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DIVISION OF OIL, GAS AND MINING

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November 3, 1999

Richard Pick
Canyon Fuel Company, LLC
6955 Union Park Center, Suite 540
Salt Lake City, Utah 84047

Re: Technical Analysis and Finding for Adding Federal Lease, Canyon Fuel Company, LLC,
Dugout Canyon Mine, ACT/007/039-SR99D, Folder #3, Carbon County, Utah

Dear Mr. Pick:

The Division has completed a technical analysis (TA) of your application to add Federal Lease U-07064-027821 to the Dugout Canyon Mine. A copy is enclosed for your records. The purpose of this TA is to determine the technical adequacy of your application. As you will note, there are areas of deficiency in your application that prevent us from approving it at this time.

Please review the TA carefully to make sure you understand the concerns. The deficiencies will need to be adequately addressed before your application can be approved. In order for us to further process your application, please provide a response by no later than January 3, 2000. You may submit it sooner if you are prepared and so desire. At that time you should plan on compiling your response into your application so that we have a complete and accurate plan to review. We will be happy to assist you in accomplishing this.

Please call if you have any questions.

Sincerely,

Daron R. Haddock
Permit Supervisor

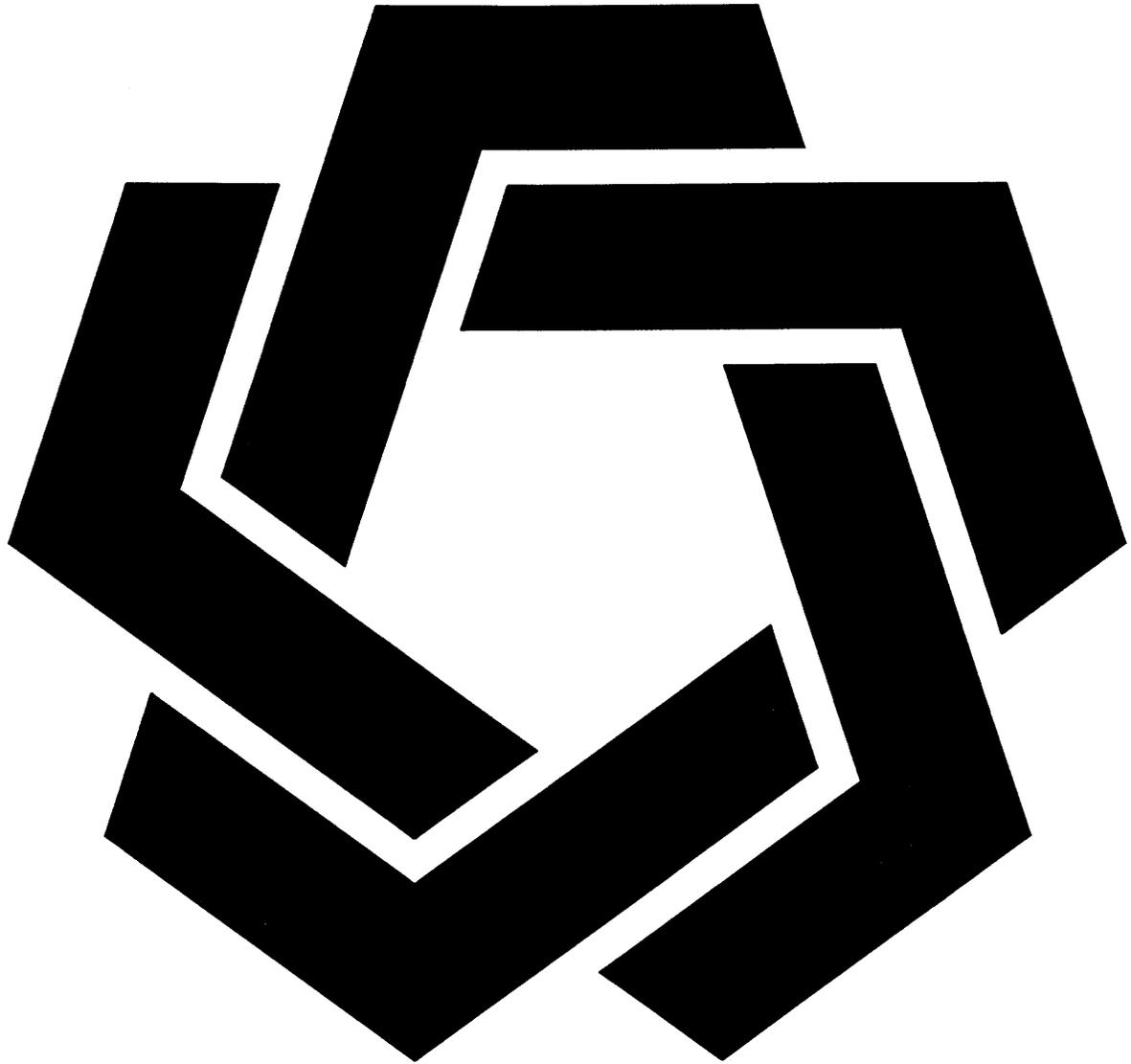
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Enclosure

cc: Ken Payne, Canyon Fuel, Scofield
Chris Hansen, Canyon Fuel, Scofield
Jim Smith, DOGM
Price Field Office

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State of Utah
Division of Oil, Gas and Mining
Utah Coal Regulatory Program



Technical Analysis and Findings
Significant Revision to add Federal Lease U-07064-027821
Dugout Canyon Mine
ACT/007/039 - SR99D
November 1, 1999

TABLE OF CONTENTS

ADMINISTRATIVE FINDINGS

.....	1
VALID EXISTING RIGHTS	1
SEVERED SURFACE AND MINERAL OWNERSHIP	1
ENDANGERED SPECIES ACT	1
NATIONAL REGISTER OF HISTORIC PLACES	1
HYDROLOGIC IMPACT	1
RECLAIMABILITY	1
EXISTING STRUCTURES	2
RECLAMATION FEES	2
AGRICULTURAL POST-MINING LAND USE	2
SPECIAL CATEGORIES AND AREAS OF MINING	2
PUBLIC NOTICE AND COMMENT	2
SPECIAL CONDITIONS OR STIPULATIONS TO THE PERMIT APPROVAL	2

TECHNICAL ANALYSIS

3

INTRODUCTION	3
--------------------	---

SUMMARY OF OUTSTANDING DEFICIENCIES (Draft TA Only)	3
---	---

ENVIRONMENTAL RESOURCE INFORMATION	8
--	---

GENERAL	8
---------------	---

PERMIT AREA	8
-------------------	---

CLIMATOLOGICAL RESOURCE INFORMATION	9
---	---

FISH AND WILDLIFE RESOURCE INFORMATION	10
--	----

SOILS RESOURCE INFORMATION	11
----------------------------------	----

LAND-USE RESOURCE INFORMATION	11
-------------------------------------	----

ALLUVIAL VALLEY FLOORS	12
------------------------------	----

PRIME FARMLAND	12
----------------------	----

GEOLOGIC RESOURCE INFORMATION	12
-------------------------------------	----

HYDROLOGIC RESOURCE INFORMATION	14
---------------------------------------	----

Sampling and analysis.	14
-----------------------------	----

Baseline information.	14
----------------------------	----

Ground-water information.	14
--------------------------------	----

Surface-water information.	15
---------------------------------	----

Baseline cumulative impact area information.	16
---	----

Modeling.	16
----------------	----

Alternative water source information.	16
--	----

Probable hydrologic consequences determination.	16
--	----

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION	18
---	----

Affected Area Boundary Maps	18
-----------------------------------	----

Archaeological Site and Cultural Resource Maps	18
--	----

Coal Resource and Geologic Information Maps	18
---	----

Existing Surface Configuration Maps	19
---	----

TABLE OF CONTENTS

Mine Workings Maps	19
Monitoring and Sampling Location Maps	19
Permit Area Boundary Maps	19
Subsurface Water Resource Maps	19
Surface and Subsurface Manmade Features Maps	19
Surface Water Resource Maps	20
Surface water resource maps	20
Vegetation Reference Area Maps	20
Well Maps	20
OPERATION PLAN	21
General	21
Type and Method of Mining Operations	21
Facilities and Structures	21
EXISTING STRUCTURES:	21
PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES	21
RELOCATION OR USE OF PUBLIC ROADS	22
AIR POLLUTION CONTROL PLAN	22
SUBSIDENCE CONTROL PLAN	23
Renewable resources survey.	23
Performance standards for subsidence control.	24
SLIDES AND OTHER DAMAGE	25
FISH AND WILDLIFE PROTECTION	26
TOPSOIL AND SUBSOIL	26
INTERIM REVEGETATION	27
ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES	27
SPOIL AND WASTE MATERIALS	28
Acid and toxic-forming materials and underground development waste.	31
Transfer of wells.	31
Water quality standards and effluent limitations.	31
Casing and sealing of wells.	32
Discharges into an underground mine.	32
Gravity discharges.	32
Diversions.	32
Stream buffer zones.	32
Sediment control measures.	32
Siltation structures.	32
Sedimentation ponds.	32
Other treatment facilities.	32
Exemptions for siltation structures.	32
Discharge structures.	32
Impoundments.	32
SUPPORT FACILITIES AND UTILITY INSTALLATIONS	33
SIGNS AND MARKERS	33
USE OF EXPLOSIVES	33
MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS	33
Affected area maps.	33

TABLE OF CONTENTS

Mining facilities maps.	33
Mine workings maps.	
Monitoring and sample location maps.	33
RECLAMATION PLAN	35
GENERAL REQUIREMENTS	35
PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES	
.....	35
HYDROLOGIC INFORMATION	35
Ground-water monitoring.	35
Surface-water monitoring.	36
Transfer of wells.	36
Casing and sealing of wells.	36
Acid and toxic-forming materials.	36
Discharges into an underground mine.	36
Gravity discharges.	36
Diversions.	36
Stream buffer zones.	36
Sediment control measures.	36
Siltation structures.	36
Sedimentation ponds.	36
Other treatment facilities.	36
Exemptions for siltation structures.	36
Discharge structures.	36
Impoundments.	36
Water quality standards and effluent limitations.	36
MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS	37
Affected area boundary maps.	37
Reclamation monitoring and sampling location maps.	37
Reclamation surface and subsurface manmade features maps.	37
Bonded area map.	37
Reclamation backfilling and grading maps.	37
Reclamation facilities maps.	37
Final surface configuration maps.	37
Reclamation treatments maps.	37
APPROXIMATE ORIGINAL CONTOUR RESTORATION	37
BACKFILLING AND GRADING	37
MINE OPENINGS	37
TOPSOIL AND SUBSOIL	37
ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES	37
CONTEMPORANEOUS RECLAMATION	37
REVEGETATION	37
STABILIZATION OF SURFACE AREAS	38
CESSATION OF OPERATIONS	38
BONDING AND INSURANCE REQUIREMENTS	38
REQUIREMENTS FOR PERMITS FOR SPECIAL CATEGORIES OF MINING	39

TABLE OF CONTENTS

INTRODUCTION 39

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT 40

INDEX 41

TECHNICAL ANALYSIS

Last revised - November 1, 1999

ADMINISTRATIVE FINDINGS

COMPLETENESS

The application is not complete and accurate and the applicant must comply with all the requirements of the State Program before this significant revision to the MRP can be approved. This finding is based on the findings made in the Technical Analysis.

VALID EXISTING RIGHTS

The proposed permit area is not within an area under study or administrative proceedings under a petition, filed pursuant to R645-103-400 or 30 CFR 769, to have an area designated as unsuitable for coal mining and reclamation operations.

SEVERED SURFACE AND MINERAL OWNERSHIP

Regulation R645-301-114.200 does not apply to underground mining operations.

ENDANGERED SPECIES ACT

The operation would not affect the continued existence of endangered or threatened species or result in destruction or adverse modification of their critical habitats, as determined under the Endangered Species Act of 1973 (16 U.S.C. 1531 et. seq.). This finding should be supported by the information found in the Technical Analysis.

NATIONAL REGISTER OF HISTORIC PLACES

The proposed addition to the permit area contains no known cultural resources listed or eligible for listing in the National Register of Historic Places; therefore, no protection measures are necessary. The Division is seeking concurrence from the State Historic Preservation Office that the proposed action will have no effects on cultural resources.

HYDROLOGIC IMPACT

The Division has made an assessment of the probable cumulative impacts of all anticipated coal mining and reclamation operations on the hydrologic balance in the cumulative impact area and has determined that the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area. The primary document supporting this finding is the CHIA; however, additional information supporting this finding relies on other findings made in the Technical Analysis.

RECLAIMABILITY

The applicant has proposed no additional disturbance, and the Division has previously found that reclamation is feasible at the mine surface facilities.

EXISTING STRUCTURES

There are no existing structures.

RECLAMATION FEES

Based on a check of the Applicant Violator System (AVS) the permittee has paid all reclamation fees from previous and existing coal mining and reclamation operations as required by 30 CFR Part 870.

AGRICULTURAL POST-MINING LAND USE

The applicant has not proposed an agricultural postmining land use other than grazing.

SPECIAL CATEGORIES AND AREAS OF MINING

There are no special categories or areas of mining.

PUBLIC NOTICE AND COMMENT

Public Notice was published in the Sun Advocate on October 7, 14, 21, and 28, 1999; however, the Division has not received proof of publication for inclusion in the significant revision of the permit. The Division has received no public comments.

SPECIAL CONDITIONS OR STIPULATIONS TO THE PERMIT APPROVAL

There are no variances, special conditions, or stipulations associated with permit approval.

TECHNICAL ANALYSIS

INTRODUCTION

Canyon Fuel Company is proposing to add 2416.14 acres to the Dugout Canyon Mine permit area. The addition consists of federal coal lease U-07064-027821 and adjacent subsidence buffer zones. Maps submitted with the significant revision also outline an adjacent Utah State Institutional Trust Lands (SITLA) coal tract that is not part of the current significant revision application: it is an area of possible future expansion east of the federal lease and data for the SITLA tract are in the significant revision submittal.

The proposed significant revision to the Dugout Canyon Mine MRP was received by the Division May 21, 1999, and a modification was received August 4, 1999. None of the proposed changes to the MRP affect the adequacy of the reclamation plan. Twelve deficiencies have been identified that must be addressed prior to approval of this significant revision. The permittee has made some changes in Chapter 5 that are not germane to the significant revision, and some of this information has been found inadequate for insertion into the MRP.

The last TA for the Dugout Canyon Mine, in October 1998, was to permit a larger sedimentation pond for the mine pad, addition of water storage tanks, and expansion of coal storage and the electric-power sub-station.

SUMMARY OF OUTSTANDING DEFICIENCIES (Draft TA Only)

The Technical Analysis regarding the proposed permit changes is not complete at this time, pending submittal of additional information by the permittee and further review by the Division, to address outstanding deficiencies in the proposal. A summary of those outstanding deficiencies is provided below. Additional comments, concerns and deficiencies may also be found within the analysis and findings made in this Draft Technical Analysis which have not been presented in this summary. Upon finalization of this review, any outstanding deficiencies will be evaluated for compliance with the regulatory requirements. Such deficiencies may be conditioned to the requirements of the permit issued by the Division, result in denial of the proposed permit changes, or may result in other executive or enforcement action as deemed necessary by the Division at that time to achieve compliance with the Utah Coal Regulatory Program.

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

R645-301-112.500 and R645-301-112.600, The application needs to be revised so land ownership information is consistent between the text and the maps. 5

R645-301-114, Page 1-28 of Section 114 contains a discussion of acreage figures that needs to be clarified. The first part of this discussion apparently refers to surface ownership, but the application needs to make this clear 6

TECHNICAL ANALYSIS

R645-301-411.140, The application needs to either contain adequate cultural resources information or it needs to reference the Soldier Canyon mining and reclamation plan which contains this information 9

R645-301-322.200, The applicant needs to update the threatened and endangered species information in Section 322.200 of the mining and reclamation plan, including Table 3.1 11

R645-301-522, Revise 55% coal recovery, if needed, and provide the necessary information and/or calculation for justification 23

R645-301-525, Revise plate 5-7 by reducing the number of future survey stations within the longwall panels and adding survey stations to determine: a) the true angle of draw for this area, and b) any subsidence outside the existing angle, if it would occur 25

R645-301-332, In Section 332 is a reference to Section 521.100 that appears to be in error. The correct section is 525.100 25

R645-301-333, The raptor nest monitoring plan needs to be general enough that it includes all nests in the proposed addition to the permit area and any other nest discovered in the future that could be affected by subsidence. Wording in the current plan is specific to certain nests or groups of nests 26

R645-301-121.200, -731.200, In a TA dated October 16, 1998, the operator was asked to provide a commitment to 2 years of quarterly water-quality monitoring, at a minimum the operational parameters listed in Table 7-4 of the MRP, for springs SC-14, SC-65, SC-100, and SP-20 (S-30). A commitment to do this is on pages 7-53 and 7-54 of the October 1998 MRP; the significant revision does not contain this commitment.

There have been failures to perform the planned monitoring, and the underlying cause seems to be that the monitoring plan is unclear and ambiguous. The ground-water monitoring plan needs to be clearly specified in detail, and preferably in tabular form; for example, as in Tables 7.31-1 through 7.31-4 in Canyon Fuel Company's Soldier Canyon Mine MRP or Tables 7-2 through 7-5 in Canyon Fuel Company's SUFCO Mine MRP 32

R645-301-121.200, -724, -731.200, Monitoring protocols are explicit for DC-1 through DC-5, but are vague for PC-1a, PC-2, and RC-1. The Division recommends that the surface-water monitoring schedule be specified in detail in a table 32

R645-301-121.200, Two lines of text have been omitted at the bottom of page 7-62 33

R645-301-512.120, Plate 5-2 will need to be updated as requested in the August complete inspection. The new submission must identify the two areas which are not going to be disturbed as stated on page 5-16. Update the total disturbed area caused by mining in the MRP 34

ADMINISTRATIVE INFORMATION

OWNERSHIP AND CONTROL INFORMATION

Regulatory Reference: R645-301-112

Analysis:

The application would not change most of this section of the plan, including the land ownership information, but some of this material needs to be modified. The plan only lists three owners of land, both surface and mineral, in the permit area. These are the State of Utah, the Bureau of Land Management, and Canyon Fuel, but two other entities, identified as Thayn and Conover on the revised Plate 1-1, would own surface land in the revised permit area. In addition, the plan includes names and addresses of owners of surface and mineral property contiguous to the permit area, and some of these owners are not shown on Plate 1-1 or 1-2. These discrepancies need to be resolved.

The application would revise the section of the plan discussing interests in contiguous lands. The current plan discusses possible future permitting of the federal coal lease, but this would be eliminated. The application says the applicant does not intend to mine the state coal to the east of the permit boundary (revised boundary) during the current permit term.

Findings:

Information provided in the application is not adequate to meet the requirements of this section of the regulations. Prior to approval, the applicant must provide the following in accordance with:

R645-301-112.500 and R645-301-112.600, The application needs to be revised so land ownership information is consistent between the text and the maps.

VIOLATION INFORMATION

Regulatory Reference: R645-301-113

Analysis:

The lists of violations received by Canyon Fuel Company's operations has been updated. This information needs to be checked with the applicant violator system.

Findings:

Information provided in the application is adequate to satisfy the requirements of this section of the regulations.

RIGHT OF ENTRY

Regulatory Reference: R645-301-114

Analysis:

The right of entry section includes information about the federal coal lease that is being added to the permit area. This lease was approved in 1957 and readjusted effective January 1, 1997. On July 15, 1997, effective March 1, 1996, this lease was approved as part of the Soldier Creek Logical Mining Unit with Canyon Fuel Company as the unit operator. Most of the surface of the federal coal lease is privately owned.

Part of the proposed addition to the permit area is federal, state, and private land, both surface and mineral, for which the applicant does not have right of entry; however, no coal mining is proposed for these areas. These areas are to be used as subsidence buffer zones.

Page 1-28 of Section 114 contains a discussion of acreage figures that needs to be clarified. The first part of this discussion apparently refers to surface ownership, but the application needs to make this clear. Although the application has this minor problem, the applicant has evidently checked the acreage figures to be sure they correlate and has clearly explained one item that at first appears to be a discrepancy.

Findings:

Information provided in the proposal is not considered adequate to satisfy the requirements of this section of the regulations. Prior to final approval, the applicant must supply the following in accordance with:

R645-301-114, Page 1-28 of Section 114 contains a discussion of acreage figures that needs to be clarified. The first part of this discussion apparently refers to surface ownership, but the application needs to make this clear.

UNSUITABILITY CLAIMS

Regulatory Reference: R645-301-115

Analysis:

The applicant is not aware of any unsuitability designation or proposal to designate the area unsuitable for mining. No operations would be conducted within 300 feet of an occupied dwelling, and the current mining and reclamation plan contains approval for mining within 100 feet of a public road.

The proposed addition to the permit area contains a few unimproved roads, mostly on private land. The current mining and reclamation plan contains commitments to repair material damage to these roads to a condition acceptable to both the private land owner and the applicant.

TECHNICAL ANALYSIS

Last revised - November 1, 1999

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

PERMIT TERM, INSURANCE, PROOF OF PUBLICATION, AND FACILITIES USED IN COMMON

Regulatory Reference: R645-301-116 and -117

Analysis:

No changes are proposed for this section of the mining and reclamation plan. The applicant will need to submit a copy of the proof of publication when advertising is complete.

Findings:

Information provided in the proposal is considered adequate to meet the requirements of this section of the regulations. The applicant will need to submit a copy of the proof of publication when advertising is complete.

ENVIRONMENTAL RESOURCE INFORMATION

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

GENERAL

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

Analysis:

A description of the pre-mining environmental resources within the proposed permit area and adjacent areas that may be affected or impacted by the proposed underground mining activities is included in Sections 411, 521, and 720 of the current MRP; Section 411 has been modified to include information on surface ownership and land use in federal lease U07064-027821.

Findings:

General resource information is adequate to meet the requirements of this section of the regulations. No additional information is needed for approval of the significant revision.

PERMIT AREA

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

Analysis:

Addition of federal lease U07064-027821 to the Dugout Canyon Mine will not require additional surface disturbance. Lands subject to disturbance from surface coal mining operations over the estimated life of the Dugout Canyon Mine are described and identified in the current MRP. Federal lease U07064-027821 and the SITLA tract, which is an area of possible future permit expansion, are described and shown on maps in the significant revision.

Findings:

Permit area resource information is adequate to meet the requirements of this section of the regulations. No additional information is needed for approval of the significant revision.

HISTORIC AND ARCHAEOLOGICAL RESOURCE INFORMATION

Regulatory Reference: R645-301-411.140

Analysis:

TECHNICAL ANALYSIS

Last revised - November 1, 1999

The application includes no new cultural resources information. The current mining and reclamation plan for the Soldier Canyon Mine contains a 1980 cultural resources inventory that included the proposed addition to the permit area. Not all of the area was examined for cultural resources. Instead, the survey concentrated on those areas where prehistoric or historic activities were most probably concentrated, particularly in the canyons.

The cultural resource survey located one isolated artifact and one historical site. The historical site is the Pace Canyon Mine, and it was determined to not be eligible for listing in the National Register of Historic Places.

The information in the Soldier Canyon plan is adequate and is available to the Division, but the Dugout plan needs to refer to this information.

Findings:

Information provided in the proposal is not adequate to meet the requirements of this section of the regulations. Prior to final approval, the applicant must provide the following in accordance with:

R645-301-411.140, The application needs to either contain adequate cultural resources information or it needs to reference the Soldier Canyon mining and reclamation plan which contains this information.

CLIMATOLOGICAL RESOURCE INFORMATION

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

Findings:

Climatological resource information is covered in the current MRP. No additional information is needed for approval of the significant revision.

VEGETATION INFORMATION

Regulatory Reference: R645-301-321

Analysis:

Vegetation in the proposed addition to the permit area is very similar to that in the current permit area. The applicant has added one new vegetation community designation to Plate 3-1. This community is called deciduous streambank vegetation and limited riparian vegetation. According to the text, heavy grazing and erosion in Pace Creek and Rock Creek Canyons have resulted in sections of the stream banks having little or no deciduous and/or riparian vegetation.

Since the applicant is not proposing additional disturbance, the information in the application and the current plan is acceptable.

Findings:

Information provided in the application is adequate to meet the requirements of this section of the regulations.

FISH AND WILDLIFE RESOURCE INFORMATION

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

Analysis:

Wildlife Information

The applicant has revised Plate 3-2 to include the proposed addition to the permit area. This plate shows one eagle nest in the proposed addition, and the plate has been updated to include results from the 1998 raptor survey. Plate 3-2 also shows high priority yearlong elk habitat and critical deer summer range in the new area. High priority winter ranges are to the south of the proposed addition. According to the text, the access roads in Pace Creek and Rock Creek Canyons cross areas used by deer as winter range, but traffic is sporadic during the winter and heavier in the summer and fall.

This section includes updated information about the wildlife habitat mitigation project undertaken near Dugout Creek above the mine. The number of willows planted and to be planted along the creek may be less than the 4000 originally planned because there is a limited amount of appropriate habitat in which to plant the willows.

Threatened and Endangered Species

The existing mining and reclamation plan contains information about threatened, endangered, and sensitive species. According to Section 322.200, no threatened or endangered plant or wildlife species were discovered in recent inventories by Wildlife Resources, the Forest Service, and other qualified personnel. Appendix 3-1 contains a letter from Robert Thompson, Forest Service botanist, indicating the area contains no threatened or endangered plant species.

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 it could occur in other parts of the permit area and proposed addition.

Section 322.200 says three listed species, the bald eagle, peregrine falcon, and black-footed ferret, could potentially inhabit the area. Peregrine falcons are no longer listed as threatened or endangered, and this portion of the plan, including Table 3-1, should be updated. There have been no confirmed sightings of black-footed ferrets in Carbon County in several years, but bald eagles probably occur within the permit area during the winter.

TECHNICAL ANALYSIS

Last revised - November 1, 1999

Dugout Creek is within the drainage of the Green River which is habitat for certain threatened and endangered fish of the upper Colorado River basin. Through effects on water quantity and quality, the mine could potentially adversely affect these species.

As required by R645-301-358.100, the applicant must promptly report to the Division any state or federally listed endangered or threatened species within the permit area of which it becomes aware. Seasonal or migrating bald eagles are expected and would not need to be reported.

Findings:

Information provided in the proposal is not adequate to meet the requirements of this section of the regulations. Prior to final approval, the applicant must provide the following in accordance with:

R645-301-322.200, The applicant needs to update the threatened and endangered species information in Section 322.200 of the mining and reclamation plan, including Table 3.1.

Once the Division receives comments from the Division of Wildlife Resources and the Fish and Wildlife Service, it may be necessary to require additional information.

SOILS RESOURCE INFORMATION

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

Analysis:

Soils resource information is covered in the current MRP. There is to be no additional surface disturbance and no additional soils resource information is needed for approval of the significant revision.

Findings:

Information provided in the proposal is considered adequate to meet the requirements of this section of the regulations.

LAND-USE RESOURCE INFORMATION

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

Analysis:

Plate 4-1 and Exhibit 8 of Appendix 4-2 have been updated to show grazing allotments and logging areas in the proposed addition to the permit area. Exhibit 8 shows one area of proposed logging in the Fish Creek area, but it shows no additional timbering in the proposed addition to the permit area.

The application shows the number of livestock allowed in the various federal allotments, but the number varies in some non-federal areas because it is private land.

TECHNICAL ANALYSIS

The applicant proposes no other changes to this section of the mining and reclamation plan. The current plan says there are no cemeteries, public parks, or units of the National System of Trails or the Wild and Scenic Rivers System located within the permit boundary, and it is assumed this statement is still valid for the proposed addition.

Findings:

Information provided in the proposal is considered adequate to meet the requirements of this section of the regulations.

ALLUVIAL VALLEY FLOORS

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

Analysis:

Alluvial valley floor information is covered in Chapter 9 the current MRP. No additional information is needed for approval of the significant revision.

Findings:

Information provided in the proposal is considered adequate to meet the requirements of this section of the regulations.

PRIME FARMLAND

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

Analysis:

Prime farmland information is covered in the current MRP. No additional information is needed for approval of the significant revision.

Findings

Information provided in the proposal is considered adequate to meet the requirements of this section of the regulations.

GEOLOGIC RESOURCE INFORMATION

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

Analysis:

TECHNICAL ANALYSIS

Last revised - November 1, 1999

Changes, mostly minor, have been made to the text on pages 6-2, 6-4, 6-15 through 6-19, and 6-21 of Chapter 6. Plates 6-1, 6-4, 6-5, 6-6 (Confidential Folder), and 6-7 (Confidential Folder) include federal lease U07064-027821 within the proposed permit boundary; they also include the adjacent SITLA coal tract that is not part of the current significant revision application but that is an area of possible future expansion east of the federal lease. Plate 6-4 is an isopach map of the Rock Canyon seam overburden thickness and Plate 6-5 is an isopach map of the Rock Canyon to Gilson seam interburden thickness. Plates 6-6 and 6-7 in the Confidential binder are isopach thickness maps of, respectively, the Rock Canyon and Gilson seams. Plates 6-3A and 6-3B, also submitted with the significant revision, are geologic cross sections of the federal lease and SITLA tract.

The geologic map and 6 cross sections in the permit application are based on drill hole data and mapping of surface geology. Fourteen additional drill-hole logs have been submitted with the significant revision, so Appendix 6-1 now contains drill-hole logs for twenty-nine of the holes that have been bored in and adjacent to the permit area: the bore holes are listed on pages 6-2 and 6-4. Collar or ground elevations are included in Appendix 6-1. Drill hole locations and elevations are shown on Plate 6-1.

Some bore holes have been logged from the surface to total depth, for others only the coal seams and adjacent strata have been logged. Together, the logs describe lithologic characteristics and thickness of each stratum from the surface to below the coal seams. Ground water occurrence was not marked on these logs at the time the holes were bored (p. 6-17).

Analysis reports on coal, floor, and roof samples from the Rock Canyon and Gilson seams are in Appendix 6-2 (Confidential binder). No new data have been submitted with the significant revision submittal, just a new title page for Appendix 6-2.

Geologic cross sections D - D', E - E', and F - F' (Plates 6-3A and 6-3B) have been submitted with the significant revision. They show the interval from the Sunnyside coal zone to below the Gilson coal zone in federal lease U07064-027821 and the SITLA coal tract. Together, cross sections A - A' through F - F' show relative positions and thickness of the Rock Canyon, Sunnyside, and Gilson coal seams (and of rider seams associated with the Rock Canyon and Gilson seams) in the proposed permit and adjacent areas.

The current MRP includes a description of the areal and structural geology of the proposed permit and adjacent areas, including federal lease U07064-027821 and the SITLA tract. The description is based on maps and plans required as resource information for the plan, detailed site specific information, and geologic literature and practices. It shows how areal and structural geology may affect the occurrence, availability, movement, quantity, and quality of potentially impacted surface and ground water. Section 624.100 contains descriptions of the stratigraphy and lithology, a discussion of geologic structure, and a very brief but adequate description of the nature, depth, and thickness of the coal seams and the interburden between the Sunnyside, Rock Canyon, and Gilson seams.

The Gilson and Rock Canyon seams are sufficiently developed to allow for economic mining of one or the other in much of the proposed permit area; however, multiple seam mining will be limited to the vicinity of Dugout Canyon. The Gilson seam is generally not of minable thickness west of Dugout Canyon. East of Dugout Canyon the sulfur content of the Rock Canyon coal increases and renders it unmarketable. In addition, interburden between the two seams thins east of the canyon, making multiple seam mining difficult, dangerous, and uneconomical. Coal in the Rock Canyon seam ranges from 5 to 8

TECHNICAL ANALYSIS

feet in thickness, except for a want in the north-central part, where coal thins to under 3 feet (p. 6-16). Plate 6-7 indicates the Gilson seam is up to sixteen feet thick in federal lease U07064-027821; however, this is near the outcrop and recovery of this thickest coal may not be practical. Most Gilson coal in the federal lease is between 6 to 10 feet thick. The R2P2 for the logical mining unit that includes Soldier Canyon and Dugout Canyon Mines and federal lease U-07064-027821 is in the Confidential binder.

Maximum subsidence can be projected as 4.2 to 7.0 feet, based on 6 feet being the minimum and 10 feet being the maximum thicknesses to be mined (R2P2) and on the assumption that the surface will subside up to 70% of the thickness of the extracted coal. Where the Rock Canyon coal seam is minable, overburden thickness ranges from 500 feet in the south to over 2,400 feet in the north (Section 627 and p. 7-45). Overburden consists of the upper Blackhawk Formation, the Castlegate Sandstone, and the Price River, North Horn, and Flagstaff Formations, which are described in Section 624.100. Gilson to Rock Canyon interburden thickness is 30 to 80 feet over the proposed permit area (Plate 6-5).

The application includes geologic information in sufficient detail to assist in determining the probable hydrologic consequences of the operation upon the quality and quantity of surface and ground water in the permit and adjacent areas, including the extent to which surface and ground water monitoring is necessary, and determining whether reclamation as required by the Utah Coal Mining Rules can be accomplished and whether the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area.

At this time the Division does not require the collection, analysis, and description of additional geologic information to protect the hydrologic balance, to minimize or prevent subsidence, or to meet the performance standards. The applicant has made no request the Division to waive in whole or in part the requirements of the bore hole information or analysis required of this section. The applicant has requested that the information in Appendices 6-1 and 6-2 be kept confidential.

Findings:

Information on geologic resources is considered adequate to meet the requirements of this section.

HYDROLOGIC RESOURCE INFORMATION

Analysis:

Sampling and analysis.

Information on sampling and analysis is covered in the current MRP. No additional information is needed for approval of the significant revision.

Baseline information.

Ground-water information.

TECHNICAL ANALYSIS

Last revised - November 1, 1999

Water monitoring data that potentially met the minimum requirements of SMCRA and the Utah Coal Mining Rules was done at only 13 (6 springs and 7 in-mine locations) of the 97 sites listed in the initial PAP. On average only 3 samples were analyzed for those 13 sites, so determination of baseline seasonal quality was minimal for specific sites; however, overall baseline ground-water quality and quantity information was considered sufficient to characterize baseline ground-water conditions for the permit area.

Water-quality samples were to have been collected during 1997. October 1997 data at SC-65, SC-100, and SP-20 were mistakenly collected as field parameters only rather than water-quality parameters, and no data at all were collected at SC-14 that month. The permittee collected no water samples nor made any determinations of field parameters during the first quarter of 1998, but by agreement with UDOGM monitoring was done early in the third quarter as representative of the second quarter. Unfortunately field parameters only, rather than water-quality parameters, were determined for these samples.

Springs SC-65, SP-20 (same as S-30), SC-14, and SC-100 were to have been monitored for operational water quality and quantity beginning the third-quarter of 1998. The permittee selected these springs because they were considered reasonably accessible and representative of conditions within their respective formations (page 7-54); however, there is actually little historic data for these springs and it is necessary to rely on data from the Soldier Canyon Mine and surrounding springs to extrapolate baseline information. Because of the dearth of baseline water-quality and -quantity data, the operator was asked to provide a commitment to 2 years of quarterly water-quality and -quantity monitoring, at a minimum the operational parameters listed in Table 7-4 of the MRP, for these four springs. Pages 7-53 and 7-54 of the current MRP contain a commitment to monitor these springs quarterly, when accessible, for at least 2 years and to analyze the water samples for the parameters listed in Table 7-4; the significant revision does not contain this commitment.

Since 1997 there has been repeated failure to perform planned monitoring. There always seems to be a justification, but it seems the underlying cause is an unclear, ambiguous monitoring plan. The ground-water monitoring schedule needs to be clearly specified in detail, and preferably in tabular form (such as Tables 7.31-1 through 7.31-4 in Canyon Fuel Company's Soldier Canyon Mine MRP or Tables 7-2 through 7-5 in Canyon Fuel Company's SUFCO Mine MRP), in order:

- to reduce confusion;
- to help assure that the monitoring plan is followed for:
 - sites monitored,
 - frequency of monitoring,
 - parameters to be monitored,
 - and collection of appropriate samples for water-quality analysis; and
- to facilitate the Division's inspections of water-quality data.

The significant revision adds springs SC-116, 200, 203, 227, 259, and 260 to the operational monitoring list: 200, 203, 259, and 260 are in the SITLA tract. Baseline data are scarce in the vicinity of the Dugout Canyon Mine, so these springs are to be monitored quarterly for 3 years and water samples analyzed according to the Division's guidelines (p. 7-56), referring to UDOGM directive Tech 004.

Surface-water information.

TECHNICAL ANALYSIS

Data from 1978 and 1979 for PC-1 and 1978 to 1980 for PC-1a are in the revised Appendix 7-7: some of these samples were adequately analyzed for baseline parameters. Appendix 7-7 has adequate baseline data for the first 2 quarters of 1999 for PC-1a, PC-2, and RC-1: Rock Canyon was dry both quarters while flow in Pace Canyon appears to be seasonal and to originate from springs in the Flagstaff and North Horn Formations. Baseline data will continue to be obtained from PC-1a, PC-2, and RC-1 for 3 years prior to initiating operational monitoring; however, the monitoring protocols in the MRP are vague.

Baseline cumulative impact area information.

A Cumulative Hydrologic Impact Assessment (CHIA) has previously been prepared for the Soldier Canyon and Dugout Canyon Mines. The Cumulative Impact Area (CIA) for that CHIA included federal lease U07064-027821 and the surrounding area. Two small corners of the subsidence buffer zone around the federal lease are outside that of the CIA; however, those two remote areas will not be impacted by mining nor contribute to cumulative impacts outside the proposed Dugout Canyon Mine permit area. No additional hydrologic and geologic information is needed from the permittee for a CHIA.

Modeling.

No modeling techniques, interpolations, or statistical techniques have been used in preparation of the current MRP or the significant revision.

Alternative water source information.

Probable hydrologic consequences determination.

A PHC determination prepared by Mayo and Associates in 1996 is in Appendix 7-3. Information on geology, hydrology, and hydrogeology and data on discharge, sediment, and other surface and ground water parameters were compiled from previous studies, and seventeen ground- and surface-water samples were collected in 1995 for chemical and isotopic analyses. In spite of the seemingly large data base, most analyses lacked information on seasonal variation and on the basic parameters required by the Coal Mining Rules and SMCRA. The PHC determination in Section 728 of the MRP is based on the Mayo and Associates PHC and additional data collected in 1996 and 1997. Potential impacts covered in the PHC in Section 728 are:

- Ground water and surface-water availability;
- Contamination from acid- and toxic-forming materials;
- Sediment yield;
- Acidity, total suspended solids, and total dissolved solids;
- Flooding or streamflow alteration;
- Ground-water and surface-water availability;
- Potential hydrocarbon contamination;
- Road salting; and
- Coal haulage.

TECHNICAL ANALYSIS

Last revised - November 1, 1999

The area covered by Mayo's PHC (Appendix 7-3) included Pace Creek. The PHC in Section 728 has been revised to include Pace Creek. (The SITLA lease was not included in either PHC, so future expansion into Rock Canyon may require a revised PHC.)

Potential adverse effects to the hydrologic balance from the proposed mining operations are: both decreased and increased stream flows and spring discharges due to capture of surface or ground water by mine-related subsidence, bedrock fracturing, and aquifer dewatering (p. 7-46); increased stream flows due to increased discharge of ground water from the Blackhawk Formation through the mine workings; and increased ground-water recharge from overlying ground water systems. It appears that the Soldier Canyon Mine has not decreased groundwater discharge in overlying or underlying groundwater systems. It is unlikely that coal mining will effect the discharges of any spring as a result of mining in the Dugout Canyon permit and adjacent areas (p. 7-47 and Appendix 7-3).

Considerable seasonal and climatic variability are noted in the hydrographs of springs in the permit and adjacent areas, but data for both Soldier Creek and springs that overly the Soldier Canyon Mine workings do not show discharge declines that may be attributed to either subsidence or bedrock fracturing (p. 7-46). The Blackhawk groundwater system in the vicinity of mined coal seams is compartmentalized both vertically and horizontally. Coal mining locally dewateres overlying rock layers in the Blackhawk Formation but does not appear to draw additional recharge from overlying or underlying groundwater systems (p. 7-47).

Subsidence is anticipated where overburden is between 600 and 1,200 feet in the main fork of Dugout Creek and 500 to 2,000 feet in the right fork of Dugout Creek. Subsidence is also anticipated in a small area along the bottom of the Pace Creek drainage. The loss of stream-flow to the mine because of subsidence is highly unlikely and losses to bedrock exposed in or beneath soil in the channel would be short lived because of thick mantles of fine-grained soils, the tendency of fractures in fine-grained rocks of the Blackhawk Formation to close relatively rapidly, and the expected rapid filling of fractures that may occur in channel floors (pages 7-45 and 7-46).

Steady-state inflow to the Dugout Canyon mine is expected to be approximately 210 gpm, which is considered by the permittee to be a conservatively high estimate (p. 7-49). After accounting for in-mine consumption, up to 190 gpm (306 acre-feet/yr) could be discharged to Dugout Creek, which would represent an increase of approximately 6% over the average annual flow of 5,100 acre-feet/yr. Estimated maximum discharge from the Dugout Canyon Mine is approximately 400 gpm. If this maximum rate were sustained for a full year there would be a 13% increase in the estimated average annual flow of Dugout Creek (p. 7-50).

Ground-water monitoring plan.

Ground-water monitoring is discussed in the Operation Plan section of this TA. The significant revision adds springs to the operational monitoring list: 200, 203, 259, and 260 are in the SITLA tract. Baseline data are scarce in the vicinity of the Dugout Canyon Mine, so these springs are to be monitored quarterly for 3 years and water samples analyzed for baseline parameters as specified in UDOGM directive Tech 004. After completion of baseline monitoring, these springs will be monitored quarterly for field parameters .

Surface-water monitoring plan.

Surface-water monitoring is discussed in the Operation Plan section of this TA. PC-1a, PC-2, and RC-1 will be monitored for baseline parameters for 3 years prior to switching tom operational parameters..

Findings:

The hydrologic resource information provided in the PAP is considered adequate to meet the requirements of this section.

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

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

Analysis:

Affected Area Boundary Maps

Plate 5-7 shows the boundaries of all areas proposed to be affected over the estimated total life of the coal mining and reclamation operations. The dates on Plate 5-7 indicate that the applicant hopes to operate the Dugout Canyon Mine until 2009. Plate 5-7 has been revised to include federal lease U07064-027821 and the SITLA tract and adjacent areas.

Archaeological Site and Cultural Resource Maps

Maps showing cultural resource sites are in the reports discussing these sites. These maps meet regulatory requirements.

Coal Resource and Geologic Information Maps

Coal resource and geologic information maps have been revised to include federal lease U07064-027821 and the SITLA tract and adjacent areas.

Contour Maps

Plate 5-4 shows the existing topography, Plate 5-2 shows the proposed topography during mining and Plate 5-5 shows the topography after reclamation. The Division has reviewed these plates and determined that they adequately showed the surface configurations. These three plates show the topography around the disturbed area and have not been revised because they are not affected by the significant revision.

TECHNICAL ANALYSIS

Last revised - November 1, 1999

Existing Structures and Facilities Maps

Plate 4-1 has been revised to include federal lease U07064-027821 and the SITLA tract and adjacent areas. The existing structures include a power line and the new county road to the Dugout Canyon Mine.

Existing Surface Configuration Maps

Plate 5-4, which has not been revised, shows the topography of the disturbed area prior to the Dugout Canyon Mine permit being issued, and also older, pre-SMCRA disturbance.

Mine Workings Maps

Plate 5-1, which shows the Pre-SMCRA mine workings in the Rock Canyon and Gilson seams and the old mine openings, has not been revised. Plate 5-7, which shows the current and projected Dugout Canyon Mine workings, has been revised to include federal lease U07064-027821 and the SITLA tract and adjacent areas.

Monitoring and Sampling Location Maps

Maps showing monitoring locations for vegetation, wildlife, and water and locations of bore holes have been revised to include federal lease U07064-027821 and the SITLA tract and adjacent areas

Permit Area Boundary Maps

Maps showing boundaries of land upon which the applicant has the legal right to enter and begin underground mining activities have been revised to include federal lease U07064-027821 and the SITLA tract and adjacent areas.

Subsurface Water Resource Maps

Maps and cross-sections showing location and extent of subsurface water within the proposed permit or adjacent areas have been revised to include federal lease U07064-027821 and the SITLA tract and adjacent areas.

Surface and Subsurface Manmade Features Maps

There are no buildings or other structures within 1,000 feet of the permit area except for roads. Roads are shown on several maps, including Plates 4-1 and 5-7, which have been revised to include federal lease U07064-027821 and the SITLA tract and adjacent areas.

Surface and Subsurface Ownership Maps

Surface and subsurface ownership maps have been revised to include federal lease U07064-027821 and the SITLA tract and adjacent areas.

Surface Water Resource Maps

Surface water resource maps have been revised to include federal lease U07064-027821 and the SITLA tract and adjacent areas.

Vegetation Reference Area Maps

The reference areas have not been changed, but the map showing the reference areas has been altered to show vegetation communities in the areas proposed to be added to the permit area.

Well Maps

No oil or gas wells are known to exist within the permit area.

Certification Requirements.

Maps and cross-sections submitted with the significant revision have been certified by a qualified, registered, professional engineer.

Findings:

Information provided in the application is adequate to meet the requirements of this section of the regulations.

TECHNICAL ANALYSIS

Last revised - November 1, 1999

OPERATION PLAN

MINING OPERATIONS AND FACILITIES

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

Analysis:

**General
Type and Method of Mining Operations
Facilities and Structures.**

Finding:

These sections are not affected by the significant revision.

EXISTING STRUCTURES:

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

Analysis:

Plate 4-1 shows the two existing structures in the permit area: the main access road, owned by the county up to the Dugout Canyon Mine property line, and the power lines. Both structures have been modified since the Dugout Canyon Mine permit was issued. There are several dirt roads, trails, and wheel tracks in the area that are on lands owned by the permittee or the Thayn family and to which access is limited. The Division has not required the identification the dirt roads, trails, and wheel tracks that will not be used for mining activities except for monitoring and data collection. Plate 4-1 has been revised to include federal lease U07064-027821 and the SITLA tract and adjacent areas.

Findings:

Information provided in the application is adequate to meet the requirements of this section of the regulations.

PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES

Regulatory Reference: 30 CFR Sec. 784.17; R645-301-411.

Analysis:

TECHNICAL ANALYSIS

The proposed addition to the permit area contains no known significant cultural resources, including sites eligible for listing in the National Register of Historic Places, cemeteries, public parks, or units of the National System of Trails and Wild and Scenic Rivers System. Therefore, no protection plan is needed.

Findings:

Information provided in the application is adequate to meet the requirements of this section of the regulations. The Division should recommend a cultural resource clearance from the State Historic Preservation Office.

RELOCATION OR USE OF PUBLIC ROADS

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

Analysis:

Information on relocation or use of public roads is in Section 521 of the current MRP. There is to be no additional surface disturbance and no additional information on relocation or use of public roads is needed for approval of the significant revision.

Findings:

Information provided in the proposal is considered adequate to meet the requirements of this section of the regulations.

AIR POLLUTION CONTROL PLAN

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

Analysis:

The application includes a statement that, as of January 1, 1999, the Dugout Canyon mine has a permit to operate at a production rate of five million tons annually. A copy of the revised Air Quality Approval Order is included in the application.

Findings:

Information provided in the application is adequate to meet the requirements of this section of the regulations.

TECHNICAL ANALYSIS

Last revised - November 1, 1999

COAL RECOVERY

Regulatory Reference: R645-301-522

Analysis:

The coal recovery section has not been updated as stated on page 5-22. It is highly unlikely that 55% recovery is still the same. Longer longwall mining panels and additional mining leases should alter the 55% coal recovery.

Finding:

Information provided in the proposed significant revision is not considered adequate to meet the requirements of this section. Prior to approval, the permittee must provide the following in accordance with:

R645-301-522, Revise 55% coal recovery, if needed, and provide the necessary information and/or calculation for justification.

SUBSIDENCE CONTROL PLAN

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

Analysis:

Renewable resources survey.

Renewable resource lands within the permit and adjacent areas are shown on Plate 4-1. This map shows the two existing structures in the permit area: the main access road, owned by the county up to the Dugout Canyon Mine property line, and the power lines. As shown on Plate 4-1, both structures have been modified since the Dugout Canyon Mine permit was issued. Plate 4-1 has also been revised to include federal lease U07064-027821 and the SITLA tract and adjacent areas.

The area of potential subsidence is currently used for livestock grazing and wildlife habitat, with limited timber production (Section 411.130). Exhibit B in Appendix 4-2 shows areas where timber has been harvested in the past and areas to be potentially logged in the future: none of the areas for future logging are within the significant revision area.

No major transmission lines, pipelines, or agricultural drainage tile fields exist within the area of potential subsidence. Roads within the area of potential subsidence consist of private dirt roads, trails, and wheel tracks that are owned and maintained by the parent company of Soldier Canyon Mine and by private citizens, including the Thayn family. These unimproved roads, which may be used for access to the lease area, may be damaged by subsidence. Damage to roads not owned by the parent company of Soldier Canyon Mine will be repaired to a condition acceptable to both the private land owner and Soldier Canyon Mine. No other structures are known to exist within the area of potential subsidence (Section 525.100).

TECHNICAL ANALYSIS

Hydrologic resources in the area are discussed in Chapter 7 of the MRP. Information regarding baseline groundwater conditions is provided in Section 724.100.

Anticipated Impacts

The current mining and reclamation plan contains a discussion of potential effects of subsidence on wildlife. In Section 332 is a reference to Section 521.100 that appears to be in error. The correct section is 525.100.

The application discusses potential effects on perennial and intermittent streams and says flow interruptions are not anticipated. According to the current plan, it has been demonstrated that topographic lows, such as stream channels, tend to be protected by upwarping of adjacent slopes during subsidence. Therefore, mining-induced surface fracturing should be very limited within stream channel areas, and any fracturing that does occur in channels is likely to fill rapidly as a result of sedimentation.

As discussed in the current plan, it is anticipated that no substantial damage will occur to rangelands as a result of subsidence. Most wildlife will be unaffected. Potential effects on raptors are discussed in the "Fish and Wildlife Protection" portion of this review.

Subsidence Control Plan

The permittee has several future monitoring stations within the angle of draw and mainly near the center of the future mined out area created by longwall mining. There are no new monitoring stations along or outside the angle of draw. Therefore, it would be difficult to determine the effects of mining outside the angle of draw, if any occurs.

If future monitoring stations were placed around the perimeter of the angle of draw, this information should provide any impacts occurring beyond the angle of draw. Secondly, provide information to determine an accurate angle of draw. This could potentially give the permittee a lesser angle of draw and thus coal recovery would increase.

Performance standards for subsidence control.

Subsidence damage to surface resources is not anticipated. No public buildings or facilities, churches, schools, hospitals, impoundments or other bodies of water with a capacity of 20 acre-feet or more, aquifers or bodies of water that serve as a significant water source for any public water supply system, urbanized areas, cities, towns, or communities are in the area of potential subsidence (Section 525.200).

The applicant has revised Plate 3-2 to include the proposed addition to the permit area. This plate shows one eagle nest in the proposed addition, and the plate has been updated to include results from the 1998 raptor survey.

Should material damage occur, SOLDIER CANYON MINE will correct any material damage to the extent technologically and economically feasible. In addition, SOLDIER CANYON MINE will notify the Division of any slide, rock fall, or other disturbance caused by subsidence that will affect the environment.

TECHNICAL ANALYSIS

Last revised - November 1, 1999

The information provided in the proposed amendment is not considered adequate to determine subsidence that occurred outside the angle of draw. New submittal must justify and determine an accurate angle of draw for future coal leases. This potential information could increase the recoverable tons of coal in future leases.

Notification.

Each owner or resident of property that is above and adjacent to an underground mining block and may be affected by subsidence will be notified by mail at least 6 months prior to mining, or within that 6-month period if approved by the Division. The notification will contain:

- Identification of specific areas in which mining will take place;
- Dates the specific areas will be undermined; and
- The location or locations where the SOLDIER CANYON MINE subsidence control plan may be examined.

Finding:

Information provided in the proposal is not adequate to meet the requirements of this section of the regulations. Prior to final approval, the applicant must provide the following in accordance with:

R645-301-525, Revise plate 5-7 by reducing the number of future survey stations within the longwall panels and adding survey stations to determine: a) the true angle of draw for this area, and b) any subsidence outside the existing angle, if it would occur.

R645-301-332, In Section 332 is a reference to Section 521.100 that appears to be in error. The correct section is 525.100.

SLIDES AND OTHER DAMAGE

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

Analysis:

The significant revision does not change this section of the MRP. The information and commitments in the current MRP are adequate to meet the requirements of the Coal Mining Rules.

Findings:

Information provided in the proposal is considered adequate to meet the requirements of this section of the regulations.

FISH AND WILDLIFE PROTECTION

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

Analysis:

Protection and Enhancement Plan, Threatened and Endangered Species, Bald and Golden Eagles, Wetlands, and Habitats of Unusually High Value

The current mining and reclamation plan contains monitoring and protection commitments some of which apply to mining in the area proposed to be added. These commitments include consultation with various agencies and evaluation of mine plans at least nine months before undermining any nests to determine what protection, avoidance or mitigation options are available.

For the most part, this plan is adequate. However, the plan discusses monitoring of specific nests or nests in certain sections, and although this was adequate for the known nests in the existing permit area, these commitments are worded such that they would not apply to the nest in the proposed addition to the permit area. The specific information about nests in the existing permit area is good because the applicant has considered when these nests would be undermined and when consultation might be needed, but the monitoring plan needs to be general enough that it would include the nest in the proposed addition and any other nest that might be discovered in the future.

The applicant does not need to monitor every nest every year. Only those nests that could be affected by subsidence within the coming year or two need to be checked.

Through water use, the mine could potentially adversely affect threatened and endangered fish of the upper Colorado River basin. The Fish and Wildlife Service requires mitigation when annual water use exceeds 100 acre-feet. According to the revised Probable Hydrologic Consequences document, the increased acreage will not result in increased water use which is currently estimated at 46.5 acre-feet per year. Therefore, no mitigation should be required.

Findings:

Information provided in the proposal is not adequate to meet the requirements of this section of the regulations. Prior to final approval, the applicant must provide the following in accordance with:

R645-301-333, The raptor nest monitoring plan needs to be general enough that it includes all nests in the proposed addition to the permit area and any other nest discovered in the future that could be affected by subsidence. Wording in the current plan is specific to certain nests or groups of nests.

TOPSOIL AND SUBSOIL

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

TECHNICAL ANALYSIS

Last revised - November 1, 1999

Analysis:

Protection of topsoil and subsoil is discussed in the current MRP. The significant revision will not involve disturbance or removal of soils. No additional information on soils is required for approval of the significant revision.

Findings:

Information provided in the proposal is considered adequate to meet the requirements of this section of the regulations.

INTERIM REVEGETATION

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

Analysis:

The existing mining and reclamation plan adequately addresses interim revegetation, and since no surface disturbance is proposed, no revisions are needed.

Findings:

Information provided in the proposal is considered adequate to meet the requirements of this section of the regulations.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

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

Analysis:

Road systems and other transportation facilities are discussed in Section 527 of the current MRP. No additional information on road systems and other transportation facilities is needed for approval of the significant revision.

Findings:

Information provided in the proposal is considered adequate to meet the requirements of this section of the regulations.

SPOIL AND WASTE MATERIALS

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

Analysis:

Disposal of coal mining waste is discussed in Section 536 of the current MRP. No spoil or processing waste is produced by the Dugout Canyon Mine. No additional information on spoil and waste materials is needed for approval of the significant revision.

Findings:

Information provided in the proposal is considered adequate to meet the requirements of this section of the regulations.

HYDROLOGIC INFORMATION

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

Underground mining and reclamation activities are planned to be conducted to minimize disturbance of the hydrologic balance within the permit and adjacent areas, to prevent material damage to the hydrologic balance outside the permit area, and to support approved postmining land uses in accordance with the terms and conditions of the approved permit and the performance standards of this part. The Division has not required additional preventive, remedial, or monitoring measures to assure that material damage to the hydrologic balance outside the permit area is prevented.

Analysis:

By defining terms, stating objectives, and identifying responsibilities, UDOGM Coal Regulatory Program Directive Tech-004 (Tech-004) is meant to clarify the Division's position on what constitutes an appropriate monitoring program and provides methodology for consistently amending these monitoring programs. Under Tech-004, amendments to monitoring programs will be approved on a site specific basis.

The monitoring plan at Dugout Canyon Mine conforms to the amended monitoring plan approved for the Soldier Canyon Mine, which is based on Tech-004. The amended Soldier Canyon Mine monitoring plan was approved in accordance with the procedure in section 5E of Tech-004:

- a. Canyon Fuel Company appears to be the owner of the surface in all areas where monitoring was stopped. Canyon Fuel Company also owns the water rights for the

TECHNICAL ANALYSIS

Last revised - November 1, 1999

springs that have been removed from the monitoring plan. The only surface-water right involved that is not owned by the mine is upstream of the mine, beyond the area affected by subsidence, and the monitoring point on that reach of stream is to be replaced by one downstream, closer to the mine.

- b. Historical quality data show that, except for some problem samples, a good cation/anion balance exists with these data.
- c. Data can be used in a regression analysis to demonstrate that conductivity correlates to the specific water quality of that site, as measured by TDS.
- d. The site is not critical to the ongoing PHC determination.
- e. Monitoring is no longer necessary to achieve the purposes set forth in the approved monitoring plan.
- f. Subsidence monitoring information indicates that further subsidence is not likely and that future mining will not occur in adjacent areas that could affect these water sources.

Sites above and below the disturbed areas and discharge points of the Dugout Canyon Mine (DC-1, DC-2, and DC-3) are monitored quarterly for flow and operational field and laboratory parameters. PC-1a, PC-2, and RC-1 are added to the monitoring plan by this proposed significant revision.

Ground-water monitoring.

Locations of wells and springs to be monitored are on Plate 7-1. Operational ground-water quality parameters to be monitored at the Dugout Canyon Mine are listed in Table 7-4 of the MRP. They correspond with the operational parameters in Table 4 of Tech-004 except that total alkalinity and hardness are not included. Operational ground-water monitoring protocols are given on pages 7-53 through 7-57.

For the initial Dugout Canyon Mine MRP, the permittee selected springs SC-65, SP-20 (same as S-30), SC-14, and SC-100 for operational monitoring because they were considered reasonably accessible and representative of conditions within their respective formations (page 7-54); however, there is actually little historic data for these springs and it is necessary to rely on data from the Soldier Canyon Mine and surrounding springs to extrapolate baseline information. Because of the dearth of baseline water-quality and -quantity data, the operator was asked to commit to 2 years of quarterly water-quality and -quantity monitoring at these four springs, (UDOGM TA dated October 16, 1998). Pages 7-53 and 7-54 of the current MRP contain a commitment to monitor these springs quarterly, when accessible, for at least 2 years and to analyze water samples for the parameters listed in Table 7-4; the significant revision does not contain this commitment.

Springs SC-65, SP-20, SC-14, and SC-100 were to have been monitored for operational water quality and quantity beginning the third-quarter of 1998; however, only field parameters have been collected for these 4 springs. Since 1997 there have been other failures to perform planned monitoring. There always seems to be a justification, but the underlying cause seems to be an unclear, ambiguous monitoring plan. The ground-water monitoring schedule needs to be clearly specified in detail, and preferably in tabular form (such as Tables 7.31-1 through 7.31-4 in Canyon Fuel Company's Soldier Canyon Mine MRP or Tables 7-2 through 7-5 in Canyon Fuel Company's SUFCO Mine MRP), in order:

- to reduce confusion;
- to help assure that the monitoring plan is followed for:

TECHNICAL ANALYSIS

- sites monitored,
- frequency of monitoring,
- parameters to be monitored,
- and collection of appropriate samples for water-quality analysis; and
- to facilitate the Division's inspections of water-quality data.

After 2 years of operational water-quality data has been collected, quarterly operational monitoring of springs SC-14, SC-65, SC-100, and SP-20 is to be reduced to field parameters (flow, pH, specific conductance, and temperature).

Operational water-quality parameters for springs SC-14, SC-65, SC-100, and SP-20 will also be determined semi-annually during the first "wet" and "dry" years; this is one notable variation from the recommended schedule in Tech-004. Wet and dry years will be defined based on snow-pack measurements as of March 1 for the Price-San Rafael area, a wet year being the first year after permit issuance when the snow pack water content is greater than 110% of normal and a dry year being the first year following permit issuance when the snow pack is less than 70% of normal. These "wet" and "dry" years may occur during the initial 2 years of quarterly operational monitoring. Also during these "wet" and "dry" years, spring flows will be measured weekly between April 1 and August 31 as conditions permit, with the intent of preparing baseflow hydrographs from the data.

The significant revision adds springs SC-116, 200, 203, 227, 259, and 260 to the operational monitoring list: 200, 203, 259, and 260 are in the SITLA tract. Baseline data are scarce in the vicinity of the Dugout Canyon Mine, so these springs are to be monitored quarterly for 3 years and water samples analyzed for baseline parameters as specified in UDOGM directive Tech 004. After completion of baseline monitoring, these springs will be monitored quarterly for field parameters .

Tech-004 recommends that for springs, water-quality samples be analyzed for baseline parameters every fifth year. Page 7-56 includes a commitment to collect one water sample from each monitored spring, at low flow during the year preceding re-permitting (once every five years), that will be analyzed for baseline parameters.

Water depth in wells GW-10-A, GW-11-2, and GW-24-1 will be monitored quarterly. Well GW-24-1 (completed in the Castlegate Sandstone) is currently monitoring ground water levels in federal lease U07064-027821.

During Phase I construction in September 1998, ground water was discovered discharging from the old Gilson coal-seam workings on the east side of Dugout Canyon. This water had been seeping undetected through the alluvium and into the stream channel. Beginning in the fourth quarter of 1998, this water was to be monitored at point MD-1, shown on Plate 7-1 (page 7-56). Data for 1998 and 1999 are with the surface-water information in Appendix 7-7.

Surface-water monitoring.

Operational surface-water monitoring protocols are given on pages 7-57 through 7-59. Sites DC-1 through DC-5 are monitored under the current MRP. Under the significant revision, PC-1a and PC-2 are to be monitored on Pace Creek to evaluate surface-water conditions upgradient and downgradient of

TECHNICAL ANALYSIS

Last revised - November 1, 1999

the significant revision area and the SITLA tract, and RC-1 in Rock Canyon is to be monitored to obtain baseline data for future mine expansion into the SITLA tract. PC-1a, PC-2, and RC-1 will be monitored for baseline parameters for 3 years prior to switching to operational parameters. Monitoring protocols are explicit for DC-1 through DC-5, but are vague for PC-1a, PC-2, and RC-1. The Division recommends that the surface-water monitoring schedule be specified in detail in a table to reduce confusion when the operator or the operator's representative measures field parameters and collects samples for analysis and to facilitate the Division's inspections of water-quality data.

For surface water, Tech-004 recommends one water-quality sample at low flow every fifth year, either during the year preceding re-permitting or at midterm review, to be analyzed for baseline parameters. The MRP contains a commitment to collect one water sample at each sampling point during low flow period every fifth year, during the year preceding re-permitting, to be analyzed for baseline parameters (p. 7-59).

Acid and toxic-forming materials and underground development waste.

Acid- and toxic-forming materials are discussed in Chapter 6. No new information on acid- and toxic-forming materials is in the revised Chapter 6 in the significant revision submittal. No additional information on acid- and toxic-forming materials is needed for approval of the significant revision.

Disposal of coal mining waste is discussed in Section 536 of the current MRP. No spoil or processing waste is produced by the Dugout Canyon Mine. There is to be no additional surface disturbance because of the significant revision and no additional information on spoil and waste materials is needed for approval of the significant revision.

Transfer of wells.

The significant revision contains no plans for boring or construction of wells. Well GW-24-1 (completed in the Castlegate Sandstone) is currently monitoring ground water levels in the significant revision area. Before final release of bond, exploration or monitoring wells will be sealed in a safe and environmentally sound manner. Ownership of wells will be transferred only with prior approval of the Division, and conditions of such a transfer will comply with State and local laws. Canyon Fuel Company will remain responsible for the management of transferred wells until bond release (Section 731.400).

Water quality standards and effluent limitations.

There will be no additional surface disturbance from this significant revision. Discharges of water from disturbed areas will be in compliance with all Utah and federal water-quality laws and regulations and with effluent limitations for coal mining contained in 40 CFR Part 434 (Section 751).

Casing and sealing of wells.

The significant revision contains no plans for boring or construction of wells. Well GW-24-1 (completed in the Castlegate Sandstone) is currently monitoring ground water levels in federal lease U07064-027821. When no longer needed for monitoring or other use approved by the Division and upon a finding of no adverse environmental or health and safety effects, or unless approved for transfer as a water well, each well will be capped, sealed, backfilled, or otherwise properly managed as required by the Division. Permanent closure measures will be designed to prevent access to the mine workings by people, livestock, fish and wildlife, machinery and to keep acid or other toxic drainage from entering ground or surface waters (Section 765).

Discharges into an underground mine.

Gravity discharges.

Diversions.

Stream buffer zones.

Sediment control measures.

Siltation structures.

Sedimentation ponds.

Other treatment facilities.

Exemptions for siltation structures.

Discharge structures.

Impoundments.

These sections do not apply to the significant revision.

Findings:

Operations hydrologic information provided in the PAP is considered adequate to meet the requirements of this section.

R645-301-121.200, -731.200, In a TA dated October 16, 1998, the operator was asked to provide a commitment to 2 years of quarterly water-quality monitoring, at a minimum the operational parameters listed in Table 7-4 of the MRP, for springs SC-14, SC-65, SC-100, and SP-20 (S-30). A commitment to do this is on pages 7-53 and 7-54 of the October 1998 MRP; the significant revision does not contain this commitment.

There have been failures to perform the planned monitoring, and the underlying cause seems to be that the monitoring plan is unclear and ambiguous. The ground-water monitoring plan needs to be clearly specified in detail, and preferably in tabular form; for example, as in Tables 7.31-1 through 7.31-4 in Canyon Fuel Company's Soldier Canyon Mine MRP or Tables 7-2 through 7-5 in Canyon Fuel Company's SUFCO Mine MRP.

R645-301-121.200, -724, -731.200, Monitoring protocols are explicit for DC-1 through DC-5, but are vague for PC-1a, PC-2, and RC-1. The Division recommends that the surface-water monitoring schedule be specified in detail in a table.

TECHNICAL ANALYSIS

Last revised - November 1, 1999

R645-301-121.200, Two lines of text have been omitted at the bottom of page 7-62.

**SUPPORT FACILITIES AND UTILITY INSTALLATIONS
SIGNS AND MARKERS
USE OF EXPLOSIVES**

Findings:

These sections do not apply to the significant revision.

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:

Affected area maps.

This is discussed in the Maps, Plans, and Cross Sections of Resource Information section of this TA.

Mining facilities maps.

Surface Facilities.

The current surface facility map is not accurate with additions that have been made. A review of the map was made during the August complete inspection.

On page 5-16, the two areas will not be disturbed as stated in the original MRP. These areas will need to be identified on plate 5-2, since the disturbed area has changed. A new calculation of "totaled" disturbed area is needed.

Mine workings maps.

Monitoring and sample location maps.

See the section on Maps, Plans, and Cross Sections of Resource Information

Certification Requirements.

Maps and cross-sections submitted with the significant revision have been certified by a qualified, registered, professional engineer.

TECHNICAL ANALYSIS

Findings:

Information provided in the proposed significant revision is not considered adequate to meet the requirements of the Maps, Plans, and Cross Sections of Mining Operations section. Prior to approval, the permittee must provide the following in accordance with:

R645-301-512.120, Plate 5-2 will need to be updated as requested in the August complete inspection. The new submission must identify the two areas which are not going to be disturbed as stated on page 5-16. Update the total disturbed area caused by mining in the MRP.

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.

PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES

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

Findings:

See comments in the Fish and Wildlife Information section of this TA.

HYDROLOGIC INFORMATION

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

Analysis:

Ground-water monitoring.

Reclamation ground-water monitoring protocols are given along with the operational monitoring protocols in Section 731.200, pages 7-52 through 7-57. Locations of wells and springs to be monitored are on Plate 7-1. Groundwater monitoring of wells and springs will continue during the post-mining period until bond release (p. 7-56).

During the post-mining period, field data and water samples will be collected once each year in September or October, during low-flow season but while the sites are still accessible, at springs SP-20, SC-14, SC-65, SC-100, SC-116, 200, 203, 227, 259, and 260 (p.7-53).

TECHNICAL ANALYSIS

The significant revision contains no change to the reclamation well-monitoring plan. Water levels will be measured in wells GW-10-2, GW-11-2, and GW-24-1, all completed in the Price River Formation or the underlying Castlegate Sandstone, once each year (p.7-56).

Surface-water monitoring.

The surface-water monitoring plan is in Section 731.200, pages 7-57 through 7-59. Surface-water data will be collected under the surface-water monitoring program every year until bond release (p. 7-59). Locations of reclamation monitoring sites DC-1, DC-2, DC-3, PC-1a, and PC-2 are on Plate 7-1.

Transfer of wells.

The significant revision contains no plans for boring or construction of wells. Well GW-24-1 (completed in the Castlegate Sandstone) is currently monitoring ground water levels in the significant revision area. Before final release of bond, exploration or monitoring wells will be sealed in a safe and environmentally sound manner. Ownership of wells will be transferred only with prior approval of the Division, and conditions of such a transfer will comply with State and local laws. Canyon Fuel Company will remain responsible for the management of transferred wells until bond release (Section 731.400).

Casing and sealing of wells.

The significant revision contains no plans for boring or construction of wells. Well GW-24-1 (completed in the Castlegate Sandstone) is currently monitoring ground water levels in federal lease U07064-027821. When no longer needed for monitoring or other use approved by the Division and upon a finding of no adverse environmental or health and safety effects, or unless approved for transfer as a water well, each well will be capped, sealed, backfilled, or otherwise properly managed as required by the Division. Permanent closure measures will be designed to prevent access to the mine workings by people, livestock, fish and wildlife, machinery and to keep acid or other toxic drainage from entering ground or surface waters (Section 765).

Acid and toxic-forming materials.

Discharges into an underground mine.

Gravity discharges.

Diversions.

Stream buffer zones.

Sediment control measures.

Siltation structures.

Sedimentation ponds.

Other treatment facilities.

Exemptions for siltation structures.

Discharge structures.

Impoundments.

Water quality standards and effluent limitations.

These sections do not apply to the significant revision.

TECHNICAL ANALYSIS

Last revised - November 1, 1999

Finding:

Reclamation hydrologic information provided in the PAP is considered adequate to meet the requirements of this section.

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.

- Affected area boundary maps.**
- Reclamation monitoring and sampling location maps.**
- Reclamation surface and subsurface manmade features maps.**

See Maps, Plans, and Cross Sections of Resource Information in this TA.

- Bonded area map.**
- Reclamation backfilling and grading maps.**
- Reclamation facilities maps.**
- Final surface configuration maps.**
- Reclamation treatments maps.**

These do not apply to the significant revision.

Certification Requirements.

Findings:

None of the proposed changes to the MRP affect this section of the reclamation plan. Maps and cross-sections submitted with the significant revision have been certified by a qualified, registered, professional engineer.

- POSTMINING LAND USES**
- APPROXIMATE ORIGINAL CONTOUR RESTORATION**
- BACKFILLING AND GRADING**
- MINE OPENINGS**
- TOPSOIL AND SUBSOIL**
- ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES**
- CONTEMPORANEOUS RECLAMATION**
- REVEGETATION**

**STABILIZATION OF SURFACE AREAS
CESSATION OF OPERATIONS
BONDING AND INSURANCE REQUIREMENTS**

Findings:

None of the proposed changes to the MRP affect these sections of the reclamation plan.

REQUIREMENTS FOR PERMITS FOR SPECIAL CATEGORIES OF MINING

INTRODUCTION

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

None of the requirements for permits for special categories of mining apply to the Dugout Canyon Mine or this significant revision to the Dugout Canyon Mine MRP.

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

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

A Cumulative Hydrologic Impact Assessment (CHIA) has previously been prepared for the Soldier Canyon and Dugout Canyon Mines. The Cumulative Impact Area (CIA) for that CHIA included federal lease U07064-027821 and the surrounding area. Two small corners of the subsidence buffer zone around the federal lease are outside that of the CIA; however, those two remote areas will not be impacted by mining nor contribute to cumulative impacts outside the proposed Dugout Canyon Mine permit area. No additional hydrologic and geologic information is needed from the permittee for a CHIA.

TECHNICAL ANALYSIS

Last revised - November 1, 1999

- RULES INDEX -

30 CFR

701.5	28
773.17	28
774.13	28
783	8
783.12	8
783.18	9
783.21	11
783.22	11
783.24	18
783.25	18
784.11	21
784.12	21
784.13	35
784.14	28, 35, 40
784.15	35
784.16	28, 35
784.17	21, 35
784.18	22, 35
784.19	28, 35
784.2	21
784.20	23, 35
784.21	10, 26, 35
784.22	12, 35
784.23	33, 35, 37
784.24	27, 35
784.25	28, 35
784.26	22, 35
784.29	28, 35
785	39
785.16	12
785.19	12
817.121	23
817.122	23
817.150	27
817.151	27
817.200	11
817.22	26
817.41	28, 35
817.42	28, 35
817.43	28, 35
817.45	28, 35
817.49	28, 35
817.56	28, 35
817.57	28, 35
817.71	28
817.72	28
817.73	28
817.74	28
817.81	28
817.83	28
817.84	28
817.87	28
817.89	28

TECHNICAL ANALYSIS

	817.95	22
	817.97	26, 35
	817.99	25
	823	12
R645		
	-100-200	28
	-300-140	28
	-300-141	28
	-300-142	28
	-300-143	28
	-300-144	28
	-300-145	28
	-300-146	28
	-300-147	28
	-300-148	28
	-301-210	28
	-301-211	28
	-301-212	28
	-301-220	11
	-301-221	12
	-301-230	26
	-301-231	21, 35
	-301-233	35
	-301-244	22
	-301-322	10, 26, 35
	-301-323	18, 35, 37
	-301-331	35
	-301-333	26, 35
	-301-341	35
	-301-342	26, 35
	-301-358	26, 35
	-301-411	8, 11, 18, 21, 35
	-301-412	28, 35
	-301-422	35
	-301-512	28, 33, 35, 37
	-301-513	28, 35
	-301-514	28, 35
	-301-515	25, 35
	-301-521	8, 18, 22, 23, 27, 28, 33, 35, 37
	-301-522	35
	-301-525	23, 35
	-301-526	21, 22, 28, 35
	-301-527	27, 35
	-301-528	21, 28, 35
	-301-529	35
	-301-531	28, 35
	-301-532	28, 35
	-301-533	28, 35
	-301-534	27, 35
	-301-535	28
	-301-536	28, 35
	-301-537	35
	-301-542	28, 33, 35, 37
	-301-553	28
	-301-622	18
	-301-623	12, 35

TECHNICAL ANALYSIS

Last revised - November 1, 1999

-301-624	35
-301-625	35
-301-626	35
-301-631	35
-301-632	33, 35, 37
-301-720	28
-301-721	8
-301-722	18
-301-723	35
-301-724	9, 12, 23, 35
-301-725	35
-301-726	35
-301-728	35
-301-729	35
-301-730	40
-301-731	18, 28, 33, 35, 37
-301-732	27, 28, 35
-301-733	28, 35
-301-742	28, 35
-301-743	28, 35
-301-745	28
-301-746	28, 35
-301-747	28
-301-750	28, 35
-301-751	35
-301-760	35
-301-761	28, 35
-301-764	28, 35
-301-830	35
-302	39
-302-270	12
-302-320	12
-302-323	33