorporated operations. All corporate violations that are pending exist at ARCH operations in the States of West Virginia or Virginia. There are no outstanding violations relative to ARCH's Canyon Fuel Company operations in the State of Utah.

### **Findings:**

The submitted information meets the minimum regulatory requirements.

## **PERMIT TERM**

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

### **Analysis:**

The permittee submitted new corporate violation information to address the requirements of this section on September 10, 2003. The new information has been submitted for incorporation into the Dugout Canyon Mine mining and reclamation plan. The required information is contained in Chapter 1, pages 1-21, 1-22, and 1-23A-R of the MRP. The information was previously updated in January of 2003.

The newly submitted information contains the violation information for all of the ARCH Coal, Incorporated operations. All corporate violations that are pending exist at ARCH operations in the States of West Virginia or Virginia. There are no outstanding violations relative to ARCH's Canyon Fuel Company operations in the State of Utah.

### **Findings:**

The submitted information meets the minimum regulatory requirements.

## **PUBLIC NOTICE AND COMMENT**

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

### **Analysis:**

The proposal to permit and drill the three methane degasification wells at the Dugout Mine will occur on private surface land managed by the heirs of the Milton and Ardith Thayn Trust. The permittee has previously provided a copy of the surface lease agreement (See **Appendix 4-2, SURFACE LANDOWNER AGREEMENT**, Task ID #1642) between the Thayn Trust and Canyon Fuel Company. There is no need for a public notice and comment period.

### **Findings:**

The requirements of this regulation are not relative to this application.

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## GENERAL CONTENTS

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### **FILING FEE**

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

#### **Analysis:**

The proposal to drill the three methane de-gasification wells is not a permit application, but is an amendment to the currently approved mining and reclamation plan.

#### **Findings:**

This requirement is not relative to this permit amendment.

### **PERMIT APPLICATION FORMAT AND CONTENTS**

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

#### **Analysis:**

This proposal is an amendment or modification to the currently approved mining and reclamation plan, which is an integral part of the permit. The determination that the permit application consisted of the proper format and adequately addressed the requirements of the disciplines relative to completeness was made prior to the receipt of this application.

#### **Findings:**

A determination that the permit application was administratively complete was made prior to receipt of this amendment. This requirement is not relative.

### **REPORTING OF TECHNICAL DATA**

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

#### **Analysis:**

Dr. Patrick Collins of Mt. Nebo Scientific, Inc. conducted the July 2003 vegetation inventory as well as the threatened, endangered, and sensitive plant species inventory (Attachment 3-1).

Dean Stacy of NRCS (Price office) conducted the August 2003 productivity estimates.

## GENERAL CONTENTS

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DWR (Chris Colt and LeRoy Mead) conducted the 2003 and 2004 raptor surveys.

Environmental and Engineering Consultants (EIS) conducted the 2003 and 2004 Mexican Spotted Owl (MSO) survey. Vicky Miller (personal communications, 8/12/03) clarified that Tom Paluso, (EIS engineer) conducted the survey. The amendment contains a copy of the corporate TE permit (exp. 12/31/05) with Mel Coonrod as principal officer. In order for a person to conduct official surveys, they must have fulfilled the following sequential requirements:

- Belong to the permit holding corporation.
- Take the species-specific course and exam.
- Submit the application for permit to the USFWS.
- Record name to the corporate permit records.

The corporate permits shows that Tom Paluso is authorized to conduct MSO surveys.

Baseline soils information (Attachment 2-1) was compiled by Mr. Dan Larsen (Soil Scientist) with EIS Environmental and Engineering Consulting on May 17, 2004 and June 10-13, 2003. Mr. Larsen's qualifications have been included in Attachment 2-1 of the Methane Degasification Amendment Wells G-1, G-2, and G-3 to the MRP.

Attachment 2-2 (topsoil calculations) was prepared by Layne Jensen of Earthfax Engineering, Inc., also included in Attachment 2-1 of the Methane Degasification Amendment Wells G-1, G-2, and G-3 to the MRP. Mr. Jensen is a registered, professional engineer.

### **Findings:**

The information provided meets the requirements for the reporting of technical data requirements of the regulations.

## **MAPS AND PLANS**

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

### **Analysis:**

All maps and plans that have been submitted with the application that are relative to well location, pad design, hydrology, or engineering design are certified by a Utah registered professional engineer.

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## GENERAL CONTENTS

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### **Findings:**

The minimum regulatory requirements have been addressed.

## **COMPLETENESS**

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

### **Analysis:**

The permittee's initial application to permit three additional degasification wells for the Dugout Mine long-walling system was received on June 7, 2004. The provided information is felt to be complete and adequate.

### **Findings:**

The provided information meets the minimum regulatory requirements for completeness.

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**GENERAL CONTENTS**

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**ENVIRONMENTAL RESOURCES INFORMATION**

**ENVIRONMENTAL RESOURCE INFORMATION**

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

Much of the information concerning environmental resources for the permit area is in the MRP and confidential files. This amendment provides supplemental information focusing on the degas wells.

**VEGETATION RESOURCE INFORMATION**

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

**Analysis:**

Dr. Patrick Collins of Mt. Nebo Scientific, Inc. conducted the June 2003 (July) vegetation inventory as well as the threatened, endangered, and sensitive plant species inventory (Attachment 3-1). The inventories covered the proposed well sites (~200 x 300 feet) and two-associated reference sites. Collins used the following approved methods for the vegetation inventory:

- Meter square quadrat method for cover.
- Point-quarter method for woody species density.

Table 1 shows the results of the vegetation inventory for percent cover, percent cover by life forms, and woody species density.

Table 1. Vegetation inventory

Site	% Total Living Cover (TLC)	Grass % of TLC	Forb % of TLC	Woody % of TLC	Woody Sp. Density Individ/Acre
Ref Area: B Aspen/Doug	90	15	34	51	4265
G1 Prev disturb	38	21	50	28	1241
G4 Prev disturb	48	23	55	23	358
G6 Part disturb	94	23	5	73	2355
Ref Area: A	63	17	46	37	4811

**ENVIRONMENTAL RESOURCE INFORMATION**

Sage/Snow					
G2 Undisturbed	66	18	39	44	4812
G3 Undisturbed	60	12	44	44	6306
G5 Undisturbed	63	15	43	43	6718

Table 1 shows that G1, G4, and G6 were previously disturbed (prev/part disturb). Collins notes that these disturbances include road and logging impacts. The woody percent cover for the G1 and G4 sites appear lower and the G6 site appears higher than for the corresponding reference area (B). The woody species density is significantly lower for G1 and G4 and significantly higher for G6, G3, and G5 than corresponding reference areas. There is no significant difference of wood species density between G2 and the corresponding reference area. Collins notes a concern of meeting performance standards for certain wells (Attachment 1, pg. 14). The Division expects that meeting the standards will not be a concern provided the Permittee implements recommended reclamation procedures and shows prudent land stewardship practices.

There are two reference areas for the degas wells: A-Maple, aspen, Douglas fir and B-Sagebrush, snowberry, grass. These names/descriptions reasonably correspond to the descriptions of the community types categorized on Plate 3-1 of the MRP. The Division had a concern over the apparent close proximity of the Sagebrush, snowberry, grass reference area to the road. The Permittee mentioned (personal communications 8/19/03) that this reference area is at least 500 feet from the road on one side and 2000 feet on the other side. The Permittee assures the Division that no disturbance will occur to the area other than grazing. If conditions change and disturbance is evident, the Permittee plans to fence this reference area on the two sides that face the adjacent road. The other reference area is apparently protected from disturbance by the natural topography.

Pre-disturbance productivity values are particularly important for these sites because the post-mine land use is grazing for some of the disturbed area. Dean Stacy (NRCS Price office) conducted the August 2003 productivity estimates for the degas wells and two associated reference areas. Stacy states that both the aspen/Douglas fir and sage/snowberry communities are experiencing changes in productivity values with a decrease in herbaceous values and an increase in woody plant values. Stacy attributes the lack of proper land management practices to the decline in productivity.

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## ENVIRONMENTAL RESOURCES INFORMATION

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In drought years, productivity is expected to be 1,500 lbs/acre and 300 lbs/acre for the sage/snowberry and aspen/Douglas fir community types, respectively (1988 Carbon County Soil Survey). The estimated productivity values for the wells approach or match the Soil Survey expected value.

Table 1. Production results

Site	Productivity Lbs. per acre
Ref Area: B = Aspen/Doug fir	300
G1 Previously disturbed	100
G4 Prev disturbed	150
G6 Partially disturbed	300
Ref Area: A = Sage/Snowberry	1,500
G2 Undisturbed	1,500
G3 Undisturbed	1,500
G5 Undisturbed	1,500

### Findings:

The information provided is adequate for the reporting of vegetation resource requirements of the regulations.

## FISH AND WILDLIFE RESOURCE INFORMATION

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

### Analysis:

Previously, the Permittee provided the following information concerning TES for different sites of the mine permit area:

The Permittee provided a TES inventory (Incoming 2003; Degas Wells MW-6 and -8; Attachment 3-2) conducted by Mr. David Steed (Ecologist) of Environmental and Engineering Consulting on May 10, 2002. The TES survey was not comprehensive and included surveys for TES species not listed for Carbon County. The survey crew surveyed for twenty-seven plant and two animal species. These species are included on federal threatened and endangered (TE) list for Carbon and Emery counties or on sensitive lists for the area.

**ENVIRONMENTAL RESOURCE INFORMATION**

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For the sites evaluated for TES species, including MW-6 and -8, the surveyors noted “no observation” for all species surveyed. The survey, however, shows suitable habitat for the following species:

*Last chance townsendia* (*Townsendia aprica* – USFS SS; Emery, Sevier, et. al.)

*Tufted cryptantha* (*Cryptantha caespitosa* - CS; Carbon)

*Canyon sweetvetch*

(*Hedysarum occidentale* var. *canone* – USFS SS; Manti-LaSal/Carbon, Emery, et. al.)

*Helenium hymenoxys* (*Hymenoxys helenioides* – CS; Carbon, Emery, Sevier, et. al.)

*Bicknell milkvetch*

(*Astragalus consobrinus* - USFS SS; Manti-LaSal-potential/Emery, Sevier)

*Basalt milkvetch* (*Astragalus subcinereus* – BLM SS; W.Emery, E.Sevier)

*Sedge fescue* (*Festuca dasyclada* – USFS SS; Manti-LaSal/Emery)

*Graham beardtongue*

(*Penstemon deaveri* – Utah Heritage Program; extreme northeastern corner of Carbon County)

[Parenthetical information shows species name and DOGM research results for management responsibility; county or forest location.]

It is evident from the list that three of the seven species are tracked in Carbon county:

*Tufted cryptantha*, *Canyon sweetvetch*, and *Helenium hymenoxys*. The other four species in the list were probably included as an oversight by Mr. Steed because he included Emery County in the TES survey. A June 24, 1995, survey for canyon sweetvetch found this sensitive species along Dugout Creek approximately one-half mile below the gate. The Division is aware of a fairly extensive population in the permit area in Fish Creek Canyon, and the plant could occur in other parts of the permit area and proposed addition.

EIS conducted a survey of the proposed M-series drill sites on June 21, 2001. The consultants surveyed for the loggerhead shrike, burrowing owl, canyon sweetvetch, and Creutzfeldt cryptantha. The inventory found no suitable habitat for any of the species except the canyon sweetvetch. The sweetvetch was not found within any of the areas to be disturbed.

For the current amendment, Dr. Collins conducted a literature search on TES plant species for the degas wells. Note that G1 and G2 are in same township and range as MW-6 and MW-8. His results showed that the area includes suitable habitat only for canyon sweetvetch (*Hedysarum occidentale* var. *canone*). Collins did not specifically mention Tufted cryptantha, *Helenium hymenoxys*, or Graham beardtongue in his literature or survey results. The surveyor ground-truthed (June 2003) for TES plant species and observed no TES species growing at any of the degas well sites or reference areas.

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**ENVIRONMENTAL RESOURCES INFORMATION**

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Previously, the Permittee provided the following information concerning the MSO for different sites of the mine permit area:

- *EIS conducted a survey for the MSO in Pace Canyon on June 18 to July 3, 2001. The surveyor used the USFWS established protocol for the MSO. The results showed no spotted owl in the area surveyed even though suitable habitat exists.*
- *Final Report: Assessing the impact of scale on the performance of GIS habitat models for MSO David W. Willey, October 22, 2002 (Incoming 2003; Degas Wells MW-6 and -8; Attachment 3-3). The report summarizes the study that evaluated the performance of the 1997 and 2000 models developed by Dr. Willey et. al. for predicting MSO habitat. The study included four project areas near Price, but did not include the Dugout mine area.*

For the current amendment, Tom Paluso of Environmental and Engineering Consultants (EIS) conducted a MSO survey for Dugout Canyon. The consultant conducted a calling survey (May 20 - June 18, 2003 and spring of 2004) for MSO individuals within a half-mile radius around the G1-G6 degas well area. The calling procedure included calling at seven different points with points no greater than 0.5 mile apart. The consultant called for 20 minutes using three different calling types. The results showed no MSO responses within a half-mile radius around the G1-G6 degas well area. The results, however, showed responses from Great Horned Owl (5/20/03: site not provided) and Northern Saw-whet (5/20/03: G2; 5/27: G6; 6/4: G6 and G5; 6/11: G3).

Previously, an EIS survey documented two saw-whet owls responses. One saw-whet owl was heard near drill hole DT-2. The Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances (Laura Romin and James Muck, May 1999, U.S. Fish and Wildlife Service, Utah Field Office, Salt Lake City) require a 0.25-mile seasonal buffer from March 31 to August 31 for this species. Chris Colt, UDWR<sup>1</sup>, stated that the survey did not locate an owl nest but only the owl's response to a call. The survey did not attempt to locate saw-whet owl nests. Mr. Colt stated that if young owls were present then they should be mobile by July 15 in this area. However, Mr. Colt recommended that a one or two night survey be conducted within a 300-meter perimeter of drill pad DT-2 prior to drilling. Limiting drilling to after August 31 or surveying to be sure no nest occurs within 300 meters of the drill pad will ensure compliance with the Migratory Bird Treaty Act.

Preliminary results of the Mexican spotted owl survey (May 2004) showed positive responses for the Northern Saw-whet Owl at many of the calling stations. Because the Permittee wants to drill during the exclusionary period and survey results are positive for this owl, the Division is requiring the Permittee to mitigate (R645-301-342.100). In consultation with DWR

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<sup>1</sup>Phone conversation on August 10, 2001.

**ENVIRONMENTAL RESOURCE INFORMATION**

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(Tony Wright, July 6, 2004), an appropriate mitigation project is to install nest boxes designed for the Northern Saw-whet owl. DWR will provide box design and conduct installation. The Permittee must contact DWR and install the boxes prior to October 1, 2004. DWR will determine the number of nest boxes, but the required number will not exceed ten.

The Permittee will include the specifics of the owl mitigation project in the 2004 Annual Report for DOGM (due spring of 2005) by briefly describing the project goals and procedures, implementation date(s), overseeing agency and contacts (DOGM and DWR), and nest box locations (range, township, and sections). The Permittee must reference, in the MRP section 342.100, that the information concerning the owl mitigation project is in the 2004 Annual Report.

DWR conducted a helicopter raptor survey in 2003 and 2004. The Permittee provides a summary table of DWR's results and maps of the over-flight survey. The amendment states (pg. 3-3) that the 2003 results showed "no raptor nests...recorded in the survey area" of the degas wells (sections 24 and 19). Results are still pending for the 2004 survey.

The plan provides a map showing the over-flight pattern, locations of raptor nests, but not locations of the drill hole sites or boundary lines of the mine permit area. The map shows that a Red-tailed Hawk nest 1304 is on the border of section 24 and 13. The results, however, show that this nest was "inactive" on 5/21/03.

Other than the raptor and MSO survey, there were no other TES animal species survey for the degas wells. The amendment includes two tables (Attachment 3-2): Utah's State Listed Species by County (Carbon) and County Lists of Utah's Federally Listed TEC species (Carbon). Page 3-3 states that there are no known federal or state listed TES species within the area of the degas wells. The bald eagle and black-footed ferret, however, could potentially inhabit the area (Incoming 2003; Degas Wells MW-6 and -8; section 322.220). There have been no confirmed sightings of black-footed ferrets in Carbon County in several years, and bald eagles probably only occur within the permit area during the winter seasons.

The Permittee's representative mentioned (8/12/03) that she read all the animal species on the two tables to Bill Bates (DWR) and that he supports that no known TES are within the degas well area. As required by R645-301-358.100, the permittee must promptly report to the Division siting(s) of state or federally listed endangered or threatened species within the permit area. Seasonal or migrating bald eagles are expected and would not need to be reported.

JBR Environmental Consultants conducted the bat survey in June 2002 (Incoming 2003; Degas Wells MW-6 and -8; pg. 3; sec. 322.200). The previous attachment, however, did not provide the survey report. The current amendment also does not include the bat survey. The Permittee mentioned (personal communications 8/11/03) that the bat survey in 2002 was required because Dugout was planning to mine in escarpment areas. The mine operator never

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## ENVIRONMENTAL RESOURCES INFORMATION

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mined in that area of concern. The Permittee states that there is no bat habitat in the area of the degas wells; therefore, the bat survey does not apply.

Plate 3-2 shows the G-series degas wells are located near (approximately 1 mile) critical deer winter range and elk winter range.

### **Findings:**

The information provided is adequate for the reporting of fish and wildlife resource requirements of the regulations.

## **SOILS RESOURCE INFORMATION**

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

### **Analysis:**

Appendix 2-2 of the MRP provides a general outlook on the soils of the Book Cliffs in the vicinity of the Dugout Mine. The specific soils information for degasification well sites G-1 through G-6 is found in Attachment 2-1 of the Methane Degasification Amendment Wells G-1, G-2, and G-3 to the MRP. Mr. Dan Larsen conducted the inventory in Attachment 2-1 in June 2003 and May 2004. Site sketches provide valuable estimates of topsoil thickness over the entire site. Mr. Larsen states in the introduction that each site will be developed to a 0.5-acre size, and therefore, topsoil calculations must be adjusted for the 1.0-acre sites described by the application. Sites G-5 and G-6 fall within Map Unit 103, Senchert/Toze Family Complex (Appendix 6.2 – 6.4 of Attachment 2-1). Despite the location of site G-4 within the Map Unit 62, Midfork family – Comodore complex (Appendix 6.2 – 6.4 of Attachment 2-1), Mr. Larsen classified the soils at sites G-4, G-5, G-6 as Senchert Series soils, with an inclusion of Midfork soil at the center of the G-5 pad site.

The 1988 Soil Survey of Carbon County Utah (an Order 3 soil survey) describes the Map Unit 103, Senchert/Toze Family Complex (Appendix 6.2 – 6.4 of Attachment 2-1). The Senchert/Croydon Series are deep soils with silt loam texture and high amounts of organic matter. The effective rooting depth of Senchert soils is 20 to 40 inches. The potential plant community in the Senchert/Toze Family Complex is Douglas fir and canopy of 60%, and understory including 10% grasses, 5 forbs, and 85% shrubs. The important plants are sedges, mountain lover, snowberry, Oregon grape and quaking aspen. The Senchert series is in the High Mountain Loam (Douglas-fir) range site. In a normal year, forage productivity is expected to be 100 lbs/acre (1988 Carbon County Soil Survey).

Site G-4:

The site is located on a 40% slope at an elevation of 8,120 feet (profile description, Appendix 6-6 of Attachment 2-1). Mr. Larsen classifies the soil as a fine-loamy, mixed, Pachic Argicryoll soil type. Topsoil is estimated at 24 –36 inches (Appendix 6-7 of Attachment 2-1). This site was previously disturbed by logging (Table 3-1, pg 3-16, Attachment 2-1 section 4.3).

Site G-5:

This site is located on a 10 – 20% slope at an elevation of 8,240 ft. Mr. Larsen indicates the soil in the center of the pad site is like the Midfork soil and classifies it as a loamy-skeletal, typic Haplocryoll or Argicryoll soil type. Topsoil is estimated at nine inches (Appendix 6-7 of Attachment 2-1). The remainder of the site is classified as a fine-loamy, Pachic Argicryoll soil type, similar to the soils described at site G-4. Topsoil is estimated at 24 inches for most of the site with a pocket of 50-inch deep mollic epipedon in the NW corner.

Site G-6:

Information gathered for the G-6 site in June 2003 was as follows:

- Located on a 30% slope at an elevation of 8,220 ft.
- Classified as a fine loamy, mixed, superactive Pachic Argicryoll soil type, similar to the soils described at site G-4 and on the periphery of G-5.
- Topsoil is estimated at 36 inches (Appendix 6-7 of Attachment 2-1).
- A portion of the site was previously disturbed by drilling (pp 2-3, 3-16).

The pad location was subsequently moved to the existing surface disturbed roadway and a previously leveled area to protect the adjacent forested area (personal communication with Vicky Miller on July 8, 2004). Mr. Dan Larsen's May 2004 report (Attachment 2-1) indicates variable depths of topsoil availability from the previously disturbed area, from zero in the center of the area, 4 – 6 inches to the south, and 22 – 28 inches of topsoil to the north. The information is summarized in Section 222.400. An average of 12 inches of topsoil depth was used for topsoil calculations.

All Sites:

Soils were not analyzed during the topsoil survey. The application indicates that the topsoil from all sites will be analyzed for the following parameters during soil salvage: pH, Electrical Conductivity, Sodium Adsorption Ratio, percent CaCO<sub>3</sub>, plant available Nitrogen, Potassium, and Phosphorus (Section 243).

**Findings:**

The information provided meets the minimum requirements for Soils Environmental Resource Information.

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### LAND-USE RESOURCE INFORMATION

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

#### **Analysis:**

The pre-mining land use is open range for wildlife and livestock and hunting as described in Chapter 4. Table 3-1 provides productivity estimates between 300 – 1,500 lbs/ac (NRCS letter in Attachment 3-1). The highest productivity sites are G-2, G-3, and G-5 (Trag, Brycan and Senchert soils) and the lowest productivity site is G-1 Comodore series soil, previously disturbed by roads and logging.

The land is owned by the Thayn Trust and is the subject of the Surface Use Agreement between Canyon Fuel Co. and the Thayn Trust dated November 22, 1999 and the First Amendment to the Surface Use Agreement dated August 13, 2001 (Attachment 4-2). This agreement describes hunting as another use of the land. Communication with the landowner is found in Attachment 4-2.

#### **Findings:**

The information provided meets the Land Use requirements of the Regulations.

### ALLUVIAL VALLEY FLOORS

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

#### **Analysis:**

##### **Alluvial Valley Floor Determination**

The sites are at elevations of 8,100 to 8,400 feet on the plateau between Dugout Canyon and Pace Canyon. Alluvial sediments deposited by Dugout and Pace Creek drainages are far below the site as shown on Plate 6-1 of the MRP. Although Site G-2 has soils in the Brycan series that developed from alluvial deposition, they are presently not being irrigated or cultivated. Site G-2 is currently being used for open range.

**Findings:**

The Division finds that the methane degasification well sites are not located in an alluvial valley floor.

**PRIME FARMLAND**

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

**Analysis:**

Prime farmland does not exist at this elevation in the Book Cliffs. The growing season is short (60 days) and there is no developed water source. The Utah Agricultural Experiment Station Research Report Number 76 entitled "Important Farmlands of Parts of Carbon, Emery, Grand, and Sevier Counties" does not include R 12 E, T 13 S.

Regulation R645-302-313 requires that a reconnaissance inspection is done for all permit applications whether or not Prime Farmland is present and that the Division and Natural Resource Conservation Service will determine the extent of the reconnaissance inspection. On April 24, 2003, the Division consulted with Gary Roeder, Area Conservationist with the NRCS Price Field Office. Mr. Roeder stated that developments anywhere in the permit area at these elevations would not fit the parameters of prime farmland.

**Findings:**

The Division in consultation with the Natural Resources Conservation Service determines that there are no prime farmlands in the location of the proposed degasification wells G-1, G-2, G-3, G-4, G-5, and G-6.

**GEOLOGIC RESOURCE INFORMATION**

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

**Analysis:**

No new geologic information is provided with the current submittal. For geologic information the reader is referenced back to Chapter 6 of the currently approved MRP.

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## ENVIRONMENTAL RESOURCES INFORMATION

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### **Findings**

The information provided adequately addresses the minimum requirements of the Environmental Resources – Geologic Resource Information section of the regulations.

## **HYDROLOGIC RESOURCE INFORMATION**

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

### **Analysis:**

#### **Probable Hydrologic Consequences Determination**

Within the currently approved Methane Degasification document the Operator has adequately identified any potential impacts to the hydrologic balance and has cited adequate mitigation for the potential impacts. No acid- or toxic- forming materials have been identified in the soils or strata at the Dugout Mine and none are anticipated. Any groundwater encountered during drilling will be sealed with drilling mud to eliminate migration down the hole and into the mine. No hydrocarbons will be stored on site, but should any leak or spill occur, the saturated absorbent materials would be disposed of at a landfill facility. Drilling of wells G-2 and G-3 did not encounter any acid- or toxic- forming materials and no measurable groundwater was encountered in either hole. Similar conditions are anticipated for the proposed wells.

### **Findings:**

The information provided adequately addresses the minimum requirements of the Environmental Resources – Hydrologic Resource Information section of the regulations.

## **MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION**

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

### **Analysis:**

### **Vegetation Reference Area Maps**

Figure 1 provides locations of the G1-6 drill holes on a topographic map. The Permittee assigned two reference areas for the degasification wells. The locations of these two reference sites are shown in a topographic map in the Vegetation survey (Attachment 3-1, Figure 3-1. Figure 3-2 shows the vegetation types for the area specific to the degas wells.

### **Findings:**

The information provided is adequate for the reporting of map resource requirements of the regulations.

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## OPERATION PLAN

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## MINING OPERATIONS AND FACILITIES

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

### Analysis:

The purpose of the proposed methane de-gasification wells is to enhance the venting/dilution capability of the mine's ventilation system, such that dangerous levels of methane gas are not allowed to accumulate within the gob area (area where the coal seam has been extracted and the roof has been allowed to cave) and/or the bleeder entries. It is the permittee's intent to have the wells permitted, and then drill them, if it is decided that they are needed. At the present time, only minor delays have been experienced from methane buildup as the current longwall panel is being extracted. The permittee has verbally indicated that the wells will not be drilled as sequenced. If the permittee concludes that the additional venting capability is necessary, well G-6 will be the first to be put down. If additional capability is needed, well G-5 will be drilled and so on. At the present time, only two of the first three wells that were permitted have been drilled. Wells G-6, G-5, and G-4 are being permitted via this application.

As depicted on FIGURE 5-16, TYPICAL WELL DESIGN (See Task ID #1642), the wells will be drilled to depths such that the hole bottom will stop twenty-five feet above the roof elevation of the Gilson coal seam. Depending on the amount of overburden at the specific well site, the well depths could vary from 1250 to 2050 feet.

**Chapter 6, Geology**, page 6-2, section **625**, (Task ID #1642) states, "it is not anticipated that any additional geologic data will need to be collected at the well sites". Section **624.300** also states "no test boring(s) or drill cores are planned at the site". Therefore, none of the coal seam will be extracted for analysis. The wells will be permitted as a mining related activity under the R645 coal rules.

None of the methane wells will be plugged post drilling, as their purpose is to bleed off the combustible gases within the mine, improving safety conditions and mining productivity. The anticipated life/usage of the degasification hole(s) is unknown at this time.

Possible adverse affects to the four Colorado River endangered fish species (Colorado pikeminnow, the humpback chub, the bonytail chub, and the razorback sucker) are addressed by calculating the amount of water used by a mine. The USFWS provides the Windy Gap Process that provides examples of factors necessary for consumption calculations. In brief, consumption

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estimates must include evaporation from ventilation; coal preparation; sediment pond evaporation; subsidence effects on springs; alluvial aquifer abstractions into mines; postmining inflow to workings; coal moisture loss; and direct diversions. Mitigation is required if loss is greater than 100 acre-feet per year.

Dugout Creek is within the drainage of the Green River. Through effects of water quantity and quality on the river, the mine could potentially adversely affect the four Colorado River endangered fish species. The Permittee attempts to address the possible adverse effects to the four Colorado River endangered fish species by stating that the drilling of the degas wells does not involve the mining of coal, therefore, the Windy Gap Process calculations do not apply. Irrespective of this statement, the Permittee must address the adverse effects to the four Colorado River endangered fish species. The Permittee must provide all evidence and equations leading to the sum of water consumption, including water consumed, for dust suppression for the entire mine operations. The calculations are due before amendment approval of the SILTA lease amendment. Statements of “no water consumption” are not acceptable.

The amendment refers to the MRP for information concerning the protective measures in the Operation Plan. The Permittee provides little additional information for the Operation Plan concerning the degas wells in this amendment.

### **Findings:**

The amendment does not qualify as a minor coal exploration amendment, and therefore, same will be reviewed as an amendment to the mining and reclamation plan.

The Permittee must assess possible adverse effects of mine water consumption to the four Colorado River endangered fish species: the Colorado pikeminnow, the humpback chub, the bonytail chub, and the razorback sucker. The Permittee must provide all evidence and equations leading to the sum of water consumption, including water consumed for dust suppression, for the entire mine operations. The calculations are due before approval of the SILTA lease amendment. Statements of “no water consumption” are not acceptable.

### **EXISTING STRUCTURES:**

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

### **Analysis:**

The proposal to construct the methane degasification wells will occur in an area well outside of the disturbance created by the Mine’s facilities. There are no known dwellings, public buildings, schools, churches, or community buildings within 1,000 feet of the pre-determined

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well locations. There is no indication that blasting will be done during the construction/reclamation process of the well sites. This regulation is not applicable.

### **Findings:**

There are no known structures in the area of the methane well development sites. This regulation is not applicable.

## PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES

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

### **Analysis:**

There are no public parks in the area where the three wells are being proposed. Archaeological surveys of the well sites were conducted in June of 2003; with nothing being found that required future investigation. There are no cemeteries, or units of the National System of Trails or the Wild and Scenic Rivers System located within the wells site boundaries, (See report included as Attachment 4-1, **Cultural Resource Survey and Inventory, Task ID #1642**).

The permittee has agreed to notify the Utah State Historic Preservation Office of previously unidentified cultural resources discovered during the course of operations of the wells.

### **Findings:**

The submitted information is adequate to meet the minimum regulatory requirements of this section.

## RELOCATION OR USE OF PUBLIC ROADS

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

### **Analysis:**

All access roads within the surface lease agreement area are owned by the surface landowners, the heirs of the Milton and Ardith Thayn Trust. There are no public roads involved in the submittal.

**Findings:**

This regulation is not applicable to this submittal.

**AIR POLLUTION CONTROL PLAN**

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

**Analysis:**

The permittee's submittal commits to watering of the access roads (both the private surface roads as well as the portions to be constructed). See Chapter 4, page 4-5, section **424, Fugitive Dust Control Plan**, Task ID #1642, approved September 19, 2003. The application of water will be of sufficient frequency and quantity to maintain the surface material in a damp/moist condition unless it is below freezing.

**Findings:**

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

**COAL RECOVERY**

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

**Analysis:**

As stated previously, the methane wells will be drilled to depths varying from 1250 to 2050 feet, depending on the amount of overburden at the well location. All boreholes will be stopped at a depth that correlates to twenty-five feet above the roofline elevation of the Gilson coal seam. No coal will be recovered from the seams that are being mined within the Dugout Mine permit area. No test borings or drill cores are planned at the well sites.

**Findings:**

This regulation is not applicable to this amendment.

**SUBSIDENCE CONTROL PLAN**

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

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### Analysis:

#### Renewable Resources Survey

A discussion relative to **Structures and Renewable Resource Lands** is included as part of Chapter 5, page 5-27 of the Dugout Canyon Mine mining and reclamation plan. Same indicates that there are no major electrical transmission lines, pipelines, or agricultural drainage tile fields within the area to be extracted using long wall mining methods. All roads in sections 18 and 24 are the private property of the heirs of the Milton and Ardith Thayn Trust. As previously mentioned, the permittee has been granted use of these roads via the surface lease agreement between Canyon Fuel Company and the heirs of the Milton and Ardith Thayn Trust.

#### Subsidence Control Plan

Chapter 5, page 5-7, section **525 Subsidence** (Task ID #1943) of the application indicates “no subsidence will occur at the well sites, as a result of drilling and development of the degasification well sites. Subsidence could occur at the well site because of underground mining...” The application references Section 525 of the approved mining and reclamation plan.

As the long wall panel is extracted from the Gilson seam, the roof will cave behind the shields as the face is mined and the shields are advanced. Although the broken material will swell to a certain extent as it breaks and falls, some settling of material will propagate to the surface, and the elevation of all surface over the extracted panel will be diminished.

**Subsidence Monitoring** is discussed on pages 5-28 through 5-31 of the approved mining and reclamation plan. The commitment made by the permittee on page 5-30 is to install one monitoring point per panel.

#### Performance Standards For Subsidence Control

The permittee has an approved subsidence control plan in place, as evidenced via review of the approved mining and reclamation plan.

#### Notification

Chapter 5, page 5-34, section **525.300 Public Notice of Proposed Mining**, indicates that “each owner of property or resident within the area above an underground mining block and adjacent area that may be affected by subsidence will be notified by mail at least six months prior to mining or within that period if approved by the Division”. That notification will include 1) the identification of specific areas in which mining will take place, 2) dates the specific areas

will be undermined, and 3) the location or locations where the Dugout Canyon Mine subsidence control plan may be examined.

**Findings:**

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

**TOPSOIL AND SUBSOIL**

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

**Analysis:**

Prime farmland does not exist at this elevation in the Book Cliffs. The growing season is short (60 days) and there is no developed water source. The Utah Agricultural Experiment Station Research Report Number 76 entitled "Important Farmlands of Parts of Carbon, Emery, Grand, and Sevier Counties" does not include R 12 E, T 13 S.

Regulation R645-302-313 requires that a reconnaissance inspection is done for all permit applications whether or not Prime Farmland is present and that the Division and Natural Resource Conservation Service will determine the extent of the reconnaissance inspection. On April 24, 2003, the Division consulted with Gary Roeder, Area Conservationist with the NRCS Price Field Office. Mr. Roeder stated that developments anywhere in the permit area at these elevations would not fit the parameters of prime farmland.

**Findings:**

The Division in consultation with the Natural Resources Conservation Service determines that there are no prime farmlands in the location of the proposed degasification wells G-1, G-2, G-3, G-4, G-5, and G-6.

**ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES**

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

**Analysis:**

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### **Road Classification System**

The privately owned access roads will remain in place after the venting phase of each of the wells is completed. The road length that will be constructed to access site G-5 has been classified as “primary” and will be reclaimed upon the final reclamation of the well sites (See page 5-2 (revised, Task ID #1943), section 512.200, **Primary Roads**. FIGURE 5-14, TYPICAL ACCESS ROAD CROSS SECTION (Task ID #1642) depicts the basic design that will be used to construct the roadway lengths that are necessary to access the methane well pads. This design was approved via Task ID #1642. A roadway width of twenty feet will be cut/filled for a distance of two hundred and ten feet to access well site G-5. FIGURE 5-14 is P.E. certified by Mr. Layne Jensen, Utah registered professional engineer.

### **Plans and Drawings**

The application contains a typical road cross section for the length of access which requires construction, FIGURE 5-14. The drawing depicts an access roadway width of twenty feet, showing a road cut. The drawing is P.E. certified by Mr. Layne Jensen, Utah registered professional engineer.

A plan view of the “to be constructed” access road length for well G-5 is depicted on FIGURE 5-20. This is the contour map for well G-5. All figures are P.E. certified by a Utah registered professional engineer.

### **Primary Road Certification**

The permittee’s application classifies the roadway length that requires construction for well G-5 as primary. The roads will have surface constructed of compacted native subsoil material. The road is depicted on FIGURE 5-20, and same is designated as the contour map for wells G-5. The roadway length that is developed to access the well pad location will be reclaimed upon the completion of the methane venting process.

### **Findings:**

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

## **SPOIL AND WASTE MATERIALS**

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

### **Analysis:**

#### **Disposal Of Noncoal Mine Wastes**

All noncoal waste generated by the well drilling activities will be disposed of in the same manner as waste generated at the main mine facilities area.

There will be no noncoal waste disposal areas at any of the proposed well sites.

#### **Coal Mine Waste**

Chapter 5, page 5-3, section 513.300 Underground Development Waste, Coal Processing Waste, and Excess Spoil addresses this requirement. None of these types of material will exist at the well sites.

#### **Refuse Piles**

No refuse piles will exist at the well sites, (Chapter 5, page 5-15, Section **553.250, Refuse Piles**).

#### **Impounding Structures**

“No impoundments will exist at the well sites, “ (See **Chapter 5**, page **5-4**, section **515.200 Impoundment Hazards** of the submittal).

#### **Burning And Burned Waste Utilization**

This section is not applicable to this submittal.

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

No coal processing waste will be generated within the well sites, (Chapter 5, page 5-15, section **553.200 Spoil and Waste**).

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### **Excess Spoil:**

This section is not applicable to this submittal.

### **Findings:**

The permittee has addressed those sections that are felt to be relevant to the proposed drilling of the three methane vent wells. The submitted information is adequate to meet the minimum regulatory requirements of this section.

## **HYDROLOGIC INFORMATION**

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

### **Analysis:**

#### **Groundwater Monitoring**

There are no active groundwater monitoring wells within two-miles of any of the proposed drill sites. Well GW-19-1 was only monitored in August and October 1997 and Well GW-24-1 has been blocked since 1998. It would be beneficial to establish groundwater wells in the area if any water existed. However, the drilling of G-2, G-3, and exploration holes currently being drilled (summer 2004), have not encountered any noticeable water. Spring SC-116 is located approximately 1 mile southeast of G-6 but is located in Flagstaff formation and no affects to the spring are anticipated. The establishment of a groundwater well after degasification production is not anticipated.

#### **Surface Water Monitoring**

The nearest surface-water monitoring site is DC-5 (Right Fork Dugout Creek), which is located approximately 1.5- and 2.0 miles downstream of G-5 and G-6, respectively. Both sites are approximately 1,500 feet upslope from the drainage. No encountering of groundwater is anticipated during drilling and any sheet flow from the site is adequately treated prior to leaving the drill site. The Right Fork of Dugout Creek is an intermittent drainage with flows ranging from 0 to 480 gpm being documented. A flow study conducted in 2002 (a drought year), peak flow on April 2, 2002, was documented at 25 gpm, with flow tapering off to zero by July 29, 2002. No adverse affects to the surface drainages are anticipated.

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

The well design is shown on Figure 5-16. The well will be drilled to a depth twenty feet above the coal seam (approximately 2,000 feet). Fragments of various rock strata will be brought to the surface with the air drill along with any water encountered. After drilling is completed, the mud pit will be allowed to dry and the drilling fragments will be mixed with the excavated subsoil from the mud pit. This practice should reduce any potential concentrations of salinity or acidity.

Previous investigations have not found acid or toxic materials in the strata (Section 623 and Appendix 6-1 and 6-2). Water was encountered during drilling at this location at a depth of about 1500 feet. There has been no water reported during monitoring in this vicinity. The Division does not expect there to be a problem with acid/toxic materials and does not expect there will be much water encountered in the drilling.

### **Discharges Into An Underground Mine**

As cited in the currently approved Degasification amendment, if any water is encountered during drilling, the formation will attempt to be sealed using drilling mud. During completion of the well, a solid casing and grout will be used to ensure no water leaks into the mine. The wells are to be completed approximately 20-feet above the coal seam. No water was encountered during the drilling of G-2 or G-3 and no water problems are anticipated with the proposed wells.

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

Section 751 of the Methane Degasification submittal indicates any potential overflow of the mud pit will be pumped into a tank and hauled from the site; indicating no discharges will occur at the site. Any sheet flow due to rainstorms will be treated with a silt fence prior to leaving the site.

### **Sediment Control Measures**

The drill pads have been designed to minimize erosion and flow of sediment off the pads. A berm will be constructed around the perimeter of the disturbed area and will flow directly to silt fences. The drill pads will be constructed so that sheet-flow will be directed to areas of 'cut' material instead of 'fill' material to reduce potential erosion. During intermediate reclamation, sheet flow will be directed to silt fences discharging to areas of minimal (if any) intermediate reclamation. Water bars are proposed at both ends of the access road to site G-5. Additional water bars may be added during construction if necessary. Sites G-2 and G-3 have been functioning as designed since last year.

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## OPERATION PLAN

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### **Casing and Sealing of Wells**

In Section 542.700 of the Degasification Well document, the Operator commits to sealing wells in accordance with Federal and State regulations. At abandonment, the holes will be plugged at the bottom, and a lean concrete mixture will be poured into the casing until the concrete is within five (5) feet of the surface. The casing will be cut off at ground level and filled to the surface with concrete.

#### **Findings:**

The information provided adequately addresses the minimum requirements of the Operation Plan – Hydrologic Information section of the regulations.

### **SUPPORT FACILITIES AND UTILITY INSTALLATIONS**

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

#### **Analysis:**

The proposed methane vent wells are intended to enhance the mine ventilation system, allowing additional venting and dilution capability for the combustible mine gases that are inherent in the coal seam, as well as the adjacent strata. Thus, they are a support facility.

Chapter 5, page 5-8, section **526.200 Utility Installation and Support Facilities** of the submittal addresses this requirement. According to that information, no utilities will be installed at the well sites. A portable methane-exhausting unit will be installed, and the operation of that machine will be initiated with portable propane bottles. Upon start up, the device will be switched over to operate from the methane concentrations venting from the well, and will thus be self-sufficient.

#### **Findings:**

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

### **SIGNS AND MARKERS**

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

**Analysis:**

Chapter 5, page 5-6, section **521.100, Signs and Markers** addresses this requirement of the R645 coal rules. The application commits the permittee to install a mine and permit identification sign at each well site that is developed. The identification sign will contain the following information: mine name, company name, company address, and telephone number, MSHA identification number, and the permanent program identification number.

The application commits the permittee to install disturbed area perimeter markers to identify all acreage to be affected before beginning mining activities.

Stream buffer zone signs will not be required at any of the proposed well sites.

Topsoil storage signs will be placed on all topsoil stockpiles.

All signs and markers will be maintained until no longer needed, generally until all Phase III bond release requirements have been met.

**Findings:**

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

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

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

**Analysis:**

**Mining Facilities Maps**

The methane well submittal includes three maps/drawings for each of the three wells that are being proposed; these include:

- 1) A contour map, which depicts the undisturbed surface contour, and the relationship of the well pad.
- 2) A typical cross section for each well pad, depicting the pre-disturbed and final reclamation surface configuration, as well as the Operational surface configuration.
- 3) A plan view of the “approximate” drilling layout for each of the proposed well sites showing the drill hole location and the mud pit. The plan view shows the

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## OPERATION PLAN

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various methods to control and treat intercepted precipitation, including sloping the pad(s), and the installation of berms and silt fences.

All three figures for each of the three proposed wells are P.E. certified by Mr. Layne Jensen, Utah registered professional engineer.

### **Mine Workings Maps**

Not applicable to this amendment.

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

All maps relative to this requirement are incorporated into the approved mining and reclamation plan for the Dugout Canyon Mine.

### **Certification Requirements**

As noted above, all plans, drawings, and maps that are relative to this submittal have been certified by a Utah registered professional engineer.

### **Findings:**

The submitted information is adequate to meet the minimum regulatory requirements of this section.



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## RECLAMATION PLAN

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# RECLAMATION PLAN

## GENERAL REQUIREMENTS

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

### Analysis:

Upon completion of the drilling activities, all machinery will be removed and the mud pits backfilled and compacted. Each disturbed well site will be reclaimed by returning it to approximate original contour, (See Chapter 5, page 5-10, section **537.200, Regrading of Settled and Revegetated Fills**), roughening, and reseeding the area. An exhaust blower will be set up to create a low pressure area across the well head, allowing the combustible mine gases to vent to the atmosphere. This will remain at the site for the length of the life of the well.

Upon completion of the venting phase, the blower and wellhead will be removed and the well casing will be plugged to the maximum depth possible, up to an elevation five feet below the surface. The casing will then be cut off, and final reclamation activities will then commence, returning the remaining disturbed area to approximate original contour (See Chapter 5, page 5-13, **542.700 Final Abandonment of Mine Openings and Disposal Areas**). Revegetation activities will commence; the only remaining equipment will be the disturbed area perimeter fence, and the permittee identification sign, which will remain until authorization is granted by the Division to remove same.

### Findings:

The minimum regulatory requirements have been addressed.

## POSTMINING LAND USES

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

**Analysis:**

Chapter 5, page 5-15, section **553.100 Disturbed Area Backfilling and Grading, Post-Mining Land Use** indicates, “the disturbed area will be reclaimed in a manner that supports the approved post-mining land use. Refer to Sections 411 and 412 for additional detail.”

Chapter 4, page 4-1, section **411.100 Pre-mining Land Use** of the submittal (Task ID #1642) indicates, “the area is utilized for the landowners private use and as open range for livestock and wildlife.” The area is also zoned by Carbon County for “mining and grazing, (MG-1)”, (See section **411.130 Land Use Description**, Chapter 4, page 4-1 of the submittal, Task ID #1642). “There are no industrial or municipal facilities located on or immediately adjacent to the well sites.”

Chapter 4, page 4-3, section **412.100 Post Mining Land Use Plan** indicates that the permittee will conduct all activities in the area such that “all uses of the land prior to the wells construction/operation and the capacity of the land to support prior alternate uses will remain available throughout the life of the sites. Dugout Canyon intends (for) the post mining land use to be livestock and wildlife grazing. Final reclamation activities will be completed in a manner to provide the lands able to parallel the pre-mining land use.” Thus, the permittee intends to conduct all mining operations in a manner such that the post-mining land use and the pre-mining land use are identical.

**Findings:**

The submitted information is adequate to address the minimum regulatory requirements of this section.

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

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

**Analysis:**

The Permittee predicts establishment of young vegetation that may help “break up” the large blocks of sagebrush communities (“monoculture”) near G2 and G3.

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## RECLAMATION PLAN

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### Findings:

The information provided is adequate for the reporting of Fish and Wildlife requirements of the Reclamation regulations.

## APPROXIMATE ORIGINAL CONTOUR RESTORATION

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

### Analysis:

Upon completion of the drilling phase of the well(s), the disturbance(s) will be reclaimed by regrading that portion not necessary for the venting phase to approximate original contour, (See Chapter 5, page 5-14, section **553.100 Disturbed Area Backfilling and Grading, Approximate Original Contour**) roughening the area to enhance moisture retention and re-seeding the area with the seed mix approved by the Division. See page 5-9, Chapter 5, section **537.200, Regrading of Settled and Revegetated Fills** (Task ID #1943). As indicated, “upon completion of the well site, the areas not required for the exhaust blower will be regraded to approximate original contour”. If any settling should occur within the reshaped area, the permittee’s submittal makes the commitment to regrade the settled areas. After the venting phase of the degasification wells has been completed, the remainder of the disturbance will be reclaimed, returning the acreage associated with venting phase to approximate original contour. This will be followed by roughening and reseedling of the area. The disturbed area perimeter fence and the associated permittee identification signs will remain in place until the Division has made a determination that all reclamation standards have been adequately addressed.

### Findings:

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

## BACKFILLING AND GRADING

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

### Analysis:

### **General**

See previous analysis under **APPROXIMATE ORIGINAL CONTOUR RESTORATION**.

### **Previously Mined Areas**

The area has not been mined previously; the requirements of this section are not applicable to the methane well submittal.

### **Backfilling and Grading On Steep Slopes**

Chapter 4, page 4-1, section **411.120 Land Capability** (Task ID #1642), indicates, “the well site areas are located on the flatter mesa tops and rolling terrain”. A review of FIGURES 5-1, 5-5, and 5-10, which are contour maps for each of the respective well sites, reveals that, based on the determination of the slope gradient that none of the well sites surface increase in elevation at an angle steeper than 12 degrees. By definition, steep slopes are slopes that increase in height when the vertical angle is twenty degrees or more. Therefore, none of the well sites are being proposed in what would be considered a steep slope area.

### **Special Provisions for Steep Slope Mining**

This requirement is not applicable to this submittal.

### **Findings:**

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

## **MINE OPENINGS**

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

### **Analysis:**

Reclamation of the methane vent wells is addressed in Chapter 5; section **540 RECLAMATION PLAN**, section **550, RECLAMATION DESIGN CRITERIA AND PLANS**, and section **560, PERFORMANCE STANDARDS**.

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## RECLAMATION PLAN

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Section **541.100, Commitment** indicates, “Upon permanent cessation of methane venting, Dugout Canyon Mine will seal the wells and permanently reclaim all affected areas in accordance with the R645 regulations and this reclamation plan.”

The sealing of wells involves meeting the minimum regulatory requirements associated with R645-301-765. Page 7-13, **Chapter 7, HYDROLOGY**, section **748, Casing and Sealing Wells**, refers one to **Chapter 5, ENGINEERING**, section **542.700, Final Abandonment of Mine Openings and Disposal Areas**. Page 5-13 states, “All openings will be sealed in accordance with Federal and State Regulations. The casings will be plugged at the bottom to hold concrete. A lean concrete mixture will be poured into the casing until the concrete is within five (5) feet of the surface. At that time, the casing will be cut off at ground level and the rest of the casing will be filled with lean concrete. The concrete will be allowed to harden before the final reclamation is completed.”

Methane degasification wells are unique in that they are drilled to a depth that is approximately twenty-five feet above the coal seam that is being extracted. As the longwall face retreats and extracts the coal from the area beneath the borehole, the roof caves as the longwall shields are advanced in order to protect the machinery. Hopefully, the roof caves up to the bottom of the degasification well, completing the circuit, and allowing atmosphere containing mine gases to be vented to the surface. An exhaust blower will sit on the surface creating a low pressure across the wellhead, venting the mine gases from the underground gob area.

It is generally accepted that more than 90% of the subsidence associated with coal extraction via longwall mining methods will occur within the first year after completion of the extraction process. The casing of the methane vent well may be subjected to crushing or shearing anywhere along its length, due to the shifting, bending and/or breaking of the strata adjacent to the well. Thus, the venting of combustible gases from the gob areas of the mine may be short lived. The plugging of these casings may only be effective in preventing adverse environmental or health and safety effects to a certain extent. The prevention of cross contamination of aquifers may not be possible in consideration of the fact that the plugging of the hole may not be possible for its entire depth.

### **Findings:**

The permittee has committed to plugging the degasification well casings to the extent possible to prevent adverse environmental damage or possible effects to health and safety. This commitment is the best that can be given at this point in time, as only the future will tell if the partial plugging of the wells will be adequate. The minimum regulatory requirements of this section have been addressed.

## **TOPSOIL AND SUBSOIL**

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

### **Analysis:**

#### **Redistribution**

The reclamation timetable is shown on Figure 5-26 for sites G-4 through G-6. These sites will be reclaimed in one phase after methane venting ceases. The area will be graded, topsoiled, roughened, seeded, and mulched (see Figures 5-4, 5-8, and 5-12).

The plan describes the reclamation of the drilling mud pits in Section 242.100. The mud pit will be allowed to dry and will be filled with soil that will be compacted to minimize settling. There will be mixing of the cover material with the rock fragments and sediments of the mud pit to avoid creating an abrupt boundary between the layers.

The plan indicates the sites will be ripped to a depth of eighteen to twenty four inches (Section 242.100 and 341.200) to reduce compaction.

Topsoil will be re-spread using a trackhoe. The soils will be handled when loose and friable (not too wet, not too dry), see Section 242.100. Redistribution thickness is shown in Table 2-3.

The soils will be analyzed during soil salvage for the following parameters: pH, Electrical Conductivity, Sodium Adsorption Ratio, percent CaCO<sub>3</sub>, plant available Nitrogen, Potassium, and Phosphorus (Section 243) to determine if amendments are needed.

### **Findings:**

The information provided meets the minimum requirements of the Reclamation Topsoil Redistribution Regulations.

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

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

### **Analysis:**

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## RECLAMATION PLAN

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### Reclamation

Chapter 5, page 5-13, section **542.600 Roads** of the methane well submittal addresses this requirement. A road length of 55 feet will be developed for well G-1. A 370-foot road will be developed for road G-2; G-3 will require a ninety-foot section of road development. Section **-542.600** states the following; “the access roads established during the drilling program will be reclaimed after methane extraction has been completed.” A reference is made to **Chapter 2**, section **242** (Task ID #1943); same is in reference to soils redistribution, which is not addressed by this section.

### Retention

As mentioned elsewhere in this technical memorandum, the roads in place at the present time are the property of the heirs of the Milton and Ardith Thayn Trust. They will stay in place after the venting phase of the wells has been completed. The surface use agreement in place between Canyon Fuel Company and the Trust allows the permittee the use of the roads for the length of the agreement.

### Findings:

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

## CONTEMPORANEOUS RECLAMATION

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

### Analysis:

#### General

Upon completion of the drilling phase of the well(s), the disturbance(s) will be reclaimed by regrading that portion to approximate original contour, (See Chapter 5, page 5-14, section - **553.100 Disturbed Area Backfilling and Grading, Approximate Original Contour**) roughening the area to enhance moisture retention and re-seeding the area with the seed mix approved by the Division. See page 5-9, Chapter 5, section **-537.200, Regrading of Settled and Revegetated Fills**. As indicated, “upon completion of the well site, **the areas not required for the exhaust blower** will be regraded to approximate original contour”. If any settling should occur within the reshaped area, the permittee’s submittal makes the commitment to regrade the settled areas.

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Experience gained from development of site G-3 indicates that the lifespan of the vent boreholes may be fairly short (less than one year). Therefore the proposal indicates sites G-4 through G-6 will be fully reclaimed in a single operation upon cessation of methane venting (Section 341), rather than a two stage reclamation plan described for degas holes G-1 through G-3.

### Findings:

The submitted information meets the minimum regulatory requirements.

## REVEGETATION

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

### Analysis:

#### Revegetation: General Requirements

The Permittee plans to reclaim the disturbed areas in two phases:

Phase I = Contemporaneous reclamation: Apply final reclamation procedures to site-specific areas no longer needed for operations.

- Grade.
- Rip to 18-24”.
- Apply topsoil and leave in roughened state by gouging (\*See *Findings*).
- Hydroseed the final seed mix (slurry will include a small amount of fiber).
- Wood fiber mulch at a rate of 2,000 pounds per acre with tackifier.

Phase II = Final reclamation: Apply final reclamation procedures to the remaining disturbed areas no longer needed for operations.

- Plug the wells.
- Prepare the site.
- Plant as above.

The seed mix is the same for both Phase I and II. Fall plantings include hydroseeding at a final rate of 106 pure live seed per square foot. The species and planting rates are the following:

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<i>Species</i>		<i>PLS/sq.ft.</i>
<i>Elymus elymoides</i>	Bottle brush squirrel tail	4
<i>Poa pratensis</i>	Kentucky bluegrass	16
<i>Elymus spicatus</i>	Bluebunch wheatgrass	12
<i>Poa secunda</i>	Sandberg bluegrass	25
<i>Bromus marginatus</i>	Mountain brome	3
<i>Penstemon strictus</i>	Rocky mountain penstemon	11
<i>Lupinus x alpestris</i>	Mountain lupine	1
<i>Artimesia tridentata</i>	Wyoming big sage	29
<i>Symphocarpus oreophilus</i>	Mountain snowberry	5

The Division provides the following comments and recommendations for the seed mix:  
 Mountain brome -

- Not included in the vegetation survey.
- Consider *Bromus carinatus* (California brome; surveyed on site). When ordering seed make sure to specify the species.

The seed mix provides a vegetative cover composed of native species (Welsh considers Kentucky Bluegrass a native). The goals are to quickly stabilize the disturbed site and provide compatible browsible and forgeable habitat for the post-mine land use. The Permittee will fence the well sites to prevent grazing until bond release.

**Revegetation: Timing**

The Permittee will seed the areas in the fall.

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

Reclamation includes ripping the area to a roughened state and applying 2000 pounds per acre of wood fiber mulch to the areas (Section 341.200).

**Revegetation: Standards For Success**

The Permittee will follow the Division’s vegetation guidelines to measure density/diversity. The success standards for the reclaimed drill sites are the corresponding reference areas. The Permittee plans to use the following sampling methods:

- Cover: line interception.
- Density: belt transects or plots.
- Productivity: clipping.

The Permittee may want to consider the following excerpt from the vegetation guidelines:

*Exclosures:*

*The use of exclosures for productivity measurements is optional where domestic livestock will not be in the study area prior to sampling. If livestock are to be in the study area prior to sampling, then exclosures should be used. When used, exclosures should be large enough to prevent animals from reaching through and grazing on the plot to be sampled. Exclosures should be randomly placed and anchored to the ground, before the growing season begins. The number of exclosures established should be based on previously collected production data and field experience. To reduce variability and sample sizes, community types should be separated as much as possible. Exclosures should be numbered in the order of the random numbers generated for their placement. Sampling should follow the number sequence until sample adequacy is met or all exclosures have been sampled.*

**Findings:**

The information provided is adequate for the reporting of revegetation requirements of the reclamation regulations. The Permittee committed to extreme surface roughening technique as described The Practical Guide to Reclamation in Utah (personal contact, 9/12/03).

**STABILIZATION OF SURFACE AREAS**

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

**Analysis:**

The area will be ripped to a depth of 18 – 24 inches (Section 242.100).

Erosion control measures will include silt fences and berms (Section 231.100), seeding, and mulching of the soils (Sections 244.200 and 341.200.) Disruptive gullies (greater than nine inches) will be reseeded (244.300). Surfaces will be left rough. Mulch will be applied at 2,000 lbs/ac with a tackifier Section 341.200).

The Permittee should contemplate the addition of mulch generated from the grubbing of vegetation. This would be an inexpensive method of adding surface protection.

**Findings:**

The information provided is adequate for the purposes of the regulations.

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## RECLAMATION PLAN

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

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

#### Analysis:

##### **Affected Area Boundary Maps**

The general location of the proposed wells is depicted on PLATE 1-4, which shows the permit boundary for the Dugout Canyon Mine. The proposed disturbance for each of the wells is depicted on FIGURE 1 for well G-1, FIGURE 5-5 for well G-2, and FIGURE 5-9 for well G-3. All figures are P.E. certified by a Utah registered professional engineer.

##### **Bonded Area Map**

The bonded area for each well is depicted by FIGURE 5-1 for G-1, FIGURE 5-5 for G-2 and FIGURE 5-9 for G-3.

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

The permittee has committed to returning the drill pad areas to approximate original contour. Thus, the final surface configuration should very closely resemble the contours depicted on FIGURES 5-1, 5-5, and 5-9.

##### **Certification Requirements**

All maps and drawings requiring certification as listed under R645-301-512 are P.E. certified by Mr. Layne Jensen, Utah registered professional engineer.

#### Findings:

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

### BONDING AND INSURANCE REQUIREMENTS

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

#### Analysis:

**General**

The permittee has not submitted reclamation cost information for the well sites. However, the Dugout Canyon Mine has been over bonded in the amount of \$403,000 to provide coverage for the reclamation of the degasification wells that were to be permitted after March 31, 2004. Task ID #1943 fits this scenario.

**Findings:**

The minimum regulatory requirements of R645-301-800, Et. Seq., have been met.

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

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

### **Analysis:**

Based on the anticipated affects of the proposed amendment, no modifications to either the Probable Hydrologic Consequence (PHC) or Cumulative Hydrologic Impact Assessment (CHIA) are necessary. Information provided adequately addresses how any potential affects caused by the drilling of the degasification wells can be reasonably mitigated without impact to the hydrologic regime.

### **Findings:**

Information provided adequately addresses the minimum requirements of the Reclamation Plan - Cumulative Hydrologic Impact Assessment section of the regulations.

