CANYON FUEL COMPANY, LLC

DUGOUT CANYON MINE

METHANE DEGASSIFICATION AMENDMENT

WELLS G-1, G-2, G-3, G-4, G-5 and G-6

C/007/039

AUGUST 2003

JUNE 2004

CHAPTER 1

LEGAL, FINANCIAL, COMPLIANCE AND RELATED INFORMATION

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110 MINIMUM REQUIREMENTS FOR LEGAL, FINANCIAL, COMPLIANCE AND RELATED INFORMATION

111 Introduction

The degassification wells will be located on property owned by the Milton and Ardith Thayn Trust. The well locations are found in Table 1-1 and are shown in Figure 1-1.

TABLE 1-1

Degas Well Locations

Pine Canyon, Utah Quadrangle,Salt Lake Meridian

Hole Number	Section	Township and Range
G-1	Portion of N1/2SE1/4NW1/4 Section 24	Township 13 South, Range 12 East
G-2	Portion of N1/2SW1/4NE1/4 Section 24	Township 13 South, Range 12 East
G-3	Portion of N1/2SW1/4NW1/4 Section 19	Township 13 South, Range 13 East
G-4	Portion of N1/2NE1/4NW1/4 Section 24	Township 13 South, Range 12 East
G-5	Portion of N1/2NW1/4NE1/4 Section 24	Township 13 South, Range 12 East
G-6	Portion of S1/2SW1/4NW1/4 Section 18	Township 13 South, Range 13 East

112 Identification of Interests

Refer to the same section of the approved M&RP.

112.100 Business Entity

Refer to the same section of the approved M&RP.

112.200 Applicant and Operator

APPLICANT: Operations, Administration, Permit Revisions, and Amendments

Canyon Fuel Company, LLC
6955 South Union Park Center
Suite 540
Midvale, Utah 84047
Telephone: (801) 569-4700
Employer Identification: 87-0567183

Operator: Canyon Fuel Company, LLC
6955 South Union Park Center
Suite 540
Midvale, Utah 84047
Telephone: (801) 569-4700

Resident Agent: C. T. Corporation Systems
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Salt Lake City, Utah 84104
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Contact Person: Reed Olsen
Canyon Fuel Company, LLC
Dugout Canyon Mine
P. O. Box 1029
Wellington, Utah 84542
Telephone: (435) 637-6360

PERSON WHO WILL PAY ABANDON MINE RECLAMATION FEES:

Richard D. Pick
Canyon Fuel Company, LLC
6955 South Union Park Center
Suite 540
Midvale, Utah 84047

112.300 Officers of the Applicant

Refer to the same section of the approved M&RP.

112.400 Coal Mining and Reclamation Operation Owned or Controlled

Refer to the same section of the approved M&RP.

112.500 Legal or Equitable Owner of the Surface and Mineral Properties

The legal and equitable owner of the surface and mineral properties to be affected by this operation during the duration of the permit period are list below.

Milton & Ardith Thayn Trust
7730 East US Highway 6
Sunnyside Star Route
Price, Utah 84501

United States of America
State of Utah, Department of Interior
Bureau of Land Management
Price Field Office
125 South 600 West
Price, Utah 84501

112.600 Owners of Record of Property Contiguous to Proposed Permit Area

Owners of record for surface and mineral properties contiguous to the proposed permit area are list below.

United States of America	State of Utah
Department of Interior	School and Industrial
Bureau of Land Management	Trust Lands Administration
Price Field Office	675 East 500 South
125 South 600 West	Salt Lake City, Utah 84102-2818
Price, Utah 84501	

112.700 MSHA Numbers

Refer to the same section of the approved M&RP.

112.800 Interest In Contiguous Lands

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.

112.900 Certification of Submittal Information

No information has changed in the approved M&RP because of this submittal. Refer to the same section of the approved M&RP.

113 Violation Information

Refer to the same section in the approved M&RP.

114 Right-of-Entry Information

Refer to the same section of the approved M&RP.

See Table 1-2 for disturbed acreage for each well site. The disturbed acres will be added to the total disturbed acreage for the Dugout Mine as each site is constructed.

TABLE 1-2

Disturbed Acres by Well Site

Well Site	Disturbed Acres
G-1 (Not Drilled)	0.6
G-2	1.21
G-3	0.97
G-4	0.7
G-5	1.2
G-6	0.75

115 Status of Unsuitability Claims

Refer to the same section of the approved M&RP.

116 Permit Term

Refer to the same section of the approved M&RP.

117 Insurance, Proof of Publication, and Facilities and Structures Used in Common

The certificate of insurance(s) for each well will be obtained if required when the well is drilled. The certificate of insurance(s) will be included in Appendix 1-2 of the approved M&RP.

118 Filling Fees

Refer to the same section of the approved M&RP.

120 PERMIT APPLICATION FORMAT AND CONTENTS

This amendment submittal will comply with R645-301-120.

130 REPORTING OF TECHNICAL DATA

All technical data submitted in the amendment will be accompanied by the name or organization responsible for the collection and analysis of data, dates of collection and descriptions of methodology used. Technical analyses will be planned by or under the direction of a qualified professional in the subject to be analyzed.

140 MAPS AND PLANS

The maps and plans in the Mining and Reclamation Plan will correspond with the requirements in R645-301-140.

150 COMPLETENESS

CFC believes the information in this permit application to be complete and correct.

CHAPTER 2

SOILS

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210 INTRODUCTION

This chapter and associated attachments address the pertinent data required for the addition of the degassification well sites for the Dugout Canyon Mine. Only those sections of the Division regulations that apply to the well sites have been addressed. The remainder of the regulations have already been addressed in the existing M&RP. The M&RP and this document contain pertinent information relating to the identification, management, and reclamation activities associated with the soil resources.

220 ENVIRONMENTAL DESCRIPTION

The well sites range in elevation from approximately 8100 to 8400 feet. The well sites are located in the Pace Canyon area of the Book Cliffs. General vegetation includes sagebrush, serviceberry, aspen, Douglas-fir, and snowberry.

221 Prime Farmland Investigation

Due to limiting terrain, lack of water for irrigation and no evidence of past cultivation of the sites, it is concluded that no prime farmland exists within the area of the well site disturbance.

222 Soil Survey

222.100 Soils Map

The soils have been mapped as part of the Soil Survey of the Carbon Area, Utah by the Soil Conservation Service (1988), at an Order III intensity level.

A description of the soils is included in Appendix 2-2 of the approved M&RP and in Attachment 2-1, which includes a report by Dan Larsen, Soil Scientist, entitled "Soil Inventory and Assessment Six

Methane Degassification Borehole Sites". An additional report for well site G-6 was prepared in 2004 and is incorporated into Attachment 2-1.

222.200 Soil Identification

Well No.	Soil Map Unit	Soil Components
G-1	62/88	Midfork-Comodore complex, Rabbitex-Datino Varient
G-2	7	Brycan, Beje-Trag complex, 3-30% slopes
G-3	7	Beje-Trag complex, 3-30% slopes
G-4	62/103	Midfork-Comodore complex, Senchert-Toze complex
G-5	103	Senchert-Croydon
G-6	62	Midfork-Comodore complex

222.300 Soil Description

Refer to Attachment 2-1 of the submittal for soil descriptions.

222.400 Soil Productivity

The depth of topsoil at each site was measured to determine the amount of growth medium available for reclamation. The following table lists each well site and the approximate amount of growth medium available.

TABLE 2-1

Topsoil Volumes

Well No.	Cubic Yards of Material
G-1	415
G-2	3,104
G-3	1,182
G-4	1,100
G-5	1,909
G-6	792

Figure 5-1 through Figure 5-25 show the layout and approximate size of each well pad. Topsoil volume calculations can be found in Attachment 2-2.

Estimated topsoil salvage from the G-1 well site will average about 7". This site on a ridge top has previously been disturbed for exploration drilling. The site has pockets of fractured sandstone bedrock at the surface and stony subsoils, which are the limiting factors in the quantity of salvageable topsoil. The average topsoil depth at well site G-2 is 30". The average topsoil thickness for well site G-3 is 10". However, enough soil will be stripped to allow 12" of soil to be placed during reclamation. Thus some subsoils will be stripped with the topsoil to generate the required volume. The estimated topsoil salvage from well site G-4 area will be 28" except on the area of the exiting road(s). The average salvageable topsoil at well site G-5 is 22". Well site G-6 will be established on a pre-existing drill pad, with a portion of the new pad extending onto undisturbed area. Topsoil on the pre-existing drill pad ranges from 0 to 30 inches, on the north edge in from 20 to 28 inches and on the cut slope on the south edge from 6 to 30 inches. The slope will be restored to original contour with the application of topsoil, the entire site will receive at least 12 inches of topsoil. Twelve inches was used to calculate the volume of topsoil to be salvaged and to determine the size of the topsoil pile for drill site G-6. Available topsoil at each site will be salvaged, stockpiled and redistributed.

223 Soil Characterization

The topsoil evaluation described in this chapter was performed by Daniel M. Larsen, Professional Soil Scientist in accordance with the standards of the National Cooperative Soil Survey.

224 Substitute Topsoil

Dugout Canyon does not plan to use substitute topsoil as growth media except as described in Section 222.400.

230 OPERATION PLAN

231 General Requirements

231.100 Removing and Storing Topsoil Methods

The topsoil will be removed, stockpiled and protected with a berm and/or silt fence. A qualified person will be on site during soil salvage to monitor and supervise the operation for the purpose of maximizing salvage volumes. Prior to topsoil salvage shrubs/vegetation will be removed and placed/wind rowed along the inside perimeter of the disturbed area.

After the topsoil is removed, the mud pit will be excavated and the soils from the mud pit excavation will be stored immediately adjacent to the mud pit. Mud pit excavation of subsoil will be approximately 110 CY at each well site. A portable container for drilling fluids will be used if necessary, should there not be sufficient subsoil depth to excavate a mud pit.

Topsoil beneath the topsoil stockpiles will not be removed. Ribbon or a marking fabric will be placed on top of the topsoil prior to placement of the topsoil from the well pad area.

The approximate volume of subsoil to be salvaged and used to create berms around the perimeter of the well site including the topsoil stockpile perimeter is: G-1 - 161 CY; G-2 - 254 CY, G-3 - 208 CY, G-4-165 CY, G-5 - 191CY, and G-6 - 156 CY.

231.200 Suitability of Topsoil Substitutes/Supplements

See Section 224.

231.300 Testing of Topsoil Handling and Reclamation Procedures Regarding Revegetation

Dugout will exercise care to guard against erosion during and after application of topsoil and will employ the necessary measures to ensure the stability on graded slopes. Erosion control measures will include silt fences, berms, seeding, straw bales, soil roughening, and mulching of the soils.

Topsoil will be redistributed and the original soil surface beneath the topsoil stockpile will be roughened as presented in Section 242.100 and seeded with the seed mix described in Chapter 3, Section 352.

Methods used to evaluate success of revegetation and stabilization are discussed in Chapter 3, Section 356.

231.400 Construction, Modification, Use, and Maintenance of Topsoil Storage Pile

Topsoil removed from the drill pad sites will be stockpiled on the site. The estimated volumes of topsoil stockpile for each site are shown in Table 2-1. The stockpiles will be sized as shown in Table 2-2.

The slopes of the stockpile will be 1H:1V or approximately 45^0 during the construction phase. Soils in these areas generally have an angle of repose greater than 50 degrees, making a stockpile with 1:1 slopes feasible. The steeper slope also help minimize the area to be disturbed. During the operational phase the remaining topsoil will be stockpiled with slopes of 2H:1V.

TABLE 2-2

Topsoil Stockpile Dimensions*

Well No.	Length (ft)	Width (ft)	Height (ft)
G-1	55	35	16
G-2	156	50	20
G-3	70	60	17
G-4	110	35	17
G-5	90	65	21
G-6	105	30	13

* These are approximate dimensions of the topsoil stockpile and construction dimensions may vary.

See Section 234.200 for detailed information on the topsoil stockpile(s).

232 Topsoil and Subsoil Removal

232.100 Topsoil Removal and Segregation

All topsoil will be removed as a single layer with no segregation. Topsoil will be removed using a dozer and/or loader. Refer to Section 231.100 for additional details.

232.200 Poor Topsoil

No poor soils exist at the well sites see Attachment 2-1.

232.300 Thin Topsoil

Not applicable see Attachment 2-1.

232.400 Minor Disturbances Not Requiring Topsoil Removal

Topsoil will not be removed along the fence line at the wells sites.

232.500 Subsoil Segregation

The B and C soil horizons will not be removed. Any small quantity of subsoil removed with the topsoil will not be segregated.

232.600 Timing

Topsoil removal will take place after all vegetation that could interfere with salvaging the topsoil has been grubbed.

232.700 Topsoil and Subsoil Removal Under Adverse Conditions

The topsoil will be removed first and stockpiled and the remaining soil horizons will be left in place, except where natural conditions render removal operations hazardous or detrimental to soils outside the disturbed area then topsoil will not be removed.

Conventional Machines - In locations where steep grades, adverse terrains, severe rockiness, limited depth of soils, or other adverse conditions exist that render soil removal activities using conventional machines hazardous, soils will not be salvaged and stockpiled. Such conditions are not likely to occur in these areas.

Substitute Topsoil - Importing of substitute topsoil is not anticipated (Section 224).

233 Topsoil Substitutes and Supplements

233.100 Overburden Materials Supplementing and/or Replacing Topsoil

No overburden material will be used.

233.200 Suitability of Topsoil Substitutes and Supplements

No substitute topsoil is planned.

233.300 Physical and Chemical Analysis

See Section 243.

233.400 Testing of Substitute Topsoil

No substitute topsoil is planned.

234 Topsoil Storage

234.100 Topsoil Stockpiling

Topsoil will be stockpiled for later use in reclamation operations.

234.200 Topsoil Stockpile

Stable Stockpile Site - Stockpiled material will be placed on a stable site.

Protection from Contaminants and Compaction - To protect the topsoil from contaminants and unnecessary compaction that could interfere with vegetation, the stockpile will be isolated from the main surface area by a berm and/or silt fence. A sign designating "topsoil" will be installed on the stockpile.

The topsoil stockpile will be constructed in such a manner as to allow access for repair of the pile surfaces and diversion structures.

Wind and Water Erosion Protection - The topsoil stockpile will be protected from water erosion by berms, which trap sediment runoff from the stockpile. The berms have been designed to completely contain the 10-year 24-hour storm event (see Attachment 7-1). The stockpile will be surface pitted, gouged and/or roughened and revegetated using the grass seeds listed in Table 3-2 to prevent wind erosion.

Topsoil Redistribution - Stockpile soil will not be moved until redistribution during contemporaneous or final reclamation operations unless approved by the Division.

234.300 Topsoil Stockpile Relocation

Stockpiled soil in jeopardy of being detrimentally affected in terms of its quantity and quality by drilling operations may be temporarily redistributed or relocated on approval by the Division and modification of this M&RP.

240 RECLAMATION PLAN

241 General Information

Reclamation of the degassification sites (topsoil redistribution, amendments, and stabilization) is discussed in Sections 242, 243, and 244 respectively.

242 Soil Redistribution

242.100 Soil Redistribution Practices

The topsoil will be placed after recontouring of the site has occurred. Topsoil will be handled when they are loose or in a friable condition. The moisture content will be visually monitored and water will be added as needed to enhance the soil's condition for handling. The approximate amount of topsoil available for each site is shown in Table 2-1. The reclamation time line can be found on Figure 5-15 for sites G-2 and G-3 and on Figure 5-26 for sites G-4, G-5 and G-6.

The topsoil will be distributed in two phases at well site G-1, G-2 and G-3, the first phase will be the contemporaneous reclamation of a portion of the pad area used during well construction (see Figures 5-4, 5-8 and 5-12). During contemporaneous reclamation topsoil from the stockpile will be distributed on each site in the depths shown in Table 2-3.

Final reclamation will occur at all well sites after venting of the methane gas is complete, venting equipment has been removed and the well has been plugged. The topsoil stockpile storage area and access road (G-2 and G-5) will be reclaimed during this final phase. The access roads to G-1, G-3, G-4 and G-6 are pre-existing and will not be reclaimed. Refer to Section 341 for additional information.

Soil Thickness - The topsoil will be distributed during contemporaneous and final reclamation in the thickness shown in Table 2-3.

TABLE 2-3

Approximate Topsoil Distribution Thickness

Well Site No.	Topsoil Thickness (Inches)
G-1	7
G-2	30
G-3	12
G-4	28
G-5	22
G-6	12

Compaction - Prior to the application of topsoil, compacted subsoils will be roughened or loosened for a depth of 18 to 24 inches. To prevent compaction of topsoil, soil moving equipment will refrain from unnecessary operation over spread topsoil. The topsoil will be in a loosened condition prior to seeding.

Following the drying of the mud pit materials, the dirt excavated to create the mud pit will be mixed with the drill cutting and returned to the pit to prevent a boundary of hard material from forming in the mud pit area that would hamper root penetration and then compacted to minimize settling.

Erosion - Care will be exercised to ensure the stability of topsoil on graded slopes to guard against erosion during and after topsoil application. Post reclamation (contemporaneous and final) erosion control measures will be surface roughing, mulching and seeding.

242.200 Regrading

The areas will be graded to their approximate original topographic configuration.

242.300 Topsoil Redistribution on Impoundments and Roads

The mud pits will be dismantled and filled following completion of drilling. See Section 242.100, Compaction for additional information. Mud pits will be covered with the same amount of topsoil as the rest of the site. The roads existing prior to starting the drilling program will not be reclaimed. Access roads built to allow entrance to the drilling pads will be reclaimed and will receive topsoil in the same depth as their corresponding pad areas when methane venting is complete.

243 Soil Nutrients and Amendments

The soils will be analyzed directly following salvage to determine if amendments are needed. Testing of the topsoil will be done according to Table 6 of the Division's Topsoil and Overburden Guidelines. The topsoil will be tested at a minimum for the following parameters: pH, electrical conductivity, total carbon, SAR, water holding capacity, plant available nitrogen, and phosphorus. Results of these analyses will be incorporated into Attachment 2-2.

244 Soil Stabilization

244.100 Protection and Stabilization of Surface Area

All reclaimed areas will be stabilized to control erosion by application of mulch, tackifier, and roughening of the surface. The areas will be graded to the approximately original topographic configuration. Seeding will be accomplished with the application of seeds and mulch with a long fiber tackifier or broadcast. Methods of protection and stabilization are further discussed in Chapter 3, Section 341.

244.200 Mulch Application

Mulch/tackifier will be applied to stabilize the soil on all areas that have been regraded and covered with growth media. For further discussion of revegetation practices to be utilized, see Chapter 3, Section 341.

244.300 Rills and Gullies

Postmining Land Use and Revegetation - Rills and gullies that are approximately nine (9) inches in depth and disrupt the postmining land use or reestablishment of vegetative cover will be regraded and seeded.

Water Quality - There are no streams immediately adjacent to the well sites.

250 PERFORMANCE STANDARDS

251 Topsoil, Subsoil, and Topsoil Supplements Management

All topsoil, subsoil, and topsoil supplements will be managed as outlined in Sections 230 and 240.

252 Stockpiled Topsoil and Subsoil

All stockpiled topsoil and subsoil will be managed according to plans outlined in Sections 230 and 240.

ATTACHMENT 2-1

SOIL INVENTORY AND ASSESSMENT

ATTACHMENT 2-2

TOPSOIL CALCULATIONS

add to the back of existing information

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310 INTRODUCTION

This chapter presents a description of the biological resources found on the Dugout Canyon degas well site areas.

311 Vegetative, Fish and Wildlife Resources

Vegetative, fish, and wildlife resource conditions in and adjacent to the proposed degassification wells are discussed in Section 320 of this submittal and the approved M&RP.

312 Potential Impacts to Vegetative, Fish, and Wildlife Resources

Potential impacts to vegetative, fish, and wildlife resources and the associated mitigation plan is presented in Sections 330 and 340 of this chapter.

313 Description of Reclamation Plan

The reclamation plan used to restore the vegetative, fish, and wildlife resources to a condition suitable for the post mining land use is presented in Section 340.

320 ENVIRONMENTAL DESCRIPTION

321 Vegetation Information

This section and the approved M&RP contain the environmental descriptions of the vegetation for the permit and adjacent areas.

321.100 Plant Communities Within the Proposed Permit Area

During June 2003, the degassification well sites were surveyed by Patrick Collins, Mt. Nebo Scientific). The report and survey for the areas are included in Attachment 3-1. The site for G-6 was moved to a pre-disturbed exploration well pad, the plant communities described in Mr. Collins report reflect the undisturbed portions on the north and south edges of the well pad.

321.200 Land Productivity Prior to Mining

Productivity of the well site lands prior to mining are shown in Table 3-1. Refer to Appendix 3-1 for a copy of the NRCS letter pertaining to productivity.

TABLE 3-1

Land Productivity

Well No.	Productivity (lbs.) Per Acre
G-1 (Previously Disturbed)	100
G-2	1,500*
G-3	1,500*
G-4 (Previously Disturbed)	150
G-5	1500*
G-6 (Majority Previously Disturbed)	300*
Aspen, Maple, Douglas Fir Reference Area	300*
Sagebrush, Snowberry, Grass Reference Area	1,500*

* Community composition is experiencing a declining trend, with decrease in herbaceous production, increase in shrub/tree production.

322 Fish and Wildlife Information

Fish and wildlife information associated with the degas wells is provided in this chapter. A summary of the fish and wildlife resource information for the permit and adjacent areas is contained in Sections 322.100 through 322.200 of the approved M&RP.

322.100 Level of Detail

The scope and level of detail within the "Methane Degassification Amendment" are sufficient to design the protection and enhancement plan for wildlife and fish associated with the degas wells. Additional information pertaining to fish and wildlife in the permit area is located in the M&RP.

322.200 Site-Specific Resource Information

Raptors - An aerial raptor nest survey was done of the area by the Utah Division of Wildlife Resource (DWR, Chris Colt, Leroy Mead) and CFC personnel in May of 2003, refer to Attachment 3-3. A second survey was completed in May of 2004, the information will be incorporated into Attachment 3-3 after it is received from the DWR.

No raptor nests were recorded during the survey (2003) in the area (portions of N1/2SE1/4NW1/4 and N1/2SW1/4NE1/4 of Section 24; a portions of N1/2SW1/4NW1/4 Section 19, Township 13 South, Range 13 East) of the degas wells. Refer to Figure 1-1 for mapped well locations.

A raptor survey will be conducted of the well site areas, each year that the wells are in operation.

Bats - No known open mine shafts, caves, adits or other man made structures that might provide habitats for bats are known to exist in the degas project area. The sites are open and the lack of a food source would force the bats to seek habitat and nourishment elsewhere.

Mexican Spotted Owl - In the Summer of 2003, a calling point survey was conducted in the degas well area by EIS Environmental and Engineering Consulting. The survey report concluded that " within the project area, a thorough search did not reveal the presence of any Mexican spotted owls". The report is included in Attachment 3-2. A second survey was completed in May of 2004, the information will be incorporated into Attachment 3-2 after it is received from the consultant.

Threatened and Endangered Plant and Wildlife Species - There are no known federally or state listed threatened and endangered plant and wildlife species within the sites planned for degassification wells.

There are no known groundwater or surface water flows to the Colorado or Green Rivers with potential for impact by the drilling of the degas wells. Potential adverse affects to the four Colorado River endangered fish species (refer to table below) would not be likely since there is no direct route to the Colorado River or Green River from the proposed well locations. Per the Windy Gap Process (referenced by personal communication Jerriann Ernstsen, 8/19/03) consumption estimates for the degas wells: evaporation from ventilation - zero, drill holes will not intersect the coal seam being mined, therefore no access to mine ventilation until after area is sealed; coal preparation - zero, no coal preparation at degas sites (see Sections 522 and 523) ; sediment pond evaporation - zero, no sediment pond at degas sites (see Section 732.200); subsidence effects on springs - zero, no anticipated subsidence at degas sites (see Section525); alluvial aquifer abstractions into mines - zero, no alluvial aquifer abstractions associated with degas drill holes (see Sections 513.500 and 600); postmining inflow to workings - zero, no workings for postmining inflow associated with degas wells (see Sections 513.500 and 600); coal moisture loss - zero, no coal therefore no moisture loss (see Sections 522 and 523); direct diversion - zero, no direct diversions associated with degas wells (see Sections 522 and 523). Mitigation will not be required since the estimated loss for the construction and reclamation of the degas holes is zero acre feet per year.

Federal and State Listed, Threatened, Endangered and Candidate Species
Plants and Wildlife
Carbon County, Utah
October 2002

Common Name	Scientific Name	Status	Habitat Present*
Plants			
Uinta Basin Hookless Cactus	Sclerocactus glaucus	T	No habitat available
Graham Beardtongue	Penstemon grahamii	C	No habitat available
Fish			
Humpback Chub	Gila cypha	E	No habitat available
Roundtail Chub**	Gila robusta	T	No habitat available
Bonytail	Gila elegans	E	No habitat available
Colorado Pikeminnow	Ptychocheilus lucius	E	No habitat available
Razorback Sucker	Xyrauchen texanus	E	No habitat available
Birds			
Bald Eagle	Haliaeetus leucocephalus	T	No habitat available, See Attachment 3-3
Yellow-billed Cuckoo	Coccyzus americanus	C	No habitat available
Ferruginous Hawk**	Buteo Regalis	T	No habitat available
Southwestern Willow Flycatcher**	Empidonax traillii extimus	E	No habitat available
Mexican Spotted Owl	Strix occidentalis lucida	T	See Attachment 3-2
Mammals			
Black-footed Ferret	Mustela nigripes	EX	No habitat available

* Habitat availability in Carbon County/Dugout Mine/Degas Well Sites.

** Utah State Listed Species - Information verified with Bill Bates, DWR (personal communication 7/17/03)

E = A taxon that is listed by the U.S. Fish and Wildlife Service as "endangered" with the possibility of worldwide extinction.

T = A taxon that is listed by the U.S. Fish and Wildlife Service as "threatened" with becoming endangered.

C = A taxon for which the U.S. Fish and Wildlife Service has on file sufficient information on biological vulnerability and threats to justify it being a "candidate" for listing as and endangered or threatened.

Source: Utah Division of Wildlife Resources data base - created 10/24/02

322.300 Fish and Wildlife Service Review

If requested, Dugout Canyon authorizes the release of information pertaining to Section 322 and 333 to the U. S. Fish and Wildlife Service Regional and Field Office for their review.

323 Maps and Aerial Photographs

Location of the well sites can be seen in Figure 1-1 of this submittal.

323.100 Location and Boundary of Proposed Reference Area

Reference areas for the degassification wells were established during the vegetative study conducted in the Summer of 2003. Well sites G-2, G-3, G-4 and G-5 will be compared to the Sagebrush/Snowberry/Grass reference area and G-1 and G-6 to the Aspen/Maple/Douglas Fir reference area. Refer to Attachment 3-1 and Figure 3-1 for the location of the reference areas.

323.200 Elevation and Locations of Monitoring Stations

Refer to Section 323.200 of the approved M&RP.

323.300 Facilities for Protection and Enhancement

Section 333.300 and 358.500 of the approved M&RP contain additional discussion pertaining to protective measures to be taken by Dugout Canyon on behalf of wildlife.

323.400 Vegetation Type and Plant Communities

Vegetative types and plant communities are outlined in the vegetative report in Attachment 3-1. Figure 3-2 gives details of the vegetation types located adjacent to the well sites.

330 OPERATION PLAN

331 Measures Taken to Disturb the Smallest Particle Area

The well sites will be sized to disturb the smallest acreage possible and still meet the requirements for the drilling equipment. The drainage control required will be built to satisfy the environmental requirements.

332 Description of Anticipated Impacts of Subsidence

Refer to Section 525.

333 Plan to Minimize Disturbances and Adverse Impacts

General control and mitigation measures addressing potential related biological impacts will include the following:

- Minimizing the total area of disturbance,
- Design, construction, and operation of the well sites to minimize impacts

- Exclusion of wildlife from potentially hazardous areas, and
- Reclamation of disturbed areas when they are no longer needed.

All water associated with the drilling of these wells will be appropriated and hauled and/or pumped to the sites by a licensed contractor. Since the drilling of degas wells does not involve the mining of coal, the USWFS consumption requirements for underground operations do not apply (i.e., evaporation form ventilation, coal preparation, sediment pond evaporation, subsidence of springs, alluvial aquifer abstractions into the mine, postmining inflow to workings, coal moisture loss, direct diversions).

333.100 Minimize Disturbance to Endangered or Threatened Species

Dugout Canyon will apply all methods necessary to minimize disturbances or any adverse effects to threatened or endangered species. See Section 322.200.

333.200 Species and Habitats

All species and habitats within the permit area will be protected to the best of Dugout Canyon's ability.

333.300 Protective Measures

Refer to Section 333.300 of the approved M&RP.

340 RECLAMATION PLAN

341 Revegetation

Revegetation of the sites will occur in two phases at drill site G-1, G-2 and G-3. The first phase is to redistribute topsoil and seed the well area not needed for access and operation of the gas exhaust blower. The second phase will consist of plugging the well and distributing the remaining topsoil and seeding on the remaining pad area. Refer to Section 242.100 for additional detail. Following drilling sites G-4, G-5 and G-6 will be reclaimed in one phase due to the quantity of soil moved during the site construction.

The short-term goal of this revegetation plan is the immediate stabilization of the disturbed sites through erosion control. This objective will be achieved through controlled grading practices, proper seedbed preparation to encourage rapid plant establishment, inclusion of rapidly establishing species in the seed mixture to be planted, and mulch application.

The long-term goals are to establish useful, and productive range. These goals will be attained through the selection and placement of desirable and productive plant species and a commitment to monitor and maintain revegetated areas throughout the bond liability period.

The well sites will be fenced to discourage wildlife and livestock from grazing the reclaimed areas until bond release.

341.100 Schedule and Timetable

The reclamation timetable is shown in Figures 5-15 (G-2 and G-3)and 5-26 (G-4, G-5 and G-6) of this submittal and the reclamation monitoring schedule is found in Chapter 3, Table 3-3 of the approved M&RP.

341.200 Descriptions

Species and Amounts of Seed - The well sites will be planted with the seed mix listed on Table 3-2. The seed mix will be used in both contemporaneous and final reclamation phases. The seed will be incorporated with a small amount of wood fiber mulch and applied by hydroseeding equipment or broadcast. Refer to Section 234.200 for topsoil stockpile seeding description.

Methods Used for Planting and Seeding - The degassification sites will be graded to final contour, then ripped to relieve compaction. The depth of ripping will be from 18 to 24 inches. Following ripping, topsoil will be applied to the ripped surface and left in a gouged and roughened state.

Mulching Techniques - Wood fiber mulch will be applied on top of the seed with hydroseeding equipment at the rate of 2,000 pounds per acre and anchored with a tackifier.

Irrigation, Pest, and Disease Control - No irrigation is planned and pesticides will not be used unless previously approved by the Division.

Measures Proposed for Revegetation Success - Refer to Section 356.

341.300 Greenhouse Studies, Field Trials or Other Equivalent Studies

Refer to the Section 341.300 of the approved M&RP.

342 Fish and Wildlife

342.100 Enhancement Measures

Post bond release enhancement measure will include the establishment of vegetation for wildlife food, cover, and the break up of large blocks of monoculture to diversify habitat. In consultation with

UDWR (Tony Wright, July 6, 2004) and UDOGM (Jerriann Ernstsen, July 6, 2004) a mitigation project was designated for the Northern Saw Whet Owl to compensate for drilling during the exclusionary period. The project will be completed prior to October 1, 2004. The project will include the construction and installation of 6 to 10 nest boxes on property owned by Canyon Fuel Company, LLC. Because of the UDWR knowledge and experience their personnel will choose the location and install the boxes. Information (goals, procedures, agencies, dates, box locations - township, range, section) concerning the owl mitigation project will be included in the annual report for 2004.

342.200 Plants Used for Wildlife Habitat

Nutritional Value - The nutritional value will be consistent with that of vegetation in the surrounding areas.

Cover - Cover will be comparable to the cover on the associated reference area.

342.300 Cropland

Cropland is not a postming land use.

342.400 Residential, Public Service, and Industrial Land Use

No residential, industrial or public service use is planned.

350 PERFORMANCE STANDARDS

351 General Requirements

Dugout Canyon commits to conduct all operations in accordance with the plans submitted in Sections R645-301-330 through R645-301-340 of the permit application.

352 Contemporaneous Reclamation

Reclamation activities prior to final reclamation will to the extent feasible, be preformed contemporaneously. Contemporaneous reclamation will be performed at the well sites following construction of the wells. Refer to Section 341 for additional details.

353 Revegetation: General Requirements

A vegetative cover will be established on all reclaimed areas to allow for the designated postmining land use of grazing. Refer to Section 411 for additional information.

353.100 Vegetative Cover

The seed mix proposed for revegetation is intended to provide vegetative cover that will be diverse, effective, and permanent. The seed mixture was selected with respect to the climate, potential seedbed quality, erosion control, drought tolerance, and the mixture's ability for quick establishment and spreading.

Native Species - The reclamation vegetation mixture will be comprised of species indigenous to the area and capable of achieving the postmining land use. Diversity of species should allow utilization of plants by wildlife and domestic livestock. The recommended seed mix is comprised of native species.

Extent of Cover - The vegetative cover will be at least equal in extent to the cover at the designated reference areas.

Stabilizing - The vegetative cover mixture is capable of stabilizing the soil surfaces from erosion.

353.200 Reestablished Plant Species

Compatible - The reestablished plant species have been selected to insure their compatibility with the approved postmining use.

Seasonal Characteristics - The revegetation plant species will have the same growing season as the adjacent areas.

Self-Generation - The reestablished plants are species capable of self-generation and plant succession.

Compatibility - The seed mix suggested for revegetation contains plants native to the area and compatible with the plant and animal species of the permit area.

Federal and Utah Laws or Regulations - The seed mix purchased to revegetate the degassification well sites will contain no poisonous or noxious plant (see Section 234.200). No species will be introduced in the area without being approved by the Division.

Table 3-2

Reclamation Seed Mix

SPECIES	# pls/acre	# pls/sq. ft.**
Grasses, Forbs, and Shrubs		
Kentucky Bluegrass (1,390,000 seeds/lb)*	0.5	16
Mountain Brome (64,000 seeds/lb)*	2.0	3
Sandberg Bluegrass (1,100,000 seeds/lb)*	1.0	25
Bluebunch Wheatgrass (126,000 seeds/lb)*	4.0	12
Bottlebrush Squirreltail (192,000 seeds/lb)*	1.0	4
Rocky Mountain Penstemon (478,000 seeds/lb)*	1.0	11
Mountain Lupine (12,000 seeds/lb)*	3.0	1
Mtn. Snowberry (54,000 seeds/lb)*	4.0	5
Wyoming Big Sage (2,500,000 seeds/lb)*	0.5	29
TOTAL	17	106

* Native Plants

** Rounded nearest whole seed

Grass seed quantities will be doubled if the area is broadcast seeded.

353.300 Vegetative Exception

Dugout Canyon does not require vegetative exception at this time.

353.400 Cropland

The permit area contains no land designated as cropland.

354 Revegetative: Timing

Dugout Canyon will follow the recommended guidelines for revegetation and planting during the first normal period for favorable planting conditions after replacement of the topsoil. In Utah the planting period is usually Fall due to the precipitation events.

355 Revegetation: Mulching and Other Soil Stabilizing Practices

Mulch and/or other soil stabilizing practices (roughing, etc.) will be used on all areas that have been regraded and covered by topsoil (Section 341.200). Dugout Canyon Mine will exercise care to guard against erosion during and after application of topsoil.

356 Revegetation: Standards for Success

356.100 Success of Revegetation

The success of revegetation will be judged on the effectiveness of the vegetation for postmining land use, the extent of cover on each degassification well site compared to their respective reference areas.

Sampling Techniques - Dugout Canyon will comply with the standards for success, statistically valid sampling techniques for measuring success, and the approved methods outline in the Division's "Vegetation Information Guidelines, Appendix A" for sampling.

The sampling methods to be used during reclamation will be specific to the requirements at the time of reclamation. Nonetheless, according to the currently approved UDOGM guidelines, these sampling methods would be used: sample adequacy, cover (line interception), density (belt transects or plots) and productivity (clipping). The Jaccard's Community Coefficient will be used to calculate acceptable plant similarity and diversity.

Standards for Success - The standards for success will include criteria representative of undisturbed lands in the area of the degas wells as means to evaluate ground cover, production and stocking of the reclaimed site.

356.200 Standards for Success

Standards of success will be applied in accordance with the approved postmining land use as described in this section.

Grazing Land and Pasture Land - The ground cover and production of living plants on the revegetated area will be at least equal to the reference area.

Cropland - There is no area designated as cropland within the degassification well sites.

Fish and Wildlife Habitat - The postmining land use for the degas well sites will be grazing, except on pre-existing roads. Pre-existing roads will be returned to their approximate original contour and compacted.

Industrial, Commercial or Residential - The postmining land use for the permit area is not designated for industrial, commercial, or residential use.

Previously Disturbed Areas - Site G-1, G-4 and G-6 have been previously disturbed. Sites G-2, G-3 and G-5 have not been previously disturbed. Standards of success for all sites will be applied in accordance with the postmining land use of grazing as described in this section.

356.300 Siltation Structures

Siltation structures will be maintained until the disturbed areas have been stabilized and revegetated. For additional details on siltation structures, see Sections 542 and 763 of this amendment.

356.400 Removal of Siltation Structures

The land on which siltation structures are located will be revegetated in accordance with the reclamation plan discussed in Section 353 and 357. Refer to Section 763 for addition information pertaining to the removal of siltation structures.

357 Revegetation: Extended Responsibility Period

Dugout Canyon will be responsible for the success of revegetation for a period of 10 years following seeding of the reclaimed area or upon Division bond release.

357.100 Extended Period Begins

The period of extended responsibility will begin after disturbed areas have been reseeded.

357.200 Vegetation Parameters

Vegetation parameters will equal or exceed the approved success standard during the last 2 years of the responsibility period. The success standards are outline in Section 356 of this application.

357.300 Husbandry Practices

The use of husbandry practices are not being requested by Dugout Canyon for the degas well sites.

358 Protection of Fish, Wildlife, and Related Environmental Values

Dugout Canyon will minimize disturbances and adverse impacts on wildlife and their related environments as outline in Section 333 of the approved M&RP and Section 342 of this submittal. See Chapter 7, Section 731.100 of the approved M&RP for methods to protect water sources in the area.

358.100 Existence of Endangered or Threatened Species

The well sites will not be constructed or operated where they might jeopardize the existence of any endangered or threatened species. Refer to Section 322.200 and Attachments 3-1, 3-2 and 3-3 for additional information pertaining to threatened, endangered, and sensitive species.

State or federally listed endangered or threatened species will be reported to the Division upon its discovery.

358.200 Bald and Golden Eagles

Dugout Canyon understands that there is no permission implied by these regulations for taking of bald or golden eagles, their nests, or eggs. If found, nests will be reported to the Division.

358.300 Taking of Endangered or Threatened Species

Dugout Canyon understands that there is no permission implied by these regulations for taking of endangered or threatened species, their nests, or eggs.

358.400 Replacement of Wetland or Riparian Vegetation

The sites contain no wetland or riparian vegetation.

358.500 Manmade Wildlife Protection Measure

Electric Power Lines - No utilities will exist at the well sites.

Potential Barriers - No potential barriers will exist at any of the well sites, except for the perimeter fence. No ponds exist at the well sites. Refer to Sections 231.100 and 242 for information pertaining to the mud pit.

CHAPTER 5

ENGINEERING

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510 INTRODUCTION

This chapter provides a discussion of general engineering aspects, an operation plan, a reclamation plan, design criteria, and performance standards related to the degassification well sites. The activities associated with the construction and reclamation of the well sites have been or will be designed, located, constructed, maintained, and reclaimed in accordance with the operation and reclamation plans.

511 General Requirements

The permit application includes descriptions of construction, maintenance, and reclamation operations of the proposed well sites with maps and plans. Potential environmental impact as well as methods and calculations utilized to achieve compliance with the design criteria are also presented.

512 Certification

Where required by the regulations, cross sections and maps in this permit application have been prepared by or under the direction of, and certified by, qualified registered professional engineers or land surveyors. As appropriate, these persons were assisted by experts in the fields of hydrology, geology, biology, etc.

512.100 Cross Sections and Maps

Cross sections for the degassification well pads are shown on Figures 5-2, 5-6, 5-10, 5-18, 5-21, 5-24 and typical road cross sections are shown on Figures 5-13 and 5-14.

512.200 Plans and Engineering Designs

Excess Spoil - No excess spoil will be generated from the well sites.

Durable Rock Fills - No durable rock fills will exist at the well sites.

Coal Mine Waste - No coal mine waste will exist at the well sites.

Impoundments - Refer to Section 733.200 of this submittal.

Primary Roads - Short sections of road are required to access well sites G-2 and G-5. These access roads are classified as primary roads. Topsoil will be stripped from the road alignment and stored with the topsoil stripped from the pad area prior to grading the new access road. Well sites G-1(not drilled), G-3,G-4 and G-6 are on existing roads, no access roads will be constructed.

Variance from Approximate Original Contour - No variance from approximate original contour is required for the well sites.

513 Compliance with MSHA Regulations and MSHA Approval

513.100 Coal Processing Waste Dams and Embankments

No coal processing waste dams and embankments will exist at the well sites.

513.200 Impoundments and Sedimentation Ponds

Refer to Section 733.200 of this submittal.

513.300 Underground Development Waste, Coal Processing Waste, and Excess Spoil

No underground waste, coal processing waste, and excess spoil will exist at the well sites.

513.400 Refuse Piles

No refuse piles will exist at the well sites.

513.500 Underground Openings to the Surface

The well will be equipped with a valve that will be closed and locked when not in use. A typical well head is shown in Figure 5-16.

513.600 Discharge to Underground Mine

No discharge to the underground mine will occur at the well sites.

513.700 Surface Coal Mining and Reclamation Activities

No surface coal mining, or reclamation activities associated with surface coal mining will occur at the well sites.

513.800 Coal Mine Waste Fire

No coal waste will be developed, therefore, no coal waste fires will occur at the well sites.

514 Inspection

514.100 Excess Spoil

No excess spoil will be stored at the well sites.

514.200 Refuse Piles

No refuse piles will exist at the well sites.

514.300 Impoundments

Refer to Section 733.200 of this submittal.

515 Reporting and Emergency Procedures

515.100 Slides

Refer to Section 515.100 in the approved M&RP.

515.200 Impoundments Hazards

No impoundments will exist at the well sites.

515.300 Temporary Cessation of Operations

If temporary cessation of the mining operations does occur, the wells will remain open. Once liberation of the methane gas is completed, the wells will be sealed as discussed in Section 542.700 of this submittal.

520 OPERATION PLAN

521 General

See Figures 5-1, 5-5, 5-9, 5-17, 5-20, and 5-23 for the contour map showing pre-disturbance and drilling phase contours. These figures also show the disturbed area boundary and the new access road contours. Figures 5-3, 5-7, 5-11, 5-19, 5-22 and 5-25 show the layout of the well sites during the drilling phase. Figures 5-4, 5-8, 5-12 show the layout of the well sites during the operational phase and the area to be reclaimed at the completion of drilling. Cross sections for each site can be found on Figures 5-2, 5-6, 5-10, 5-18, 5-21 and 5-24.

521.100 Cross Sections and Maps

Existing Surface and Subsurface Facilities Features - No buildings are located on or within 1,000 feet of any of the well sites.

Landowner, Right-of-Entry, and Public Interest - The land which the wells will be drilled on is owned by the Milton and Ardith Thayn Trust. Canyon Fuels, LLC has reached an agreement with the Thayn trustees to allow access for the construction and drilling of the wells (see Attachment 4-2).

Mining Sequence and Planned Subsidence - Refer to Section 525.

Land Surface Configuration - Surface contours of undisturbed well sites are included in Figures 5-1, 5-5, 5-9, 5-17, 5-20, and 5-23.

Surface Facilities - No permanent surface facilities will exist at the well sites.

521.200 Signs and Markers

Mine and Permit Identification Signs - A mine and permit identification sign will be displayed at each well site. This sign will be a design that can be easily seen and read, will be made of durable material, will conform to local regulations, and will be maintained until after the release of all bonds for the well site areas. The sign will contain the following information:

- Mine name,
- Company name,
- Company address and telephone number
- MSHA identification number, and
- Permanent program permit identification number

Perimeter Markers - The perimeter of all areas affected will be clearly marked before beginning mining activities. The markers will be a design that can be easily seen and read, will be made of durable material, will conform to local regulations, and will be maintained until after the release of all bonds for the permit area.

Buffer Zone Markers - Stream buffer zone markers will not be required at any of the three well sites.

Topsoil Markers - Markers will be placed on all topsoil stockpiles. These markers will be a design that can be easily seen and read, will be made of durable material, will conform to local regulations, and will be maintained until topsoil is redistributed on the well sites.

Construction Markers - Not applicable.

522 Coal Recovery

No coal recovery will be performed at the well sites.

523 Mining Methods

No mining will be performed at the well sites.

524 Blasting and Explosives

No explosives are to be used at the well sites.

525 Subsidence

No subsidence will occur at the well sites, as a result of drilling and development of the degassification well sites. Subsidence could occur at the well site because of underground mining see Section 525 of the approved M&RP.

526 Mine Facilities

526.100 Mine Structures and Facilities

No buildings exist or are proposed at the well sites; therefore, no existing building will be used in connection with or to facilitate this proposed coal mining and reclamation plan.

526.200 Utility Installation and Support Facilities

No utilities are to be installed at the well sites. A portable methane exhaust unit will be temporarily installed to draw methane to the surface from the mined panel. The exhaust blower will be started by using propane from portable tanks. Once started and running, the unit will be powered by burning the extracted methane gas. Excess methane will be vented to the atmosphere. The blower is approximately 12-feet long by.6-feet wide and about 10-feet tall. It is not known how long the degassification of the longwall panel will take.

527 Transportation Facilities

527.100 Road Classification

Well sites will be developed near existing private roads as shown on Figures 1-1, 5-1, 5-5, 5-9, 5-17, 5-20, and 5-23. The new access roads will be classified as primary roads and will be maintained by the permittee (see Figure 5-14).

527.200 Description of Transportation Facilities

The well sites were chosen close to existing roads in the area to limit surface disturbance. The existing roads were constructed and are maintained by the land owner. The existing roads are approximately 20 feet wide and are shown on Figures 5-1, 5-5, 5-9, 5-17, 5-20, and 5-23. See Figure 5-13 for a typical cross section of the existing roads.

528 Handling and Disposal of Coal, Excess Spoil, and Coal Mine Waste

No disposal of coal, excess spoil, and coal mine waste will occur at the well sites.

529 Management of Mine Openings

The perimeter of the sites, including the topsoil stockpiles will be fenced with gates on the access roads. The well casing will have a valve that is closed and locked. The valve will also prevent access by animals or other material. Mine openings will be monitored in accordance with Federal and State Regulations.

During the life of the methane wells, the sites will be inspected as needed by mine personnel to verify the continued operation of the pumping equipment and general site conditions.

530 OPERATIONAL DESIGN CRITERIA AND PLANS

531 General

This section contains the general plans for the construction of sediment controls and general construction and maintenance of the well sites.

The decision to construct each well will be based on the amount of methane encountered during mining. If small amounts of methane are encountered and the mine's ventilation system can dilute the methane, no well will be drilled. The proposed well site locations are shown on Figure 1-1.

532 Sediment Control

Sediment control measures for the well sites are described in Sections 732 and 742 of this submittal. Runoff control structures at the well sites have been designed to convey runoff in a non-erosive manner. Sediment yields in the well permit area are minimized by:

- Disturbing the smallest practicable area during the construction of the well site and
- Contemporaneously reclaiming areas suitable for such reclamation.

533 Impoundments

No impoundments will exist at the well sites.

534 Roads

Refer to Section 527 of this submittal.

535 Spoil

No spoil will be generated at the well sites.

536 Coal Mine Waste

No coal mine waste will be stored at the well sites.

537 Regraded Slopes

537.100 Division Approval

No mining or reclamation activities will be conducted in the permit area that requires approval of the Division for alternative specifications or for steep cut slopes.

537.200 Regrading of Settled and Revegetated Fills

Upon completion of the well site, the areas not required for the exhaust blower will be regraded to approximate original contour. Because of the nature of the well site, settling is not anticipated. However, if settlement does occur, these areas will be regraded.

540 RECLAMATION PLAN

541 General

541.100 Commitment

Upon the 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.

541.200 Surface Coal Mining and Reclamation Activities

Not applicable.

541.300 Underground Coal Mining and Reclamation Activities

Upon completion of the methane venting activities the wells will be reclaimed.

541.400 Environmental Protection Performance Standards

The plan presented is designed to meet the requirements of R645-301 and the environmental protection performance standards of the State Program.

542 Narratives, Maps, and Plans

542.100 Reclamation Timetable

A timetable for the completion of each major step in the reclamation plan is presented in Figure 5-15 (G-2 and G-3) and 5-26 (G-4, G-5 and G-6).

542.200 Plan for Backfilling, Soil Stabilization, Compacting, and Grading

Following completion of the venting activities, the well site will be prepared for contouring and soil distribution. Details regarding topsoil placement and revegetation are provided in Section 242 and Section 353, respectively.

Sedimentation Pond Removal and Interim Sediment Control - See Section 542.500 of this submittal.

542.300 Final Surface Configuration Maps and Cross Sections

The sites will be regraded to the approximate original contour, the contours representing the pre-disturbance topography also represent the reclamation topography. Refer to Figures 5-2, 5-6, 5-10, 5-18, 5-21 and 5-24 to see cross sections representing the final surface configuration.

542.400 Removal of Temporary Structures

The well sites will not have surface structures.

542.500 Removal of Sedimentation Pond

No sediment pond will be constructed at the well sites.

542.600 Roads

The roads which existed prior to the drilling program will be retained after reclamation. The access roads established during the drilling program will be reclaimed after methane extraction has been completed. See Section 242 for additional detail concerning the reclamation plan.

542.700 Final Abandonment of Mine Openings and Disposal Areas

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 final reclamation is completed.

542.800 Estimated Cost of Reclamation

Refer to the Appendix 5-6 of the existing M&RP. It is anticipated that the cost of reclamation of the well sites is adequately covered by the Dugout Canyon Reclamation Bond, refer to Chapter 8 for additional detail.

550 RECLAMATION DESIGN CRITERIA AND PLANS

551 Casing and Sealing of Underground Openings

Permanent sealing is described in Section 542.700.

552 Permanent Features

552.100 Small Depressions

No permanent small depressions will be created as part of the well site construction and reclamation.

552.200 Permanent Impoundments

See Section 515.200 of this submittal.

553 Backfilling and Grading

553.100 Disturbed Area Backfilling and Grading

Approximate Original Contour - The well sites will be returned to their approximate original contour after reclamation is completed.

Erosion and Water Pollution - Sediment controls will consist of gouging the surface to create depressions and mounds which store and impede the movement of water. As vegetation becomes established on the reclaimed surface, erosion potential will be further minimized.

Post-Mining Land Use - 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.

553.200 Spoil and Waste

Spoil - No spoil will be generated within the well sites.

Coal Processing Waste - No coal processing waste will be generated within the well sites.

553.250 Refuse Piles

No refuse piles will exist at the well sites.

553.300 Exposed Coal Seams, Acid and Toxic Forming Materials and Combustible Materials

No coal seams will be left exposed at the well sites. All wells will be sealed according to Federal and State regulations.

553.400 Cut and Fill Terraces

No cut and fill terraces will be constructed at the well sites.

553.500 Highwall From Previously Mined Areas

No highwalls exist or will be built at the well sites.

553.600 Previously Mined Area

No previously mined areas exist at the well sites.

553.700 Backfilling and Grading - Thin Overburden

No surface mining and reclamation activities involving thin overburden will occur at the well sites.

553.800 Backfilling and Grading - Thick Overburden

No surface mining and reclamation activities involving thick overburden will occur at the well sites.

553.900 Regrading of Settled and Revegetated Rills

If settlement or rills occur at the well sites, they will be regraded and revegetatived. Refer to Section 244.300.

560 PERFORMANCE STANDARDS

Dugout Canyon Mine well sites will be conducted in accordance with the approved permit and the requirements of R645-301-510 through R645-301-553.

FIGURE 5-26

Reclamation Schedule - Well G-4, G-5 and G-6

Task	Weeks to Complete from Start of Reclamation Activities		
	1	2	3
Plug Well			
Regrade Site to Original Contour			
Rip Subsoil			
Place Topsoil and Roughen			
Seed and Mulch			
The schedule assumes that weather conditions are conducive. Schedule is for each individual well not wells collectively. If necessary the timing may be extended.			

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HYDROLOGY

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Attachment 7-1 Hydrology Calculations

710 INTRODUCTION

711 General Requirements

This chapter presents a description of the following:

- Proposed operations and the potential impacts to the hydrologic balance;
- Methods of compliance with design criteria and the calculations utilized to show compliance; and
- Applicable hydrologic performance standards.

712 Certification

All maps, plans, and cross sections presented in this chapter have been certified by a qualified, registered professional engineer.

713 Inspection

Inspections are not required since no permanent impoundments will exist at the well sites.

720 ENVIRONMENTAL DESCRIPTION

721 General Requirements

This section presents a description of the pre-mining hydrologic resources within the well pad and their adjacent areas that may be affected or impacted by the proposed coal mining and reclamation operations.

722 Cross Sections and Maps

722.100 Location and Extent of Subsurface Water

Figure 7-1 in the approved M&RP shows a generalized hydrostratigraphic cross section of the permit and adjacent areas including the well sites. Section 724.100 of the approved M&RP provides baseline groundwater conditions.

722.200 Location of Surface Water Bodies

Plate 7-2 in the approved M&RP shows the locations of surface-water bodies and existing or pending water rights. Section 724.200 of the approved M&RP provides baseline surface water conditions.

722.300 Locations of Monitoring Stations

Plate 7-1 in the approved M&RP shows the location of surface water and groundwater monitoring stations.

722.400 Locations and Depth of Water Wells

Refer to Section 722.400 and Plate 7-1 of the approved M&RP for information pertaining to the groundwater monitoring wells. Refer to Appendix 7-9 of approved M&RP for details pertaining to the Gilson well.

722.500 Surface Topography

Surface topography features at the well sites and adjacent areas are shown on Figures 1-1, 5-1, 5-5, 5-9, 5-17, 5-20, and 5-23. Refer to Plate1-4 in the M&RP for well locations.

723 Sampling and Analysis

Refer to Section 723 of the approved M&RP.

724 Baseline Information

Refer to Section 724 of the approved M&RP.

724.100 Groundwater Information

Refer to Section 724.100 of the approved M&RP.

724.200 Surface Water Information

Refer to Section 724.200 of the approved M&RP.

724.300 Geologic Information

Geologic information related to the well sites and adjacent areas in presented in Chapter 6 of this submittal and in the approved M&RP.

724.400 Climatological Information

Climatological data are summarized in Appendix 4-1 behind the Air Quality Permit of the approved M&RP and RA Attachment 7-5 of the Refuse Pile Amendment.

724.500 Supplemental Information

Refer to Section 724.500 of the approved M&RP.

724.600 Survey of Renewable Resource Lands

Refer to Section 724.600 of the approved M&RP.

724.700 Alluvial Valley Floor Requirements

Information regarding the presence or absence of alluvial valley floors in the well sites and adjacent areas is presented in Chapter 9 of this submittal and the approved M&RP.

725 Baseline Cumulative Impact Area Information

The CHIA currently in place for the Dugout Canyon Mine covers the well sites. The hydrologic and geologic information required for the Division to develop a Cumulative Hydrologic Impact Assessment (CHIA) is presented in the approved M&RP.

726 Modeling

No groundwater or surface water modeling was conducted in support of this submittal.

727 Alternative Water Source Information

Not applicable.

728 Probable Hydrologic Consequences

This section addresses the probable hydrologic consequences of construction and reclamation operations at the well sites. Mitigation measures are discussed generally in this section and in detail in Section 730 of the approved M&RP.

728.100 Potential Impacts of Surface and Groundwater

Potential impacts of the well sites in this area on the quality and quantity of surface and groundwater flow may include contamination from materials associated with the drilling of the wells. The potential impact is addressed in Section 728.300 of this submittal and the approved M&RP.

728.200 Baseline Hydrologic and Geologic Information

Baseline geologic information is presented in Chapter 6 of the approved M&RP. Baseline hydrologic information is presented in Section 724.100 and 724.200 of the approved M&RP.

728.300 PHC Determination

Potential Impacts to the Hydrologic Balance - Potential impacts of the Dugout Canyon Mine on the hydrologic balance of the well sites and adjacent areas are addressed in the subsections of this submittal and the approved M&RP.

Acid and Toxic Forming Materials - No acid or toxic forming materials have been identified in the soils or strata of the Dugout Canyon Mine (Chapter 6, Section 623 of this submittal). Additional information is located in Appendix 6-2 of the approved M&RP.

Groundwater - During drilling of the wells, the groundwater encountered will be affected. Drilling mud will be used to seal the groundwater aquifers. Once drilling is completed, the casing will be grouted in the well hole. This will seal the aquifers to prevent any groundwater from migrating down the outside of the casing into the mine.

Potential Hydrocarbon Contamination - Hydrocarbon products will not be stored at the well sites, however fuels, greases, and other oils may leak from equipment during drilling operations.

Absorbent materials will be used for the collection of leaked fuels, greases, and other oils. The saturated absorbent materials will be disposed of at an appropriate landfill facility.

729 Cumulative Hydrologic Impact Assessment (CHIA)

The Cumulative Hydrologic Impact Assessment currently in place for the Dugout Canyon Mine includes the well sites and adjacent areas.

730 OPERATION PLAN

731 General Requirements

731.100 Hydrologic - Balance Protection

Groundwater Protection - The effect on groundwater at the well sites is expected to be minimal. Groundwater encountered during drilling will be sealed off, refer to Section 728.300.

Surface Water Protection - To protect the hydrologic balance, construction, maintenance, and reclamation operations will be conducted to handle earth materials and runoff in a manner that prevents, to the extent possible, additional contributions of suspended solids to stream flow outside the permit area, and otherwise prevent water pollution.

During initial drilling, the sites will be graded to ensure that storm runoff will flow towards the berms surrounding the entire drilling pad area. The berms will direct the runoff to the lowest point(s) within the pad area where a silt fence and/or straw bale dike(s) will treat the runoff (see Figures 5-1, 5-5, 5-9, 5-17, 5-20, and 5-23). The berm placed at the top of the drilling pad cut slopes will divert runoff around the drilling pad. Thus reducing the runoff affected by the drilling pad.

After drilling, the pad size will be reduced for exhausting operations. The pad will be re-graded to cause the storm runoff to sheet flow towards a silt fence and/or straw bale dike. A berm will be placed at the top of the fill slope to direct any runoff from the operational pad to the silt fence and/or straw bale dike(see Figures 5-4, 5-8, 5-12, 5-19, 5-22 and 5-25). The silt fences and/or straw bale dikes will be periodically inspected, and accumulated sediment will be removed as needed to maintain functionality. The sediment from the silt fence and/or straw bale dikes will be piled on the pad and will be used for fill during final reclamation of the well site. During the drilling phase a berm and silt fence will be installed at the toe of the fill slope as shown on Figures 5-1, 5-5, 5-9, 5-17, 5-20, and 5-23 to treat any runoff from the drilling pad.

731.200 Water Monitoring

No water monitoring will be conducted at the degas well sites. Refer to approved M&RP for a description of water monitoring.

731.300 Acid or Toxic Forming Materials

No acid or toxic forming materials are anticipated at the well sites (see Section 728.300).

731.400 Transfer of Wells

Refer to Section 731.400 of the approved M&RP.

731.500 Discharge

No discharges to underground workings.

731.600 Stream Buffer Zones

Stream Channel Diversions - No stream channel diversions are planned at the well sites.

Buffer Zone Designation - None of the drilling sites are adjacent to a stream, therefore the establishment of a stream buffer zone is not necessary.

731.700 Cross Section and Maps

Not applicable.

731.800 Water Rights and Replacement

Refer to Sections 728.300 and 731.800 of the approved M&RP.

732 Sediment Control Measures

The sediment control measures within the well sites have been designed to prevent additional contributions of sediment to stream flow or to runoff outside the well sites. In addition, the well sites have been designed to minimize erosion to the extent possible.

The structures to be used for runoff control at the well sites are berms, silt fences and/or straw bale dikes.

732.100 Siltation Structures

Berms, silt fences and straw bales dikes will be used to treat runoff.

732.200 Sedimentation Pond

The drilling sites will not have sedimentation ponds.

732.300 Diversions

Refer to Section 731.100 of this submittal.

732.400 Road Drainage

No diversion ditches will be constructed along the primary roads leading to the well sites. See Figures 5-13 and 5-14 for typical road cross sections. Where needed roads accessing the drill sites will have a water bar constructed at the base of the road to divert water off the road prior to the runoff reaching the drilling pad.

733 Impoundments

733.100 General Plans

Not applicable.

733.200 Permanent and Temporary Impoundments

No permanent impoundments will exist at the well sites.

734 Discharge Structures

A berm will surround the entire drill pad at each well site during the drilling phase. The berm will divert undisturbed runoff around the drilling pad and direct runoff from the pad to a silt fence/straw bale dike at the lowest point within the well pad disturbed area. A silt fence and/or straw bale dike will be the discharge structure for each of the well sites during the operational phase.

735 Disposal of Excess Spoil

There will be no excess spoil generated at the well sites.

736 Coal Mine Waste

There will be no coal mine waste generated or stored at the well sites.

737 Non-Coal Mine Waste

There will be no non-coal mine waste disposed at the well sites.

738 Temporary Casing and Sealing of Wells

Refer to Section 542.700 of this submittal.

740 DESIGN CRITERIA AND PLANS

741 General Requirements

This submittal includes general well site plans that incorporate design criteria for the control of drainage.

742 Sediment Control Measures

742.100 General Requirements

Design - Sediment control measures have been formulated to prevent additional contributions of sediment to stream flow or to runoff outside the well site area; and minimize erosion to the extent possible.

Measures and Methods - Sediment control methods will include silt fences, berms, and straw bales to reduce runoff and trap sediment.

742.200 Siltation Structures

General Requirements - Additional contributions of suspended solids and sediment or runoff outside the well site area will be prevented to the extent possible using silt fences, berms, and straw bale dikes. Siltation structures(berms, silt fences and/or straw bale dikes) will be installed before the topsoil is removed from the well site. Construction activities will not occur during major precipitation events.

Design - All hydrology calculations were made using the 10-year, 24-hour precipitation event. Hydrology calculations are in Attachment 7-1. Locations of the berms and silt fences are shown on Figures 5-1, 5-4, 5-5, 5-8, 5-9, 5-12, 5-17, 5-20, and 5-23.

742.300 Diversions

No diversion ditches will be constructed as part of the drilling or operational phases.

742.400 Road Drainage

Refer to Section 732.400 of this submittal.

743 Impoundments

No impoundments will exist at the well sites.

744 Discharge Structures

No discharge structures have been planned or designed.

745 Disposal of Excess Spoil

There will be no excess spoil generated at the well sites.

746 Coal Mine Waste

746.100 General Requirements

There will be no coal mine waste used at the well sites.

746.200 Refuse Piles

There will be no refuse piles at the well sites.

746.300 Impounding Structures

Refer to Section 733.200 of this submittal.

746.400 Return of Coal Processing Waste to Abandoned Underground Workings

No coal processing waste will be generated at the well sites.

747 Disposal of Non-Coal Mine Waste

All non-coal mine waste will be dispose of at an approved landfill.

748 Casing and Sealing Wells

Refer to Section 542.700 of this submittal.

750 PERFORMANCE STANDARDS

751 Water Quality Standards and Effluent Limitations

Water encountered during drilling and runoff water will be treated using silt fence and/or straw bale dikes prior to leaving the site. Should it become necessary the water encountered during drilling will be pumped into a tank and hauled from the site for disposal at a licensed facility.

752 Sediment Control Measures

All sediment control measures will be located, maintained, constructed and reclaimed according to plans and designs presented in Section 732, 742, and 760 of this submittal.

752.100 Siltation Structures and Diversions

Siltation structures will be located, maintained, constructed and reclaimed according to plans and designs presented in Section 732, 742, and 763 of the submittal.

752.200 Road Drainage

Refer to Section 732.400 of this submittal.

753 Impoundments and Discharge Structures

Refer to Section 733.200 of this submittal.

754 Disposal of Excess Spoil, Coal Mine Waste and Non-Coal Mine Waste

There will be no excess spoil or coal mine waste generated at the well sites. Refer to Section 747 of this submittal regarding non-coal waste disposal.

755 Casing and Sealing

Refer to Section 542.700 of this submittal.

760 RECLAMATION

761 General Requirements

A detailed reclamation plan for the well sites is presented in Section 540. No structures will exist at the well sites.

762 Roads

Refer to Section 542.600.

762.100 Restoring the Natural Drainage Patterns

The natural drainage patterns will be restored after degassification is completed.

762.200 Reshaping Cut and Fill Slopes

Cut and fill slopes will be reshaped at the well sites.

763 Siltation Structures

763.100 Maintenance of Siltation Structures

All siltation structures will be maintained until removed in accordance with the approved reclamation plan.

763.200 Removal of Siltation Structures

When a siltation structure is removed, the land on which the siltation structure was located will be regraded and revegetated in accordance with the reclamation plan presented in Section 540.

764 Structure Removal

A timetable for the reclamation of the sites is presented in Figures 5-15 (G-2 and G-3) and 5-26 (G-4, G-5 and G-6).

765 Permanent Casing and Sealing of Wells

Refer to Section 542.700 of this submittal.

ATTACHMENT 7-1

HYDROLOGY CALCULATIONS

CHAPTER 8

BONDING AND INSURANCE

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810 BONDING DEFINITIONS AND DIVISION RESPONSIBILITIES

This chapter provides information regrading the bonding for reclamation of the well sites at the Dugout Canyon Mine. CFC has on file with the Division a bond or bonds payable to the Division for performance of all requirements of the State Program.

820 REQUIREMENTS TO FILE A BOND

A description of the disturbed area location for each well site is found in Chapter 1, Table 1-1. Reclamation of the disturbed areas are discussed in Section 340 of this submittal. The performance bond period is for the duration of coal mining and reclamation operations including the extended period designated by the Division. The bond is in the form of a surety bond and is described in Section 860 of the M&RP.

830 DETERMINATION OF BOND AMOUNT

The present bond of $2,400,000 should be sufficient to assure the completion of the reclamation plan. The reclamation bond (direct and indirect costs) for the well sites is covered under Item No. 45 in the currently approved bond. The most current formulas from the Office of Surface Mining, *Handbook for Calculation of Reclamation Bond Amounts*, were used to determine the coverage necessary for reclamation . The reclamation plan and design criteria concerning the well sites can be found in Sections 540 and 550. The bonding information pertaining to the well sites will be incorporated into Appendix 5-6 of the approved M&RP upon approval of the bond. The bond coverage will be adjusted per the Division's determination of required bond coverage.

840 GENERAL TERMS AND CONDITIONS OF THE BOND

Refer to Chapter 8 of the approved M&RP.

850 BONDING REQUIREMENTS FOR UNDERGROUND COAL MINING AND RECLAMATION ACTIVITIES

Refer to Chapter 8 of the approved M&RP.

860 FORMS OF BONDS

Refer to Chapter 8 of the approved M&RP.

870 REPLACEMENT OF BONDS

Refer to Chapter 8 of the approved M&RP.

880 REQUIREMENTS TO RELEASE PERFORMANCE BONDS

The applicant will comply with the requirements described in Section R645-301-880 of the Division regulations when applying for the release of performance bonds.

890 TERMS AND CONDITIONS FOR LIABILITY INSURANCE

Certificates of insurance issued for the Dugout Canyon Mine are included in Appendix 1-2 of the approved M&RP and the 2002 Annual Report. For additional information, refer to Chapter 8 of the approved M&RP.