

0011

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF SURFACE MINING

FILE
ACT/015/009
#2

SHORT NOTE TRANSMITTAL

10/22/84

(Date)

TO : Mary Boucek, DOGM
FROM : Louis Hamm, OSM
SUBJECT: Trail Mountain Mine Permit Package

The enclosed TA EA and Findings are the final version as now in the Solicitor's Office, Washington, D.C. for Headquarters approval.

Not much change from the last package I sent you. If you have any comments I've got to have them now.

Permit is imminent

RECEIVED

OCT 25 1984

DIVISION OF OIL
GAS & MINING

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Trail Mountain Coal Company Trail Mountain Mine

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United States Department of the Interior

OFFICE OF SURFACE MINING

Reclamation and Enforcement

BROOKS TOWERS

1020 15TH STREET

DENVER, COLORADO 80202

OCT 0 3 1984

MEMORANDUM

TO: Director, Office of Surface Mining

FROM: *for* Allen D. Klein, Administrator, Western Technical Center *RD Dawes*

SUBJECT: Recommendation for Approval of Trail Mountain Coal Company's Trail Mountain Mine Mining Plan and Permit, Emery County, Utah, Federal Lease: U-082996

I. Recommendation

I recommend approval with conditions of the Trail Mountain Coal Company's Trail Mountain mine permit for an underground mining operation. This is a repermitting application under the permanent program for an existing mine. The mining plan and permit were approved under the Federal lands and State interim programs. My recommendation is based on the technical analysis (TA) and environmental assessment (EA) of the complete application. The applicant has proposed to continue underground coal mining activities on Federal coal lease U-082996, during the five-year permit, and develop additional portions of fee coal and State coal during the five-year life-of-mine. The permit with conditions, included with this memorandum, will be in conformance with the applicable Federal regulations, the Utah State Program and the Mineral Leasing Act, as amended. I also recommend that you advise the Assistant Secretary for Land and Minerals Management, under 30 CFR 746.14, that the Trail Mountain Coal Company's Trail Mountain mine mining plan is ready for approval. I concur that a performance bond in the amount of \$463,711.00 is adequate.

The Utah Division of Oil, Gas and Mining (UDOGM) and the Office of Surface Mining (OSM), identified elements of the applicant's proposal which require conditions to comply with State and Federal law. The State regulatory authority will issue this permit in conjunction with the Federal permit.

My recommendation for approval is based on the complete mining plan and permit application, updated to June 6, 1984. I have determined that this action will not have a significant impact on the human environment.

II. Background

The proposed Trail Mountain mine is located in Emery County, Utah, located approximately 11 miles northwest of Orangeville. The permit area contains 773 acres, of which 80 acres are Federal, 640 acres are State and 53 acres are fee coal land. All of these acres have been leased. This mine operation will not affect any environmentally sensitive areas. The majority of the proposed underground operations will utilize room and pillar mining methods. The Hiawatha coal seam will be mined to yield a production rate of 400,000 tons per year. All underground coal mining activities are scheduled to cease around the year 1989.

The Trail Mountain mine permit application was reviewed by OSM, using the approved Utah State Program and the Federal Lands Program (30 CFR Chapter VII, Subchapter D). The Mineral Leasing Act portion of the plan was also reviewed for compliance with the applicable portion of 43 CFR Part 3400 (i.e., requirements and responsibilities of the Bureau of Land Management, Branch of Solid Minerals). The draft TA and EA for this mine application were prepared by Simons Li. & Associates, Inc., contractor to OSM. The TA and EA were completed by OSM. These documents, other documents prepared by UDOGM, the company's application, and other correspondence developed during the completeness and technical reviews are part of OSM's mining plan and permit application file. UDOGM and OSM jointly developed proposed conditions to assure compliance with State and Federal regulations.

The OSM Albuquerque Field Office, and the Headquarters office of Reclamation and Enforcement were contacted regarding delinquent tax payments and organizational structure related to the Trail Mountain mine. Research concluded that the required payments were in order. With regard to the organizational structure related to the Trail Mountain mine, the OSM at Albuquerque forwarded a certificate of corporate revocation dated in November of 1982, which concerned delinquent corporate tax payments by Natomas Minerals of Utah, Inc., operators of the Trail Mountain mine at that time. Subsequent telephone conversation with the Utah Lieutenant Governor's Office, Corporate Division, indicated that Natomas Minerals of Utah, Inc. had merged with WK Minerals of California on January 31, 1983, under the WK name. All delinquencies had been mitigated and the surviving corporation is currently in good standing.

During processing of the permit application and decision document, it became apparent that the relationship between Diamond Shamrock Corporation and Trail Mountain Coal Co. had not been established in the permit application package. OSM advised the applicant of the discrepancy citing compliance with the requirements of UMC 782.13 and 782.14. The applicant responded that they felt they had complied with the regulatory requirements by discussing ownership through the principal shareholder, Natomas Corporation. OSM has since determined that both OSM files and other public records clearly show that Trail Mountain Coal Co. is a subsidiary of Diamond Shamrock Corporation, and that is sufficient record to meet the permitting requirements.

During the process of resolving the ownership issue, OSM received a request for correspondence letters on the issue from OSM's public files. The request was filed by Mr. Dennis Stickley of Clyde, Pratt, Gibbs & Cahoon, representing Nevada Power and Light Co., a former coal market source for the Trail Mountain mine.

A chronology of events related to this mining plan application is enclosed. After the Trail Mountain Coal Company published the newspaper notice as required, no written comments, objections, or requests for an informal conference were received. Written concurrence was provided by the Utah State Office, Bureau of Land Management, Branch of Solid Minerals; United States Forest Service; and letters from U.S. Fish and Wildlife Service; and the State Historic Preservation Officer.

The information in the permit application and mining plan, as well as other information documented in the recommendation package and made available to the applicant, has been reviewed by (UDOGM) staff in coordination with the OSM Project Leader. Other information regarding coal development in the Trail Mountain mine area includes: U.S. Department of the Interior, 1979, Development of Coal Resources in Central Utah: U.S.G.S. Final Environmental Impact Statement; and, U.S. Department of the Interior, 1981, Uinta-Southwestern Utah Regional Coal Environmental Impact Statement; Bureau of Land Management, Final Environmental Impact Statement.

MINING PLAN INFORMATION

MINE ID UT-0017

Mine Name TRAIL MOUNTAIN New/Existing EXISTING State UTAH County EMERY
 Operator TRAIL MOUNTAIN COAL COMPANY Controlled By NATOMAS COAL
 Mining Method: UNDERGROUND: ROOM AND PILLAR Federal Lease Nos.: U-082996
 (Legals on attached map)

Ownership Data:

<u>Surface Resources (Acres)</u>	<u>Existing Mining Plan Area</u>	<u>Proposed Mining Plan Area</u>	<u>Total Life of Mine Area</u>
Federal	80	80	80
State	640	640	640
Private	53	53	53
TOTAL	773	773	773

Coal Ownership (Acres)

Federal	80	80	80
State	640	640	640
Private	53	53	53
TOTAL	773	773	773

Coal Resource Data

	<u>Federal</u>	<u>State</u>	<u>Private</u>	<u>Total</u>
Total Reserves	168,381	3,422,923	MINED-OUT	3,591,304 tons
Total Recoverable Reserves	50,514	2,263,518	USED AS ACCESS	2,314,032 tons

Recoverable Reserve Data

	<u>Name</u>	<u>Thickness</u>	<u>Ash</u>	<u>Sulfur</u>	<u>Moisture</u>	<u>BTU</u>
Seam	<u>HIAWATHA</u>	<u>0 to 7 feet</u>	<u>5.6 to 13.2%</u>	<u>0.4 to 0.57%</u>	<u>5.0 to 8.3%</u>	<u>11,400 to 12,900</u>
Seam						
Seam						
Seam						

Average annual production 400,000 tons/yr Percent recovery 65%
 Mine life 5 yrs Date-Production begins 3/2/81 Reaches annual rate Now Ends 1989
 Reserves recoverable by (1) Surface mining none (2) Underground Mining 2,314,032
 Reserves lost thru management decision -
 Coal market Power generating, ARCO contract, Spot Market

-11-6-

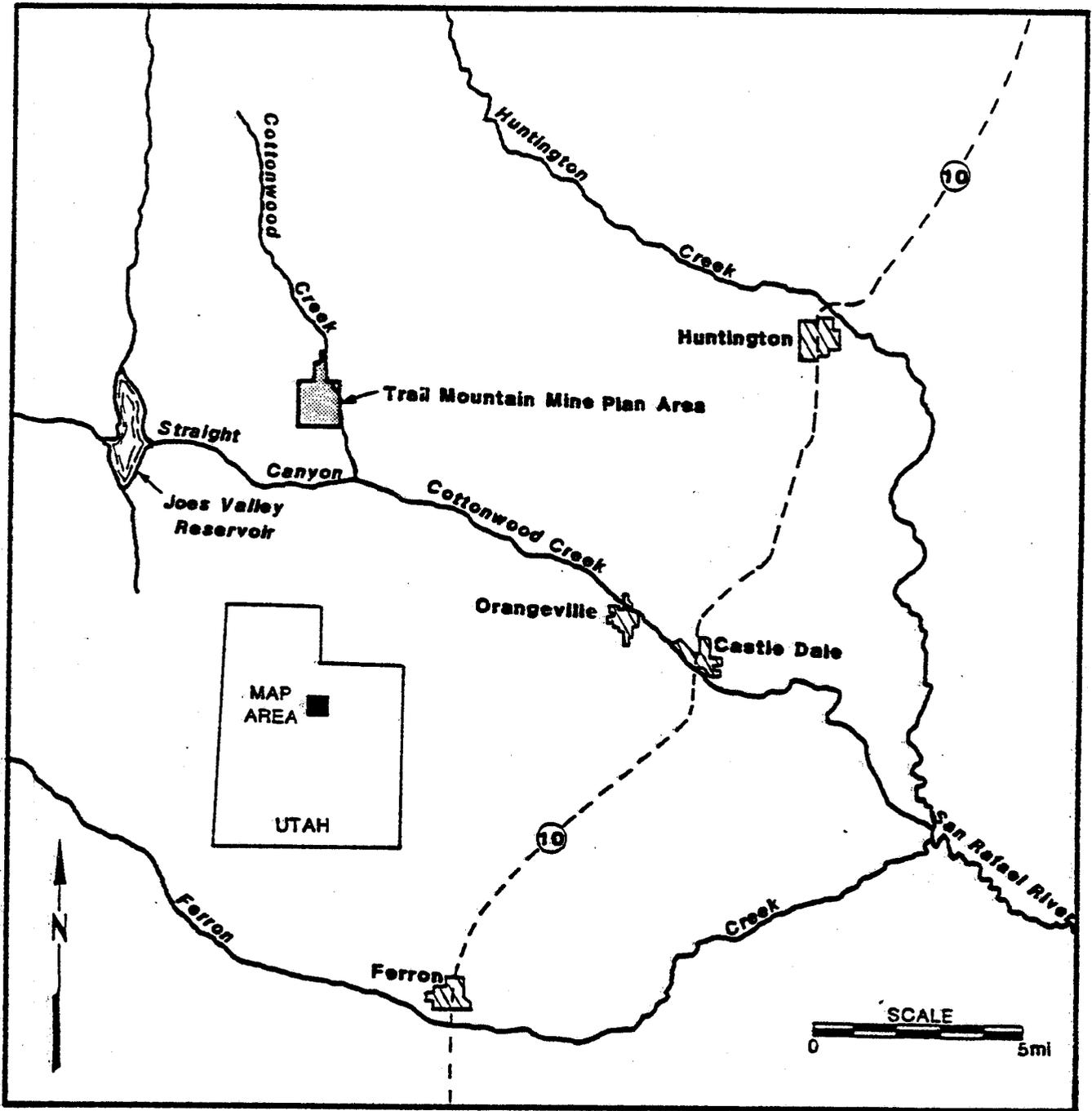
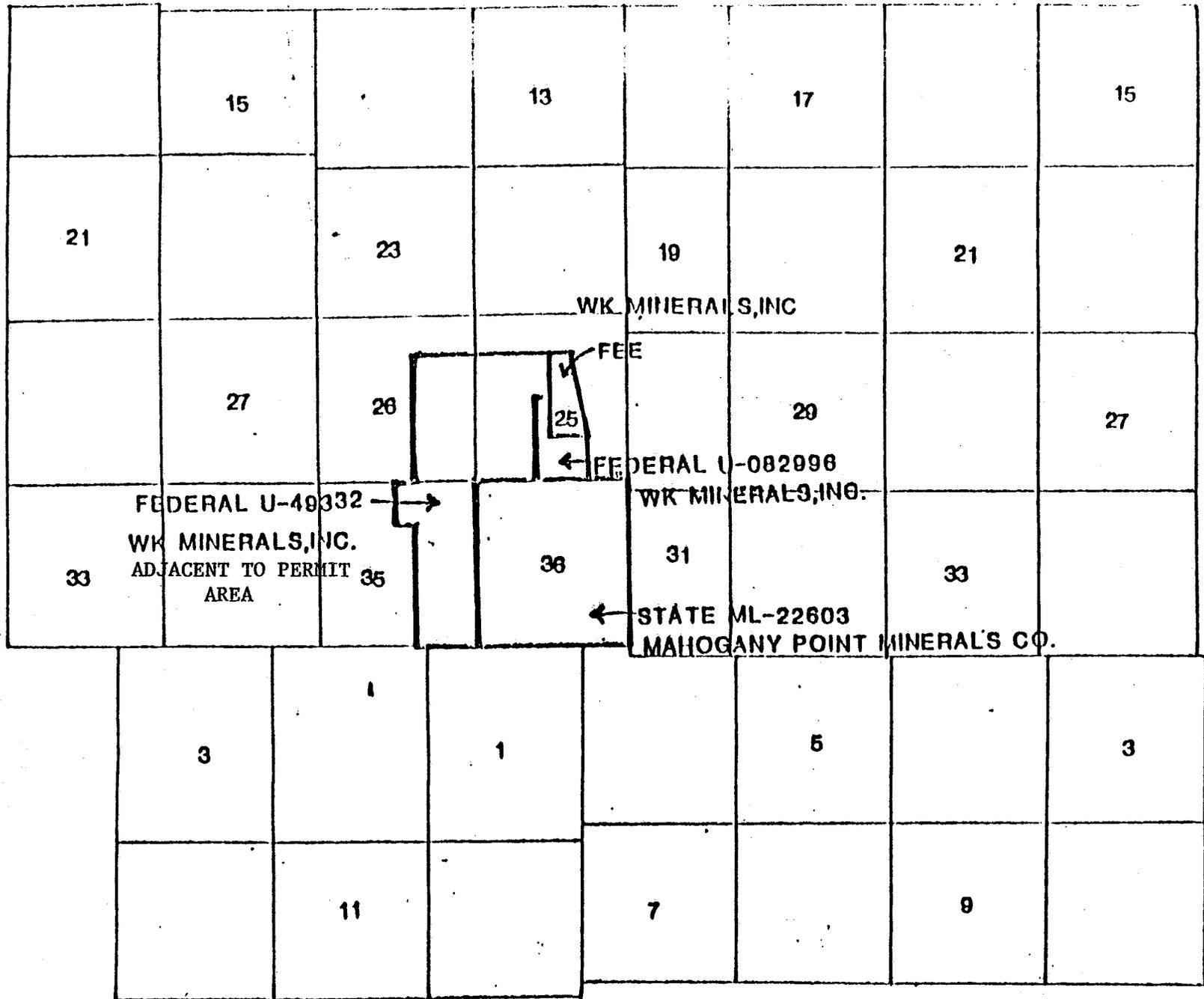


Figure 1-1. Location Map of the Trail Mountain Mine.



T.17 S.

T.18 S.

2-13

R.6 E. R.7 E.
 FIGURE 4-1 PROPERTY CONTROLLED BY TRAIL MNT. COAL COMPANY

CHRONOLOGY OF EVENTS

Trail Mountain Coal Company
Trail Mountain Mine

Application for Mining Plan and Permit Approval

DATE	EVENT
September 11, 1981	Natomas Trail Mountain Coal Co. (NTMCC) submits permit application and mining plan.
November 3, 1981	NTMCC submits request for expeditious review of plans for sediment pond and culvert.
November 27, 1981	U.S. Geological Survey submits comments and stipulations regarding the NTMCC mining plan.
December 3, 1981	Office of Surface Mining (OSM) grants preliminary approval for a temporary diversion of Cottonwood Creek.
December 7, 1981	U.S. Forest Service, Manti-LaSal National Forest, submits deficiency comments regarding mining and reclamation.
December 7, 1981	Utah Division of Oil, Gas and Mining (UDOGM) approves plans for sediment pond and culvert.
March 8, 1982	U.S. Fish and Wildlife Service submits deficiency comments regarding mining and reclamation.
July 20, 1982	UDOGM advises NTMCC that certain deficiencies must be addressed before approval can be granted to a culvert extension and abatement modification request.
August 26, 1982	UDOGM approves culvert design changes with clarifications.
March 16, 1983	UDOGM approves site drainage modification, with stipulations for abatement of violation.
March 18, 1983	UDOGM submits ACR deficiency comments.

DATE	EVENT
May 10, 1983	UDOGM grants approval for powerline relocation.
May 31, 1983	NTMCC submits response to ACR.
May 31, 1983	OSM submits comments to UDOGM regarding ACR comments submitted by UDOGM.
June 13, 1983	OSM and UDOGM submit joint letter regarding time limits of continued operation under administrative delay.
July 19, 1983	NTMCC submits post-mining contour and post-mining reclamation maps in response to deficiencies.
July 28, 1983	UDOGM grants 60-day extension for completion of construction related to "natural disaster" mitigation.
August 9, 1983	OSM advises UDOGM that several deficiencies remain in the mining plan submittal after NTMCC deficiency responses.
September 1, 1983	OSM submits hydrology DOA deficiencies to UDOGM.
September 1, 1983	Diamond Shamrock executes merger with NTMCC, NTMCC becomes Trail Mountain Coal Company.
October 13, 1983	OSM submits DOA for all disciplines other than hydrology to UDOGM via Express Mail.
October 14, 1983	BLM writes that the plan is compatible with 30 CFR 211.10(c). Trail Mountain Coal Company receives DOA comments.
November 7, 1983	Compliance schedule sent to Allen Childs of Trail Mountain Coal Company.
November 10, 1983	OSM gives verbal approval to 30-day extension.
November 11, 1983	Diamond Shamrock officially requests 30-day extension by letter to OSM.

DATE	EVENT
December 21, 1983	Trail Mountain submits revised permit application package (PAP).
January 3, 1984	Trail Mountain permit work delayed by mine fire at neighboring Des-Bee-Dove mine.
January 11, 1984	Trail Mountain submits additional required data to the PAP.
January 17, 1984	OSM declares the Trail Mountain PAP apparently complete.
January 18, 1984	OSM requests applicant response to deficiencies by February 1, 1984.
February 6, 1984	OSM receives applicant's response to January 18 letter.
February 10, 1984	OSM receives additional deficiency responses.
February 16, 1984	OSM requests operator response to additional deficiencies by March 7, 1984.
February 24, 1984	Receipt of applicant's responses.
March 9, 1984	OSM requests applicant's response to technical deficiencies by March 16, 1984.
March 19, 1984	Applicant submits one-half of required responses.
March 26 1984	Simons Li submits final TA based on applicant responses available.
April 2, 1984	Applicant submits second-half of required responses available.
April 3, 1984	OSM advises applicant of conditions in Simons Li final TA, per phone conversation. Specify response to these issues by April 10, 1984.
April 10, 1984	Applicant hand-delivers response to TA conditions.
June 6, 1984	Applicant submits updated soil data and minor information additions in response to multiple agency review in the decision document process.

DATE	EVENT
June 6, 1984	U.S. Forest Service submits concurrence comments regarding perceived remaining deficiencies in the permit application.
June 27, 1984	OSM advises Counsel for Trail Mountain Coal Co. of a discrepancy in legal and compliance information supplied in the permit application package with regard to the requirements of UMC 782.13 and 782.14.
August 8, 1984	Counsel for Trail Mtn. Coal responds that Natomas "holds all of the shares of Trail Mountain," and "demands" permit issuance.
August 29, 1984	OSM receives request for information on the Trail Mountain ownership issue from public files. Request by Mr. Dennis Stickley of Clyde, Pratt, Gibbs & Cahoon, representing Nevada Power and Light Company.
October 2, 1984	OSM determines that the files on the Trail Mountain mine clearly indicate that Diamond Shamrock is the ultimate corporate owner and declare the issue closed.

FINDINGS

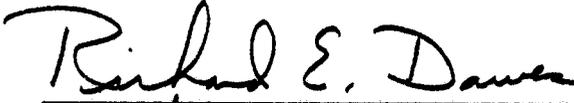
Trail Mountain Coal Company, Inc.
Trail Mountain Mine
Application for a Permit to Mine

- I. The Office of Surface Mining (OSM) has determined that the permit application package originally submitted on October 14, 1981, and updated through June 6, 1984, and the permit with conditions are accurate and complete and comply with the requirements of the approved Utah State Program, the Surface Mining Control and Reclamation Act and the Federal Lands Program. [UMC 786.19(a)]
- II. OSM has reviewed the permit application package (PAP), and prepared the technical analysis (TA), the environmental assessment (EA), and based on this has made the following findings:
 1. The applicant proposes acceptable practices for the reclamation of disturbed lands. OSM has determined that reclamation, as required by the Act and the Utah State regulatory program, can be feasibly accomplished under the mining and reclamation activities plan contained in the PAP when supplemented by conditions. [UMC 786.19(b); TA, page 42; PAP, Appendix 9]

OSM has determined that reclamation of the Trail Mountain mine is technologically and economically feasible under SMCRA [Sec. 522 (a)(2) and (b)].
 2. The probable cumulative impacts of all anticipated coal mining within the general area on the hydrologic balance (CHIA), as described in UMC 784.14(c), has been made by the regulatory authority. Included in this assessment were the Trail Mountain, Wilberg, and Des-Bee-Dove mines within the Cottonwood Creek drainage basin. The regulatory authority has determined that the operations proposed in the PAP have been designed to prevent damage to the hydrologic balance outside the proposed mine plan area. The details of the type and extent of impact are included in the CHIA (TA, Appendix A). [UMC 786.19(c); PAP, Chapter VII].
 3. After reviewing the description of the proposed permit area, OSM has determined that this area is:
 - a. Not included within an area designated unsuitable for underground coal mining activities under UMC 764, or 30 CFR 765 or 769. [UMC 786.19(d)(1)]
 - b. Not within an area under study or designation as unsuitable for underground coal mining activities in an administrative proceeding begun under UMC 764, 30 CFR 765 or 769. [UMC 786.19(d)(2)]
 - c. Not on any lands subject to the prohibitions or limitations of UMC 761.11(a) (national parks, etc.), (f) (public buildings, etc.), or (g) (cemeteries). [UMC 786.19(d)(3)]

- d. Within 100 feet of the outside right of way line of a public road, due to pre-law existence of the mine and the road in their current locations as approved under the interim permit program. [UMC 786.19(d)(4); TA, page 44; PAP, page 3-9]
 - e. Not within 300 feet of any occupied dwelling. [UMC 786.19(d)(5)]
 - f. Not unsuitable in accordance with Section 522(b) and (a)(3) of SMCRA.
4. The proposed operations will not adversely affect publicly-owned parks or places included in the National Register of Historic Places. [UMC 786.19(e)]
 5. The applicant has the legal right to enter and begin underground coal mining activities in the permit area. There are no associated operations involving the surface mining of coal per UMC 782.15(b). [UMC 786.19(f); PAP page 2-12E, Volume 1; TA, page 30]
 6. The applicant has submitted proof and OSM's records indicate that prior violations of applicable law and regulations have been corrected. [Personal communication, Gil Jacobs, Headquarters Reclamation and Enforcement, October 2, 1984; UMC 786.19(g); PAP 2-10, Volume 1; TA, page 30]
 7. OSM's records confirm that all fees for the Abandoned Mine Reclamation Fund have been paid. [UMC 786.19(h); personal communication, Gil Jacobs, Headquarters Reclamation and Enforcement, October 2, 1984]
 8. OSM's records confirm that the applicant does not control nor has controlled any mining operations with a demonstrated pattern of willful violations of the Act of such nature, duration, and with such resulting irreparable damage to the environment as to indicate an intent not to comply with the provisions of the Act. [Personal Communication, Gil Jacobs, Headquarters Reclamation and Enforcement, October 2, 1984; UMC 786.19(i) 773.15(b)(1); PAP, Appendix 7-7, Volume 3; TA, page 30]
 9. Underground coal mining activities to be performed under the permit will not be inconsistent with such other operations anticipated to be performed in areas adjacent to the proposed permit area. [UMC 786.19(j); TA page 47]
 10. The applicant has provided evidence and OSM has found there are no prime farmlands in the permit area. [UMC 786.19(l); SCS letter of concurrence, PAP attachment 4A, page 4-11, Volume 1]
 11. Negative alluvial valley floor determinations have been made for the drainages in the proposed permit area. These determinations were made on the basis of no alluvial material within or adjacent to the permit area. [UMC 786.19(l); TA page 47]

12. All existing structures comply with UMC 700.11 (e) and the applicable performance standards of 30 CFR Subchapter B or UMC Subchapter K, and no significant harm to the environment or public health or safety will result from use of the structures.
13. The proposed postmining land use of wildlife habitat for the permit area has been approved by OSM, the U.S. Forest Service (concurrence letter dated June 6, 1984), and the Bureau of Land Management, Moab District Office (letter of concurrence dated April 17, 1984). [UMC 786.29(m)]
14. OSM has made all specific approvals required under Subchapter K of this chapter of the approved Utah State Program [UMC 786.19(n), 30 CFR 786.19(n), TA document]
15. OSM, in cooperation with the U.S. Fish and Wildlife Service has found that the proposed operation will not affect the continued existence of any endangered or threatened species or result in the destruction or adverse modification of their critical habitats as determined under the Endangered Species Act of 1973 (16 U.S.C. Sec 1531, et. seq.). [UMC 786.19(o); Letters of Concurrence, this document]
16. Procedures for public participation have complied with requirements of the Act, the approved Utah State Program, the Federal Lands Program and the Council on Environmental Quality regulations (40 CFR Part 1500 et seq.). [30 CFR 740.13(c)(3); Chronology of Events; Notifications]
17. The applicant has complied with all other requirements of applicable Federal laws, and either has or has applied for permits from the Environmental Protection Agency and Utah State Air and Water Quality Agency. [30 CFR 746.13(g); Letters of Concurrence, and mining plan and permit application package]
18. Approximately 80 acres of the permit area are located within the Manti-LaSal National Forest. During leasing, the Forest Service supplied stipulations and, during mine plan review, determined that there were no significant recreational, timber, economic, or other values which may be incompatible with such surface mining operations. [Section 522(e)(2), SMCRA; see concurrence letter from the U.S. Forest Service, and Findings of Compatibility]



acting Administrator
Western Technical Center

Headquarters Reviewing Officer

FINDING OF NO SIGNIFICANT IMPACT

Trail Mountain Coal Company
Trail Mountain Mine

The technical analysis (TA), and the environmental assessment (EA), prepared by Simons Li Associates, Inc., contractor, and the Office of Surface Mining (OSM) preceding this "Finding of No Significant Impact" statement, identify certain environmental impacts that would result from the Federal approval of the mining plan for Trail Mountain Coal Company's Trail Mountain mine. The 5-year permit application, submitted to the State under its approved permanent program, proposes a total permit area of 773 acres. The permit area encompasses 80 acres of Federal Coal Lease U-082996.

The regional impacts of coal mining in the Wasatch Plateau Coal Field are addressed in the United States Geological Survey Development of Coal Resources in Central Utah Environmental Impact Statement, 1979, and the Bureau of Land Management's Uinta - Southwestern Utah Regional Coal Environmental Impact Statement, 1981.

Impacts identified by OSM and the State would be mitigated by those appropriate environmental protection measures detailed in the mining plan and proposed conditions attached to the permit.

Based upon the evaluation of impacts given in the TA and EA, I find that no significant impacts to the human environment would result from the existing mine. Therefore, an Environmental Impact Statement is not required.

ats Richard E. Dawer
Administrator
Western Technical Center
Oct 3, 1984
Date

ENVIRONMENTAL ASSESSMENT
TRAIL MOUNTAIN COAL COMPANY
TRAIL MOUNTAIN MINE

INTRODUCTION

The Trail Mountain Coal mine, operated by the Trail Mountain Coal Company of Orangeville, Utah, is an underground mine located in east central Utah, 11 miles northwest of Orangeville, Utah. The proposed permit area covers 773 acres. Included is Federal coal lease U-082996 encompassing 50,514 tons of recoverable reserves below 80 acres of surface managed by the Manti-LaSal National Forest. Also included are 640 acres of State land and coal (State Mineral Lease ML-22603), and 53 acres of private land and coal. Total recoverable reserves before mining were 2,314,032 tons. Currently 800,000 tons remain. The estimated life of the mine is five years.

The Bureau of Land Management, Branch of Solid Minerals (BLM) granted approval of the Trail Mountain Resource Recovery Protection Plan (RRPP) on April 18, 1984.

The proposed area of mining plan approval, the permit area, and the RRPP boundary are identical.

In the vicinity of the Trail Mountain mine, there are two other active underground coal mines: the Wilberg mine (NE1/4 Sec. 27 T17S R7E), and the Des-Bee-Dove mine (SW1/4 Sec. 26 T17S R7E) (The Deer Creek mine, which overlies the northern part of the Wilberg mine, is considered part of the Huntington Canyon drainage and not part of the Cottonwood Canyon mines). Both mines are undergoing the Federal permitting process in accordance with the requirements of SMCRA and the Mineral Leasing Act. There are 11,174 acres associated with these two mines.

PURPOSE AND NEED FOR ACTION

The Trail Mountain mine is currently operating under a permit (ACT-015-009) issued by the State of Utah, Division of Oil, Gas and Mining (UDOGM) on May 11, 1978. Also on May 11, 1978, approval under 30 CFR 211 was issued by the U.S. Geological Survey (MSHA ID No. 42-01211). To continue mining, the applicant has submitted an underground mine permit application in compliance with the Coal Mining and Reclamation Permanent Program (Chapter 1) of the State of Utah. The necessary federal action is to approve, disapprove, or conditionally approve the application in accordance with the requirements of the Surface Mining Control and Reclamation Act (SMCRA) and the Mineral Leasing Act. This environmental assessment will address the environmental consequences of the proposed mining operations and reclamation plans in the permit application. The consequences of no permit approval will also be addressed. The purpose of this document is to assist the Secretary in making a decision with respect to NEPA compliance.

DESCRIPTION OF ALTERNATIVES

Proposed Action: Approval of the Permit, With Conditions

OSM may approve the operator's permit application package for the 773 acres of coal subject to certain conditions.

Alternative I: No Action

The Federal Mineral Leasing Act requires that the Secretary of the Interior approve, disapprove, or conditionally approve mining operations on Federal leases. Therefore, the alternative to take no action is not viable and will not be discussed further.

Alternative II: Disapproval of the Permit Application Package

Disapproval of the applicant's permit would result in permanent closure of the existing mining operation. All facilities are in place at the Trail Mountain mine, and the life of mine is not expected to extend beyond the permit term. Therefore, one impact that is different from the impacts of the other alternatives would be socioeconomic in nature, resulting in the permanent loss of 61 jobs in the area. Under this alternative, the mine operator would begin reclamation at the disturbed area, resulting in revegetation and a slight increase and improvement in wildlife habitat.

The impact unique to this alternative would be the loss of approximately 800,000 tons of coal reserves.

DESCRIPTION OF THE AFFECTED ENVIRONMENT

Soils

Soils at the Trail Mountain surface facilities site and surrounding area consist of six mapping units. Two of these units are rockland (RoE, RY). The four remaining units are the very stony sandy loam complex (AbG), stony sand loam complex (CoG), shaley colluvial land (SN), and riparian (R). Of these mapping units, the riparian and stony sandy loam complex are considered representative of the soils which are assumed to have overlain the existing disturbed area (8.8 acres). Soil sampling and analysis were conducted on each of these mapping units and the results submitted with the original permit application (1981, Chapter 8). One sampling pit was excavated in each unit.

Soil sampling showed the soil of the riparian mapping unit to be of the Kenilworth Series (Xerollic Camborthid). Horizon textures ranged from sandy loam to sandy clay loam. Electrical conductivity, pH, and sodium adsorption ratios ranged from 0.4 to 3.2, 8.0 to 8.4, and 0.08 to 0.29, respectively. Sampling occurred to a depth of five feet at intervals corresponding to soil horizons.

Soil of the stony sandy loam complex is shallow to bedrock (1.6 feet). Textures ranged from loam to silty clay loam. Electrical conductivity and sodium adsorption ratios ranged from 0.3 to 0.4 and 0.7 to 0.8, respectively. The pH values were 8.2 to 8.7. Phosphorus and potassium levels are lower for this soil than for that found in the riparian unit. Sample intervals corresponded to horizon thickness.

Due to previous mining operations, little soil material exists on the disturbed site. The final graded surface to be used as a seedbed will be composed of cut, fill, and mine-generated spoil materials with some coal wastes included. These materials were sampled in eight locations (46 individual samples) on the existing disturbed area (Appendix 9). Sampling occurred to a depth of eight to twelve feet at two- to three-foot intervals. Samples were analyzed for phosphorous (ppm), nitrate (ppm), organic matter (percent), electrical conductivity (EC) (millimohs/cm), cation exchange capacity, calcium carbonate (percent), calcium (ppm), magnesium (ppm), sodium (ppm), potassium (ppm), sodium adsorption ratio (SAR), pH, nitrogen (percent), texture, and percent moisture. The following table presents the results of the analysis with regard to the more important soil parameters.

Sample Site	pH Range	EC Range	SAR Range	Texture Range
1	7.6-7.9	4.95-8.20	2.65-4.56	Sandy loam
2	7.8-8.7	1.85-14.80	3.29-8.47	sandy clay loam
3	7.7-8.2	7.00-18.40	6.25-20.10	Sandy loam
4	7.6-7.9	8.40-37.00	6.30-36.00	sandy clay loam
5	8.2-8.3	11.4-15.7	3.6-6.4	clay loam
6	8.2-8.7	4.8-7.7	1.4-3.4	Loam
7	7.5-8.0	5.7-10.9	2.6-3.9	Clay loam
8	7.2-7.6	7.5-11.3	2.4-7.9	sandy clay loam
				Clay loam
				sandy clay loam

Electrical conductivity (EC) and sodium adsorption ratio (SAR) values are elevated throughout the depth of material sampled, apparently as a result of storage and use of road salt. Mean values for EC in the spoil sample sites range from 6.7 to 22.1 mmhos/cm. The mean EC value is 10.8 mmhos/cm. Excluding the high value (22.1 mmhos/cm.) sample site four reduces the mean spoil value to 9.3 mmhos/cm. Values for SAR's have a median value of 6.25.

Hydrologic Resources

The Trail Mountain permit area comprises 773 acres of land located within Cottonwood Canyon. The disturbed area (surface disturbance, 8.8 acres) is drained by the North Fork of Cottonwood Creek. All tributaries to the North Fork located on the permit area are ephemeral. Elevations in the general area range from 7,250 feet in the canyon bottoms to 9,200 feet along the ridges and plateaus. The basin area of the North Fork Cottonwood Creek, upstream of the mine, is approximately 19.3 square miles. The drainage is a small perennial stream with a base flow (for the period of record) averaging 0.85 cfs. This base flow is sustained by spring discharges and ground-water seeps. Most of the mean annual flow (approximately 90 percent) comes in the months of May and June and occurs in response to snowmelt. The water quality of the surface drainage is generally good and can be characterized as a calcium-magnesium bicarbonate water with total dissolved solids ranging from 290 to 600 milligrams per liter.

The majority of springs on Trail Mountain occur in the North Horn Formation, which consists of variegated shales, sandstones, conglomerates and fresh-water limestone. The overlying Flagstaff Limestone is highly fractured, which allows for good vertical transport of water with little lateral movement, and hence few springs. The Flagstaff serves as a local source of recharge to the North Horn Formation. The existing water quality of the springs on Trail Mountain is good and is of similar chemical character as the surface water. The applicant identified ten springs, seeps, and developed stockponds within three miles of the permit area. None are located within the permit area.

Vegetative Resources

The vegetation in the permit area contains five distinct vegetation communities, all of which are representative of the steep canyons and mountains of central Utah. These are described as: riparian, grassland-shrub, pinyon-juniper, conifer, and aspen communities. The riparian community is the smallest of the vegetation communities and occurs only as a narrow band along Cottonwood Creek on the eastern side of the permit area. It is dominated by narrowleaf cottonwood in the overstory and Wood's rose and mountain snowberry in the understory. The grassland-shrub is the most extensive community within the permit area, and it is dominated by slender wheatgrass and shadscale. The two communities are the only ones of the five present within the permit area which have been disturbed.

Because this is an active mine and most disturbances have already occurred, baseline vegetation data were impossible to obtain. Therefore, only reference areas were selected (and sampled) from representative locations for both of the disturbed communities.

Fish and Wildlife Resources

Terrestrial vertebrate and aquatic invertebrate species inhabiting the mine permit area and vicinity are typical for this region of the Wasatch Plateau. Several game and high-interest terrestrial species inhabit the general vicinity of the mine permit area. Most, except for mule deer and cliff-nesting species of raptors, are not likely to be exposed to any significant impact from mine operations. Cliffs within and near the permit area represent potentially valuable cliff-nesting habitat for several species of raptors (e.g., golden eagle, red-tailed hawk, and prairie falcon). Wooded habitat within the permit area also provides nest sites for the tree-nesting species such as goshawk, Cooper's hawk, sharp-shinned hawk, red-tailed hawk, American kestrel, and screech owl. The bald eagle is a winter visitor to the area. Raptor surveys on the mine plan area did not locate any nests and only American kestrel, goshawk, and golden eagle were observed in the area. U.S. Fish and Wildlife helicopter raptor surveys in 1981 and 1982 identified six golden eagle nests (one active in 1981) and one possible prairie falcon eyrie in the general vicinity of the permit area, but all were located at least one kilometer from the mine facilities area.

Mule deer occur within the mine plan area year-round. During the summer, they occupy the mixed mountain shrub and grass-aspen habitats in the mid to upper elevation of the permit area. In the winter, portions of the canyon bottom along the stream and haul and access road are classified by the UDWR as high-priority and critical winter range for mule deer. No fish species occur in North Cottonwood Creek in the vicinity of the mine; however, the lower portion of Cottonwood Creek, below its confluence with Straight Canyon Creek, does support trout and is designated as a Class 3 fishery. Aquatic macroinvertebrate communities in North Cottonwood Creek above the mine portal are considered healthy and indicative of good stream quality. Below the mine portal area, pre-law sediment loading has degraded the quality of stream habitat and reduced the density and diversity of the macroinvertebrate community.

Land Use

The Trail Mountain Coal Company owns 53 acres of private land for operation of the Trail Mountain mine and the State owns one section of land (640 acres) on the permit area. The majority of the remaining land in the area is part of the Manti-LaSal National Forest. Mineral ownership within the mine plan area consists of Federal, State, and fee coal. The Trail Mountain mine is the only operating mine in the North Cottonwood Creek drainage. No oil or gas wells have been drilled on or adjacent to the permit area, although one state and one Federal oil and gas lease are held within the permit area.

Preliminary and existing land use on and adjacent to the permit area consists of mining, recreation, wildlife habitat, and limited livestock grazing. Coal mining in Cottonwood Canyon has occurred since 1909. The Johnson mines were active from 1909 to 1948, while the Cottonwood Canyon prospects were active from 1946 to 1948. An estimated 96,000 tons of coal have been removed from the Hiawatha seam by the earlier mines. Production of the earlier mines was by room and pillar mining. Recreational use of the area occurs primarily as sightseeing by people traveling up the road in Cottonwood Canyon to access the upper plateau areas above the mine. There is no fishing in the canyon in the vicinity of the mine, although some hunting occurs on the plateau above the mine.

No farming or commercial forest harvesting has occurred within the mine plan area. Steep, rocky terrain and poor soil preclude farming in the area, and the predominance of rugged terrain and rocky cliffs also limits livestock grazing.

Topography

The Trail Mountain mine is located along the North Fork of Cottonwood Creek, a perennial stream. The facilities area is for the most part located on a flat area along the stream, but is adjacent to a steep hill side. The hill side has been excavated to form additional work area for the operations. The cliff above the mine is formed by interbedded shales and sandstone and massive sandstone layers. The sandstone layers form vertical cliffs over much of the hillside.

Air Resources

The Trail Mountain mining operation has had some effect on the air quality of Cottonwood Canyon since mining began in 1946. Dust production from the mine is the main contribution.

Several methods are utilized at the Trail Mountain mine to protect the air quality in the mine vicinity. These methods are:

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

Socioeconomics

The Trail Mountain mine was temporarily idled the week of March 19, 1984; therefore, a minimal workforce (10-15 people) are currently employed at the mine. Prior to this shut-down in operation, the company employed 61 workers. The current and projected population of the affected area is as follows:

Carbon County, Utah	<u>1983 Population</u>	<u>1990 Population</u>
Price	11,313	17,479
Helper	3,217	3,971
Emery County, Utah		
Huntington	2,594	2,976

*Source: Utah State Planning Coordinator's Office, 1983.

Other communities within commuting distance of the mine include Castle Dale, Ferron, and Orangeville in Emery County.

Additional information regarding the socioeconomic environment of this area may be found in the Bureau of Land Management's "Round II Final Environmental Impact Statement, Uinta-Southwestern Utah Coal Region," October 1983.

Cultural Resources

Mining in the Trail Mountain mine area has occurred for over 40 years. In that time, surface disturbance (other than subsidence) has taken place. In 1979, Archaeological-Environmental Research Corporation (AERC) conducted a cultural resource inventory of Cottonwood Canyon, a portion of which overlaps the eastern boundary of the Trail Mountain mine. Five sites and four isolated occurrences were located in the canyon, all of which are outside the present mine plan boundary. Direct mining impacts are not likely on these sites although two "archaic" sites (42EM959 and 42EM960 - recommended as eligible) are located near enough to the mine and canyon road to be potentially impacted by vandalism (which has already occurred) and widening of the road by the Forest Service. Both of these sites were tested and "mitigated" by AERC for Utah Power and Light and reported upon in 1982.

Most of the surface overlying the proposed mine working is unsurveyed for cultural remains. Subsidence projections by the company, based on type of mining (room and pillar - one seam), competence of and depth of overburden and historic subsidence studies in the area indicate that subsidence will be minimal in nature.

Subsidence projections coupled with unfavorable topography (steep, rocky terrain) and the paucity of prehistoric and historic sites in similar nearby environments allowed the SHPO to concur in a "no effect" to cultural resources recommendation for the Trail Mountain project (SHPO letter of concurrence and permit conditions in the decision document).

ENVIRONMENTAL IMPACTS

Impacts of the Proposed Alternative

Soils

The majority of soils overlying the Trail Mountain mine facilities area (8.8 acres) were lost during construction activities conducted in association with previous mining operations. Little soil was saved for reapplication. The sole exception is soil salvaged from the borrow area (Appendix 7) in conjunction with construction activities accomplished during 1982. This soil was removed, stockpiled near the mine portal, and temporarily revegetated. No new disturbances are planned at the mine. Therefore, no impacts are expected with regard to soils adjacent to the existing disturbance.

Soil will remain in the existing stockpile for the life of the mine (to 1986) until needed for reapplication during revegetation. This soil will be subject to compaction, a reduction in nutrient levels, and a reduction in soil microbial populations. Soil structure was permanently lost during salvage. Stockpile compaction will be relieved during reapplication. Nutrient levels will be re-established through fertilization. Microbial populations should readily re-establish in the soil matrix through inoculation from surrounding areas. Given past revegetation success in the West with soil reapplication, these impacts are not considered significant. With the exception of the permanent loss of structure, the duration of these impacts is limited to a short time-frame.

A minimal amount of soil in the stockpile will be lost through erosion. This loss, however, should be negligible with respect to the total amount salvaged. The stockpile was revegetated following borrow material acquisition. The time that soil will be stored in the stockpile will be limited (to 1986), which in turn will limit soil exposure to erosive forces.

The seedbed over the majority of the Trail Mountain site will be composed of cut and fill materials generated during previous mining activities. Coal wastes have become mixed with these materials at and adjacent to coal handling and stockpiling facilities. Admixtures also include oil, gasoline, and diesel fuels. Mixing will likely continue through the life of the mine. The applicant has committed to either treat and bury all toxic materials during grading or dispose of such materials at approved landfills. This will result in the use of uncontaminated fill as seedbed material after grading. Therefore, the impact of mixing is considered slight.

Spoil to be used as seedbed material is currently in place as fill and has historically been subjected to compaction. Compaction will continue through the life of the mine. During regrading, existing compaction will be relieved through excavation and spoil replacement.

Erosion of fill, and therefore seedbed materials, will occur during operations as a result of wind and water forces. The potential for erosion is greatest on the out-slopes of construction fills. The level to nearly level fill slopes will be subject to significantly less erosion due to slope angle and compaction. In addition, the applicant has committed to reclaiming (during the life of the mine) existing disturbed areas not required for mine operation. Given the small area of disturbance and short mine life, both the magnitude and duration of this impact are considered limited.

Samples of soil taken on the mine site indicate that a significant portion of the existing fill, to a depth of eight to twelve feet, exhibits moderate to high electrical conductivity (EC) and sodium adsorption ratio (SAR) values (see "Description of the Affected Environment," subsection "Soils"). Replacement of such spoil material as a seedbed during final revegetation would seriously limit potential revegetation success in terms of a reduction of available soil moisture, possible nutrient imbalances and deficiencies, and poor seedbed physical condition. This is particularly significant given the endemic climate. To eliminate this impact, the applicant will identify spoil materials having undesirable EC and SAR values. The applicant will separate such materials during the grading process and bury them under suitable topsoil substitute materials. This will ensure that only spoil with acceptable EC and SAR values are used as seedbed material. Therefore, the potential impact of spoil contamination at the mine site is not considered significant.

Reapplied soil and spoil will be subjected to erosion from the time of final grading until vegetation is established. Erosion should be significantly reduced from the time of mulch application until applied mulch decomposes and no longer provides surface protection (one to two growing seasons). During this time period, contour trenches to be constructed along slope faces during revegetation will also aid in reducing erosion of the seedbed. Seedbed mulch decomposes rapidly as it establishes the germinated

seedlings. As the mulch decomposes, there will be an increase in erosion until vegetative cover is established. This impact is considered to be insignificant, particularly on regraded slopes, due to the absence of soil for use of seedbed material combined with the low average annual precipitation.

Surface-Water Hydrology

Impacts During Mining

With approval of the mine plan, all surface drainage facilities will have been designed to safely control water and sediment runoff from all disturbed areas. In addition, all surface water originating from undisturbed lands will be diverted around the existing operation. The presence of sedimentation control and riprap structures at the culvert outlet should adequately reduce the potential for excessive erosion. It should be noted that when the design event is exceeded (i.e., greater than the 10-year, 24-hour event for the sediment pond) little sediment treatment will take place, leading to higher than normal sediment loading. Adverse effects to Cottonwood Creek resulting from the above will be minimal since high sediment loads during large runoff events are characteristic of the area.

The Trail Mountain mining operation will result in some decrease in streamflow to the North Fork of Cottonwood Creek. Runoff over 23 acres or 0.2 percent of the drainage basin will flow to the sediment pond. In effect, this area will be isolated from the remaining hydrologic system. The effects of the loss of such a small percentage of the drainage basin on surface water flows will be negligible. In addition, the applicant proposes to continue diverting 4,040 gpd of surface water for mine use in dust control, machinery, and in the site bath-house. This volume of water amounts to 0.74 percent of the average daily flow of the stream as recorded by USGS gaging station 14060009 (Appendix 7-24 of the permit application package). The overall impact of surface water diversions for dust control upon streamflow will be negligible. Following reclamation of the stream channel, there will be some short-term impact to the water quality of Cottonwood Creek. The applicant proposes to re-establish the stream channel in its original configuration and riprap the banks of the post mining channel. The bed of the reconstructed channel will be re-established on bedrock. Construction activities include the removal of the buried culvert, dirt work, and placement of riprap. During construction activities to re-establish the stream channel, control of sediment produced by construction is not possible because construction will take place directly in the stream channel. No practical technology is available to control sediment for this necessary reclamation step. Therefore, construction to reclaim the stream channel will take place during the low-flow months of September through November to minimize the temporary sediment transport. The initial flows that pass through this channel will carry sediment from the construction disturbance downstream. As the system equilibrates, the amount of sediment will be reduced. The degradation of the stream-water quality due to construction activities will be short term and should not preclude anticipated uses downstream of the Trail Mountain mine.

Adverse during-mining impacts to the surface-water system, in particular to Cottonwood Creek, should be negligible and of short-term nature.

Post-Mining Surface Water Impacts

At the end of mining and reclamation, impact to the surface-water system will be minimal. It is not anticipated that dewatering of the springs by the mining activities or associated subsidence will take place. Hence, streamflow should not be affected by any loss of springflow.

Reclamation of the 8.8-acre disturbance may result in lower infiltration rates, hence greater runoff and sediment yield, initially. The applicant proposes to control sediment and runoff from the reclaimed slopes with contour trenches. These trenches should work satisfactorily until vegetation becomes established. As the trenches fill with sediment overland flow, rilling and possibly gullying may occur, resulting in an increase in sediment yield to the channel. If all sediment control measures were to fail simultaneously, a worst-case scenario, approximately 14 tons of sediment per year (assuming: USLE value, Appendix 9, PAP; 70 percent sediment delivery ratio for a steep, small watershed) may enter the North Fork of Cottonwood Creek. If such a sediment yield is sustained for the long term, significant volumes of sediment may enter the drainage system. However, the applicant has proposed a number of measures to control sheet, rill, and gully erosion, including erosion netting, contour trenches, and revegetation. All data indicate that these methods should reduce sediment yield to negligible volumes.

In summary, no long-term impacts to the Cottonwood Creek drainage system are anticipated due to the Trail Mountain operation.

Ground-water Impacts

Impacts During Mining

Relative to other underground mines, Trail Mountain is a "dry" mine, intercepting approximately 10 gpm of ground water. Hence, it is not anticipated that significant dewatering of the overlying aquifers is occurring. The applicant is monitoring springs and seeps in the general area. The nearest spring (or ground-water source) to the mining operation is 2,000 feet to the west of the underground workings. Given the perched nature of the aquifer system and the fact that mining is occurring in the Blackhawk Formation, 1,400 to 2,000 feet below the North Horn Formation source of the springs, it is not likely that dewatering or subsidence will directly or indirectly affect the discharge of the springs. Geologic data indicate that there are no faults or continuous fractures within the permit area which might serve to propagate ground-water impacts. However, it is important to note that neither existing geologic nor hydrogeologic data yield sufficient information to positively identify impacts to the ground-water system. Continued monitoring of the springs over the course of mining should provide adequate protection of the ground-water resource.

Based on the available data, it can be concluded that the Trail Mountain mining operation will not significantly impact the ground-water system during the operational phases of mining.

Post Mining Ground-water Impacts

Subsidence of the land surface is expected to occur at the Trail Mountain mine following closure. Because of their respective distances from the underground workings (greater than 2,000 feet horizontal and 1,500 feet vertical) spring flows should not be impacted adversely by subsidence. These springs appear to receive recharge from snowmelt along the plateaus to the west of the mine workings and discharge from strata immediately to the east and below these sources. The flow path (recharge/discharge) should be undisturbed by subsidence because it is well outside the subsidence cone.

Where aquifers immediately overlie the mined area, vertical permeability will increase, enhancing hydrologic communication. The result will be commingling of the perched aquifers and possibly the creation of new springs. Insufficient data exist on the perched aquifers immediately overlying the mined area to accurately predict ground-water impacts. It is important to note that pre-mining communication between aquifers does exist, hence water quality impacts due to commingling will be minimal. Water quantity impacts to these aquifers will be restricted to the translocation of water from one perched zone to another or to the surface.

In summary, it can be concluded that there will be no long-term impacts to the springs and seeps in the Trail Mountain area. Some impacts will occur to the local, perched aquifers immediately overlying the subsided area. Such impacts will not adversely affect the ground-water hydrologic balance at the Trail Mountain mine site. The applicant has committed to replacement of water sources impacted by the mining operation.

Vegetative Resources

Construction and expansion of the facilities area displaced approximately 8.8 acres of grassland-shrub and riparian vegetation. Short-term impacts to vegetation have therefore already occurred. During mining, certain small areas above and below the facilities pad will be revegetated attenuating, in part, some of the original impact. Following mining, the entire disturbed area will be revegetated, reducing the severity of short-term impacts from barren areas to early successional stages of replaced vegetation. Following reclamation, no long-term impacts are expected to remain as vegetation communities must be sufficiently recovered before the company's bond is released.

Fish and Wildlife

Approximately 8.8 acres of surface disturbance has resulted from the Trail Mountain mine operation. Surface disturbance has occurred in the grassland-shrub and riparian vegetation types. The disturbance area will remain devoid of wildlife habitat for the life of the mine and until reclamation is successful. None of the affected area represents critical habitat for any threatened or endangered species; however, the Utah Division of Wildlife Resources (UDWR) considers riparian habitat unique for the region and critical to the survival of many species of wildlife. Even though some riparian habitat has been disturbed, wildlife impacts associated with loss of habitat will remain relatively minor because of the limited areal extent of the surface disturbance.

Besides direct loss of habitat, other mine-associated wildlife impacts include human harassment of all wildlife, mule deer road-kills, and degradation of water quality in Cottonwood Creek. The effects of human harassment on wildlife, either inadvertent or purposeful, should be considered from a cumulative standpoint since at least three other mines are currently operating along the southern end of East Mountain. However, since premining baseline data for wildlife populations in the area are lacking, these effects are extremely difficult to quantify. At a minimum, mine activities probably preclude raptor nesting in cliff habitat in the vicinity of the mine portal facilities because of human activity. Subsidence may effect the habitat of raptors over the mining area by some steep slope failures as discussed under subsidence on the following page. However, this risk is not considered excessive due to the natural ruggedness of terrain and spalling of rock through natural erosion processes. Mine-sponsored wildlife educational programs should help in reducing other harassments of wildlife as much as possible. The potential for mule deer road-kills is greatest during the winter months when mule deer congregate in the critical and high-priority winter range traversed by the Trail Mountain access/haul road. However, unless a particularly hazardous area is identified by UDWR and applicant monitoring, this impact is not expected to be significant. Pre-law mining operations have degraded aquatic habitat in Cottonwood Creek, downstream of the mine portal and facilities. Degradation has occurred primarily through sedimentation. Installation of a culvert and a sedimentation pond near the mine facilities should reduce this problem. Monitoring efforts implemented by the applicant will be sufficient to determine the success of these sediment-control measures.

Land Use

No additional surface disturbance is proposed for the current permit term. Surface disturbance (8.8 acres) associated with the mine portal and facilities areas and a concomitant loss of wildlife habitat will remain until reclamation, following mine closure, is completed. This and other land use impacts resulting from the mine operation are relatively minor because of the small acreage involved and the nature of the terrain. Premining livestock grazing use of the disturbance area was limited by the steep, rocky terrain. Recreational and cattle-drive access up the canyon has not been obstructed by the mining operation.

Backfilling and Grading

Impacts associated with the backfilling and grading of the facilities area at the mine are minimal. During the backfilling and grading operation, the mine site will be disturbed by the operations. This will cause enhanced erosion rates, and will require that surface-water control structures be maintained until vegetation is established. The applicant has provided a plan which adequately addresses these concerns. The site will essentially be returned to its premining condition by backfilling the excavated material. However, the backfill material will not be as stable as the original material at the site since the fill was excavated from bedrock in many instances. However, the applicant is proposing to reclaim the site using state-of-the-art techniques, and to re-establish vegetation to stabilize the fill slopes. The applicant has proposed plans for backfilling that will ensure the mass stability of the slopes.

Subsidence

Mining operations at the Trail Mountain mine will result in lowering of the ground surface possibly three feet over the mine area. The possibility exists that slope failure in the Castlegate Sandstone may occur. This is a steep-slope forming formation, resistive to erosion, which is situated above the underground mains in the mine. Information to be submitted by the applicant in annual monitoring reports will identify the probable extent of these impacts. Current analytical techniques prevent certain identification of these possible impacts without further data collection as a result of mining. The worst-case analysis of this issue would indicate that some slope failure might occur which could alter the appearance of the slopes, cause some surface cracking or could topple some blocks from the ridges. This could pose a hazard to persons hiking in the area or using the road. However, this risk is not excessive given the natural ruggedness of the terrain and spalling of rock through natural erosion processes. These impacts will occur over an extended period of time in some areas over the mine. In areas where maximum extraction occurs, the subsidence may occur within a few years. If subsidence is dependent upon pillar failure, then this may take decades to occur.

Air Resources

Those activities which produce the most dust are coal haulage down canyon from the mine, coal handling, and surface winds over the disturbed area. The impacts of dust pollution at the Trail Mountain mine are significantly reduced by the relatively small area of surface disturbance and various dust control measures outlined in the description of the affected environment, in this document.

Socioeconomic Impacts

The socioeconomic impacts attributable to this permit action would be negligible. Assuming average annual production resumes, the majority of the 61-person workforce would be re-hired by the company from the local area (i.e., Price, and Helper in Carbon County and Huntington, Castle Dale, Ferron, and Orangeville in Emery County). The company anticipates future permitting of an emergency lease to increase its production capacity in 1985 to approximately 800,000 tons per year. Maximum employment at the mine required for this production level would be 120 workers. The socioeconomic impacts attributable to the proposed development of the emergency lease will be minimal. The addition of approximately 59 people at the mine would result in an indirect population impact of 165 people. The unemployment rate is projected to remain at 13% throughout 1984-1985; therefore, the majority of mine-associated population would come from the local area. Since little in-migration is anticipated, the increased employment level at the mine will not have an adverse cumulative socioeconomic effect on the area.

Cultural Resources

No additional surface disturbance is proposed for the current permit term. No known prehistoric or historic sites, that are eligible for nomination to the National Register of Historic Places, are located in the permit area. Areas potentially impacted by subsidence will be monitored and surveyed for cultural resources if warranted by information on subsidence. No impacts to cultural resources are anticipated.

IMPACTS OF THE DISAPPROVAL ALTERNATIVE

Disapproval of the applicant's permit would shut down the existing Trail Mountain mining operation and reclamation of the present disturbance would commence. Given the five-year life of the mine and the prospects of no additional surface disturbance, this alternative would provide few additional environmental benefits. One possible benefit would be a slight reduction in subsidence. The impact of this alternative would be the loss of approximately 61 jobs and approximately 800,000 tons of coal reserves. It is possible that Trail Mountain would use some of their existing staff for reclamation operations.



United States Department of the Interior

FISH AND WILDLIFE SERVICE
ENDANGERED SPECIES OFFICE
1406 FEDERAL BUILDING
125 SOUTH STATE STREET
SALT LAKE CITY, UTAH 84138-1197
July 23, 1984

OSF-WIT
1984 JUL 26 AM 8:52
WESTERN WILDLIFE CENTER

IN REPLY REFER TO:

MEMORANDUM

TO: Utah Task Force Leader, Office of Surface Mining
Denver, Colorado

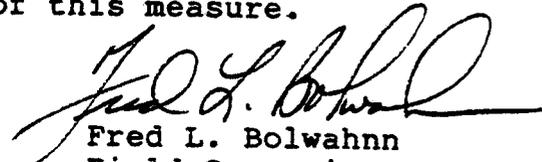
FROM: Field Supervisor, Endangered Species Office
U.S. Fish and Wildlife Service, Salt Lake City, Utah

SUBJECT: Biological Assessment of Canyon Sweet-vetch (Hedysarum
occidentale var. canone).

We have reviewed your agency's biological assessment of impacts to the canyon sweet-vetch (Hedysarum occidentale var. canone) by the Kaiser Steel Corporation's Sunnyside Mine, Trail Mountain Coal Company's Trail Mountain Mine, and Beaver Creek Coal Company's Huntington Canyon No. 4 Gordon Creek No. 2 mines. As you have noted the canyon sweet-vetch is not a listed threatened or endangered species but is under review for possible listing in the future if future status surveys deem that listing is appropriate for that species.

We note that the Forest Service has designated the canyon sweet-vetch as a sensitive species is providing protection to this species under authority other than the Endangered Species Act.

We have concluded that the protective measures outlined in your biological assessment should provide adequate conservation for this species in relation to current and future operations of the above listed mines. We appreciate your efforts in providing for the survival and conservation of this measure.


Fred L. Bolwahn
Field Supervisor



United States Department of the Interior
FISH AND WILDLIFE SERVICE

MAILING ADDRESS
Post Office Box 25486
Denver Federal Center
Denver, Colorado 80225

STREET LOCATION
134 Union Blvd.
Lakewood, Colorado 80228

IN REPLY REFER TO
FA/SE/OSM--
Trail Mtn. Mine

MAY 18 1984

Allen Childs, Engineer
Trail Mountain Coal Company
P.O. Box 370
Orangeville, Utah 84537

Dear Mr. Childs:

This responds to your May 9, 1984, letter and your contribution of \$70 to the Fish and Wildlife Service. Your commitment to the protection and recovery of the Colorado squawfish in the Colorado River system is indeed noteworthy.

Your contribution concerning the Trail Mountain Mine certainly will satisfy your commitment to help with the conservation and recovery of the Colorado River endangered fish species. As stated in our April 20, 1984, biological opinion, the contribution will be used to fund certain conservation measures for these fish. These will be used primarily for habitat manipulation and monitoring existing habitat.

Your contribution is gratefully appreciated and will be conscientiously administered.

Sincerely yours,


ROBERT H. SHIELDS
Acting Regional Director

cc: Louis Hamm
Office of Surface Mining
Denver Technical Service Center
Brooks Tower
1020 15th Street
Denver, CO 80202

Hand delivered to Lynn Kunzler at UUDOM 2/21/84
Sent to Albuquerque 5/3/84

NIT 7/24/80
for 4/24/84



United States Department of the Interior

FISH AND WILDLIFE SERVICE
ENDANGERED SPECIES OFFICE
1406 FEDERAL BUILDING
125 SOUTH STATE STREET
SALT LAKE CITY, UTAH 84198-1197

IN REPLY REFER TO:

April 20, 1984

SE/SLC:6-5-84-0021

MEMORANDUM

TO: Chief, Technical Support Branch,
Office of Surface Mining, Denver, Colorado

FROM: Field Supervisor, Endangered Species Office,
U.S. Fish and Wildlife Service, Salt Lake City, Utah

SUBJECT: Section 7 Consultation, Trail Mountain Mine

Reference is made to your memorandum dated March 13, 1984 which presented Office of Surface Managements' (OSM) determination that depletion of water from the North Fork of Cottonwood Creek in Emery County, Utah as a result operation of the Trail Mountain Mine may effect the Colorado squawfish (Ptychocheilus lucius) and the humpback chub (Gila cypha). Your memorandum also requested a biological opinion for the permitting action OSM is contemplating. Our comments have been prepared as prescribed in the Section 7 Interagency Cooperation Regulations, 50 CFR 402, and the Endangered Species Act (ESA), 16 U.S.C., 1531 et. seq.

BIOLOGICAL OPINION

The issuance of a permit to allow continued operation of the Trail Mountain Mine is not likely to jeopardize the continued existence of the Colorado squawfish provided the conservation measures outlined below are adopted and followed. The above action also is not likely to jeopardize the continued existence of the humpback chub.

PROJECT DESCRIPTION

The Trail Mountain Mine is located in Emery County, Utah. The continued operation will result in an annual depletion of 4.53 acre-feet per year (af/yr) from the North Fork of Cottonwood Creek. Part of this will be consumed by mining equipment operation and the remainder as dust control. This depletion of water from the North Fork of Cottonwood Creek will result in a depletion of Cottonwood Creek a tributary to the San Rafael River which eventually flows into the Green River. There are no other potential impacts to currently listed threatened or endangered (T&E) species to be considered.

BASIS FOR OPINION

COLORADO SQUAWFISH

Early records indicate that the Colorado squawfish was once abundant throughout the Colorado River system. It was abundant over all of its range prior to the 1850's (Seethaler, 1978). The present range of the squawfish is restricted to the upper Colorado River basin. It is found inhabiting about 360 miles of the main stem Green River from the mouth of the Yampa River downstream to the confluence of the Green and Colorado Rivers (Fish and Wildlife Service, [FWS] 1982).

Decline of the populations of the squawfish correlates very closely with the construction of dams and reservoirs and the removal of water from the Colorado River system. Colorado squawfish evolved in and apparently require habitat conditions typified by great seasonal fluctuations in flow and turbidity, coupled with warm summer temperatures. Additionally, it appears that squawfish require relatively unrestricted movement to satisfy all of their life history requirements. Movement of adult squawfish appears to be related to flow, temperature, feeding and spawning behavior.

The life stages that appear to be most critical are from egg fertilization through its first year of life. It has been demonstrated that these phases of squawfish development are also closely tied to some specific habitat requirements. It is imperative that proper flows and temperatures are provided during these essential life stages. The Conservation Measures outlined below will help meet the habitat requirement needs of the Colorado squawfish.

HUMPBACK CHUB

Humpback chub generally do not make migrational movements in the Upper Colorado River and tend to reside throughout the year within a limited stretch of river. Humpback chub are found inhabiting narrow, deep canyon areas which are quite restricted in distribution. They seldom leave their canyon habitat (Miller et al. 1982). While the humpback chub are still found dispersed in the Green and Yampa Rivers, the only major population of humpback chub conclusively known to exist in the Upper Colorado River Basin are located in Black Rocks and Westwater Canyons on the Colorado River. Since the Trail Mountain Mine will not have any effect on the Colorado River at the sites where known humpback chub populations occur, in our opinion, the proposed project is not likely to jeopardize the continued existence of the humpback chub.

CONSERVATION MEASURES

FWS believes that any further water depletions from the upper basin may have detrimental effects on listed fishes; however it is believed that certain management techniques can be implemented to offset harmful effects from additional development. Two major categories for potential impacts are considered: (1) direct, project specific impacts and; (2) indirect subtle impacts.

1. Direct Impacts

In the case of the Trail Mountain Mine the direct impacts to the Colorado squawfish are simply the violation of required fish flows in essential reaches for this species. The Trail Mountain Mine Project by depleting ground water a significant distance from occupied habitat, will have an imperceptable effect on minimum flows. The amount and timing of the reduction of minimum flows as a result of depleting 4.53 af/yr from the North Fork Cottonwood Creek will not be measurable and cannot be analyzed by the FWS hydrologic model. Because of the above and because this is a continuing small water depletion project, it is determined that the Trail Mountain Mine project will not affect FWS determined minimum flows.

2. Indirect Effects

Other impacts resulting from water developments may be more subtle, but just as harmful in a cumulative sense. The fact that water is depleted from the rivers reduces the flexibility of the system to withstand additional water losses without detrimental impacts to essential areas. Creation of habitat favorable to introduced species is an example of how seemingly minor changes in flow regimes may shift the balance between survival and extinction for one or all of these listed fishes.

Depletions that bring present day flows down to the prescribed minimums can only occur if enhancement measures contained in active research and management plans are funded by the project sponsor or proponent. FWS has identified certain conservation measures that are currently considered necessary to maintain the survival of the fish and contribute toward future recovery. These measures include monitoring known populations and attempting to locate new areas containing the fish; further analyzing the potential effects of water depletions and associated flow regime modifications; locating existing and potential spawning and YOY rearing areas; researching and constructing various fish passage and habitat restoration features; and producing the fish in a hatchery facility for research and restocking of individuals in existing and historical habitat.

Since such measures will develop critically important data on the survival needs of the fish, attempt to restore essential habitat, and allow a recovery program to be implemented, funding of these activities by project sponsors is considered a reasonable and

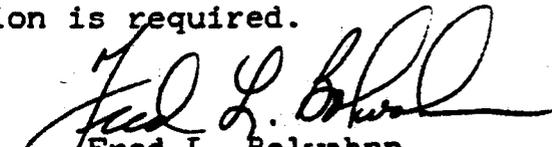
prudent alternative designed to compensate or prevent the adverse effects of water depletion. Under a procedure developed by the FWS, Upper Basin project sponsors are assessed a proportion of the total cost needed to support these conservation measures, currently estimated at approximately 25 million dollars.

The cost assessed any particular project is based upon the amount of water that the project would annually deplete from the upper Colorado River system in proportion to the amount available for development. It has been estimated by the Bureau of Reclamation that a total of 1.906 million af (maf) remains available for development in the Upper Basin under the Colorado River Compact.

Of this amount, 231,000 af are allocated to Arizona and New Mexico and will eventually be diverted from the lower part of the Colorado River Basin (below Lee's Ferry) and would not affect areas currently occupied by the endangered fishes in the Upper Basin. This leaves 1.675 maf in the Upper Colorado River sub-basins as the value against which project depletions are assessed in calculating a project's proportion of the conservation measures. Based upon the use projection of 4.53 af/yr for the Trail Mountain Mine the amount of contribution to the Conservation measures would not exceed \$70. A contribution of this amount to the conservation fund will offset the impacts of the depletion of water on the Colorado squawfish and will not jeopardize the continued existence of this species. The FWS should be notified in writing within three months of the date of this biological opinion whether the OSM and the operators of the Trail Mountain Mine agree with this conservation measure. Negotiations for contributing to the fund should be initiated as soon as possible.

The FWS is currently attempting, with the assistance and input of other concerned and interested Federal and State agencies, to develop conservation measures which will provide for the conservation and recovery of the endangered Colorado River fishes. If the results of this coordinated effort is a continuation of minimum flows and contributions of funds towards the conservation effort, then the approach outlined above as an alternative precluding jeopardy to the Colorado squawfish will remain valid. If a different approach is developed it would then be used in future consultations.

Should there be any changes in the amount of water depletion or any other project change from that which was proposed which may affect any endangered or threatened species, or failure to agree to the Conservation Measures the FWS should be contacted to determine if further consultation is required.


Fred L. Bolwahn
Field Supervisor

REFERENCES

Seethaler, K. 1978. Life History and Ecology of the Colorado Squawfish (Ptychocheilus lucius) in the upper Colorado River basin. Thesis, Utah State University. Logan, Utah.

U.S. Fish and Wildlife Service. 1982. Colorado River Fishery Project Final Report. Part I (42 pp), Part II (356pp), and Part III (324 pp). Prepared for the U.S. Bureau of Reclamation, Salt Lake City, Utah. April 1982.

10 11/11/83

ATT 5 10/27/83

United States Department of the Interior

FISH AND WILDLIFE SERVICE
AREA OFFICE COLORADO-UTAH
1311 FEDERAL BUILDING
125 SOUTH STATE STREET
SALT LAKE CITY, UTAH 84138-1197

21 October 1983

WESTERN TECHNICAL CENTER

093 OCT 27 AM 11:11

OSM-WTC

IN REPLY REFER TO:

MEMORANDUM

TO: Chief, Technical Support Branch
Office of Surface Mining, Denver, Colorado

FROM: Field Supervisor, Endangered Species Office
U. S. Fish and Wildlife Service, Salt Lake City, Utah

SUBJECT: Threatened and Endangered Species in underground mines in
Carbon and Emery Counties, Utah.

We have reviewed your memorandum of 23 September 1983 requesting lists of threatened and endangered species for various existing underground mines in Carbon and Emery counties in Utah. It appears that listed endangered species may occur in the area of influence of this action.

To comply with Section 7(c) of the Endangered Species Act of 1973, as amended, Federal agencies or their designees are required to obtain from the Fish and Wildlife Service (FWS) information concerning any species, listed or proposed to be listed, which may be present in the area of a proposed construction project. Therefore, we are furnishing you the following list of species which may be present in the concerned area:

Mine	Species
Emery Deep	Wright fishhook cactus <u>Sclerocactus wrightii</u>

In addition to the above listed species we would like to bring to your attention the following plant species which is under review by the Fish and Wildlife Service for possible listing in the future. While this species is not currently protected under the endangered species act, we encourage you that it be given consideration in environmental plans.

Mine	Species
Trail Mountain, Sunnyside, Huntington No. 4 Gordon Creek No. 2	Canyon sweet-vetch <u>Hedysarum occidentale</u> var. <u>canone</u>

Section 7 (c) also requires the Federal agency proposing a major Federal action significantly affecting the quality of the human environment to conduct and submit to the FWS a biological assessment to determine the effects of the

proposal on listed and proposed species. The biological assessment shall be completed within 180 days after the date on which initiated or a time mutually agreed upon between the agency and the FWS. Before physical modification/alteration of a major Federal action is begun the assessment must be completed. If the biological assessment is not begun within 90 days, you should verify this list with us prior to initiation of your assessment. We do not feel that we can adequately assess the effects of the proposed action on listed and proposed species or critical habitat and proposed critical habitat without a complete assessment. When conducting a biological assessment, you shall, at a minimum:

1. conduct a scientifically sound on-site inspection of the area affected by the action, which must, unless otherwise directed by the FWS, include a detailed survey of the area to determine if listed or proposed species are present or occur seasonally and whether suitable habitat exists within the area for either expanding the existing population or potential reintroduction of populations;
2. interview recognized experts on the species at issue, including those within the Fish and Wildlife Service, state conservation agencies, universities, and others who may have data not yet found in scientific literature;
3. review literature and other scientific data to determine the species' distribution, habitat needs, and other biological requirements;
4. review and analyze the effects of the action on the species, in terms of individuals and populations, including consideration of the cumulative effects of the action on the species and habitat;
5. analyze alternative actions that may provide conservation measures;
6. conduct any studies necessary to fulfill the requirements of (1) through (5) above;
7. review any other relevant information.

The FWS can enter into formal Section 7 consultation only with another Federal agency or its designee. State, county, or any other governmental or private organizations can participate in the consultation process, help prepare information such as the biological assessment, participate in meetings, etc.

After your agency has completed and reviewed the assessment, it is your responsibility to determine if the proposed action "may affect" any of the listed species or critical habitats. You should also determine if the action is likely to jeopardize the continued existence of proposed species or result

in the destruction or an adverse modification of any critical habitat proposed for such species. If the determination is "may affect" for listed species you must request in writing formal consultation from the Field Supervisor, Endangered Species Office, U.S. Fish and Wildlife Service at the address given above. In addition, if you determine that the proposed action is likely to jeopardize the continued existence of proposed species or result in the destruction or adverse modification of proposed critical habitat, you must confer with the FWS. At this time you should provide this office a copy of the biological assessment and any other relevant information that assisted you in reaching your conclusion.

Your attention is also directed to Section 7(d) of the Endangered Species Act, as amended, which underscores the requirement that the Federal agency or the applicant shall not make any irreversible or irretrievable commitment of resources during the consultation period which, in effect, would deny the formulation or implementation of reasonable and prudent alternatives regarding their actions on any endangered or threatened species.

We are prepared to assist you whenever you have questions which we may be able to answer. If we can be of further assistance, please advise us.

The FWS representative who will provide you with technical assistance is Larry England (FTS) 588-4430.

John L. England
Acting Field Supervisor



United States Department of the Interior

FISH AND WILDLIFE SERVICE
AREA OFFICE COLORADO-UTAH
1311 FEDERAL BUILDING
125 SOUTH STATE STREET
SALT LAKE CITY, UTAH 84138-1197

IN REPLY REFER TO:

November 10, 1982

Cleon Feight, Director
Division of Oil, Gas and Mining
4241 State Office Building
Salt Lake City, Utah 84114

Dear Mr. Feight:

This letter is written to inform you of two field trips to examine potentially hazardous powerlines within the permit boundaries of the mines described in your letter dated August 18, 1982. Mr. Ron Joseph of my staff has completed a review of the distribution lines of the following mining companies. Overall, he found no eagle remains beneath the lines examined nor does he suspect any problems with the lines in question. The following is a brief summary of each site visited and a description of the configuration examined. When possible, he examined the lines with company personnel.

Valley Camp of Utah Inc.

Mr. Joseph met with E.B. Foust, Chief Engineer to survey the lines of Valley Camp's Belina Mines and Utah #2. The three phase Belina lines for the most part traverse high timbered mountainous terrain. Previous Fish and Wildlife Service (FWS) surveys have not shown a problem with powerlines in coniferous cover primarily because trees themselves offer much better perch sites than crossarms of power poles. As an added precaution, Mr. Foust pointed out to Mr. Joseph where Valley Camp has erected perch sites in areas where the Company believed a problem could exist within the Belina Mine complex. However, on close examination, the lines did not reveal any use by raptors.

Mr. Foust also toured Mr. Joseph through the Utah #2 Mine area across from its headquarters. Due to extensive mining near the facilities and associated human activity, it is unlikely that raptors would use the lines. Again, trees dominate the landscape and raptor perch use is undoubtedly confined to trees and ridges.

Utah Power and Light (UP&L); Des-Bee-Dove, Wilberg, Deer Creek Mines

Des-Bee-Dove

Ron Joseph met with Scott Rassmussen, UP&L District Manager in Castledale, Utah, to examine the forementioned mine sites. The Des-Bee-Dove mine lines consist predominantly of 69KV three phase powerlines. The configuration is safe since adequate conductor clearance exists on the 10-foot crossarms should an eagle attempt

to perch on the pole. Much of the line traverses habitat used by wintering golden eagles. In fact, an adult golden eagle was observed using one crossarm as a perch. Mr. Joseph walked segments of the 3-4 mile line passing through relatively flat, sparsely vegetated habitat and documented some use of the lines by raptors. However, no remains were found and more importantly the lines are constructed such that birds are not likely to be electrocuted when using the crossarms as perch sites.

Wilberg

Mr. Rasmussen also showed Mr. Joseph the Wilberg line. The three phase line is energized with 69KV and is constructed such that eagles and other raptors are not likely to be electrocuted. As with the Des-Bee-Dove line, the Wilberg line has adequate conductor clearance on the 8-foot crossarm and center pole. A minimum of 42 inches separates the conductor on the pole top and those on the crossarm. Approximately 1-2 miles of line traverses habitat used by jackrabbits and no remains of rabbits or eagles were evident beneath the crossarms. Therefore, we do not anticipate any electrocution problems with the Wilberg line.

Deer Creek

The Deer Creek Mine line is constructed without a crossarm. Raptors are unable to perch on the staggered conductors of the 12KV line thereby eliminating electrocution hazards.

Trail Mountain and Knight

Mr. Rasmussen accompanied Mr. Joseph in the field to examine the UP&L lines providing power to the Trail Mountain Mine, Natomas Coal Company. The 12KV lines parallel the road and are of an armless configuration; a design which is safe for raptors because it prevents perching. The Knight Mine is of the same configuration as the Trail Mountain Mine. No problems are expected with the lines to the Knight Mine.

Beaver Creek Coal Company, Castle Valley Spur

Dave Myers of Beaver Creek Coal Company met with Mr. Joseph at the C.V. Spur facility and both walked the length of the line. The armless configuration and close proximity of the line to the C.V. Spur accounts for the lack of raptor use of the powerlines.

In summary, Mr. Joseph examined the lines described in your August 18, 1982, letter and has not found any to be a threat to eagles or other raptors. Please feel free to contact us once again if we can be of additional assistance.

Sincerely,


Field Supervisor
Ecological Services

cc: OSM, Denver
DWR, SLC

Memorandum

DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Moab District

IN REPLY REFER TO:

3400
U-082966
(U-067)

*Hand delivered to DOBM via Lynn Kunzle
on 5/2/84
To All. 5/3/84*

To : Center Administrator, OSM, Denver, CO
Attention: Louis Hamm
FROM : District Manager, Moab

Date: APR 17 1984

SUBJECT: Responses to Revisions for Trail Mountain Coal Company's
Trail Mountain Mine

We have reviewed the revisions to the Trail Mountain Mine and Reclamation Plan, OSM Serial No. UT0017, concerning surface water and reclamation, and have found them to be complete. We have no further comments at this time.

The mine plan area including the Federal Lease (U-082966) is addressed by Forest Service land use plans. The Office of Surface Mining applies the mandatory criteria found in Section 522(e) of the Surface Mining Control and Reclamation Act as well as the Alluvial Valley Floor criterion in Section 510(b)(5). We do not recommend that any of the lands within the mine plan area be designated unsuitable for coal mining.



OSM-VTC
1984 APR 19 AM 8:34
WESTERN TECHNICAL CENTER

Hand delivered to Lynn Kunzler of UDO6M 5/2/84
Sent to Albuquerque 5/3/84

IN REPLY REFER TO



United States Department of the Interior

BUREAU OF LAND MANAGEMENT
UTAH STATE OFFICE
136 E. SOUTH TEMPLE
SALT LAKE CITY, UTAH 84111

3482
U-082996
(U-921)

APR 18 1984

Memorandum

To: Utah Senior Project Manager, OSM, Denver

Attention: Mr. Louis Hamm

From: Chief, Branch of Mining Law and Solid Minerals,
BLM-SO, Salt Lake City

Subject: Diamond Shamrock Coal Unit, Trail Mountain Coal
Company, Trail Mountain Mine, Permit Application
Package (PAP)

Mr. Allen Childs from the Trail Mountain mine delivered today (04/18/84) additional maps and pages for the subject PAP. This material constitutes the final response to the concerns listed in our memorandum dated February 9, 1984. The material has been reviewed for conformance with 43 CFR 3482.1(c).

We have determined that the "Resource Recovery and Protection Plan" (R2P2) or the underground mining part of the subject PAP on file in this office is compatible with 43 CFR 3482.1(c) rules and regulations. The proposed coal recovery procedures will safely obtain maximum recovery of the coal resource within the plan area using current technology and available mining equipment. The R2P2 part of the subject PAP is adequate for BLM administration of the associated Federal coal leases.

Jackson H. Moffitt

cc: Moab District
DOGM
Trail Mountain Coal Co.

REC'D APR 20 11 8 35

082996



Reply to 2820

Date June 6, 1984

Allen D. Klein, Administrator
OSM - Reclamation and Enforcement
Brooks Towers - 1020 15th Street
Denver, Colorado 80202

Dear Mr. Klein:

We have reviewed the Mining and Reclamation Plan (MRP), the draft Technical Analysis, and the draft Environmental Assessment for the Trail Mountain Mine received from your office on January 23, 1984, May 1, 1984, and May 24, 1984, respectively. Our review also encompassed the subsequent additions to the draft TA sent May 23, 1984.

The Forest Service previously approved Environmental Assessments for Federal Coal Lease U-082996 on February 4, 1977, September 18, 1978, and May 28, 1982. New lease stipulations became effective July 1, 1983 (copy enclosed).

To continue our cooperative efforts to meet your very difficult time schedule, I will consent for the Forest Service to the Trail Mountain MRP subject to satisfactory responses to the following comments:

Mining and Reclamation Plan

Page 2-2 - Federal Coal Lease L1-082996.

The appropriate Federal coal lease number is U-082996.

Page 2-7 - Owner of Record of Surface and Subsurface Areas Contiguous to Proposed Permit Area.

The Bureau of Land Management needs to be added to the owner of record of surface area list.

Page 2-9B - Following is a Legal Description of all Coal Leases within and Contiguous to Trail Mountain Mine's Permit Area:

There are two Federal coal leases contiguous to the mine permit area not listed; U-083066 and U-47978.

Page 3-9 - There are no Roads Located on the Permit Area.

The coal haul turnaround road to the parking area and a portion of the Cottonwood Canyon road are within the permit area (refer to Figures 3-10 and 3-10A).



Page 3-17 - 3.3.2.2 - No Surface Structures or Perennial Streambeds will be Undermined During the Life of the Mine.

This is more restrictive than required by special stipulation No. 14:

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

Page 3-25 - As Shown, Another Permit Term will not be Required.

The emergency lease is not considered in this permit area or permit term. What permit term is it scheduled for?

Page 3-32 - Oil, Grease and Suspended Sediment in the Mine Water will be brought to the Surface and Discharged into a Sediment Pond.

A plan is needed to dispose of the oil and grease in the sediment pond since it does not have a skimmer.

Page 3-33 - Representative Springs Shown on Figure 7-9 will be Monitored in Accordance with the Monitoring Program.

All springs whether monitored or not should be located on the map. Figure 7-9 which indicates water monitoring stations should include the location of water sources mapped on Figure 7-2.

Page 3-37 - An Ongoing Hydrologic Monitoring Program will be Conducted at Each of the Stations Shown in Figure 7-8.

Figure 7-8 actually shows the monthly distribution of flows for Cottonwood Creek above Straight Canyon for the water year 1979.

Page 3-49 - The Perturbation Impact of the Operations on the Macroinvertebrates is Rated at 4 and on Ultimately High Interest Fish Species is Rated as 3.

A table should be included to define various perturbation impacts.

Page 3-58 - No Structures are Present that could be Affected by any Subsidence that Might Occur on Trail Mountain.

There are fences and stock ponds with associated earth dams that could be affected.

Page 3-68 - 3.5.5.2 - At Present, No Seedling Transplants are Proposed.

Page 70 indicates that containerized stock will be used in the reclamation timetable during April. Appendix 9, Table 7, refers to containerized stock.

Page 4-3 - 4.3.1.2 - The Southwest $\frac{1}{4}$ of the Southeast $\frac{1}{4}$ and the East $\frac{1}{4}$ of the Southwest $\frac{1}{4}$ of Section 24, Township 17 South, Range 6 East, is Managed by the Manti-LaSal National Forest, U.S. Forest Service.

The legal description should be the same as that on the enclosed current lease agreement.

Page 4-3 - 4.3.2 - Figure 4-1 Shows the Ownership of the Area Surrounding the Trail Mountain Mine Plan Area. Those Areas not Outlined are Unleased Federal Coal.

There is leased Federal coal which should be shown on the map.

Page 4-4 - 4.3.2.2 - These Leases are Located in: E $\frac{1}{4}$ of the SW $\frac{1}{4}$, Section 25, Township 17 South, Range 6 East.

Refer to the enclosed current lease agreement for the correct legal description of Federal Coal Lease U-082996.

Page 4-4 - 4.3.2.2 - A Copy of the Lease is Found in Attachment 4B.

Attachment 4B actually is the Share Purchase Agreement and the State lease.

Page 4-4 - 4.3.2.3 - A Copy of the Ownership is Found in Attachment 4A.

Attachment 4A is the Forest Service Special Use Permit for the 4 inch steel water pipeline.

Page 4-10A - Figure 4-3 Land Use Map.

This figure does not indicate livestock grazing, commercial timber, fisheries, eagle habitat and nests, big game deer/elk winter range, and gas developments.

Page 6-14 - 6.7.2 - The Dip in the Mine Permit Area is 3 to 4 Degrees in the Southwest Which is Part of the Joe's Valley Syncline.

The "Joe's Valley Syncline" is not known to our Geologists or found in any known publications.

Page 9-37 - No Threatened or Endangered Species were Observed in the Mine Lease Area. Several Species have been Proposed to be Listed in the Past . . . But are not Known to Occur in or Contiguous to the Mine Plan Area.

Sensitive plant species *Hedysarum occidentale* var. *canone* does occur within the mine lease area and along the main road up Cottonwood Canyon below the mine. There is a small population within the pinyon-juniper type community next to the road 200 feet below the Forest Service boundary sign. Other plants have been found scattered through the trees further down along the road. A major population occurs in Miller Canyon and in an unnamed canyon just west of Cottonwood Creek. When the road to the mine was recently realigned, approximately 20 plants were destroyed. The survey engineer was made aware of this population when the road was surveyed. Provision should be made to replace this population.

Page 10-4 - Table 10-4 - Species List and Classification of Birds Whose Published Ranges Overlap the Area Studies for Natomas Trail Mountain Coal Company.

The Ferruginous Hawk (*Buteo regalis*) needs to be added to the list.

Page 10-7 - Only One Endangered or Threatened Species was Observed Within the Boundary or Within Sufficiently Close Proximity to the Boundary to be Considered.

Table 10-7 lists Endangered Species of the environs of Trail Mountain Mine, and two are noted. If indeed only one was observed, which one?

Page 10-35 - Table 10-8 - Raptors of the Environs of Trail Mountain Mine.

The Ferruginous Hawk (*Buteo regalis*) needs to be added to the list.

Page 10-50 - A Portion of the Proposed Project Site Represents Winter Range for the Manti Elk Herd Unit 327.

The elk herd unit should be 12. Number 327 was a special hunt unit which was for only one year.

Page 10-52 - Raptor - General.

The Ferruginous Hawk (*Buteo regalis*) needs to be added to the list.

Page 10-53 - This is Particularly True for Nesting Aeries Which need Protection from Significant or Continual On-Line of Sight Disturbance within a One-Half Kilometer Radius of the Nest During the Time the Nest is Occupied.

This should be one-half mile or 1 kilometer radius.

Page 10-56 - In the Summer and Winter

This should read fall and winter.

Page 10-56 - During the Spring

This should read spring and summer.

Page 10-63 - The Roads will be Maintained to Prevent Material from Bouncing Out.

This discussion needs to be expanded to include the condition of the road surface to keep dust and surface materials out of the stream.

Page 10-64 - Natomas Trail Mountain Coal Company Proposes to Set Up Buffer Zones Along Cottonwood Creek to Protect the Aquatic Environment.

The buffer zone should extend along the entire length of the creek instead of the three isolated zones.

Page 12-16 - Utah Power and Light has Reported no Visible Detection of Surface Movement without the Use of Surveying Equipment with a Maximum Slope of 0.5 Feet in 100 on the Edge of the Subsidence Trough.

Subsidence has caused vertical displacements visible without survey equipment near the Wilberg Mine portal.

Appendix 3-4 - From This Point North, the U.S. Forest Service has Right-of-Way and is Responsible for Maintenance of Said Forest Service Road Number 50040.

It should be mentioned that the Forest Service has no formal right-of-way except from established historical use.

Appendix 7-24 - Utah Water Resources Data.

Data is included for 1979, 1980, and 1981. Data for 1982 and 1983 should be included.

Appendix 9-9 - Soil Nutrient Analyses were taken on the Soils that are to be Used for Final Reclamation (See Table 7).

Table 7 refers to the implementation and material cost of containerized stock.

Appendix 9.9 - the Natural Contours of the Streambank Will be Re-established and 1.4 Feet Median Riprap Will be Placed by Backhoe

The size of the riprap should be re-evaluated to determine if it is adequate.

Appendix 9-34A - Pounds/Acre 5-6.

It would be better to seed at 12-18 lbs./acre the first time with lighter applications for spot treatment, especially for broadcast seeding.

Technical Analysis

The comments which apply to the MRP also apply to this document and appropriate changes need to be made.

Environmental Assessment

Page 1 - The Estimated Life of Mine is Five Years.

The mine plan permit area does not include Federal Coal Lease U-49332 controlled by Diamond Shamrock, which is adjacent to the existing mine plan permit area. The reserves of this lease need to be figured into the life of the mine.

Pages 2 & 15 - The Impact Unique to this Alternative Would be the Loss of Approximately 800,000 Tons of Coal Reserves.

The total recoverable reserves are 2,314,032 tons as per page 1 of the Environmental Assessment.

Page 3 - Riparian (R).

This is not a standard soils mapping unit.

Page 5 - The Majority of the Remaining Land in the Area is Part of the Manti-LaSal National Forest. Mineral Ownership Within the Mine Plan Area Consists of Federal and Fee Coal.

The State of Utah must be included in both sentences.

Page 6 - Socioeconomics.

There is no mention of Castle Dale, Ferron, and Orangeville, where most of the work force is located.

Page 7 - Both of These Sites Were Tested and Mitigated by AERC for Utah Power and Light and Reported Upon in 1982.

No mitigation has been completed to our knowledge.

Page 9 - The Applicant Will Impound 23 Acres or 0.2 Percent of the Drainage Basin for Sediment Control.

This sentence does not make sense.

Page 11 - Continued Monitoring of the Springs Over the Course of Mining Should Provide Adequate Protection of the Groundwater Resource.

A sentence should be included which assures replacement of water lost or adversely affected by mining operations.

Page 13 - The Company Anticipates Obtaining an Emergency Lease.

This has already been accomplished, yet it has not been addressed in the mine plan permit area.

Page 14 - The Unemployment Rate is Projected to Remain Constant Throughout 1985-1985.

This does not make sense.

There are no attached stipulations in the Environmental Assessment.

Sincerely,



REED C. CHRISTENSEN
Forest Supervisor

Enclosure

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SERIAL NUMBER U-082996
DATE OF LEASE July 1, 1962

COAL LEASE READJUSTMENT

This lease between the United States of America (the lessor) through the Bureau of Land Management (BLM) and

Trail Mountain Coal Company
P. O. Box 356
Orangeville, Utah 84537

(lessee) is readjusted, effective as of July 1, 1983.

Sec. 1. STATUTES AND REGULATIONS. This lease readjustment is subject to the terms and provisions of the Mineral Leasing Act of February 25, 1920, as amended (41 Stat. 437, 30 U.S.C. §§ 181-263), hereinafter referred to as the Act, and of the Surface Mining Control and Reclamation Act of 1977. This lease is also subject to all regulations of the Secretary of the Interior (including, but not limited to, 30 CFR Part 211 and 43 CFR Group 3000) which are now or hereafter in force and which are made a part hereof. No amendment to the regulations made subsequent to the effective date hereof shall alter the rental and production royalty requirements in sections 5 and 6 of this lease until the next readjustment of this lease.

Sec. 2. RIGHTS OF LESSEE. The lessor, in consideration of the rents and royalty and other conditions hereinafter set forth, hereby grants to the lessee the exclusive right and privilege to mine and dispose of all coal in the following-described tracts (leased lands) situated in the State of Utah:

T. 17 S., R. 6 E., SLM, Utah
Sec. 25, E $\frac{1}{2}$ E $\frac{1}{2}$ SW $\frac{1}{4}$, SW $\frac{1}{2}$ SE $\frac{1}{4}$.

containing 80.00 acres, more or less, together with the right to construct all work, buildings, structures, equipment, and appliances which may be necessary and convenient for the mining and preparation of the coal for market, and subject to the conditions herein provided to use so much of the surface as may reasonably be required in the exercise of the rights and privileges herein granted for so long as this lease remains in full force and effect under any provisions of the law and the applicable regulations thereunder.

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

Sec. 4. BOND. The lessee shall file with the appropriate BLM office a lease bond in the amount of \$5,000 for the use and benefit of the United States, to insure payment of rentals and royalties and to insure compliance with all other terms of this lease, the regulations and the Act. An increase in the amount of the bond may be required by the lessor at any time during the life of the lease to reflect changed conditions.

Sec. 5. RENTAL. An annual rental of \$3.00 for each acre or fraction thereof shall be paid in advance on or before the anniversary date of this lease. Rentals under this lease shall be payable for each and every year during the continuance of the lease. Rentals paid for any lease year commencing prior to the effective date of this readjustment shall be credited against royalties for that year. Rentals due and payable for any lease year commencing on or after the effective date of this readjustment may not be credited against royalties (43 CFR 3473.3-1).

Sec. 6. PRODUCTION ROYALTY. The lessee shall pay a production royalty of 12% percent of the value of coal produced by strip or auger mining methods and 8 percent of the value of coal produced by underground mining methods. The value of coal shall be determined as set forth in the regulations. Production royalties paid for a calendar month shall be reduced by the amount of any advance royalties paid under this lease to the extent that such advance royalties have not been used to reduce production royalties in a previous month. Production royalties shall be payable the final day of the month succeeding the calendar month in which coal is mined.

Sec. 7. ADVANCE ROYALTY. Upon request by the lessee the Mining Supervisor may accept, for a total of not more than ten years, the payment of advance royalties in lieu of the condition of continued operation for any particular year. Any payment of advance royalties in lieu of continued operation shall be pursuant to an agreement, signed by the lessee and the Mining Supervisor, which shall be made a part of this lease. The agreement shall include a schedule of payments and shall be subject to the advance royalty conditions set forth in the regulations. The advance royalty shall be based on a percent of the value of a minimum number of tons which shall be determined on a schedule sufficient to exhaust the leased reserves in 40 years from the date of approval of the mining and reclamation plans or from June 1, 1976, depending on effective date of the lease.

Sec. 8. METHOD OF PAYMENTS. The lessee shall make rental payments to the appropriate BLM office until either production royalties or advance royalties become payable. Thereafter, all rentals, production royalties and advance royalties shall be paid to the Mining Supervisor. All remittances to BLM shall be made payable to the Bureau of Land Management; those to the Minerals Management Service shall be made payable to the Minerals Management Service.

Sec. 9. EXPLORATION PLAN. As specified in the regulations, the lessee shall submit an exploration plan before conducting any exploration on the leased lands, except casual use, between the effective date of this lease and the date of approval of the mining plan. The lessee shall not commence exploration without an approved exploration plan. Thereafter, the lessee shall conduct all exploration in accordance with the approved exploration plan.

Sec. 10. MINING PLAN. In accordance with the regulations in 30 CFR 211, 700, and 800, if the Lessee has not yet submitted a mining plan, he must do so within three years after the effective date of this readjustment. Unless or until the mining plan has been approved, the Lessee shall not conduct any operations on the leased lands except casual use or exploration, if an exploration plan has been approved. Thereafter, the Lessee shall conduct all operations in accordance with the approved mining plan.

Sec. 11. LOGICAL MINING UNITS (LMU). This lease is automatically considered to be an LMU and may be combined with other land, including other Federal leaseholds and non-Federal interests in coal, to form a larger LMU. The mining plan for such enlarged LMU must include a production schedule that provides for the mining of all the LMU reserves, both Federal and non-Federal, in a period of not more than 40 years from the date of the approval of the plan. The definition of LMU and LMU reserves and other conditions applicable to them are set forth in the regulations (43 CFR 3400.0-5).

Sec. 12. OPERATIONS ON LEASED LANDS. In accordance with the conditions of this lease, the exploration and mining plans, the regulations and the Act, the lessee shall exercise reasonable diligence, skill and care in all operations on the leased lands. The lessee's obligations shall include, but not be limited to the following:

(a) The lessee shall conduct all operations on the leased lands so as to avoid injury to life, health, or property.

(b) The lessee shall conduct operations in such a manner as may be needed to avoid or, where avoidance is impracticable, to minimize and where practicable, to repair damage to: (1) any forage and timber growth on Federal lands; (2) crops, including forage and timber, or improvements of a surface owner; or (3) improvements, whether owned by the United States or by its permittees, licensees, or lessees. The lessor must approve the steps to be taken and the restoration to be made in the event of the occurrence of damage described in this subsection.

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

Sec. 13. AUTHORIZATION OF OTHER USES AND DISPOSITION OF LEASED LANDS.

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

(b) The lessor reserves the right (1) to sell or otherwise dispose of the surface of the leased lands under existing law or laws hereafter enacted insofar as said surface is not necessary for the use of the lessee in the extraction and removal of the coal therein, or (2) to dispose of any resource in such lands if such disposal will not unreasonably interfere with the exploration and mining operations of the lessee.

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

Sec. 14. EQUAL OPPORTUNITY CLAUSE. The lessee will comply with all provisions of Executive Order No. 11246 of September 24, 1965, as amended, and of the rules, regulations and relevant orders of the Secretary of Labor.

Sec. 15. CERTIFICATION OF NONSEGREGATED FACILITIES. By entering into this lease, the lessee certifies that he does not and will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not and will not permit his employees to perform their services at any location under his control where segregated facilities are maintained. The lessee agrees that a breach of this certification is a violation of the Equal Opportunity clause of this lease. As used in this certification, the term "segregated facilities" means, but is not limited to, any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise. Lessee further agrees that (except where the lessee has obtained identical certifications from proposed contractors and subcontractors for specific time periods) lessee will obtain identical certifications from proposed contractors and subcontractors prior to award of contracts or subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity Clause; that lessee will retain such certifications in lessee's files; and that lessee will

forward the following notice to such proposed contractors and subcontractors (except where proposed contractor or subcontractor has submitted identical certifications for specific time periods). Notice is to be provided by lessee to prospective contractors and subcontractors of requirement for certification of nonsegregated facilities. A Certification of Nonsegregated Facilities, as required by the May 9, 1967 Order (32 F. R. 7439, May 19, 1967) on Elimination of Segregated Facilities, by the Secretary of Labor, must be submitted prior to the award of a contract exceeding \$10,000 which is not exempt from the provisions of the Equal Opportunity Clause. Certification may be submitted either for each contract and subcontract or for all contracts and subcontracts during a period (i.e., quarterly, semiannually, or annually).

Sec. 16. EMPLOYMENT PRACTICES. The lessee shall pay all wages due persons employed on the leased lands at least twice each month in lawful money of the United States. The lessee shall grant all miners and other employees complete freedom to purchase goods and services of their own choice. The lessee shall restrict the workday to not more than 8 hours in any one day for underground workers, except in case of emergency. The lessee shall employ no person under the age of 16 years in any mine below the surface. If the laws of the State in which the mine is situated provides for a minimum age restriction for mining below the surface, other than the requirements of Federal Law, the laws of the State shall prevail.

Sec. 17. MONOPOLY AND FAIR PRACTICES. The lessor reserves full authority to promulgate and enforce orders and regulations under the provisions of Sections 30 and 32 of the Act (30 U.S.C. §§ 187 and 189) necessary to insure that any sale of the production from the leased lands to the United States or to the public is at reasonable prices, to prevent monopoly, and to safeguard the public welfare, and such regulations shall upon promulgation be binding upon the lessee.

Sec. 18. ASSIGNMENT. This lease may be assigned, upon approval of the authorized officer in accordance with the provisions of 43 CFR Subpart 3453. An assignment will become effective on the first day of the month following approval by the authorized officer or, if the assignee requests, the first day of the month of approval.

Sec. 19. RELINQUISHMENT OF LEASE. The lessee may file a request to relinquish all or any legal subdivision of this lease. The request shall be filed in duplicate with the authorized officer. The authorized officer shall approve the relinquishment if he determines that the lessee has complied with the requirements of the lease, the exploration and mining plans, the regulations and the Act. Upon approval, the relinquishment shall be effective as of the date it is filed, subject to the continued obligation of the lessee and his surety to pay all accrued rentals and royalties and to comply with all other requirements of the lease, the regulations and the Act.

Sec. 20. NONCOMPLIANCE. Any failure to comply with the conditions of this lease, the exploration and mining plans, the regulations, or the Act shall be dealt with in accordance with the procedures set forth in the regulations.

Sec. 21. WAIVER OF CONDITIONS. The lessor reserves the right to waive any breach of the conditions contained in this lease, except the breach of such conditions as are required by the Act, but any such waiver shall extend only to the particular breach so waived and shall not limit the rights of the lessor with respect to any future breach; nor shall the waiver of a particular breach prevent cancellation of this lease for any other cause or for the same cause occurring at another time.

Sec. 22. READJUSTMENT OF TERMS AND CONDITIONS. (a) This lease is subject to reasonable readjustment of any conditions of the lease, including royalty rates, at the end of this readjustment period on July 1, 1992, and subject to readjustment at the end of each 10 year period thereafter. The lessor shall notify the lessee whether he intends to readjust conditions and, if he intends to readjust, the nature of the readjustments. The lessor shall give notice 120 days before the end of this readjustment period as to whether the lease terms will be readjusted. Unless the lessee, within 60 days after receipt of the proposed readjusted conditions files with the lessor an objection or relinquishes the lease as of the effective date of the readjustment, the lessee shall be deemed conclusively to have agreed to such conditions.

(b) If the lessee files objections to the proposed readjusted conditions with the lessor, and agreement cannot be reached between the lessor and the lessee within a period of 60 days after the filing of the objections, the lease may be terminated by either party upon giving 30 days' notice to the other party; however, the lessor's right to terminate the lease shall be suspended by the lessee's filing of a notice of appeal pursuant to section 29 of this lease, and if the lessee is ultimately successful in his appeal, the lease shall continue without the change in the provisions, the imposition of which, the lessee appealed. If the lessee is unsuccessful in his appeal and within 30 days after receipt of the decision on appeal notifies the lessor that he accepts the decision rendered upon such appeal, then the lease shall continue as amended by the decision.

(c) If the lessee files objections to the proposed readjusted conditions, the existing conditions, except those concerning royalties, shall remain in effect until there has been an agreement between the lessor and the lessee on the new conditions to be incorporated in the lease, or until the lease is terminated; however, the readjusted royalty provisions shall be effective until there is either agreement between the lessor and the lessee or until the lease is terminated. If the readjusted royalty provisions are subsequently rescinded or amended, the lessee shall be permitted to credit any excess royalty payments against royalties subsequently due to the lessor.

Sec. 23. DELIVERY OF PREMISES. Upon termination of this lease for any reason, or relinquishment of a part of this lease, the lessee shall deliver to the lessor in good order and condition all or the appropriate part of the leased lands. Delivery of the leased lands shall include underground timbering and such other supports and structures as are necessary for the preservation of the mine or deposit, and shall be in accordance with all other applicable provisions of the regulations for the completion of operations and abandonment.

Sec. 24. PROPRIETARY INFORMATION. Geological and geophysical data and information, including maps, trade secrets, and commercial and financial information which the lessor obtains from the lessee shall be treated in accordance with 43 CFR Part 2 and other applicable regulations.

Sec. 25. LESSEE'S LIABILITY TO LESSOR.

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

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

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

Sec. 26. INSPECTIONS AND INVESTIGATIONS.

(a) All books and records maintained by the lessee showing information required by this lease or regulations must be kept current and in such manner that the books and records can be readily checked, upon request, by the Mining Supervisor or his representative at the place where they are customarily maintained.

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

Sec. 27. UNLAWFUL INTEREST. No member of, or Delegate to, Congress, or Resident Commissioner, after his election or appointment, either before or after he has qualified and during his continuance in office, and no officer, or employee of the Department of the Interior, except as provided in 43 CFR 7.4 (a)(3), shall hold any share or part in this lease or derive any benefit therefrom. The provisions of Section 3741 of the Revised Statutes, as amended, 41 U.S.C. Section 22, and the Act of June 25, 1948, (62 Stat. 702, as amended, 18 U.S.C. §§ 431-433), relating to contracts, enter into and form a part of this lease insofar as they may be applicable.

Sec. 28. APPEALS. The lessee shall have the right to appeal (a) under 43 CFR 3000.4 from an action or decision of any official of the Bureau of Land Management (b) under 30 CFR Part 290 from an action, order, or decision of any official of the Minerals Management Service, or (c) under applicable regulations from any action or decision of any other official of the Department of the Interior arising in connection with this lease, including any action or decision pursuant to Section 23 of this lease with respect to the readjustment of conditions.

Sec. 29. SPECIAL STATUTES. This lease is also subject to the provisions of the Federal Water Pollution Control Act (33 U.S.C. 1151-1175) and the Clean Air Act (42 U.S.C. 1857).

Sec. 30. SPECIAL STIPULATIONS.

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

1. The Lessee will be responsible to comply with applicable Federal, State, and local laws and regulations.
2. In accordance with Sec. 523(b) of the "Surface Mining Control and Reclamation Act of 1977," surface mining and reclamation operations conducted on this lease are to conform with the requirements of this Act and are subject to compliance with Office of Surface Mining Regulations, or as applicable, a Utah program equivalent approved under cooperative agreement in accordance with Sec. 523(c) and final determination of suitability for mining. The United States Government does not warrant that the entire tract will be susceptible to mining.
3. The coal contained within the lease area and authorized for mining under this lease shall be extracted only by underground mining methods.
4. All support facilities, structures, equipment, and similar developments will be removed from the lease area within two years after the final termination of use of such facilities. All disturbed areas and those areas occupied by such facilities will be rehabilitated in accordance with an approved reclamation plan, 30 CFR 211 and the "Surface Mining Control and Reclamation Act of 1977" or approved Utah program as applicable.
5. (a) Before undertaking any activities that may disturb the surface of the lease lands, the Lessee may be required to conduct a cultural resource intensive field inventory in a manner specified by the Regional Director and the Authorized Officer of the surface managing agency on portions of the mine plan area and adjacent areas, or exploration plan area, that may be adversely affected by lease-related activities and which were not previously inventoried at such a level of intensity. The inventory shall be conducted by a qualified professional cultural resource specialist (i.e., archaeologist, historian, or historical architect, as appropriate), approved by the Authorized Officer of the surface managing agency

and a report of the inventory and recommendations for protecting any cultural resources identified shall be submitted to the Regional Director (or the District Mining Supervisor if activities are associated with coal exploration outside an approved mining permit area) and the Authorized Officer of the surface managing agency. The Lessee shall undertake measures, in accordance with instructions from the Regional Director (or the District Mining Supervisor if activities are associated with coal exploration outside an approved mining permit area), to protect cultural resources on the leased land. The Lessee shall not commence the surface disturbing activities until permission to proceed is given by the Regional Director or the District Mining Supervisor as appropriate.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

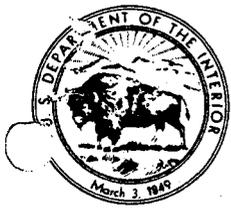
17. The Lessee will be responsible to replace any water lost or adversely affected by mining operations with water from an alternative source in sufficient quantity and quality to maintain existing riparian habitat, fishery habitat, and livestock and wildlife use.

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

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

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

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



United States Department of the Interior

OFFICE OF SURFACE MINING

Reclamation and Enforcement

BROOKS TOWERS

1020 15TH STREET

DENVER, COLORADO 80202

JUN 15 1984

Reed C. Christensen, Forest Supervisor
Manti-LaSal National Forest
599 West Price River Drive
Price, Utah 84501

Dear Mr. Christensen:

The Office of Surface Mining (OSM), Western Technical Center (WTC) has received your concurrence comments regarding the Trail Mountain mine dated June 6, 1984 (Forest Service reply 2820). As you noted in your telephone conversation with Steve Manger on June 7, 1984, most of the comments are minor in nature, concerning inconsistencies, typographical errors, information additions, and general Forest Service observation. These do not require a formal response, nor do they effect the overall acceptability of the application for permitting. However, OSM will forward these remarks to the applicant with instructions to make the required corrections to the permit application.

For future Forest Service concurrence letters we recommend that your office address minor issues in a letter separate from the concurrence document which ordinarily requires a response to each issue raised.

OSM's response to issues identified in your letter which are significant to the permitting process, or require clarification is as follows:

- p. 1 - The coal haul turnaround road to the parking area and a portion of the Cottonwood Canyon road are within the permit area (refer to Figures 3-10 and 3-10A).

The road which passes over the extreme northeast corner of the State lease is a public county road and although it passes over the permit area, it is not considered part of the permit or permit application. The applicant will be advised to change the wording of the sentence you referred to on page 3-9 of the application.

- p. 2 - The emergency lease is not considered in this permit area or permit term. What permit term is it scheduled for?

To avoid additional delays in revising the current permit application, together with the recent ownership change of the Trail Mountain mine and the associated change in permitting personnel, the applicant has elected to submit an application for the new area after the permit is obtained. This approach is conditional upon the wishes of Diamond Shamrock corporation and their overall plans for the mine.

- p. 2 - All springs whether monitored or not should be located on the map. Figure 7-9 which indicates water monitoring stations should include the location of water sources mapped on Figure 7-2.

Figure 7-2 is titled "Location of Water Sources on Trail Mountain". On that map all water sources are located. Figure 7-9 is titled "Water Monitoring Stations". All water monitoring stations are located on that map. Three water sources identified on Figure 7-2 have not been shown on Figure 7-9 because they are insignificant to the monitoring program. This is due to excessive distance from the permit area and in two of the cases, insignificant water production. Ideally both maps should be combined into one map for convenience and efficiency. However, the applicant has met the requirements of the law.

- p. 2 - There are fences and stock ponds with associated earth dams that could be affected (by subsidence).

On page 3-58 of the application, the applicant has committed to restoration of existing structures and resources that may be impacted by subsidence. The applicant will be advised to specifically add fences and stock ponds to the structures present on the permit area.

- p. 4 - Sensitive plant species *Hedysarum occidentale* var. *canone* does occur within the mine lease area and along the main road up Cottonwood Canyon below the mine. There is a small population within the pinyon-juniper type community next to the road 200 feet below the Forest Service boundary sign. Other plants have been found scattered through the trees further down along the road. A major population occurs in Miller Canyon and in an unnamed canyon just west of Cottonwood Creek. When the road to the mine was recently realigned, approximately 20 plants were destroyed. The survey engineer was made aware of this population when the road was surveyed. Provision should be made to replace this population.

A biological assessment concerning this species is in preparation and will be submitted to your office separately.

As a condition of the permit, the applicant will be directed to conduct a survey of any portions of the facilities area which may require redisturbance. If this species is found in areas to be redisturbed, the mine operators must contact the regulatory authority to develop mitigation measures.

- p. 5 - The buffer zone should extend along the entire length of the creek instead of the three isolated zones.

The part of the creek which has been culverted is part of the surface facilities area which does not require a buffer zone. However, the applicant's current map showing a buffer zone over the culverted creek is not accurate, and the applicant has been advised to resubmit the map eliminating the center buffer zone while maintaining the buffer zone at both the inlet and outlet areas of the culvert.

- p. 6 - The size of riprap should be re-evaluated to determine if it is adequate.

The applicant's current proposed riprap sizing was submitted in response to an OSM deficiency comment, and meets the requirements specified by OSM hydrologists.

- p. 6 - It would be better to seed at 12-18 lbs/acre the first time with lighter application for spot treatment, especially for broadcast seeding.

This comment will be made a condition of the permit.

I hope that these responses, together with the application forthcoming from the applicant, satisfactorily address the Forest Service comments itemized in your letter. If you have any further comments or questions, please call either Louis Hamm or Walter Swain at (303) 844-3806.

Sincerely,

(Spd) Allen D. Klein

Allen D. Klein
Administrator
Western Technical Center

cc: Robert Hagen, OSM, Albuquerque Field Office
Dianne Nielson, DOGM

Hamm/eg/6-12-84(4650)

United States Department of the Interior
OFFICE OF SURFACE MINING
Reclamation and Enforcement
BROOKS TOWERS
1020 15TH STREET
DENVER, COLORADO 80202



MEMORANDUM

JUN 19 1984

TO: Field Supervisor, Endangered Species Office,
U. S. Fish and Wildlife Service, Salt Lake City, Utah

FROM: Utah Task Force Leader, Office of Surface Mining,
Denver, Colorado

SUBJECT: Biological Assessment of Canyon Sweet-Vetch (Hedysarum
occidentale Var. canone)

Enclosed is a copy of a Biological Assessment of impacts to canyon sweet-vetch (Hedysarum occidentale var. canone) for Kaiser Steel Corporation's Sunnyside Mine, Trail Mountain Coal Company's Trail Mountain Mine, and Beaver Creek Coal Company's Huntington Canyon No. 4 and Gordon Creek No. 2 mines. Although canyon sweet-vetch is only a proposed threatened species under review by your office, the U. S. Forest Service has requested an assessment of impacts to this species as a result of mining activities.

Trail Mountain and Huntington Canyon No. 4 permits will have conditions that require the operators to survey the mine sites prior to final reclamation in an effort to identify populations of canyon sweet-vetch within the permit areas. If canyon sweet-vetch is found onsite, mitigation plans will be developed and implemented based on the status of the plant in consultation with the regulatory authorities.

If you or your staff have any comments or questions feel free to contact Mark Humphrey at FTS 564-3806.

Attachment

cc.

Bill Boley, Forest Service
Robert Thompson, Forest Service
James Smith, UDOGM
Lynn Kunzler, UDOGM
Mary Boucek, UDOGM
Susan Linner, UDOGM

Biological Assessment For:

Kaiser Steel Corporation's Sunnyside Mine,
Trail Mountain Coal Company's Trail Mountain Mine,
and
Beaver Creek Coal Company's Huntington Canyon No. 4
and Gordon Creek No. 2 Mines

Prepared by

Office of Surface Mining
Western Technical Center
Denver, Colorado

June 11, 1984

Background Information

Sunnyside, Trail Mountain, Huntington Canyon No. 4, and Gordon Creek No. 2 mines are all underground coal mines located within Emery County, Utah. Sunnyside mine, operated by Kaiser Steel Corporation is located on Bureau of Land Management lands approximately 20 miles east of Price, Utah. The mine began operations in 1890 and is expected to continue through 2008. Current production is 1 million tons of coal per year. Sunnyside permit area encompasses 14,300 acres, of which 440 acres are disturbed by existing surface facilities and no additional disturbance is expected.

Trail Mountain mine, operated by Trail Mountain Coal Company is located on the Manti La Sal National Forest approximately 11 miles northwest of Orangeville, Utah. The mine began operations in 1946 and is expected to continue through 1986. Current production is 400,000 tons of coal per year. Trail Mountain permit area encompasses 773 acres, of which 8.8 acres are disturbed by existing surface facilities. No additional disturbance is proposed.

Huntington Canyon No. 4, operated by Beaver Creek Coal Company (subsidiary of Atlantic Richfield) is located on the Manti-La Sal National Forest approximately 12 miles northwest of Huntington, Utah. The mine began operations in 1977 on land previously disturbed by mining that occurred in the 1940's. The mine was temporarily inactive from October 1978 until March 1980. Mining operations are expected to continue through 1994. Current production is 365,000 tons of coal per year. The permit area encompasses 1,320 acres of which 12.5 acres are disturbed by existing surface facilities. No additional disturbance is proposed.

Gordon Creek No. 2, also operated by Beaver Creek Coal Company (subsidiary of Atlantic Richfield) is located on private land approximately 20 miles northwest of Price, Utah. The mine began operations in 1969 on land previously disturbed by mining that ceased in the 1940's. Mining operations are expected to continue through 1998. Current production is 865,000 tons of coal per year. The permit area encompasses 2,290 acres of which 20.81 acres are disturbed by existing surface facilities. Limited additional disturbance is anticipated in conjunction with the development of a new portal facility.

Postmining land uses for all the mines include livestock forage, wildlife habitat, watershed, and recreation.

On September 23, 1983, OSM requested a list of threatened and endangered species potentially inhabiting the vicinity of the Sunnyside mine, Trail Mountain mine, Huntington Canyon No.4 mine and Gordon Creek No. 2 mine sites from the U.S. Fish And Wildlife Service (FWS), Salt Lake City, Utah. The FWS responded on October 21, 1983 with one plant species under review for possible future listing, canyon (western) sweet-vetch (Hedysarum occidentale var. canone), recommended as a threatened species by Dr. Stanley Welch of Brigham Young University (BYU). No threatened or endangered species were listed by the FWS as potentially inhabiting any of the mine sites for which a list was requested. The assessment of potential impacts on canyon sweet-vetch is presented below.

Impact Assessment

Canyon sweet-vetch (Hedysarum occidentale var. canone) which inhabits canyons and valleys in the Wasatch Plateau, is morphologically similar to northern sweet-vetch (Hedysarum occidentale var. occidentale) which inhabits the flat desert to the subalpine communities. These two varieties potentially overlap in habitat since northern sweet-vetch extends to 11,500 feet in elevation and occurs in valleys along streambanks (Harrington, 1964., Dorn, 1977. and Rydberg, 1969). Canyon sweet-vetch and northern sweet-vetch are differentiated by leaflet features. Canyon sweet-vetch has leaflets 7 to 17 in number, 9 to 29 mm long, and ovate (Thompson, 1984), while northern sweet-vetch leaflets are 11 to 19 in number, 10 to 25 mm long, and ovate (Harrington 1964). There is very little additional information available to differentiate between the two varieties.

Canyon sweet-vetch has been observed and collected by Dr. Stanley Welch and Mr. Mathew Chatterley of BYU at elevations ranging from 6,700 feet in Spring Canyon (Carbon County, Utah) to 8,300 on the Manti-La Sal National Forest (Emery and Carbon Counties, Utah).

Canyon sweet-vetch has been observed by Dr. Welch and Mr. Chatterley to inhabit the sagebrush-grass, streambottom (cottonwood), pinion-juniper and mountain brush communities (Chatterley, 1984.) Dr. Welch has located communities of canyon sweet-vetch northeast of Helper, Soldier Creek, Horse Canyon (Book Cliffs), and around Castle Valley to Straight Canyon (Thompson, 1984).

Canyon sweet-vetch has been observed and collected by Manti-La Sal National Forest (U.S. Forest Service) personnel at the Trail Mountain mine and Huntington Canyon No. 4 mine sites. The forest service identified canyon sweet-vetch as inhabiting areas adjacent to Emery County road no. 506 within the Trail Mountain permit area. At Huntington Canyon No. 4 mine, canyon sweet-vetch was identified by the Forest Service scattered throughout the permit area. Canyon sweet-vetch appears to prolifically invade disturbed areas such as road cuts (Kunzler, 1984; and Coonrod, 1984). The FWS response of October 21, 1983 indicated that canyon sweet-vetch potentially occurs at Sunnyside and Gordon Creek No. 2 mines, however, no sitings have been recorded at these two sites.

Trail Mountain Mine and Huntington Canyon No. 4 mines are not proposing any additional surface disturbance for the life-of-mine. However, reclamation of the mine sites could potentially destroy plants that have become established on disturbed areas such as cut and fill banks, stockpiles, interim revegetated areas, etc. These areas frequently require additional earthwork to blend the mine site into the natural landscape as required by UMC 817.101 and 817.103. As mitigation for potential impacts to populations of canyon sweet-vetch, a survey of the areas to be redisturbed must be conducted to identify and record locations of individuals and populations. If canyon sweet-vetch is found in portions of the permit area to be redisturbed, the mine operators must contact the regulatory authority and mitigation measures (based upon the current status of the species) will be developed in consultation with the FWS and land management agency (or land owner).

Canyon sweet-vetch is not presently listed as a Federal (or State of Utah) threatened or endangered plant species. A Section 7 Consultation with the FWS therefore is not appropriate. However, the Forest Service has identified canyon sweet-vetch as Sensitive Plant Species in Region 4. Therefore, reasonable effort must be made to mitigate impacts on canyon sweet-vetch on the Manti La-Sal National Forest lands.

REFERENCES

- Chatterley, Mathew. 1984. Personal Communication. Brigham Young University, Provo, Utah, June 4, 1984.
- Dorn, R. D. 1977. Manual of Vascular Plants of Wyoming. First Edition. Garland Publishing, Inc., New York, NY.
- Coonrod, Melvin. 1984. Personal Communication. Environmental and Industrial Supplies, Price, Utah, June 6, 1984.
- Harrington, H. D. 1964. Manual of the Plants of Colorado. Second Edition. Swallow Press, Inc., Chicago, IL.
- Hitchcock, C. L. and A. Cronquist. 1973. Flora of the Pacific Northwest. Second Edition. University of Washington Press, Seattle, Wa.
- Kunzler, Lynn. 1984. Personal Communication. Utah Division of Oil, Gas, and Mining, Salt Lake City, Utah, June 6, 1984.
- Rydberg, P. A. 1969 (Facsimile of the 1922 edition). Flora of the Rocky Mountains and Adjacent Plains. Second Edition. Hafner Publishing Co., New York, NY.
- Thompson, Robert. 1984. Personal Communication. Manti La Sal National Forest, Price, Utah, June 4, 1984.



SCOTT M. MATHESON
GOVERNOR



STATE OF UTAH
DEPARTMENT OF COMMUNITY AND
ECONOMIC DEVELOPMENT

**Division of
State History**
(UTAH STATE HISTORICAL SOCIETY)

MELVIN T. SMITH, DIRECTOR
300 RIO GRANDE
SALT LAKE CITY, UTAH 84101-1182
TELEPHONE 801/533-5755

April 27, 1984

Rex Wilson
Chief Archeologist
Office of Surface Mining
Reclamation and Enforcement
Brooks Tower
1020 - 15th Street
Denver, Colorado 80202

RE: Trail Mountain Mine

In Reply Refer To Case No. E418

Dear Mr. Wilson:

The Utah Preservation Office has received for consideration your letter dated April 13, 1984, dealing with the Natoma's Trail Mountain permit application. After review of the site information provided by your office, and our files, our office would concur with the determination that all surface disturbance has taken place, no known National Register eligible site will be impacted, and therefore a determination of no effect is appropriate.

The above is provided on request as information or assistance. We make no regulatory requirement, since that responsibility rests with the federal agency official. However, if you have questions or need additional assistance, please let us know. Contact Jim Dykman at 533-7039.

Sincerely,

Wilson G. Martin
Deputy State Historic Preservation Officer

JLD:jrc:E418/0072v

1984 MAY -9 11 8 41
0533-5755

U. S. Department of Labor

Hand Delivered to Lynn Kunzler of DOGM on 5/2/84
To Albuquerque on 5/3/84
Mine Safety and Health Administration
P O Box 25367
Denver, Colorado 80225



April 25, 1984

Mr. Allen D. Klein
Center Administrator
Office of Surface Mining
Reclamation and Enforcement
Brooks Towers
1020 15th Street
Denver, Colorado 80202

Dear Mr. Klein:

On April 5, 1984, Mr. Louis Hamm of your office contacted Monty Christo of the Denver Safety and Health Technology Center to inform him that additional information concerning the "Mining and Reclamation Plan" for the Trail Mountain Mine (UT-0017) had been received. The permit application was reviewed the following morning by Mr. Christo and the pertinent sections copied for MSHA's files.

The application as amended by the information logged on April 1, 1984, at your office is sufficient to document that no significant safety hazards to mine employees will be created by the proposed water diversion into the Trail Mountain Mine. Thus, MSHA will concur with OSM's approval of the diversion under Utah regulation UMC 817.55.

MSHA's concurrence is based on the following permit documentation and information:

1. Section 7-14 pages 1-3 "Discussion of Water Distribution at Trail Mountain Mine Site, Emery County, Utah."
2. Figure 3-7 "Typical Underground Water System" 7/81 DRN:AK
3. Figure 7-19 Dated 3/31/84.
4. Figure 7-14 "Main Mine Sump" Revision Date 3/12/84.
5. Figure 7-14A "Cross-sections of Mains and Sump Areas" Dated 3/31/84

The above listed documentation describes the location and capacity of the present main sump; it limits the quantity of water stored to 200,000 gallons and a maximum depth behind the barrier lowest in elevation to 2 feet of water; it describes the method of maintaining the reservoir quantity and recording of "in and out flows;" and, it commits to eliminating the existing

sump entirely when a new sump is constructed at a specified location. The permit does not described the future sump, sump capacity, barrier or dike design or sump/water operating plan which will be implemented; nor does the permit specify when the new sump will be in place.

MSHA recommends that OSM require an addendum to the permit application providing sufficient detail to verify that the new sump will not pose an in mine safety hazard before it is filled. The requested addendum need not delay the approval of the present system, but it should be added to the permit and reviewed by MSHA if MSHA's concurrence is to apply to the altered system. The addendum should, at a minimum, include the structural design drawings and design criteria for the dikes; the amount and working levels of water stored behind the dikes; the method of controlling in and out flows to the sump; the route the stored water would flow if the dikes failed or overtopped; and the frequency of dike and sump examination by the mine operators.

Whether the addendum would be received by OSM or by Utah at some later date is not known at this time. MSHA remains available to review the addendum when submitted in either case and requests notification through this office when the addendum is received.

Sincerely,



D. K. Walker
Chief, Safety and Health Technology center

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF SURFACE MINING

This permit, UT-0017, is issued for the United States of America by the Office of Surface Mining (OSM) to

Trail Mountain Coal Company
Box 370
Orangeville, Utah 84537

for the Trail Mountain mine. Trail Mountain Coal Company is the lessee of Federal coal lease U-082996. The permit is not valid until a performance bond is filed with the OSM in the amount of \$463,711.00, payable to the United States of America and the State of Utah, and the OSM has received a copy of this permit signed and dated by the permittee.

Sec. 1 STATUTES AND REGULATIONS - This permit is issued pursuant to the Surface Mining Control and Reclamation Act of 1977, 30 U.S.C. 1201 et seq., hereafter referred to as SMCRA, and the Federal coal leases issued pursuant to the Mineral Leasing Act of February 15, 1920, as amended, 30 U.S.C. 181 et seq., the Federal Coal Leasing Amendments Act of 1976, as amended 30 U.S.C. 201 et seq. and in the case of acquired lands, the Mineral Leasing Act for Acquired Lands of September 7, 1947, as amended, 30 U.S.C. 351 et seq. This permit is also subject to all regulations of the Secretary of the Interior including, but not limited to, 30 CFR Chapter VII, and 43 CFR Part 3400, and to all regulations of the Secretary of Energy promulgated pursuant to Section 302 of the Department of Energy Organization Act of 1977, 42 U.S.C. 7152, which are now in force or, except as expressly limited herein, hereafter in force, and all such regulations are made a part hereof.

Sec. 2 The permittee is authorized to conduct surface coal mining and reclamation operations on Federal lands (as shown on ownership map) as well as on lands with Utah State Permit ACT/015/009 affecting or affected by those operations on Federal lands with the Trail Mountain mine permit area situated in the State of Utah, Emery County, and located:

T. 17 S., R. 6 E., Salt Lake and Baseline Meridian

Sec. 25: Begin at point of SW Corner of NW1/4 SE1/4, thence North 160 Rods, thence East 44 Rods to center Cottonwood Creek, Southward along creek to a point 76 Rods east of the beginning, thence West 76 Rods to the point of beginning.

Sec. 25, SW1/4 SE1/4, E1/2 E1/2 SW1/4.

Sec. 36, All.

This legal description is for the permit boundary (as shown on the permit area map) of the Trail Mountain mine.

The permittee is authorized to conduct surface coal mining and reclamation operations connected with mining on the foregoing described property subject to the conditions of the lease, and the approved mining plan, including all conditions, and all other applicable conditions, laws and regulations.

- Sec. 3 This permit is issued for a term of 5 years commencing on the date the permit is signed by the permittee, except that this permit will terminate if the permittee has not begun the underground coal mining activities and reclamation covered herein within 3 years of the date of issuance.
- Sec. 4 The permit rights may not be transferred, assigned, or sold without the approval of the Director, OSM. Request for transfer, assignment, or sale of permit rights must be done in accordance with 30 CFR 740.13(e).
- Sec. 5 The permittee shall allow the authorized representatives of the Secretary, and the Utah Division of Oil, Gas and Mining (UDOGM), including, but not limited to, inspectors, and fee compliance officers, without advance notice or a search warrant, upon presentation of appropriate credentials, and without delay to:
- a. Have the rights of entry provided for in 30 CFR 840.12 and 842.13; and,
 - b. Be accompanied by private persons for the purpose of conducting an inspection in accordance with 30 CFR 842, when the inspection is in response to an alleged violation reported by the private person.
- Sec. 6 The permittee shall conduct surface coal mining and reclamation operations only on those lands specifically designated as within the permit area on the maps submitted in the mining plan and permit application and approved for the term of the permit and which are subject to the performance bond.
- Sec. 7 The permittee shall minimize any adverse impact to the environment or public health and safety resulting from noncompliance with any term or condition of this permit, including, but not limited to:
- a. Accelerated monitoring to determine the nature and extent of noncompliance and the results of the noncompliance;
 - b. Immediate implementation of measures necessary to comply; and
 - c. Warning, as soon as possible after learning of such noncompliance, any person whose health and safety is in imminent danger due to the noncompliance.

- Sec. 8 The permittee shall dispose of solids, sludge, filter backwash, or pollutants removed in the course of treatment or control of waters or emissions to the air in the manner required by the approved Utah State Program and the Federal Lands Program which prevents violation of any applicable State or Federal law.
- Sec. 9 The lessee shall conduct its operations:
- a. In accordance with the terms of the permit to prevent significant, imminent environmental harm to the health and safety of the public; and
 - b. Utilizing methods specified as conditions of the permit by UDOGM and OSM in approving alternative methods of compliance with the performance standards of the Act, the approved Utah State Program, and the Federal Lands Program.
- Sec. 10 The permittee shall provide the names, addresses, and telephone numbers of persons responsible for operations under the permit to whom notices and orders are to be delivered.
- Sec. 11 The permittee shall comply with the provisions of the Federal Water Pollution Control Act (33 U.S.C. 1151 et seq.) and the Clean Air Act (42 U.S.C. 7401 et seq.).
- Sec. 12 Upon expiration, this permit may be renewed for areas within the boundaries of the existing permit in accordance with the Act, the approved Utah State Program and the Federal Lands Program.
- Sec. 13 If during the course of mining operations, previously unidentified cultural resources are discovered, the applicant shall ensure that the site(s) is not disturbed and shall notify the State Regulatory Authority (RA) and OSM. The State RA, after coordination with OSM, shall inform the operator of necessary actions required.
- Sec. 14 APPEALS - The lessee shall have the right to appeal: (a) under 30 CFR 775 from actions or decisions of any official of OSM; (b) under 43 CFR 3000.4 from an action or decision of any official of the Bureau of Land Management; (c) under 30 CFR 290 from an action, order, or decision of any official of the Minerals Management Service; or (d) under applicable regulations from any action or decision of any other official of the Department of the Interior arising in connection with this permit.

Sec. 15 SPECIAL CONDITIONS - In addition to the general obligations and of performance set out in the leases, Utah State permit ACT-015-009 (to be issued concurrently with this permit) and this permit, the permittee shall comply with the special conditions of Utah State permit ACT-015-009 and the conditions appended hereto as Attachment A.

These conditions are also imposed upon the permittee's agents and employees. The failure or refusal of any of these persons to comply with these conditions shall be deemed a failure of the permittee to comply with the terms of this permit and the lease. The permittee shall require his agents, contractors, and subcontractors involved in activities concerning this permit to include these conditions in the contracts between and among them. These conditions may be revised or amended, in writing, by the mutual consent of the grantor and the permittee at any time to adjust to changed conditions or to correct an oversight. The grantor may amend these conditions at any time without the consent of the permittee in order to make them consistent with any new Federal or State statutes and any new regulations.

THE UNITED STATES OF AMERICA

By: _____

Date _____

I certify that I have read and understand the requirements of this permit and any special conditions attached.

Authorized Representative of
the Permittee

Date

Attachment A
Special Conditions

Condition No. 1

The applicant must handle the on-site spoil materials to achieve the following:

- A. All materials exceeding electroconductivity values of 16 mmhos/cm shall be placed under a minimum of two feet of less saline suitable topsoil substitute materials.
- B. The surface six inches of suitable topsoil substitute material shall not exceed electroconductivity values of eight mmhos/cm.
- C. The proposed test plots shall include a revegetation trial incorporating topsoil substitute materials having electroconductivity values approximating these limits. Specifically, the surface six inches shall have a uniform EC value of eight, plus or minus one mmho/cm, and the underlying 18 inches shall have a uniform EC value of 16, plus or minus 2 mmhos/cm.

The applicant shall provide a plan to the regulatory authority within 60 days of permit issuance to sample the regraded surface for the purpose of confirming that the salinity values cited above have not been exceeded.

Condition No. 2

Within 60 days of permit approval the operator shall submit to MSHA a plan for disposal of coal wastes underground as proposed in the permit application, and shall implement the plan upon approval by MSHA. Disposal will take place only in the fee coal areas of the mine.

Condition No. 3

Before any site redisturbance takes place, the applicant must conduct a survey, under supervision of the regulatory authority, of the areas to be redisturbed. The survey shall identify and record locations of individuals and populations of Hedysarum occidentale var. canone (canyon sweet-vetch). If canyon sweet-vetch is found in the portions of the permit area to be redisturbed, the mine operators must develop a mitigation plan for regulatory authority approval before redisturbance takes place.

Attachment A
Special Conditions
(continued)

Condition No. 4

At such time that the Office of Surface Mining, in consultation with the Division of Oil, Gas and Mining and the State Historic Preservation Officer, determines that subsidence within the permit area may adversely affect known or unrecorded cultural sites, additional cultural resources studies may be required. This determination will be based on new subsidence or cultural resource information and clear justification will be presented to the applicant.

Condition Identified by the U.S. Forest Service, Manti-LaSal National Forest (U.S. Forest Service concurrence letter)

During reclamation the applicant must apply seed at 12-18 lbs./acre the first time with lighter applications for spot treatment, especially for broadcast seeding.

TECHNICAL ANALYSIS
FINAL FINDINGS AND SUPPORTING
DOCUMENTATION

TRAIL MOUNTAIN MINE
EMERY COUNTY, UTAH

Prepared for
Office of Surface Mining
Western Technical Center
1020 15th Street
Denver, Colorado 80202

By
Simons, Li & Associates, Inc.
3555 Stanford Road
PO Box 1816
Fort Collins, Colorado 80522
Project Number UT-OSM-01
RDF167/R398
Revised Copy, October 2, 1984

INTRODUCTION

Trail Mountain Coal Company of Orangeville, Utah, has submitted an underground mining and reclamation permit application for the Trail Mountain complex in Emery County, Utah, to comply with the Coal Mining and Reclamation Permanent Program (Chapter 1) of the State of Utah. This application was originally submitted to the regulatory authority on September 11, 1981. Response to the Apparent Completeness Review was submitted May 31, 1983. The Trail Mountain mine has been operating under a permit issued by UDOGM (ACT-015-009) since May 11, 1978. The MSHA number assigned to the mine is 42-01211.

The Trail Mountain mine has 773 acres of Federal, State, and fee coal within its permit boundary. The mine is located approximately 11 miles northwest of Orangeville, Utah. One Federal coal lease (U-082996) encompasses 80 acres. One State mineral lease (ML-22603) encompasses 640 acres and fee coal land includes approximately 53 acres. The legal description of the mineral ownership is as follows:

Federal Coal Lease U-082996, 80 acres
SW 1/4 SE 1/4, Sec. 25, T17S, R6E, SLB&M
E 1/2 E 1/2 SW 1/4, Sec. 25, T17S, R6E, SLB&M

State Mineral Lease
ML-22603 - 640 acres
Sec. 36, T17S, R6E, SLB&M

Fee Coal Land - 53 acres
Beginning Point SW Corner of NW 1/4 SE 1/4
Sec. 25, T17S, R6E, SLB&M, thence North 160
Rods, thence East 44 Rods to center
Cottonwood Creek, Southward along creek to a
point 76 Rods east of the beginning, thence
west 76 Rods to the point of beginning.

Trail Mountain Coal Company has requested a permit to mine for five years. The estimated life of the mine is five years. Reclamation efforts extend an additional 10 years beyond the life of the mine. The permit area is shown on Figure 3.6 of the permit application.

The permit area is located near the center of the Wasatch Plateau Coal Field, approximately three miles from the mouth of Cottonwood Canyon. The North Fork of Cottonwood Creek forms the northeast boundary of the permit area at the surface facilities area. The topography in the area is rugged, with elevations ranging from 6,800 feet to 9,000 feet above sea level. Slopes within the mine vary from near-vertical cliffs to slopes of less than four percent. The mine portals are located on the west side of Cottonwood Canyon.

The climate in this portion of Utah is characterized by arid to semi-arid conditions. Precipitation varies between 13 and 23 inches per year, depending on elevation. In the vicinity of the mine, mean annual precipitation is estimated to be 17 inches (Utah State University, 1968). The mean average annual air temperature at the Hiawatha weather station, which lies 12 miles to the northeast of the mine (elevation 7,200 feet), is 45°F. Average monthly temperature ranges from 23°F in January to 69°F in July.

The principal soil type found within the disturbed mine area can be characterized as colluvial and alluvial soil developed from outwash brought down the canyon during infrequent floods, and debris from adjacent slopes. It is a deep soil, exceeding five feet and often attaining 10 feet or more. It consists of mostly sands, silts and clays. On the upper mountain slopes of the mine, boundary soils are stony sandy loams. These soils will not be disturbed by the surface facilities.

The vegetation in the permit area contains five distinct vegetation communities, of which all are representative of the steep canyons and mountains of central Utah, and are described as: Riparian, Grassland-Shrub, Pinyon-Juniper, Conifer and Aspen communities. The Grassland-Shrub community is the most extensive vegetation community within the permit area, and is dominated by slender wheatgrass and shadscale.

Coal has been mined on a small scale since 1946. Natomas Coal Company purchased the coal lands described previously from the Fetteroff Group of Somerset Pennsylvania, on March 2, 1981. On September 1, 1983, Trail Mountain Mine and Natomas Coal Company were absorbed by Diamond Shamrock Corporation. Trail Mountain Coal Company, a subsidiary of Diamond Shamrock Coal Unit, now operates the mine and handles all local activities. Land use on and adjacent to the mine plan area consists of recreation, wildlife habitat, and limited livestock grazing. No farming or commercial forest harvesting has occurred within the permit area.

The North Fork of Cottonwood Creek and its associated riparian habitat are considered to be of critical value to the area's wildlife and aquatic resources. No fish species occur in the North Fork of Cottonwood Creek in the vicinity of the mine; however, it is a tributary to Lower Cottonwood Creek, which supports trout and is designated as a Class 3 fishery. Cliffs within and near the permit area represent potentially valuable cliff-nesting habitat for several species of raptors. Wooded areas also provide habitat for the tree-nesting raptors. Mule deer are observed throughout the year within the permit area.

Several springs and seeps have been observed in the area. These occur as a result of recharge from snowmelt in nearby flats along ridges, and then flow horizontally above shale lenses. With no major faults to recharge the lower strata, and underlying glacial drift of highly impervious materials, the resultant ground water is often perched.

The geologic formations exposed on or adjacent to the mine plan area are the Cretaceous age Mesaverde Group, overlain by the Tertiary North Horn and Flagstaff Limestone Formations. The coal reserves are found in the Mesaverde Group. No major faults which extend into the mine plan area have been found. The dip of the strata is generally toward the southwest, ranging from 5 to 11 percent.

Surface water receiving runoff from the permit area include the North Fork of Cottonwood Creek, and Straight Canyon Creek, a tributary of Cottonwood Creek.

Description of Operations

Three portals provide access to the mine. Coal reserves are mined from the Hiawatha seam of the Blackhawk Formation. The sampled coal has low pyritic sulfur content (averaging less than 0.1 percent by weight).

Coal at the Trail Mountain mine is extracted by two continuous miners. Room and pillar mining is the only method of extraction anticipated during the life of the mine (page 3-15, PAP). The mined coal is loaded at the face and transported to a feeder breaker by shuttle cars. Coal is then fed onto a belt that conveys the coal to the tippie. The coal is crushed and stockpiled. In addition, the applicant maintains a 20-acre coal storage yard and loadout facility located one mile northeast of Orangeville, Utah, and 12 miles southeast of the mine. At that location, Trail Mountain Coal Company has added a screening plant to crush and size run of mine coal. The description of these additional coal handling facilities can be found on pages 3-11 through 3-12B of the PAP. Trucks then transport the coal to the Beaver Creek Mining Company's C.V. spur railroad siding, approximately five miles southeast of Price, Utah. The coal is then transferred by the DRG&W Railroad for shipment to customers.

Geologic Setting

The geologic setting of the Trail Mountain mine is discussed in Chapter VI and Appendices 6-1, 6-2, and 7-23 of the permit application. Lithologic logs from the general area, referenced from Davis and Doelling (1977) are presented in Appendix 3-3. A geologic map is presented as Figure 6-4 (PAP). The Trail Mountain mine is located near the center of the Wasatch Plateau Coal Field, 11 miles west of Orangeville, Utah.

Trail Mountain Coal Company (TMCC) has mined and will continue to mine the Hiawatha coal seam, which occurs at the base of the Blackhawk Formation of upper Cretaceous age. Within the permit area, the coal seam ranges from zero to seven feet thick, dipping three degrees to the west-southwest. Depth of cover on the Trail Mountain property ranges from zero to nearly 2,000 feet.

The geologic formations within and adjacent to the permit area are portrayed on Figure 6-2 of the PAP. The lowermost strata of importance is the Masuk

Shale member of the Mancos Formation. Immediately overlying the Mancos is the littoral Star Point Sandstone. The Hiawatha seam of the Blackhawk Formation immediately overlies the Star Point and was deposited in a back-barrier swamp, lagoonal environment. The lower 300 feet of the Blackhawk is the principle coal bearing strata in the region. The Castlegate Sandstone and Price River Formation are the uppermost members of the Mesaverde Group and overlie the Blackhawk Formation within the permit area. The top of the plateau is capped by the North Horn Formation and Flagstaff Limestone of Tertiary age.

The applicant has presented minimal geologic data. Trail Mountain Coal Company presents lithologic logs and a geologic cross section compiled from data collected from the adjacent area. The applicant references Davis and Doelling (1977) as the principal source of geologic data. From this reference and the knowledge derived from forty years of mining, the applicant concludes that there are no significant structures, faulting or folding, within the permit area. Because of the small area covered by the permit (773 acres) and the abundance of data available from previous studies, the applicant's sources of geologic information are considered adequate.

The applicant has collected and analyzed two samples of roof and floor material in order to evaluate the acid-forming potential of the sediments, contiguous to the coal. The acid-base potential of the two samples were +90.2 and +81.6, respectively. On the basis of these data and the low pyritic sulfur content of the roof, floor, and coal samples, 0.20 percent (average) (Table 6-3 and 6-4 of the PAP), the applicant concludes that acid-mine drainage will not be a problem. Water samples collected from within the mine are presented in Table 7-1 of the PAP. Of 16 samples collected, two indicate potential acid-drainage problems. These samples exhibit pH values of 3.2 and 2.6, respectively. The fact that neither dissolved iron, sulfate, nor TDS exhibited elevated concentrations in these two samples, indicates that their pH values represent laboratory errors. Acidic water naturally increases the level of dissolved iron, sulfate and TDS. If these two outliers are rejected, the applicant's conclusion regarding acid drainage can be supported. Continued monitoring, both within the mine and NPDES discharges, should resolve this discrepancy.

Hydrologic Resources

The Trail Mountain permit area comprises approximately 773 acres of land, within the Cottonwood Creek drainage basin. Surface disturbance at the minesite is limited to 8.8 acres and includes the North Fork of Cottonwood Creek, an unnamed side canyon tributary to the North Fork, parking areas, portals, surface facilities and a sediment pond. Surface disturbance at the minesite can be seen on Map C, Appendix 9 of the PAP.

Surface-water quality and quantity data have been collected by the applicant and the USGS since October 1978. The USGS discontinued its gaging station 14060009 in September 1981. The applicant's data are presented in Section 7.2 (Chapter 7) of the PAP. Additional surface-water data are presented in Appendices 7-1, 7-3, 7-10, 7-13.1, 7-16, 7-21, 7-24, and 7-26. Because active mining at the Trail Mountain site commenced in 1946, collection of premining data has not been possible.

The North Fork of Cottonwood Creek enters the mainstream of Cottonwood Creek, three miles below the Trail Mountain minesite. Cottonwood Creek is a tributary to the San Rafael River. Elevations in the general area range from 7,250 feet in the canyon bottoms to 9,200 feet on the ridges and plateaus. The mine portals are located on an east-facing slope between 7,200 and 7,300 feet

elevation. The basin area of the North Fork Cottonwood Creek upstream of the mine is approximately 19 square miles. The drainage is a small perennial stream with a base flow (for the period of record) averaging 0.85 cfs. This baseflow is sustained by spring discharges and ground-water seeps. Most of the mean annual flow (approximately 50 percent) comes in the months of May and June and occurs in response to snowmelt. Mean annual flow in the 1979 water year was approximately 633 acre-feet at the USGS gage 09324200. Figure 7-9 presents the locations of all water monitoring stations.

The surface water of the North Fork can be characterized as a calcium-magnesium bicarbonate-type water. Total dissolved solids vary from 290 to 600 milligrams per liter (mg/L) and vary seasonally with the quantity of flow. From April to June when stream discharges are highest due to snowmelt, a diluting effect usually occurs in surface waters, resulting in a lower total dissolved solids. Total suspended solids concentrations were found to vary from 0.1 mg/L during low flow to 1,318 mg/L during high flow. The waters of the North Fork fit the Utah Division of Health criteria as suitable for domestic use with prior treatment (classification 1C), aquatic life (classification 3A), and agricultural use (classification 4). Water quality data can be found in Tables 7-3, 7-4 and Appendix 7-24 of the PAP.

The majority of springs on Trail Mountain occur in the North Horn Formation, none of which occur on or immediately adjacent to the permit area. The North Horn Formation is composed of variegated shales, sandstones, conglomerates and fresh water limestone. In the Trail Mountain area the North Horn Formation is capped by the Flagstaff Limestone. It is postulated that the Flagstaff Limestone serves as the local recharge area for the North Horn springs. Snowmelt is the principal source of recharge. Average yield of these springs is one to two gpm and varies seasonally. Additional springs and seeps can be found in the Price River, Castlegate and Blackhawk Formations. The limited data collected indicate that these springs may have a lower yield than those in the North Horn Formation. The applicant discusses the hydrogeology of the springs in Section 7.1.5.1 and in Appendix 7-11 of the permit document. The applicant postulates that the springs discharge from a series of interconnected perched aquifers. The presence of impermeable shales within the formation cause the water to move down dip until the surface or another "drain" (i.e. sandy or cobbly strata) is encountered. Unlike other springs in the general area, geologic literature and field investigations indicate that the Trail Mountain springs are not associated with faults or fractures. Water quality data collected from the springs and seeps indicate waters of similar chemical character (calcium-magnesium bicarbonate). Total dissolved solids concentrations range from 254 to 695 mg/L and consistently average 372 mg/L. The waters are generally neutral to slightly alkaline with a pH averaging 7.6. Water quality data are presented on Table 2, Appendix 7-11 of the PAP. Such similarities in water quality indicate that the infiltrating waters are exposed to similar geological, geochemical and residence time conditions. Given the interbedded nature of the overburden sandstones, siltstones and shales, downward leakage and hydrologic communication exist between the various horizons. The springs occur where the more permeable units outcrop at the surface and the difference in hydrostatic head results in discharge.

Little water (eight to ten gpm) is produced within the Trail Mountain mine. Much of this water is used for dust suppression, fire protection and the operation of in-mine machinery. The water encountered, generally drips or seeps from bolt holes and tension cracks, positioned parallel to the working face.

The water sources often dry up as the working face progresses further down dip. Water quality data from intercepted water are presented in Table 7-1 of the PAP. The samples collected exhibit highly variable water quality with pH ranging from 2.60 to 8.60 with most samples averaging 7.80. Total dissolved solids range from 280 to 2,700 mg/L. Because of the paucity of water produced within the mine, 1,100 gpd of Cottonwood Creek water is diverted into the main mine sump for in-mine water usage. The applicant diverts an additional 2,940 gpd (gallons per day) of surface water for use in the bathhouse. The mine discharges water at a rate of 1,800 to 2,400 gpw (gallons per week) to the NPDES permitted sediment pond.

Vegetative Resources

Vegetation information can be found on pages 9-1 through 9-43 (with data on succeeding pages) of the permit application and in deficiency comment responses prepared by Mt. Nebo Scientific Research and Consulting and submitted in December 1983 (Appendix 9).

The permit area contains five distinct vegetation communities which are representative of the steep canyons and mountains of central Utah, and are identified as: Riparian, Grassland-Shrub, Pinyon-Juniper, Conifer, and Aspen communities. Aspen and Conifer communities occupy the higher elevations of north-facing slopes of the permit area. Aspen occurs only as very limited inclusions within other communities. Pinyon-Juniper communities are extensive and occupy steep, rocky slopes with a southern exposure as well as other more xeric sites. The Grassland-Shrub community is intermixed with the Pinyon-Juniper and Conifer communities and extends into the lower elevations of the permit area. The Riparian community occurs only as a narrow band along Cottonwood Creek on the eastern side of the permit area. Of these five communities, only the Grassland-Shrub and Riparian communities were disturbed by mine facilities and construction (which occurred prior to 1977).

The Trail Mountain complex was an active mine when the Surface Mining Control and Reclamation Act was promulgated in 1977, and most disturbances had already occurred. Vegetation data representative of premining communities pursuant to UMC 783.19 (baseline data) was impossible to obtain. Therefore, the applicant sampled portions of the undisturbed communities immediately adjacent to the mine facilities. This vegetation investigation provided the practical information necessary for revegetation seed mixtures and diversity.

The applicant proposes to use reference areas to determine revegetation success. These reference areas have been inspected and approved by the Utah Division of Oil, Gas and Mining (Attachment B, Appendix 9, PAP). A management plan for these areas has been included in the permit application, as well as sampling and testing procedures (UDOGM Guidelines) for determining revegetation success.

The facilities area displaces approximately 8.8 acres of Grassland-Shrub and Riparian vegetation. The remaining three communities are not expected to be disturbed. The floral characteristics of an adjacent Riparian community showed both diversity and complexity. A total of 86 species of plants were encountered during the survey. The overstory exhibited 40 percent cover and was dominated by narrowleaf cottonwood (Populus angustifolia) with an average of 86 mature trees per acre. Saplings and other tree species brought the

total density to 980 stems per acre. Wood's rose (Rosa woodsii) and mountain snowberry (Symphoricarpos oreophilus) exhibited densities of 675 and 540 stems per acre, respectively. Shrubs and tree seedlings and saplings contributed a total of 7.86 percent of total understory cover. Herbaceous cover (27.6 percent of total understory cover) was dominated by aster (Aster chilensis), scouring rush (Equisetum arvense), Kentucky bluegrass (Poa pratensis), and orchard grass (Dactylis glomerata) with 7.77, 6.51, 5.54, and 4.05 percent total understory cover, respectively. Productivity was estimated by the SCS at 2,500 lbs/acre and to be in fair condition.

The Grassland-Shrub community exhibited 37 species of plants including three tree species and six shrub species. Trees accounted for 2.54 percent of total cover (cover is 54.43 percent) and exhibited a density of 405 stems per acre. The shrub stratum exhibited an average cover of 8.50 percent and average density of 4,371 stems per acre. Shadscale (Atriplex confertifolia) dominated the shrub stratum with 4.93 percent cover and 1,153 stems per acre. Utah serviceberry (Amelanchier utahensis), Douglas rabbitbrush (Chrysothamnus viscidiflorus), and broom snakewood (Gutierrezia sarothrae) were subdominants exhibiting 1.24, 1.60, and 0.51 percent cover and 324, 647, and 2,104 stems per acre, respectively. The herbaceous stratum was dominated by slender wheatgrass (Agropyron trachycaulum) with 31.18 percent cover. Productivity was estimated by the SCS at between 900 and 1,000 lbs/acre and was listed as fair condition.

The Pinyon-Juniper community exhibited 62 plant species and was dominated by pinyon pine (Pinus edulis) with 131 out of a total of 233 stems per acre. Shrubs accounted for another 4.11 percent cover and 794 stems per acre with Utah serviceberry predominating. The herbaceous stratum contributed another 15.13 percent cover (12.99 percent grasses) with slender wheatgrass again dominating. Productivity was not estimated.

The Conifer community exhibited 43 species of plants and was dominated by Douglas fir (266 stems per acre) and white fir (156 stems per acre). Total tree density averaged 577 stems per acre while average overstory cover was 60.40 percent. The shrub stratum (3.81 percent cover) was dominated by Utah serviceberry with 2.35 percent cover and 540 stems per acre, and creeping barberry (Berberis repens) with 1.30 percent cover and 8,903 stems per acre. The herbaceous stratum (12.79 percent cover) was again dominated by slender wheatgrass. Productivity was not estimated.

Soils

Soils of the proposed surface facilities site and surrounding area consist of six mapping units. Two of these units are rockland (RoG, RY). The four remaining units are the very stony sandy loam complex (AbG), stony sandy loam complex (CoG), shaley colluvial land (SN), and riparian (R). Of these mapping units, the riparian and stony sandy loam complex are considered representative of the soils which are assumed to have overlain the existing disturbed area (8.8 acres). Soil samples and analyses were conducted on these two mapping units and the results submitted with the original permit application (Chapter 8, PAP).

Soil sampling showed the soil of the riparian mapping unit to be of the Kenilworth Series (Xerollic Camborthid). Horizon textures ranged from sandy loam to sandy clay loam. Electrical conductivity, pH, and sodium adsorption ratios ranged from 0.4 to 3.2, 8.0 to 8.4, and 0.08 to 0.29, respectively. Samples were taken to a depth of five feet at intervals corresponding to soil horizons.

Soil of the stony sandy loam complex is shallow to bedrock. Textures ranged from loam to silty clay loam. Electrical conductivity and sodium adsorption ratios ranged from 0.3 to 0.4 and 0.7 to 0.8, respectively. The pH values were 8.2 to 8.7. Phosphorous and potassium levels were lower for this soil than for that found in the riparian unit. Sample intervals corresponded to horizon thickness.

Due to previous mining operations, little soil exists on the proposed disturbed site. The final graded surface to be used as a seedbed will be composed of cut, fill, and mine-generated spoil materials with some coal wastes included (see UMC 817.103). These materials were sampled in eight locations on the existing disturbed area (pp. 39-44, Appendix 9, PAP). Sampling occurred to a depth of 8 to 12 feet at 2- to 3-foot intervals. Samples were analyzed for phosphorous (ppm), nitrate (ppm), organic matter (percent), electrical conductivity (EC), cation exchange capacity, calcium carbonate (percent), calcium (ppm), magnesium (ppm), sodium (ppm), potassium (ppm), sodium adsorption ratio (SAR), pH, nitrogen (percent), texture, and percent moisture. The following table presents the results of the analysis with regard to the more important soil parameters:

Sample Site	pH Range	EC Range	SAR Range	Texture Range
1	7.6-7.9	4.95-8.20	2.65-4.56	Sandy loam sandy clay loam
2	7.8-8.7	1.85-14.80	3.29-8.47	Sandy loam sandy clay loam
3	7.7-8.2	7.00-18.40	6.25-20.10	Sandy loam clay loam
4	7.6-7.9	8.40-37.00	6.30-36.00	Loam
5	8.2-8.3	11.4-15.7	3.6-6.4	Clay loam
6	8.2-8.7	4.8-7.7	1.4-3.4	Clay loam
7	7.5-8.0	5.7-10.9	2.6-3.9	sandy clay loam Clay loam
8	7.2-7.6	7.5-11.3	2.4-7.9	sandy clay loam Clay loam sandy clay loam

Electrical conductivity (EC) and sodium adsorption ratio (SAR) values are elevated throughout the depth of material sampled, apparently as a result of storage and use of road salt. Mean values for EC in the spoil sample sites range from 6.7 to 22.1 mmhos/cm. The mean EC value is 10.8 mmhos/cm. Excluding the high value (22.1 mmhos/cm.) sample site four reduces the mean spoil value to 9.3 mmhos/cm. Values for SAR's have a median value of 6.25.

Fish and Wildlife Resources

Wildlife resources are described in Chapter X and Appendix 10 of the permit application package.

Terrestrial vertebrate and aquatic invertebrate species inhabiting the mine permit area and vicinity are typical for this region of the Wasatch Plateau. Several game and high-interest terrestrial species inhabit the general vicinity of the permit area. Most, except for mule deer and cliff-nesting species of raptors, are not likely to be exposed to any significant impact from mine operations.

Cliffs within and near the permit area represent potentially valuable cliff-nesting habitat for several species of raptors (e.g. golden eagle, red-tailed hawk, and prairie falcon). Wooded habitat within the permit area also provides nest sites for tree nesting species such as goshawk, Cooper's hawk, sharp-shinned hawk, red-tailed hawk, American kestrel, and screech owl. The bald eagle is a winter visitor in the area. Raptor surveys on the permit area did not locate any nests, and only American kestrel, goshawk, and golden eagle were observed in the area. U.S. Fish and Wildlife helicopter raptor surveys in 1981 and 1982 identified six golden eagle nests (one active in 1981) and one possible prairie falcon eyrie in the general vicinity of the permit area, but all were located at least one-half mile from the mine facilities area.

Mule deer occur within the permit area year-round. During the summer they occupy the mixed mountain shrub and grass-aspen habitats in the mid to upper elevations of the permit area. In the winter, portions of the canyon bottom along the stream and haul and access road is classified by the UDWR as high-priority and critical winter range for mule deer.

No fish species occur in North Cottonwood Creek in the vicinity of the mine; however, the lower portions of Cottonwood Creek, below its confluence with Straight Canyon Creek, does support trout and is designated as a Class 3 fishery. Aquatic macroinvertebrate communities in North Cottonwood Creek above the mine portal are considered healthy and indicative of good stream quality. Below the mine portal area pre-law sediment loading has degraded the quality of stream habitat and reduced the density and diversity of the macroinvertebrate community.

Field investigations and literature reviews have revealed that no threatened or endangered species occur within or near the permit area. The U.S. Fish and Wildlife Service has confirmed this in a letter dated October 21, 1983 (Attachment C).

Land Use

Land use is discussed in Chapter IV of the permit application package.

The Trail Mountain Coal Company owns approximately 53 acres of private land for operation of the Trail Mountain mine. The majority of the remaining land in the area is part of the Manti-LaSal National Forest. Mineral ownership within the permit area consists of Federal and fee coal. The Trail Mountain mine is the only operating mine in the North Cottonwood Creek drainage. No oil or gas wells have been drilled on or adjacent to the permit area; one State and one Federal oil and gas lease are held within the permit area (pages 4-5 and 4-6 of the PAP). The applicant has contacted the oil and gas lessees to coordinate any future development of resources under the multiple minerals management program.

Premining and existing land use on and adjacent to the mine plan area consists of mining, recreation, wildlife habitat, and limited livestock grazing. Coal mining in Cottonwood Canyon has occurred since 1909. The Johnson mines (approximately 1.2 miles downstream from the Trail Mountain mine) were active from 1909 to 1948, while the Cottonwood Canyon prospects were active from 1946 to 1948. An estimated 96,000 tons of coal have been removed from the Hiawatha seam by the earlier mines. Production of the earlier mines was by room and pillar mining.

Recreational use of the area occurs primarily as sightseeing by people traveling up the road in Cottonwood Canyon to access the upper plateau areas above the mine. There is no fishing in the canyon in the vicinity of the mine, although some hunting occurs on the plateau above the mine.

No farming or commercial forest harvesting has occurred within the permit area. Steep, rocky terrain and poor soils preclude farming in the area. The predominance of rugged terrain and rocky cliffs also limits livestock grazing.

REGULATORY ANALYSES BY TOPIC

I. TOPSOIL

1.1 Existing Environment and Applicant's Proposal

Soil Baseline Data

Soil information for the mine permit area was presented in Chapter VIII of the original permit application in 1981. Information consists of a brief description of the soils overlying the permit area based on Soil Conservation Service mapping. Soils which were assumed to overlie the present disturbed area were evaluated in more detail. Pits were dug in the Riparian and Grassland-Shrub vegetative communities and the soils described and sampled. The normal suite of parameters was analyzed for each sample. In 1983, a sampling program was initiated to characterize fill material (Appendix 9, pp. 15-17, 39-44). Eight spoil pits were dug at various locations on the minesite. Samples were taken at two- to three-foot intervals to depths from eight to thirteen feet. Samples were analyzed for phosphorous (ppm), nitrate (ppm), organic matter (percent), electrical conductivity (EC) (millimhos per cm), calcium (ppm), magnesium (ppm), sodium (ppm), potassium (ppm), sodium adsorption ratio (SAR), pH, nitrogen (percent), texture, and percent moisture, and are discussed above. A total of 75 samples were analyzed (29 soil and 46 spoil).

Analyses provided by the applicant indicate a range of salinity values for native soils in the vicinity of the minesite, measured as EC, from 0.4 to 9.8 millimhos per cm (mmhos/cm). Surface horizon samples are less than three mmhos/cm. Recently disturbed soil materials at points topographically and stratigraphically below the mine site range in EC from 2.6 to 9.8 mmhos/cm, and average 7.6 mmhos/cm.

Spoil material EC values on the site range in value from 1.9 to 3.7 mmhos/cm. The average EC value for such materials is 10.2 mmhos/cm.

Soil Suitability and Handling

The area to be included in the surface facilities area (8.8 acres) during the permit term was disturbed during the past mining operations and will be disturbed again during reclamation operations. No additional acreage will be disturbed during the life of the mine. No soil material, with the exception of those on the borrow area site, were salvaged during initial disturbance. Existing cut-and-fill material will constitute the majority of seedbed material. With the exceptions of some high EC and SAR materials, the applicant considers this material to be suitable as a growth medium (see UMC 817.103 discussion on page 37 of this document).

After the conclusion of mining, surface facilities will be removed, the sewer system will be sealed, trash and debris will be hauled away to the Emery County landfill, and the concrete foundations and gravel road base will be buried. Cut-and-fill materials will be graded to create a slope (25 to 30 degrees, Appendix 9, p. 7) extending from Cottonwood Creek to the western extent of the disturbed area. During grading, cut-and-fill materials unsuitable as growth medium will be buried under at least four feet of fill (Appendix 9, pp. 16 through 17B). Following culvert extraction, the drainageway will be re-established and fill materials graded from embankments.

A trench will be cut at the top of the slope to divert the overland flow of water from passing over the graded spoil. These contour trenches will be cut into the graded slope to further reduce erosion potential. Erosion control mats will also be added to the slopes to protect the surface reclaimed area.

Fertilizer materials will be added to the seedbed as per the results of analysis conducted on spoil samples taken after grading. During reclamation of the Riparian community, discing and harrowing will be used to incorporate fertilizer into the seedbed. The applicant has stated that land imprinting will serve to incorporate fertilizer in the Grassland-Shrub community.

The small amount of topsoil salvaged in conjunction with borrow area construction will be replaced on the regraded site. Revegetation will then be completed as described in Appendix 9.

1.2 Evaluation of Compliance

UMC 817.21 Topsoil: General Requirements

The applicant has complied with the requirements of this section.

UMC 817.22 Topsoil: Removal

The applicant will, in effect, be using substitute topsoil materials. This activity is required since no topsoil was salvaged, with the exception of that overlying the borrow area, during previous mining activities. Chemical analyses conducted on fill material at the surface facilities area show some potential for high SAR and EC levels. An analysis of the data and backfilling and grading plan provided by the applicant indicates that there is a significant probability that the uncontrolled placement of spoil material could result in unsuitable saline material being placed in the plant rooting zone, and that salt concentrations in the surface seed bed material could inhibit seed germination and seedling establishment. The applicant will be in compliance upon acceptance of the permit condition, below, requiring selective removal and placement below two feet of suitable plant growth materials, all spoil material which exceeds an EC value of 16 mmhos/cm.

UMC 817.23 Topsoil: Storage

The applicant has complied with the requirements of this section.

UMC 817.24 Topsoil: Redistribution

Because no soil was saved during previous operations, with the exception of the borrow area, little soil exists for redistribution. The applicant has proposed to use topsoil substitute material consisting of cut-and-fill materials, but has not specified any methodology to assure that unsuitable saline materials will not be placed in the regraded material which will provide the rooting zone. The applicant will be in compliance upon acceptance of the permit condition below, which restricts the redistribution of saline materials.

The salinity of topsoil substitute materials placed in the upper six inches will be no greater than eight mmhos/cm, and the material in the six to twenty-four inch zone will not exceed 16 mmhos/cm. The applicant shall include in the proposed test plots a trial including materials approximating these limits. The applicant may include other trials which exceed these limits, if so desired, to demonstrate the feasibility of reclamation success using more saline materials.

UMC 817.25 Topsoil: Nutrients and Soil Amendments

During reclamation of the Riparian area, applied fertilizer will be incorporated into the soil by discing and harrowing in the Riparian community. With respect to the Grassland-Shrub community, incorporation will be achieved to the degree possible through land imprinting. Imprinting will disturb the soil to a depth of six to eight inches providing a reasonable degree of incorporation. Steep slopes together with precipitation which would wash away the fertilizer prevent other incorporation techniques from being applied. A small amount of fertilizer likely will be lost to erosion. The applicant is in compliance with this section.

1.3 Conditions

The applicant must handle the on-site spoil materials to achieve the following:

- A. All materials exceeding electroconductivity values of 16 mmhos/cm shall be placed under a minimum of two feet of less saline suitable topsoil substitute materials.
- B. The surface six inches of suitable topsoil substitute material shall not exceed electroconductivity values of eight mmhos/cm.
- C. The proposed test plots shall include a revegetation trial incorporating topsoil substitute materials having electroconductivity values approximating these limits. Specifically, the surface six inches shall have a uniform EC value of eight, plus or minus one mmho/cm, and the underlying 18 inches shall have a uniform EC value of 16, plus or minus 2 mmhos/cm.

The applicant shall provide a plan to the regulatory authority within 60 days of permit issuance to sample the regraded surface for the purpose of confirming that the salinity values cited above have not been exceeded.

II. HYDROLOGIC BALANCE - SURFACE WATER

2.1 Existing Environment and Applicant's Proposal

Surface disturbance at the Trail Mountain mine is confined to 8.8 acres on and near the floor of the canyon. The applicant proposes no further surface disturbance over the life of the mine. The location and nature of the disturbance is portrayed on Map C, Appendix 9 of the PAP. In order to construct the facilities area in the narrow, confined Cottonwood Creek Canyon, Trail Mountain Coal Company diverted the stream channel through a 66-inch culvert (Appendix 7-1). North of the mine office the applicant borrowed material to backfill over the existing channel and culvert and constructed the surface facilities. Additional contouring and leveling in and around the facilities accounts for the remaining surficial disturbance.

Diversion ditches and sedimentation ponds are used at the facilities site to protect the surface-water hydrologic balance. The applicant proposes to continue the use of the existing facilities for the remainder of the mining operation (five years).

The sediment control plan is discussed in Appendix 7 (7-1 through 7-6, 7-20, and 7-27) and Section 3.2.8 of the PAP. Three water diversion structures are maintained at the Trail Mountain mine. A berm and a half round culvert run north-south through the property and divert water from the disturbed area to the sediment pond. A 66-inch culvert is used to divert the North Fork of Cottonwood Creek around and below the Trail Mountain mining operation. A 48-inch culvert, located at the mouth of the tributary canyon, west of the main portal, diverts undisturbed runoff directly into the 66-inch culvert of Cottonwood Creek. Drainage control is presented in Appendix 7-1 of the PAP. Design details and design parameters for the diversion structures are presented in Section 7.2 and Appendix 7 of the PAP. One sediment pond, located south of the disturbed area, controls the sediment and water from a 10-year 24-hour storm over the disturbed area. Designs and design parameters for the sediment pond are located in Section 7.2.4.2 and Appendix 7 of the permit application.

Reclamation at the Trail Mountain site will consist of construction of sideslope sediment control and diversion trenches, and removal of the sediment pond, diversion structures and all surface facilities. The disturbed surface will be recontoured and graded to slopes approaching 25 to 30 degrees. The surface layer of the soil will be manipulated to enhance vegetation re-establishment and reseeded. Following reshaping, compacting and contouring of the slopes, the applicant proposes to restore the original drainage system

following removal of the culverts. The side canyon tributary near the mine entrance portal (Map C, Appendix 9 of the PAP) will be re-established. Large rocks (median diameter, 0.8 feet) will be placed in the drainage to establish riprapped banks. Riprap designs are presented in Appendix 7-27 of the PAP. The reclaimed slope will be temporarily protected by a contour trench 15 inches deep, 48 inches wide, which will divert runoff from the undisturbed slopes to the newly established east-flowing tributary. This trench is located immediately above the reclaimed slope.

Eighteen hundred feet of culvert will be removed from the North Fork of Cottonwood Creek and the original drainage channel will be re-established upon bedrock. The applicant intends to re-establish the natural contours of the stream and stream banks to the maximum extent possible. Rock riprap (median diameter, 1.4 feet) will be placed along the channel banks to ensure channel stability. Channel hydraulics for the restored channel (100-year event) are presented in Appendix 7-27. The North Fork channel will be designed as a trapezoidal channel with 2:1 side slopes. Riprap will be placed along the side slopes sufficient to contain a flow depth of four feet. The channel will be entrenched on pre-existing bedrock. Large boulders, serving as rock check dams and aquatic habitat, will be placed on the floor of the channel intermittently along the reclaimed reach. The applicant proposes to plant seed below the riprap filter along the banks of the reclaimed channel to promote riparian habitat. Reclaimed and premining channel cross sections are presented in the permit application (Appendix 9, Attachment C of the PAP).

The applicant proposes a variety of measures to reduce erosion along the reclaimed hillslopes. These are discussed in Appendix 9 of the PAP (pp. 7-13 and Attachments 12). The first phase of the erosion control measures utilizes a crawler dozer with an attached broadcast seeder, which will pull a land imprinter. The land imprinter will partially compact the topsoil layer, creating polygonal indentations about six to eight inches deep and will break up the large cloddy material developed from compaction of the mining activities. The patterns will parallel the contour, if possible, thus decreasing erosion, increasing infiltration and slightly covering the seed.

In addition, the applicant proposes four, approximately 1,950-foot long contour trenches between 42 and 48 inches wide and between 15 and 18 inches high. The uppermost trench, described on the previous page, will be 48 by 15 inches (w x d) and will redirect surface runoff originating above the disturbed area to the east-flowing tributary. The second, third, and fourth trench (42 by 18 inches) will be spaced 60 feet apart (downslope) and will be designed to temporarily contain water and sediment. These trenches are expected to minimize sedimentation from the reclaimed slope to Cottonwood Creek until vegetation is successfully re-established.

The applicant also proposes to protect the entire reclaimed surface area with erosion control mats. The erosion control mat is available in five-foot by 100-foot blankets of interlocking curled wood fibers held by plastic netting. The mats will be anchored to the seedbed by two-foot aluminum staples. Such matting is intended to decrease slope erosion and increase available soil moisture to enhance the establishment of vegetation.

Coal waste piles stored near the tipple (see Map C, Appendix 9) will be deposited in the underground mine. Initially the water within the sediment pond will be allowed to evaporate. The remaining sediments will be removed from the sediment pond and hauled underground in a manner similar to the coal waste products. The applicant will remove and set aside the riprap, and regrade the sediment pond to a smooth land surface configuration. The riprap will then be used for streambank reclamation. Final land surface contours are presented on Map D, Appendix 9 of the PAP. During construction activities to re-establish the stream channel, control of sediment produced by construction is not possible because construction will take place directly in the stream channel. Therefore, construction to reclaim the stream channel will take place during the low-flow months of September through November to minimize the temporary sediment transport.

The applicant presents a water monitoring map on Figure 7-9 of the permit application. A surface-water monitoring plan is presented in Section 3.4.3.6, Section 7.2.7 and Appendix 7-16 of the PAP. Data are presented on Tables 7-3, 7-4, and Appendices 7-10 and 7-24 of the PAP. Trail Mountain Coal Company currently monitors runoff at three permanent locations on the North Fork of Cottonwood Creek: SW-1, SW-2, and SW-3. The three stations along Cottonwood Creek are situated above (SW-1), below (SW-3) and within (SW-2) the disturbed area. Water quantity and quality data will be collected from perennial streams on a bimonthly basis. Once the applicant has collected sufficient data, all surface-water monitoring sites will be monitored quarterly for flow and water quality. The applicant proposes to report these data on a quarterly basis.

Following the cessation of mining the applicant proposes to monitor "representative" surface-water stations for water quantity and quality on a biannual basis (during high and low flows). Such sites will be selected after consultation with the regulatory authority. Water quality parameters to be monitored are listed on Table 7-2 of the PAP.

In addition to the applicant's monitoring program, the U.S. Geological Survey collected three years of water quantity and quality data on Cottonwood Creek (station 09324200), immediately downstream of the disturbed area. The data for this station are presented in Appendix 7-24 of the PAP.

Trail Mountain Coal Company has been issued an NPDES permit (UT-0023728) for its sedimentation pond (Attachment 7B, Chapter 7, PAP). All runoff from the facilities area are controlled by the sediment pond. The applicant notes that effluent limitation for total suspended solids (TSS), total iron, total dissolved solids (TDS), oil and grease and pH must be met to maintain compliance with the NPDES permit. Discharges from the sediment pond at the Trail Mountain mine will be monitored on an event-by-event basis. These NPDES reports will be filed quarterly.

2.2 Evaluation of Compliance

UMC 817.43 Hydrologic Balance: Diversion and Conveyance of Overland Flow, Shallow Ground-water Flow, and Ephemeral Streams

The Cottonwood Creek diversion system, a 66-inch culvert, has been designed by the applicant to pass the 50-year, 24-hour runoff event. This design event is larger than that required by the regulations, but was used based on recommendations of the U.S. Forest Service. The side canyon diversion culvert has been designed to pass the 10-year, 24-hour storm event. The half round diversion culvert, which collects runoff from the disturbed area, was designed to pass runoff from a 10-year, 24-hour storm event. The peak flows for the 10-year, 24-hour and 50-year, 24-hour events were determined using the unit hydrograph procedure developed by the U.S. Soil Conservation Service (1972) and is described by the applicant on pages 7-27 through 7-33 of the PAP. Values for peak flows are presented on Table 7-7 and Appendix 7-27 of the PAP. The applicant uses a curve number (CN) of 57 to describe the runoff characteristics of the Cottonwood Creek watershed upstream of the mine. On the basis of this and the remaining parameters (Table 7-7), the applicant calculates a design flow of 510 cfs (50-year, 24-hour storm event). Such a value concurs with the estimate provided by the U.S. Forest Service (450 cfs) (letter from D. G. Chadwick to Wayne Hedberg, October 9, 1981, Appendix 7-27 of the PAP). The applicant has provided no supporting documentation (soil survey, land-use characteristics, etc.) to substantiate this low curve number. If a higher curve number were used (i.e. CN = 70), the volume of flow would double and peak flow values would increase substantially. However, the applicant has designed the diversion facilities to exceed the requirements of the law (10-year, 24-hour storm event). Although there is disagreement on the curve number selected, design capacity of the existing diversions satisfy the requirements of the law (see UMC 817.44). All other parameters cited in Table 7-7 are reasonable. The applicant's 50 year design, with a questionable curve number of 57, will be more than adequate for the required 10-year, 24-hour storm event capacity.

Hydraulic design for the diversion and collection system was accomplished by the applicant utilizing standard open-channel and pipe flow methodologies. Culvert capacity for the side canyon diversion is determined to be adequate. Because of the use of corrugated steel culvert, channel stability is provided throughout the diversion structure. The applicant constructed riprap at the entrance of the side canyon culvert and the entrance and exit of the Cottonwood Creek culvert. The applicant discusses this on page 7-25 and in Appendix 7-27 of the PAP. Further discussion of riprap design and compliance can be found in Section UMC 817.44 of this document.

The disturbed runoff collection system proposed by the applicant incorporates the use of a 15-inch half round culvert and associated berm. A cross section of the system is presented as Figure 7-12 of the PAP. Design criteria are presented in Table 7-8 of the PAP. The collection system, as designed, provides adequate capacity to convey the 10-year, 24-hour runoff event. The highest flow velocities (11.60 fps) will occur in the corrugated culvert section of the diversion. The maximum overbank velocity will approach 5.47 fps. The applicant has presented the necessary riprap sizes to accommodate predicted velocities. The hydraulic design for the collection system, as presented in the permit application, ensures hydraulic stability.

In accordance with this regulation, the applicant intends to remove all diversions upon completion of mining activities. Additionally the applicant diverts water from the surface drainage system to its underground mine in accordance with subsection (g) of this statute. Further discussion to this effect can be found in Section UMC 817.55 of this document. At the end of mining, the side canyon tributary diversion culvert will be removed and the disturbed section of this ephemeral channel will be reconstructed in its original configuration (Appendix 7-27, PAP). The channel will be reconstructed as a trapezoidal channel (two-foot bottom width), and will be incised onto pre-existing bedrock, with riprapped 2:1 side slopes. Eight inches of riprapped freeboard will provide additional protection for the 100-year, 24-hour event. The reconstructed side canyon tributary meets the requirements of the law.

With respect to this section of the regulations, the applicant is in compliance.

UMC 817.44 Hydrologic Balance: Stream Channel Diversions

The "undisturbed" runoff diversion system of the North Fork of Cottonwood Creek has been designed by the applicant to pass the 50-year, 24-hour runoff event. This event is larger than that required by the regulations, but was used based on recommendations of the U.S. Forest Service. The peak flows for the design event were determined using the unit hydrograph procedure developed by the U.S. Soil Conservation Service (1972). Culvert capacity, as presented by the applicant, is adequate and satisfies the requirements of UMC 817.44. Because peak flow velocities are through a corrugated steel culvert, hydraulic design of the diversion is satisfactory.

The applicant has presented sufficient information with respect to the riprap structures/energy dissipators at the entrance and mouth of the diversion to assess compliance with UMC 817.44(b)(1). An analysis of the data presented by the applicant indicate that the riprap at the exit structure will reduce the velocities of flow passing through the culverts. At peak flow, velocities exiting the energy dissipator structure will approach nine fps. Some erosion of the receiving channel will take place under such velocities. It is likely that similar erosion would have taken place under natural conditions. Some movement of the riprap at the pipe-flow exit (velocities 25 fps) will take place under 50-year storm conditions. Riprap structures are in place and the applicant proposes continual monitoring and maintenance. The applicant's visual monitoring program and maintenance procedures will mitigate any failure of the riprap. The diversion system and energy dissipators, as presented in the application, are adequate.

Upon completion of mining activities, all diversions will be removed. The applicant intends to restore the original drainage configuration throughout the permit area. Design specifications and hydraulic calculations for the reconstructed stream channels are presented in the application (Appendix 7-27). The applicant proposes to reconstruct the North Fork as a trapezoidal channel (seven-foot bottom, 2.0:1 side slopes) with riprapped banks. The channel will be entrenched onto pre-existing bedrock. Channel cross sections are presented in Attachment C, pages 51 through 53, Appendix 9 of the permit application package. The applicant estimates that the 100-year storm will

reach a 3.8-foot depth of flow through the reconstructed channel reach (Appendix 7-27). This estimate is based on a roughness coefficient of 0.05 and a channel slope of six percent. The applicant proposes to extend riprap (D50 = 1.4 feet) four and a half feet high along the North Fork Cottonwood Creek side slopes. Such a design will be sufficient to withstand the erosive effects of the 100-year storm event with additional freeboard. The reconstructed stream channel is designed in accordance with the natural (undisturbed) channel immediately upstream and downstream. Its similar channel geometry and bed roughness characteristics will enhance its long-term stability. The presence of large boulders, placed intermittently along its bottom will improve aquatic habitat and enhance the riparian characteristics of the reconstructed North Fork Cottonwood Creek stream channel. The proposed reclaimed channel design of the North Fork Cottonwood Creek, referenced in Appendix 7-27 of the PAP, is acceptable.

The applicant's permanent diversion designs comply with the requirement of this section.

UMC 817.45, 817.46 Hydrologic Balance: Sediment Control Measures and Sedimentation Ponds

During the life of the mine the applicant uses a sedimentation pond to control and treat the runoff from the disturbed area. Data and design details of the sedimentation pond are presented on page 7-57 of the PAP. The sedimentation pond is designed to control the inflow volume of a 10-year, 24-hour storm. In addition, it is designed to contain sediment storage volume from 0.05 acre-feet of sediment per acre of disturbed area. The applicant commits to cleaning out sediment at 60 percent of the sediment storage level. Spillway capacity requirements for the sedimentation pond were based on runoff from the 25-year, 24-hour storm. The applicant presents the assumptions on which this analysis is based. The applicant's design meets the requirements of this section.

At the end of mining the sedimentation pond will be cleaned out and reclaimed. The applicant proposes to haul the accumulated sediment to the underground mine (page 6, Appendix 9 of the PAP). Riprap salvaged from the sedimentation pond will be used in the stream channel reconstruction.

The sedimentation control practices utilized during the course of mining are adequate as designed.

The method of contour ditching and surface manipulation during reclamation provides an adequate method for controlling erosion from the fill section at the Trail Mountain minesite. Periodic maintenance of these structures will be necessary. The design of these trenches must provide containment capacity for the 10-year design event and associated sediment accumulation until revegetation reclamation on the disturbed area is established. It should be noted that following removal of the 66-inch culvert, there will be no sedimentation control along the North Fork of the Cottonwood Creek. During construction activities to re-establish the stream channel, control of sediment produced by construction is not possible because construction will take place directly in the stream channel. No practical technology is available to control sediment for this reclamation step. Therefore,

construction to reclaim the stream channel will take place during the low-flow months of September through November to minimize the temporary sediment transport. The probable hydrologic consequences of this action are discussed in Chapter IV.

The applicant presents design criteria and calculations for the erosion-control trenches in Attachment 12 and Map D, Appendix 9. Review of the calculations indicates that the design will satisfactorily control runoff from the 10-year, 24-hour precipitation event and ten years of sediment accumulation. The applicant proposes to use the uppermost trench (Trench 1) to collect and divert all runoff and sediment from the undisturbed slope. Design specifications describe a diversion trench 1,950 feet long, with a one percent slope. Calculations (Attachment 12) indicates that such a trench will be hydraulically stable under 10-year, 24-hour storm event conditions. The lower three trenches are described in Attachment 12 as 1,950 feet long, 3.5 feet wide, and 1.5 feet high. As designed, these trenches will contain the runoff for a 10-year, 24-hour storm event and ten year's accumulation of sediment.

The applicant's sediment control measures comply with the requirements of this section.

UMC 817.52(b) Hydrologic Balance: Surface-Water Monitoring

The applicant measures surface flows and water quality within the permit boundary. Surface-water monitoring data, collected by both the applicant and the USGS, are presented in the permit document.

The applicant has proposed an operational monitoring program, which includes quarterly monitoring of flow and water quality at three surface-water stations. Data will be submitted to the regulatory authority quarterly, with an annual summary.

The applicant presents a post mining surface-water monitoring program, which includes representative surface-water monitoring stations. Frequency, monitoring parameters, and the locations of gage sites will be determined upon consultation with the regulatory authority.

Given the concerns with the stability of the riprap structures both during and following mining, the applicant engages in a visual inspection program of the riprap designed to protect the receiving waters from water quality degradation. The applicant satisfactorily meets the requirements of this statute.

UMC 817.55 Hydrologic Balance: Discharge of Water into an Underground Mine

The applicant has discharged and will continue to discharge an average of 1,100 gpd of Cottonwood Creek water into the main mine sump for in-mine water usage. In addition, the applicant diverts 2,940 gpd to the bathhouse. All water discharged from the mine is treated at the sedimentation pond prior to NPDES releases to the surface-water system.

The applicant has applied for and received approval for diverting 17.6 acre-feet of water per year (15,711 gpd) from Cottonwood Creek for industrial purposes (Appendix 7-8, 7-9 of the PAP). Approval by the State Engineer was obtained on August 26, 1983. All underground discharges are controlled and are ultimately treated by an existing facility. MSHA approval for these discharges is presented in Appendix 7-18 of the PAP.

The applicant's plan to discharge water to the underground mine meets the applicable requirements of this section.

UMC 817.56 Hydrologic Balance: Post Mining Rehabilitation of Sedimentation Ponds, Impoundments and Treatment Facilities

Rehabilitation of all temporary diversions and sedimentation ponds at the Trail Mountain mine has been addressed adequately by the applicant in Appendix 9 of the PAP.

UMC 817.57 Hydrologic Balance: Stream Buffer Zones

The initial disturbance to the North Fork of Cottonwood Creek predated the passage of SMCRA (August 1977). Although the North Fork of Cottonwood Creek contains a biological community as described in Paragraph (c) of this section, the regulations of this section do not pertain to the disturbance of the channel, as diverted through the 66-inch culvert.

The applicant has received a variance from the 100-foot buffer zone criteria on previously undisturbed areas of Cottonwood Creek, upstream and downstream of the culvert (Appendix 7-12 of the PAP). This variance is implied in the applicant's approval for main channel culvert extension granted by the Utah Division of Oil, Gas and Mining on May 26, 1983 (Appendix 7-4 of the PAP). A 50-foot buffer zone will be maintained by the applicant. Because of the narrow canyon configuration at the site, a 100-foot buffer zone is not practical. The buffer zone incorporated at the Trail Mountain mine plan is 50 feet wide, 50 feet upstream and 50 feet downstream of the culvert disturbances.

A tributary to the North Fork of Cottonwood Creek crosses the permit area just north of the portal area. This tributary is ephemeral and does not qualify for protection under buffer zone requirements.

The application meets the requirements of this section.

2.3 Conditions

None.

III. HYDROLOGIC BALANCE - GROUND WATER

3.1 Existing Environment and Applicant's Proposal

The applicant proposes to monitor the quantity and quality of ground water at locations of springflow near the Trail Mountain permit area and at in-mine locations when encountered. Permanent ground water monitoring stations are presented on Figure 7-9 of the PAP. Because the mine produces little ground water, surface water must be brought into the mine for equipment needs and dust suppression. Water discharged from the mine to the NPDES pond is a mixture of both surface and ground water.

Trail Mountain Coal Company initiated an in-mine ground-water sampling program in 1979. Only one site, UG-1, is a long-term water producer. Flow rate at this site as reported in Appendix 7-11, was measured to be 1.7×10^{-4} cfs (0.08 gpm) on November 16, 1983. The applicant has committed to monitor this site monthly as flow permits and any other underground water-producing zones, when encountered (Section 7.1.7 and Appendix 7-13.1 of the PAP). The applicant committed to reporting hydrologic monitoring results quarterly and summarizing data annually (Appendix 7-13.1, PAP).

A spring inventory was conducted in June 1981. Six springs or seeps and four stock ponds sustained by ground water were identified in this inventory. None of these sources are on or immediately adjacent to the permit area. The locations and pertinent water quality data are presented in Figure 7-2 of the PAP. Water quality data collected by the applicant and by the U.S. Geological Survey are presented in Appendix 7-11 of the PAP. The applicant has committed to monitoring springflow biannually and water quality quarterly. The applicant has collected and presented minimal stratigraphic data on the lateral extent of the aquifers present on Trail Mountain. Geologic data compiled by the applicant from regional sources are presented in Chapter 6 and Appendix 3-3 of the PAP. Regional spring and well data are presented in Appendix 7-11 of the PAP.

The hydrogeologic system of Trail Mountain is described by the applicant in Section 7.1.3 of the PAP, as consisting of perched aquifers fed by local recharge sources. The majority of these perched aquifers can be found in the North Horn, Price River, and the Blackhawk Formation. In the immediate vicinity of the mine the majority of the springs were found on the west face of Trail Mountain and emanated from the North Horn Formation. In a regional inventory of the Trail Mountain area conducted by the USGS, 30 of 54 springs were located in the North Horn Formation. Sixteen springs were located in the Price River Formation and four each were located in the Castlegate and Blackhawk Formation (Appendix 7-11 of the PAP). The applicant states that the springs are recharged by snowmelt, derived from offsite plateaus which are capped by the Flagstaff Limestone and/or the North Horn Formation. The infiltrating water flows locally down the stratigraphic section until an impermeable horizon is encountered; whereupon, the infiltrating waters move down dip (west) until the topographic surface or another "drain" within the formation is encountered. The majority of the ground water recharge-discharge occur in strata significantly higher than the coal seam which is mined at the Trail Mountain site.

The hydrogeologic and geochemical data provided by the applicant in Section 7.1.3, Appendix 7-11, and Figure 7-2, indicate that considerable mixing and vertical leakage occur in the overlying sediments. One can assume that hydrologic communication takes place between adjacent strata and formations. The presence of a small number of springs (Figure 7-2, PAP) on the east side of Trail Mountain and the one spring (TM 23-1) in the Blackhawk Formation indicate that hydraulic head differential superimposed upon geologic structure may be the controlling mechanism for the ground water gradient.

Ground-water inflow to the Trail Mountain mine is limited (8-10 gpm). The applicant describes the source of mine-water inflow in Section 6.7 and Figure 6-8 of the PAP. The applicant hypothesizes that as mining progresses, mine entries intersect joints or fractures hydrologically connected to saturated sandstone lenses or paleochannel aquifers. In some cases in-mine drill holes or roof bolts directly intersect saturated horizons and produce a limited amount of ground-water inflow. The applicant describes only one long-term water-producing horizon (UG-1) (page 7-21A of the PAP).

3.2 Evaluation of Compliance

UMC 817.48 Hydrologic Balance: Acid-forming and Toxic Material

At the end of mining the applicant proposes to dispose of the coal waste piles which are stored near the tipple in the underground mine.

The applicant has analyzed one sample from the unmined coal seam (Table 6-4 on page 6-14A of the PAP) and concluded that the Hiawatha seam contains low values of pyritic sulfur. Adjacent area mines and the general literature confirm these conclusions. In addition the applicant has collected and analyzed two samples of roof and floor material in order to evaluate the acid-forming potential of the sediments contiguous to the coal. On the basis of the acid-base potential analysis and the low pyritic sulfur content of the samples, the applicant concludes that acid drainage will not be a problem. Data from adjacent mines (Wilberg mine, 130 samples) indicate that the majority of samples are non-toxic and non-acid-forming.

Although there are indications that the coal waste pile samples may be toxic and acid-forming, the applicant's proposal to bury this material in the underground mine is acceptable. Historical data on mine water inflow indicate that the Trail Mountain mine is a relatively "dry" mine. By "backstowing" unusable or contaminated coal into mined-out areas during (Appendix 3-2) and following mining (Appendix 9), these materials will be isolated from the ground- and surface-water systems.

The applicant discusses temporary storage of coal waste materials, near the tipple on page 3-6. All runoff from the surface facilities area is controlled by the sediment pond. Based on effluent limitations (NPDES permit) neither oil and grease nor acid-forming and toxic material will be discharged to the surface-water system in accordance with permit requirements. The applicant provides sufficient information to ensure compliance with UMC 817.48(c).

The applicant is in compliance with this section of the regulations.

UMC 817.49 Hydrologic Balance: Permanent and Temporary Impoundments

There are no permanent impoundments proposed at the Trail Mountain mine. All temporary impoundments are in compliance with this regulation.

UMC 817.50 Hydrologic Balance: Underground Mine Entry and Access Discharges

There are three active portals at the Trail Mountain mine. These portals are located to prevent gravity discharge of water from the mine. For gravity drainage to occur, the active and abandoned mine workings would have to fill with water. Given the present rate of inflow it is unlikely that this scenario would occur for many decades, if at all. In addition, that water which is not used for dust control and industrial use within the mine is collected by sumps and discharged to the sedimentation pond for treatment. All discharges from the treatment facility must meet current NPDES standards.

With respect to this regulation, the application is in compliance.

UMC 817.52(a) Hydrologic Balance: Ground-water Monitoring

Minimal ground water (eight to ten gpm) is produced within the mine. The majority of this water, augmented by surface-water diversions, is used within the mine for industrial purposes. Dewatering of the mine and discharge to the sedimentation pond approaches an average of 2,000 gallons per week (286 gpd.). A schematic diagram of water balance at the Trail Mountain mine is presented on Figure 7-19 (Appendix 7-19) of the PAP. In-mine water usage is presented in Appendix 7-22 of the PAP. In summary:

Ground-water inflow is approximately 10 gpm = 14,400 gpd
Diverted surface-water inflow is approximately 0.76 gpm = 1,100 gpd
Maximum in-mine water usage is approximately 12.3 gpm = 17,806 gpd
Mine-water discharge is approximately 0.2 gpm = 286 gpd
Diverted surface water for bathhouse use is approximately 2.0 gpm = 2,940 gpd

It should be noted that the figure for in-mine water use is a maximum use value and includes recycled water and peak equipment operation.

Presently the applicant monitors the water quantity and quality at one perennial seep within the mine (UG-1). The applicant has committed to sample any ground-water inflow, which is encountered in sufficient quantities on the working face. The applicant has defined sufficient quantities of water as any springs, leakers, or seeps producing water volume equal to or greater than UG-1 for 48 hours or more. Water samples will be collected from within the mine on a monthly basis and analyzed for the parameters (including discharge) presented on Table 7-2 of the PAP. The applicant has committed to sample the mine sumps on a biannual basis. Such an in-mine ground-water sampling program is more than sufficient to reflect changes in ground-water quantity and quality directly affected by the mining operation.

In addition to the in-mine water sampling program, the applicant is monitoring three adjacent area springs and four spring-fed stock ponds (Figure 7-9 of the PAP). The applicant intends to monitor flow biannually and quality on a

quarterly basis. After the collection of one year's baseline data, the applicant intends to adjust the number of sampling sites, monitoring frequency and monitoring parameters, following consultation with the regulatory authority. Such a monitoring program will be sufficient to reflect changes in ground-water quantity and quality of the springs in accordance with UMC 817.52(a)(2).

Because the springs identified are no closer than 2,000 feet from the westernmost extent of the present mine workings and separated from the mined coal seam by nearly 2,300 feet of overburden, it is not likely that subsidence will have a detectable effect on the spring discharges.

There are no ground-water wells within or in the immediate vicinity of the permit area. Ground-water use in the area is confined to appropriations of springflow and seeps for stock and wildlife watering. Forty years of mining has hindered the collection of adequate data. On this basis, monitoring of the presently appropriated water resources will satisfy the requirements of UMC 817.52.

UMC 817.53 Hydrologic Balance: Transfer of Wells

No transfer of wells is considered by the applicant.

UMC 817.13 Casing and Sealing of Underground Openings

The applicant has addressed "abandonment of drill holes" on page 3-5 of the permit document. The applicant has complied with the requirements of this section.

UMC 817.14-15 Casing and Sealing of Underground Openings: Permanent

The applicant has proposed to close the portal by construction of a block seal 25 feet back from the opening and backfilling of the portal with noncombustible material. All loose material will be removed prior to placement of the seal and the seal will be inset into the ribs and floor of the portal. Figure 3-11 on page 3-63 of the PAP shows the proposed closure method.

The proposed sealing plan meets the requirements of UMC 817.15 concerning closure of mine openings, and the requirements of 30 CFR 75.1711-2 of the Mine Safety and Health Administration.

3.3 Conditions

None

IV. PROBABLE HYDROLOGIC CONSEQUENCES

4.1 Existing Environment and Applicant's Proposal

In Section 3.4.3 of the permit application, the applicant states that mining operations at the Trail Mountain mine will have minimal, if any, effect on the existing hydrologic balance. With respect to ground-water impact, the applicant notes that the Trail Mountain mine is a "dry mine," dewatering the working face at an average rate of 10 gpm. Based on the interbedded nature of the overburden and the lack of continuous faults or fractures, which could act as flow paths and propagate the dewatering impact, the applicant contends that the impacts for future mining will be the same as the minor impacts which have resulted from the past 50 years of mining. Local impacts to the movement of ground water in the Blackhawk and North Horn rock units may result from subsidence. Because of the distance of the identified springs from the underground workings it can be concluded that subsidence-related impacts should not directly affect any springs at the Trail Mountain mine. The applicant predicts that acid drainage (page 3-32 PAP) will not be a problem at the Trail Mountain mine and will not impact ground- or surface-water quality.

With respect to surface-water impacts, the applicant predicts that there will be no adverse effects upon the surface-water hydrologic balance due to mining at Trail Mountain (page 3-35 PAP). The applicant notes that the presence of sediment control during mining and the minimal impacts to regional springflow due to Trail Mountain mine's activities should minimize the impacts to surface-water quality and quantity during and following mining.

The applicant suggests (page 3-33 and 3-36 PAP) that the operational and post mining monitoring programs will provide adequate protection of the hydrologic balance.

4.2 Evaluation of Compliance

A Cumulative Hydrologic Impact Assessment (CHIA) has been prepared for the Cottonwood Creek drainage basin and is summarized in Attachment A of this document. The conclusion of this CHIA and the requirements of UMC 817.41 Hydrologic Balance: General Requirements, will be summarized and discussed in relation to the Trail Mountain permit application in the following sections.

4.2.1 General

Three coal mines are active in the Cottonwood Creek drainage basin. They are:

Mine Name	Portal Location	Permit Area Acreage
Trail Mountain	SE1/4 Sec. 25 T17SR6E	773
Wilberg	NE1/4 Sec. 27 T17SR7E	9,500
Des-Bee-Dove	SW1/4 Sec. 26 T17SR7E	2,760

The Deer Creek mine, which overlies the northern portion of the Wilberg mine, is considered part of the Huntington Creek drainage basin.

The relative impacts of each mine are discussed in the CHIA for the Cottonwood Creek drainage basin. Of the three mines described above, Trail Mountain encompasses the smallest disturbance and intercepts approximately 10 gpm of ground water. Water is imported to the mine from Cottonwood Creek for dust control. The Wilberg mine, the largest of the three, intercepts approximately 314 gpm and the Des-Bee-Dove mine intercepts approximately 10 gpm.

4.2.2 Ground-water Impacts

There are no regional aquifers in this coal mining area of Utah. The aquifers and impacts to them are localized. The applicant's spring inventory has resulted in the identification and collection of data from ten springs, seeps, and developed stockponds within three miles of the permit area (Figure 7-1 of the PAP). The four ponds identified in the inventory are sustained by a combination of both surface and ground water. All water sources are located beyond the limits of the affected area. Additional data are collected where ground water intercepts the working face of the mine.

The data collected by the applicant and that available from published sources (Lines, 1984; Davis and Doehling, 1977; Price and Waddell, 1973) indicate that the existing ground-water system is a series of discontinuous, perched aquifers recharged by snowmelt along the higher plateaus. No high yielding zones have been encountered. The sources appear to dry up as mining progresses further downdip. Geologic data indicate that there are no faults or continuous fractures in the immediate vicinity of the Trail Mountain mine. Hydrologic communication between the various aquifers and the mine workings is limited to seepage from more permeable zones via discontinuous fractures, roof bolts, and intercepted faces. Although the data are not conclusive, dewatering of the overlying aquifers and springs by the Trail Mountain mine has been and should continue to be minimal.

Spring flow is highly variable and much of this variation is attributable to changes in annual precipitation, particularly snowmelt. Decreased flow in the springs can be correlated to the occurrence of dry years.

The response to subsidence of various strata overlying the Trail Mountain mining operation is a critical concern to impacts to ground-water quantity and quality. Subsidence of the overlying land surface is expected to occur at the Trail Mountain mine. Because of their respective distances from the underground workings (greater than 2,000 feet horizontal and greater than 1,500 feet vertically), springflows will not be adversely impacted by subsidence. These springs appear to receive recharge from snowmelt along the plateaus to the west of the mine workings and discharge from strata immediately below and to the east of these recharge sources. Subsidence due to Trail Mountain's operations should not impact this flow path. However, subsidence will affect the aquifers immediately overlying the Trail Mountain mine. Subsidence-related fracturing of overburden strata can increase the vertical permeability and enhance hydrologic communication between the locally perched aquifers. The result will be commingling of aquifers and possibly the creation of new springs. It is important to note that premining communication does exist, hence water quality impacts due to commingling will be minimal. Water quantity impacts to these perched aquifers will be restricted to the

translocation of water from one zone to another or to the surface. Given the ground-water system at the site, the redistribution of recharge and discharge immediately above the mine workings will not adversely impact the hydrologic balance.

4.2.3 Surface-Water Impacts

The primary impact on surface waters by the Trail Mountain mine operations is the discharge of surface water from the North Fork of Cottonwood Creek to the bathhouse for shower and culinary purposes and to the underground workings for dust control. The amount of surface water diverted amounts to 4,040 gpd (6.25×10^{-3} cfs) or approximately 0.74 percent of the mean daily flow as recorded by the USGS gaging data (Appendix 7-24 of the PAP). Such a volume of water lost to the surface-water system will have minimal impact to the hydrologic balance. Secondary during-mining impacts include the impounding of approximately 23 acres or 0.2 percent of the Cottonwood Creek watershed for sediment control at Trail Mountain. The Trail Mountain mine sediment pond has discharged once (August 24, 1983) in three years of record. Given the frequency and quantity of historical discharges, it is not likely that there will be any impact to the surface-water system due to NPDES discharges.

Following reclamation, there will be some impact to the surface-water quality of Cottonwood Creek. The applicant proposes to re-establish the banks and bed of the reconstructed channel. The channel bed will be incised onto bedrock and the channel banks will be riprapped. The disturbance due to construction will yield sediment to the surface-water system until the reconstructed channel is established. The applicant proposes to minimize this impact by reconstructing the channel onto its original bedrock floor. Construction will take place during the low flow months, which will minimize the probability of a high runoff event causing aggravated erosion. There is no practical technology available to reclaim the stream channel without temporarily contributing sediment to the streamflow. Mining-related increases in dissolved or suspended solids are not expected to degrade or preclude anticipated uses downstream of the Trail Mountain mine.

4.3 Conditions

None.

V. EXPLOSIVES

5.1 Existing Environment and Applicant's Proposal

Use of explosives at the Trail Mountain minesite is limited to minor use underground and during construction in the facilities area (see page 3-1 in Appendix 3 of the PAP). Due to the use of explosives on the surface, the applicant must meet the requirements of UMC 817.61 to UMC 817.68. At the facilities area, explosives have been used or will be used for fracturing of large boulders, excavating, and installation of power line poles.

All blasting is done under the supervision of a certified blaster and is conducted to meet the requirements of Utah Permanent Regulatory Program and the requirements of the Mine Safety and Health Administration, Department of Labor.

Due to the varied use of blasting on the site, it is not possible to define a specific blasting pattern. Irregular rock outcrops may require a blasting technique quite different than an irregular boulder in the spoil material. Appendix 3-1 of the PAP generally describes the blasting operation and shows a typical face and hole pattern.

5.2 Evaluation of Compliance UMC 817.61 Use of Explosives: General

Requirements The applicant has stated that compliance with all Federal and State laws will be achieved. In addition, blasting will be conducted by a certified blaster. The applicant has stated that this certification will be in accordance with 30 CFR 850 and applicable regulations of the State of Utah Industrial Commission. The applicant is in compliance with this section of the regulations.

UMC 817.62 Use of Explosives: Preblasting Survey

Other than those owned by the applicant, there are no structures located within one-half mile of the permit area. It is expected that UP&L will be installing a ventilation fan at the Cottonwood Portal at some time in the near future. This regulatory requirement does not apply.

UMC 817.65 Use of Explosives: Surface Blasting Requirements

Currently, there are no existing dwellings or structures within one-half mile of the area which could be affected by surface blasting. Therefore, part (a) of this section does not apply.

The applicant has stated that blasting will occur between sunrise and sunset. The applicant is in compliance with part (b) of this section of the regulations.

Information has been provided concerning the warning and all-clear signals which will be used during blasting operations. Therefore, the applicant is in compliance with part (c) of this section of the regulations.

Access to the site will be controlled until the authorized personnel have determined that no hazards exist as a result of blasting. The applicant is in compliance with part (d) of this section of the regulations.

Airblast is to be controlled so as not to exceed 130 decibels linear peak at any man-made structure or dwelling within one-half mile of the permit area. In addition, there are no structures or dwellings within one-half mile of the permit area other than those owned by the mining company. The applicant is in compliance with part (e) of this section of the regulations.

Blasting will not occur within 1,000 feet of any dwellings, or within 500 feet of any disposal wells, petroleum or gas-storage facilities, municipal waste storage facilities, fluid-transmission pipelines, gas or oil collection lines, or water and sewage lines other than those used by the mining operation. The applicant is in compliance with part (f) of this section of the regulations.

Specific plans have not been provided showing how flyrock will be controlled. However, the applicant has made a general statement of commitment to prevent injury to persons and damage to public or private property. Given the uncertain and limited nature of blasting operations, this commitment is sufficient. The applicant is in compliance with parts (g) and (h) of this section of the regulations.

Specific plans have been provided showing that ground vibration will be controlled. The requirements of the one inch per second ground vibration limit will be met. The applicant has provided a statement of compliance with the scaled distance formula as described in part (1) of this section of the regulations. The applicant is in compliance with this section of the regulations.

UMC 817.67 Use of Explosives: Seismographic Measurements

Since the applicant has committed to using the scaled distance formula for control of ground vibration, seismographic measurements are not required.

UMC 817.68 Use of Explosives: Records of Blasting Operations The applicant has provided a sample blasting record which shows that all information required by this part will be recorded. The applicant is in compliance with this section of the regulations.

5.3 Conditions

None

VI. MISCELLANEOUS COMPLIANCE

The miscellaneous compliance sections of the permit application (UMC 817.11 Signs and Markers; UMC 817.131-132 Cessation of Operations: Temporary and Permanent; UMC 817.180 Other Transportation Facilities; and UMC 817.181 Support Facilities and Utility Installations) have been reviewed and found to be in compliance with the performance standards for these regulations.

Also reviewed were the requirements of UMC 782.13 and .14 concerning identification of interests and compliance information. The Trail Mountain Coal Company was identified as the applicant and the Natomas Coal Company as the principal shareholder. Although previous correspondence had indicated otherwise, the Diamond Shamrock Coal Company was not identified in the compliance and interests sections at all. It has since been determined that although Trail Mountain and Natomas Coal Companies are the immediate interest holders in the mine, the Diamond Shamrock Coal Company may have de facto control over the Trail Mountain mine operations. Therefore, Diamond Shamrock Coal Company could be considered as a "principal shareholder of the applicant" within the meaning of UMC 782.13(b)(1).

Research by the Albuquerque Field Office of OSM indicates that there are no prior violations of applicable law related to the Diamond Shamrock Coal Company.

6.1 Existing Environment and Applicant's Proposal

UMC 817.59 Coal Recovery

The Trail Mountain mine is located in the Wasatch Plateau coal field, geologically in the Mesaverde Group. In the mine lease area, the Mesaverde Group comprises, in ascending order, the Starpoint Sandstone, the Blackhawk Formation, and the Price River Formation. Overlying this group is the North Horn Formation of the Wasatch group. The coal seam to be mined is located in the Blackhawk Formation along with several other seams. These seams are in ascending order the Hiawatha, Upper Hiawatha, Cottonwood, Blind Canyon, Bear Canyon, Upper Bear Canyon, and the Upper Grimes Wash.

The mining operation is located in the Hiawatha seam. This seam varies in thickness throughout the lease area from four to eight feet. Within the lease tract, development of the operation is almost complete. The mains have been driven to the southern boundary of the lease area, and the west panels have for the most part been developed and in some areas retreat mined. The east panels have not yet been developed. The applicant has proposed a mine layout in the Hiawatha seam to maximize recovery given the constraints of the already developed mains and panels, and the the requirement to leave a coal barrier along the outcrop and lease boundaries. In addition, coal is not being recovered in the east panels by retreat mining methods. This coal is being left to support the overlying steep hillside to prevent slope stability problems. The amount of coal to be recovered by the operation is shown in Table 3-1, page 3-17A of the PAP. The overall recovery by the operation in the Hiawatha seam is 65 percent.

Initial mining of the lower seam generally precludes mining in any upper seams. Since the Hiawatha seam is the lowest coal seam in the Blackhawk Formation, historic and modern mining operations preclude recovery of coal in the upper seams. However, according to two studies by the Department of the Interior (see page 3-11 of the PAP), these upper seams are not mineable due to their highly lenticular, thin and discontinuous nature. Only small areas of the lease tract are currently undisturbed, and coal located above the Hiawatha could not be economically recovered due to the limited areal extent of the remaining reserves.

6.2 Evaluation of Compliance

The applicant has proposed a plan which maximizes the recovery of the economically recoverable coal in the lease tract. The Hiawatha target seam will be recovered to the maximum extent possible given the constraints associated with retention of barrier pillars and protection of the environment. The application is in compliance with the requirements of UMC 817.59. The Bureau of Land Management issued approval for the Resource Recovery and Protection Plan on April 18, 1984.

6.3 Conditions

None.

VII. UNDERGROUND COAL DEVELOPMENT AND COAL PROCESSING WORK

7.1 Existing Environment and Applicant's Proposal

The applicant has a small amount of coal processing waste located in the facilities area near the tipple. Upon completion of mining, the applicant has proposed that this material be disposed of in the mine (see page 6, Appendix 9 of the PAP). Provisions have been made in the bond estimate for haulage of the material underground using a low-profile Jeffry. This piece of equipment meets the requirements of MSHA for work underground (see page 6-A, Appendix 9 of the PAP). With this type of disposal method the requirements of these sections are not applicable, except as relates to protection of ground-water quality. The applicant notes that since minimal ground water enters the mine, no significant impacts are anticipated. See the ground-water section (Chapter III) of this document for additional information.

7.2 Evaluation of Compliance

UMC 817.71-74 Disposal of Underground Development Waste and Excess Spoil

The applicant does not have any plans for disposal of these types of waste material on the surface. Therefore, the requirements of these regulations do not apply.

UMC 817.81-85 Coal Processing Waste

The applicant is not proposing disposal of coal waste in a manner which is regulated by these sections. See Section UMC 817.88, Coal Processing Waste: Return to Underground Workings.

UMC 817.86 Coal Processing Waste: Burning

The applicant has provided specific plans for extinguishing any fires that might develop in the coal waste area and in other areas of the surface facilities operation. This plan is described starting on page 3-21 of the PAP. Permit approval will serve as OSM approval of the plan. Telephone conversation from OSM to Mr. Bill Denning of MSHA indicated that MSHA does not require approval of fire extinguishing plans for coal processing waste piles until a fire is active and a mitigation plan is submitted. The applicant is in compliance with this section of the regulations.

UMC 817.87 Coal Processing Waste: Burned Waste Utilization

The applicant has not proposed any activities which would be regulated by this part.

UMC 817.88 Coal Processing Waste: Return to Underground Workings

As part of the reclamation plan, the applicant is proposing to dispose of coal waste material (not produced by processing of coal) underground. Telephone conversation with John Bishop of MSHA District 9, indicates that MSHA has been in contact with the applicant concerning methods for disposal of these coal wastes underground. The applicant was advised to submit a disposal plan to MSHA for approval prior to reclamation.

UMC 817.91-93 Coal Processing Waste: Dams and Embankments

The applicant is not proposing disposal of any coal wastes in dams or embankments. Therefore, the requirements of these regulations do not apply.

7.3 Conditions

Within 60 days of permit approval the operator shall submit to MSHA a plan for disposal of coal wastes underground as proposed in the permit application, and shall implement the plan upon approval by MSHA. Disposal will take place only in the fee coal areas of the mine.

VIII. PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES

8.1 Existing Environment and Applicant's Proposal

Terrestrial vertebrate and aquatic invertebrate species inhabiting the mine permit area and vicinity are typical for this region of the Wasatch Plateau. The mine permit area's wildlife resources are described in Chapter X and Appendix 10 of the PAP.

Several game and high-interest terrestrial species inhabit the general vicinity of the permit area. Mule deer is the most prominent big-game species. Much of the land surrounding the mine permit area is classified by the UDWR as high-priority or critical mule deer winter range. However, the mine permit area and mine-related surface disturbances do not occur within high priority or critical mule deer winter range. Portions of the Trail Mountain access road do traverse critical and high priority mule deer winter range along Cottonwood Creek. This access road is a County road which was established prior to the promulgation of SMCRA. The potential for mule deer road-kills along this road and the applicant's proposed mitigation plan is discussed below.

Cliffs within and near the permit area represent potentially valuable cliff-nesting habitat for several species of raptors (e.g., golden eagle, red-tailed hawk, and prairie falcon). Wooded habitat within the permit area also provides nest sites for tree-nesting species such as goshawk, Cooper's hawk, sharp-shinned hawk, red-tailed hawk, American kestrel, and screech owl. The bald eagle is a winter visitor in the area.

No fish species occur in North Cottonwood Creek in the vicinity of the mine; however, the lower portion of Cottonwood Creek, below its confluence with Straight Canyon Creek, does support trout and is designated as a Class 3 fishery. Cottonwood Creek is also a tributary to the Colorado River.

The applicant's plan for protection of fish and wildlife is presented on pages 10-61 to 10-67 and in Appendices 7 and 10 of the PAP. The applicant has committed to educating its employees on the need to avoid harassing wildlife, especially during critical life history periods. In addition, mine employees will be informed of the potential for mule deer/ vehicle collisions along the Cottonwood Creek Road. The applicant has agreed to monitor deer road-kills, in conjunction with the UDWR and USFWS, along the access road to and within the mine permit area. Deer road-kills will be reported to the UDWR and USFWS, and if any problem areas are identified, the applicant will consult with these agencies to determine appropriate mitigation measures. To reduce the potential for deer/vehicle collisions, the applicant has committed to posting signs requiring reduced speed limits (from November 1 to May 15) along the access road from Highway 10 to the minesite.

Other commitments made by the applicant (pp. 10-61 and 10-62 of the PAP) include: (1) monitoring and notifying the appropriate regulatory authority of the occurrence of moose, threatened and endangered species, and nesting raptors on the mine permit area, (2) establishment and posting of a UDOGM

approved buffer zone in the vicinity of the Cottonwood Creek culvert, (3) prohibiting off-road vehicle use within the permit area, and (4) monitoring benthic macroinvertebrates in Cottonwood Creek above and below the mine disturbance area to check the effectiveness of sediment control measures (Appendix 7-13 and 7-13.1 of the PAP). Benthic macroinvertebrates will be monitored quarterly in conjunction with the hydrology monitoring program. Macroinvertebrate data will be reported to the regulatory authority on a yearly basis.

The 12 KV line that serves the Trail Mountain mine has been determined by the USFWS to be raptor safe (November 10, 1982 letter in the concurrences section of the decision document). The power poles along this line have an armless configuration that prevents perching by raptors.

Following cessation of mining, the applicant will restore the Cottonwood Creek stream channel and recontour and revegetate disturbed sites. Plant species selection was based on the establishment of wildlife habitat as the principal postmining land use. Details of the revegetation plan are provided in Appendix 9 of the PAP.

8.2 Evaluation of Compliance

UMC 817.97 Protection of Fish, Wildlife, and Related Environmental Values

Surface disturbances associated with the Trail Mountain mine approximate 8.8 acres. A small portion of this disturbance has occurred in riparian habitat along Cottonwood Creek. All disturbed areas will remain for the life of the mine. Although a small portion of the riparian habitat has been disturbed by construction of the stream culvert, the County road has long been the major factor deterring wildlife use of the riparian habitat since before the mine's establishment. The County road which provides access to the permit area runs along the easternmost edge of both the disturbed and undisturbed riparian habitat. The current mining operation provides some mitigation of riparian disturbance by significantly reducing sediment load downstream from the mining operations as compared to pre-law sediment loads. Because of the limited areal extent of these disturbances, wildlife impacts resulting from loss of habitat will remain relatively minor.

None of the areas affected by the mine represent any critical habitats for threatened or endangered wildlife species. The bald eagle is a winter visitor to the region but will not be affected by mining activities. Since the mine withdraws water from Cottonwood Creek (4,040 gallons/day; see TA Section 4.2.3), there is a slight potential that populations of the Colorado squawfish and humpback chub in the Colorado River could be affected by reduced flows to the Colorado River. The U.S. Fish and Wildlife Service has found that "the issuance of a permit to allow continued operation of the Trail Mountain mine is not likely to jeopardize the continued existence of the Colorado squawfish..." or the humpback chub provided that the applicant contribute \$70 (based upon stream depletion of 4.53 acre feet per year) to the Fish and Wildlife Service fund for the conservation and recovery of the endangered Colorado River fishes. The applicant responded by forwarding a check for \$70 to the U.S. Fish and Wildlife Service on May 9, 1984.

Mine-associated wildlife impacts, other than direct loss of habitat, include human harassment of all wildlife, mule deer road-kills, and degradation of water quality in Cottonwood Creek. The effects of human harassment on wildlife, either inadvertent or purposeful, should be considered from a cumulative standpoint since at least three other mines are currently operating along the southern end of East Mountain. However, since premining baseline data for wildlife populations in the area are lacking, these effects are extremely difficult to quantify. At a minimum, mining activities have and will likely continue to preclude raptor nesting activity in the vicinity of the mine facilities. The potential for mule deer road-kills is greatest during the winter months when mule deer congregate in high-priority or critical winter range traversed by the Trail Mountain access/haul road. However, unless a particularly hazardous area is identified by UDWR monitoring, this impact is not expected to be significant.

The applicant has complied with the requirements of this section.

8.3 Conditions

None.

IX. BACKFILLING AND GRADING

9.1 Existing Environment and Applicant's Proposal

Backfilling and grading of the site will commence after reclamation sediment control structures have been constructed, and upon completion of removal of facilities, coal waste material, the removal of the sediment pond, and closure of the portals. The backfilling and grading plan generally consists of the removal of material used to construct the bench area and cover the culvert used to divert Cottonwood Creek and the tributary which crosses the facilities area, and placement of that material at its approximate original location along the west slopes (Appendix 9, pages 7-9). Currently the west slopes have rock cuts which range in height from 34 feet to 50 feet and are located in the Starpoint Sandstone and the Blackhawk Formation. The reclaimed fill slopes will be constructed at 25 to 30 degrees and a 15 to 20 foot exposed slope face will remain after backfilling. This is permissible under UMC 817.101 (b)(8). In addition, portions of the Starpoint Sandstone will remain as mid-slope outcrops. The backfilling and grading plan is an optimization of the use of the available spoil material to cover as much of the rock cuts as is feasible yet not create a fill slope that is excessively steep. To reduce the slope on the fill, it would be necessary to either expose more highwall or to use more fill material. The applicant has stated that the latter option is not feasible due to the lack of additional fill at the site.

The applicant's proposal requires the retention of several sections of rock and placement of fill on steep slopes. As such the stability of these slopes is critical. The applicant has provided stability analyses in the PAP (Appendix 2) showing that the postmining fill slopes and rock cuts will be

stable. The method used in the stability analysis for the fill and the cut in the Blackhawk Formation was the Modified Bishop method using the STABL2 Computer Program developed by Purdue University. The applicant has stated that the use of this method for the cut slope in the Blackhawk Formation was justified because of the closely spaced jointing of the rock units relative to the cut height and lack of continuous planes or discontinuities which would promote a plane sliding or block failure. The program generates 100 potential failure surfaces and provides graphical output of the 10 most critical slopes. The fill slopes and the cut slopes in the Blackhawk Formation were found to have safety factors greater than 1.3 in the existing rock cuts, and greater than 2.0 in the postmine rock cuts. The fill slopes are expected to have safety factors greater than 2.03.

In their analysis, the applicant has determined that the rock cuts in the Starpoint Sandstone are stable due to the massive characteristics of that strata. The applicant adds that the bedding plane attitudes are not conducive to wedge or toppling failure which would be the expected mode of failure for this strata.

To stabilize the slopes with respect to runoff, the applicant has proposed the use of contour trenching. The Surface-Water section (Chapter II) of this document discusses the issues surrounding the use of these types of structures for runoff control and sediment control.

Prior to backfilling of the slopes, the applicant is proposing to underground disposal of all coal waste, coal material and sediment from the sediment pond. Based upon laboratory analyses the applicant indicates that certain cut-and-fill material might be unsuitable as a growth medium due to high EC and/or SAR levels. This unsuitable material will be buried under four feet of non-toxic fill after grading. Further discussion of this topic can be found in Section 9.2, UMC 817.103 of this document.

No undisturbed areas will be affected during this permit term. The applicant has committed to temporarily revegetating all disturbed areas not required for mine operation. Final reclamation of the minesite is scheduled to begin in 1986 (Table 3-2) following cessation of mining.

9.2 Evaluation of Compliance

UMC 817.99 Slides and Other Damage

The applicant has provided a specific plan for reporting of slides and other damage to the regulatory authority (see page 17-C of the PAP). The applicant is in compliance with this section.

UMC 817.101 Backfilling and Grading: General Requirements

The applicant has proposed a backfilling and grading plan which will return the facilities area to a stable landform which will resemble the premining topography. The stability factors for both fill areas and rock cuts as determined by the applicant were found by the regulatory authority to be suitable. Engineering aspects and reclamation design as submitted were also found to be suitable.

The applicant is in compliance with this section of the regulations.

UMC 817.103 Backfilling and Grading: Covering Coal and Acid and Toxic-Forming Materials

The applicant has committed to bury coal waste piles in the underground operation during reclamation. In addition, the applicant will scrape the surface of the spoils on which the pile was located as well as the spoil surface around coal handling facilities to eliminate potential coal fines contamination.

The applicant has submitted laboratory analysis for eight sets of spoil samples (46 individual samples, Appendix 9) taken on the disturbed area. Analyses show that existing spoil contains moderate to high EC and SAR levels at various depths. Such spoil would not be uniformly suitable as a seedbed material. However, these samples were taken in a former salt storage area used by the former mine owners (The Fedderholf Group), and alongside the road where roadside salt deposits tend to accumulate. Reference areas and nearby vegetation indicate that the high EC and SAR levels are elevated, but not, on average significantly so.

The regulatory authority has required that the removal and redistribution of on-site materials during backfilling and grading result in maximum electroconductivity values of eight mmhos/cm in the upper six inches, and 16 mmhos/cm in the underlying 18 inches, so that salinity in the upper two feet of the regraded, seeded surface will be limited. Materials approximating these limits will be included in the proposed test plots to confirm feasibility of reclamation success.

The applicant is in compliance with requirements of this section.

UMC 817.106 Regrading or Stabilizing Rills and Gullies

The applicant has provided a specific plan for monitoring and regrading of rills and gullies as required by this part (see page 17-C of the PAP).

The applicant is in compliance with this section of the regulations.

9.3 Conditions

None.

X. SUBSIDENCE CONTROL PLAN

10.1 Existing Environment and Applicant's Proposal

Description of Operations

The Trail Mountain mine is a room and pillar operation using continuous miners for coal extraction. The seam which will be recovered is the Hiawatha seam which ranges from 4 to 8 feet thick in the mine area. The operation is laid out with one set of mains running in a north-south direction with panel development east and west of the mains (see Figure 3-6, page 3-12, in the PAP). The east panels extend towards the coal outcrop under the cliffs formed by sandstone layers in the overlying strata. The west panels have been driven into deeper coal due to the topographic rise above the mine and because the strata dip three to five degrees to the southwest. Overburden thickness ranges from zero feet at the outcrop to 1,920 feet (see the Overburden Isopach Map, page 6-8, in the PAP). Once panel development is complete, pillar extraction will occur in the west panels.

Geologic Setting

The Hiawatha coal seam is located in the lower portion of the Blackhawk Formation, directly above the Starpoint Sandstone which is a marker bed between the Blackhawk and the Mancos Shale. Approximately 200 feet above the Hiawatha seam is the Blind Canyon seam and 750 feet above this seam is located the Castlegate Sandstone. This massive sandstone is almost 200 feet thick in this area and is a prominent steep slope former. Above this is the Price River Formation which is sandstone and interbedded shale and conglomerate and is approximately 350 feet thick. Above this is the North Horn Formation which is interbedded shales and sandstones. All of the above noted formations are part of the Mesaverde Group. The geology of the mine plan area is described in the PAP in Chapter 6. Additional discussion can be found in the introductory section of this document.

Renewable Resources and Structures

Above the mine are renewable resource lands (see page 3-55 in the PAP). Light grazing and recreational use such as hunting occurs above the mine area. These are limited due to the existence of steep slope areas. No structures have been identified above the mine e.g., oil and gas wells, pipelines, and power lines. Springs exist in the vicinity of the mine area. The closest spring is located almost half a mile to the west of the permit boundary. The area above the mine also provides wildlife habitat.

Subsidence Control Plan

The applicant's subsidence control plan is to obtain even settling of the land surface over the west panels by maximum coal extraction and to retain stable pillars under the steep slope area to maintain the integrity of the slope (see

Section 3.4.8.2, page 3-56 in the PAP). Using prediction techniques described by Orchard (1973) and based upon observation in the adjacent UP&L Deer Creek mine (see pages 12-7 to 12-10 to the PAP), the applicant predicts that subsidence will vary from zero to 2.63 feet in the mine area over the west panels. The applicant's approach considers a panel width of 800 feet in the worst-case situation. This condition occurs in an area where the 60-foot chain pillar is expected to be crushed. In other areas of the mine, the chain pillars have been designed to be permanent and are 110 to 170 feet thick. Therefore, the maximum amount of subsidence estimated at 2.6 feet is representative. Retention of these permanent chain pillars will not allow for a continuous subsidence trough over the mine area. The applicant does not expect this to be a problem given the topography and use of the surface lands. Given the depth of cover and the existence of the massive sandstone layer which would tend to reduce the effects of subsidence, the applicant does not expect cracking at the surface to be a significant problem in the area over the west mains.

To control subsidence on the steep slope on the eastern edge of the mine area, the applicant is proposing to leave a 325 foot boundary of unmined coal between the coal outcrop and mining (page 12-11 of the PAP). The depth of cover over the eastern edge of mining at this boundary ranges from 240 to 325 feet depending upon the slope of the hillside. From the 325 foot boundary to the mains, a distance ranging from approximately 550 feet to 1,250 feet, pillars will be left on 80 by 80 foot centers with an entry width of 20 feet. The maximum thickness of overburden in this area is approximately 1,200 feet.

Also located over the permit area are steep slopes formed by the Castlegate Sandstone. The cliff area extends across the top of the mine mains. In other areas in Utah, mining under a steep slope edge has resulted in slope failures along the slope. At the Trail Mountain mine, the location of the slope over the mains will minimize subsidence in this area. However, it can be expected that some subsidence might occur due to the angle of draw effects and subsidence over the west panels. If failure of the slope did occur, it would most likely be a slump. Toppling failure is possible. Toppling naturally occurs as a result of normal weathering processes in the vicinity of the mine, as is evidenced by large talus blocks located at the base of the slopes. For the most part the steep slope is located at the edge of the subsidence trough. The effects of subsidence will be to tilt the slope into the hillside which would reduce the possibility of toppling failure. The dip of the strata into the hillside also reduces the possibility of this type of failure. The effect of the subsidence is uncertain due to the lack of information on the stability of the slope edge and the amount of subsidence which might occur.

Subsidence Monitoring

The monitoring plan proposed by the applicant consists of installation of survey monuments using conventional survey methods and monitoring of the monuments by surveying or photogrammetric methods. The subsidence monitoring plan is described on pages 12-12 to 12-14. Stations are to be established both parallel and perpendicular to the panel development. The exact spacing and location of the stations have not been identified nor have stations which will be monitored conventionally or by photogrammetric methods, previously

identified. Figure 12-2 does not show any subsidence monitoring points located over the proposed workings. In addition to the above described surveying, visual inspections will be conducted to identify subsidence effects such as fractures, cracks, potholes, etc. Subsidence monitoring is to be conducted in the fall of each year and monitoring reports are to be submitted annually.

Public Notice

Surface owners which might be affected by subsidence will receive a mining schedule showing the area where mining is to take place, and the date of the activity (see Appendix 12-5). Information will be provided on the time of notification to the land owner and the measures to be taken to prevent or control adverse surface effects.

Surface Owner Protection

The applicant has proposed to conduct mining operations in a manner which will prevent the subsidence from causing material damage. Therefore, the company does not intend to take out renewable insurance covering subsidence damage. The applicant has stated that there are no structures which could be damaged by subsidence; therefore insurance for structures is not needed. The applicant has stated that trails which may be effected by subsidence will be repaired.

10.2 Evaluation of Compliance

UMC 817.121 Subsidence Control: General Requirements

The applicant has prepared a subsidence control plan showing how the proposed operation will prevent or control subsidence. Subsidence effects on the steep hill sides will be controlled by leaving a 325-foot wide unmined barrier and by first mining in areas in the east mains. The pillars which will be left will be 60 feet by 60 feet. Based upon information presented by Wilson (1972), this size of pillar can be considered stable over the long-term with the depth of cover in this area and an entry width of 20 feet. The possibility exists that mining could affect the stability of the Castlegate Sandstone steep slopes. However, state of the art subsidence analysis technology does not permit full quantification of these effects. Continued monitoring will identify the potential significance of this possibility.

A subsidence monitoring program has been proposed by the applicant which incorporated both conventional and photogrammetric survey methods, and visual inspections. The conventional method is proposed to be used only when the photogrammetric surveys are not conducted. The applicant has identified the location of the survey monuments over the mine, and committed to reporting the results of subsidence surveys to the regulatory authority within six months of survey completion.

The applicant is in compliance with this section of the regulations.

UMC 817.122 Subsidence Control Plan: Public Notice

The applicant has provided for public notice to all affected landowners above the underground workings. The notification will identify the areas in which mining will take place and the planned date for mining. Measures to be taken to prevent or control adverse surface effects to the landowners will be incorporated into the public notice. The applicant is in compliance with UMC 817.122.

UMC 817.124 Subsidence Control Plan: Surface Owner Protection

The applicant has proposed to mitigate impacts to trails. Information has not been provided on mitigation of slope failures which might occur. As mining progresses and additional information is obtained on subsidence impacts, if any, additional mitigation measures may be necessary. These will be determined by the applicant and approved by the regulatory authority on an annual basis .

Trails and slope failures have been identified as the only surface effects which may be applicable to this rule. The applicant is in compliance with UMC 817.124.

UMC 817.126 Subsidence Control: Buffer Zones

The applicant has provided for a 325-foot buffer between the coal seam outcrop and the areas where mining will commence. In addition, only limited mining will occur from this boundary to the mine mains. The applicant has not proposed any mining which will materially damage any water resources, structures, or aquifers.

The applicant is in compliance with this section of the regulations.

10.3 Conditions

None.

XI. REVEGETATION

11.1 Existing Environment and Applicant's Proposal

Pursuant to UMC 783.19 and 817.116, the applicant established two reference areas within the permit area representative of adjacent Riparian and Grassland-Shrub communities. These reference areas were approved by the regulatory authority (see Attachment B, Appendix 9, PAP). The applicant also made the commitment to the proper management of the area with inspection, maintenance, and re-seeding as needed throughout the duration of mining and reclamation. The disturbed area will be reclaimed to two vegetation community types, Grassland-Shrub and Riparian. Reclamation techniques differ to some

degree for each type. The area to be planted to the Grassland-Shrub community will be broadcast seeded following fertilization. A land imprinter will be pulled behind the dozer as a seedbed preparation treatment at the time of seeding. The planted slope will be mulched using erosion control mats. Containerized seedlings will be planted the following spring.

Fertilizer will be applied in the Riparian community as discussed in Section I. Topsoil of this document. The bulldozer will also be equipped with a disc to relieve surface compaction, prepare the seedbed, and incorporate the fertilizer. The seed will then be broadcast over the area with the spreader and the surface harrowed to cover the seed. The site will be mulched using erosion control matting and containerized stock planted the following spring.

Plant species selected for revegetation for both communities (Appendix 9, Tables 2 and 3) are either native to the area or are considered to be appropriate additions added to increase species diversity. Poa praetensis is the only introduced species scheduled for planting.

Test Plot Program (Appendix 9, pp. 18 through 30 of the PAP)

Test plots will be constructed at the northwest portion of the permit area. The objective of the test plots is to determine species best adapted to the seedbed material encountered on site.

The 0.3-acre test plot will be graded, contoured, and divided into two sections. Each section will be planted with a different seed mixture. Mixture I will be identical to that proposed for final revegetation of the Grassland-Shrub community. Mixture II will contain a variety of native and introduced species. Fertilizer and seed will be broadcast over the graded surface. The seedbed will be raked to incorporate the fertilizer into the soil and cover the seed. The plot will be mulched using erosion control mats. Containerized stock will be planted the following spring.

Test plots will be monitored on a yearly basis to evaluate revegetation success. Vegetation sampling methods will simulate those designed for reference areas. Soil samples will be taken and analyzed to evaluate chemical variations within the seedbed through time.

11.2 Evaluation of Compliance

Although difficult on the steeper slopes, revegetation is considered feasible. The applicant has committed to identifying and burying fill materials exhibiting high EC and SAR values. This will result in the return of the best quality fill to the surface following grading. The revegetation species proposed are appropriate for the climate conditions to be encountered. The planting mixtures proposed should be successful if adequate rainfall is received on site, erosion is controlled, and grading results in the proper burial of spoil material exhibiting high EC and SAR levels.

Canyon sweet-vetch (Hedysarum occidentale var. canone) has been observed and collected by Manti-LaSal National Forest personnel at the Trail Mountain mine inhabiting areas adjacent to the Cottonwood Canyon road within the Trail Mountain permit area. Hedysarum occidentale var. canone has been recommended as a threatened species by Dr. Stanley Welch of Brigham Young University. Canyon sweet-vetch appears to prolifically invade disturbed areas such as road cuts (Kunzler, Utah Division of Oil, Gas and Mining, personal communication, June, 1984).

Trail Mountain mine does not propose any additional surface disturbance for the life-of-mine. However, reclamation of the minesites could potentially destroy plants that have become established on disturbed areas such as cut and fill banks, stockpiles, or interim revegetated areas. These areas frequently require additional earthwork to blend the minesite into the natural landscape as required by UMC 817.101 and 817.103. As mitigation for potential impacts to populations of Canyon sweet-vetch, a survey of the areas to be redisturbed should be conducted to identify and record locations of individuals and populations. Such a survey must be performed before any redisturbance takes place.

UMC 817.111 Revegetation: General Requirements

The applicant has complied with the requirements of this section.

UMC 817.112 Revegetation: Use of Introduced Species

Poa praetensis is proposed for seeding in Appendix 9. This species is considered to be a naturalized species due to its wide geographic distribution and is therefore acceptable for planting.

UMC 817.113 Revegetation: Timing

The proposed schedule for revegetation conforms to accepted standards. Revegetation activities will be accomplished during recognized planting seasons. Seeding and mulching techniques are in accordance with standard accepted practices.

The applicant has proposed that 90 seedlings/acre total of woody plant species will be planted for the Riparian community in proportions equal to that found in the reference area. The application is in compliance with this section of the regulations.

UMC 817.114 Revegetation: Mulching and Other Soil Stabilizing Practices

The applicant has complied with the requirements of this section.

UMC 817.116 Revegetation: Standards for Success

The applicant has proposed acceptable methodologies for sampling cover, productivity, and density parameters on both communities to be reclaimed and their corresponding reference areas as presented in Appendix 9 of the PAP. Cover will be determined with a point-hit or ocular quadrat technique while density will be measured by means of the point-center-quarter method. Productivity will be determined with a double sampling technique involving clusters of five quadrats (one clipped, four estimated) at each sample point. Samples will be collected in each community and reference area until estimates to within 10 percent of the true mean can be determined with 90 percent confidence in the Grassland-Shrub community and 80 percent confidence in the Riparian community.

Testing will occur each of the last two years of the responsibility period and will involve a t-test of the means between reference and revegetated areas for each variable--cover, production, and density. The criteria for successful testing have been identified and are in accordance with the regulations. These criteria will ensure that revegetated areas have replaced cover, productivity and density of woody species to within 70 percent of that found on the reference areas with 90 percent confidence. Due to the postmining land use of wildlife habitat, this is an acceptable standard. With respect to the establishment and management of adequate reference areas, the application is in compliance.

UMC 817.117 Revegetation: Tree and Shrub Stocking for Forest Land

The applicant has complied with the requirements of this section.

11.3 Conditions

Before any site redisturbance takes place, the applicant must conduct a survey, under supervision of the regulatory authority, of the areas to be redisturbed. The survey shall identify and record locations of individuals and populations of Hedysarum occidentale var. canone (canyon sweet-vetch). If canyon sweet-vetch is found in the portions of the permit area to be redisturbed, the mine operators must develop a mitigation plan for regulatory authority approval before redisturbance takes place.

See additional condition identified by the U.S. Forest Service in Attachment A of the permit (Conditions).

XII. ROADS

12.1 Existing Environment and Applicant's Proposal

The Trail Mountain mine represents an existing operation established prior to enactment of the Surface Mining Control and Reclamation Act. The facilities are situated in a narrow canyon area that also accommodates a public road. Because of the topographically controlled, confined surface area, the mine is situated adjacent to the public road. This is a situation necessary for both facilities to operate and existed when the mine operation was approved under the interim permitting process.

Portions of the road which provides access to the mine are owned by the County, and the Forest Service with private right of way along the North Fork of Cottonwood Creek. The road is used by mine personnel and their private vehicles, coal trucks for haulage, and by the public for access to the upper canyon. Transportation and roads are discussed on page 3-9 of the permit application. Parking areas are maintained on the property south of the office buildings for mine employees. Surface structures and roads are presented on Figure 3-5 of the PAP. The applicant has not constructed any roads on the permit area. Graded access points over the stream diversion culvert have been constructed along the Forest Service/County road. These access points are essentially smooth graded areas to allow vehicles to drive off of the road and onto the mine parking area. These graded access points will be reclaimed upon removal of the Cottonwood Creek diversion culverts. Miscellaneous rights of way exist on the parking area to provide access to the scale house, water storage tank, generator house and portals. There are no constructed roads within the facilities area.

12.2 Evaluation of Compliance

UMC 817.150-176 Roads

The mine is situated adjacent to a public road. This is a pre-law existing situation necessary in the narrow canyon location. There are no constructed roads. The applicant has constructed graded access points over the stream culvert to the parking area from the Forest Service road. The application is in compliance.

12.3 Conditions

None.

XIII. ALLUVIAL VALLEY FLOORS

13.1 Existing Environment and Applicant's Proposal

The facilities of the Trail Mountain mine are situated in a narrow canyon with steep side and valley slopes. The canyon lacks topsoil and does not contain land, which could support agricultural activities. The canyons in which the surface facilities are located contain deposits of landslide material, slope wash, erosion debris from adjacent slopes, and alluvial material. The surface facility and mine permit area is in upland land forms, and is not located in an area where there is existing or potential agricultural activities.

13.2 Evaluation of Compliance

UMC 785.19 Underground Coal Mining Activities on Areas or Adjacent to Areas Including Alluvial Valley Floors in the Arid or Semiarid Areas of Utah

An assessment of materials contained in the application and visits by the Regulatory Authority to the site confirm that there are no alluvial valley floors in or adjacent to the permit area and underground disturbance of aquifers by mining will not affect surface-water use or downstream alluvial valley floors.

The applicant is in compliance with this section.

13.3 Conditions

None.

XIV. POSTMINING LAND USE

14.1 Existing Environment and Applicant's Proposal

Land use is discussed in Chapter IV of the PAP.

Premining use of the permit area was wildlife habitat, recreation, and livestock grazing. Livestock grazing is limited because of the predominance of rocky, rugged terrain in the mine plan area. Cattlemen and recreationalists use the road in Cottonwood Canyon for access to areas above the Trail Mountain mine.

The applicant intends to return the minesite to its premining land uses of wildlife habitat, livestock grazing, and recreation. Following cessation of mining, all facilities will be removed and disturbed areas will be recontoured to blend into the existing terrain. Revegetation will be implemented as described in Appendix 9 of the PAP. Vegetation will be re-established to be comparable to species diversity, cover, density, and productivity of the established reference areas.

14.2 Evaluation of Compliance

UMC 817.133 Postmining Land Use

The applicant has complied with the requirements of this section. See concurrence letters from the U.S. Forest Service and BLM.

14.3 Conditions

None.

XV. AIR RESOURCES

15.1 Existing Environment and Applicant's Proposal

The Trail Mountain mining operation has some effect on the air quality of Cottonwood Canyon. Dust production at the mine is the main contribution. The areas that are the highest producers of dust are coal haulage down canyon from the mine, coal handling, and surface winds over the disturbed area.

Several practices are incorporated at Trail Mountain mine to protect the air quality in the mine vicinity (page 11-5 of the PAP). Protection of the air quality is mainly accomplished by reduction of dust production by the mine operations. Practices used to reduce dust production are:

1. Periodic watering, scraping, and compaction of coal haulage road;
2. Wetting of coal during handling activities;
3. Keeping the size of the disturbed area to a minimum;
4. Revegetation of disturbed areas as soon as practicable (page 3-54 of the PAP).

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

15.2 Evaluation of Compliance of Proposal

UMC 817.95 Air Resources Protection

The applicant has addressed adequately all major topics of this section, and is in compliance with the regulation.

15.3 Conditions

None.

XVI. BONDING

16.1 Applicant's Proposal

The applicant has prepared and submitted to the regulatory authority a reclamation cost estimate for the purpose of obtaining a bond (UMC 784.13) (see Appendix 9, Tables 1 and 7). The costs include reclamation of lands disturbed by mining including coal handling, storage, and transporting within the facilities area. The applicant has identified one bonding increment. Cost estimates are based on the 1984 Means Cost Construction Data, 1983 Rental Rate Blue Book, and from Swains John Deere Farm Equipment (see the footnotes to Table 7 PAP).

16.2 Evaluation of Compliance

UMC 800.11 Requirements to File a Bond

- 1.a. The applicant has requested a permit term of five years.
- 1.b. The revegetation liability period pursuant to UMC 817.116 (b) shall be ten years because permit area annual precipitation is substantially less than 26 inches.

UMC 800.13 Regulatory Authority Responsibilities

The regulatory authority has analyzed the bond estimates and supporting calculations provided by the applicant. Costs were prepared by the applicant using standard cost estimating references. The references were up to date and were appropriately used in the estimate. Based upon the previous three years inflation trend obtained from the Robert Means Historical Cost Index for Utah, an inflation figure of 6.78 percent has been applied to the bond estimate through 1989. The applicant had applied a 1 percent figure for a two year period.

The applicant has added to the bond a 15 percent contingency fee and a two percent fee for obtaining a contractor, which would be assumed by the regulatory authority should contracting be required. The regulatory authority has applied a 10 percent contingency fee which includes administration and contracting related costs. Contractor's overhead and profit were applied to the labor costs in the regulatory authority review.

Hourly labor costs including contractor's overhead and profit, are as follows:

Laborer	\$21.95
Medium Equipment Operator	\$28.45
Crane Operator	\$29.10
Truck Driver	\$22.25
Foreman	\$31.35

The final surety estimate for the Trail Mountain mine is summarized as follows:

1. Surface Facility Removal	\$72,579
2. Earth Moving and Recontouring	\$84,207
3. Riprap	\$12,412
4. Revegetation	\$60,389
5. Miscellaneous*	<u>\$74,086</u>
Total	\$303,673
Add 10 percent contingency	<u>\$30,367</u>
Total 1984 dollars	\$334,040
Add an inflation factor of 6.78 percent over 5 year permit term.	
Total Surety Estimate	<u>\$463,711</u>

*Miscellaneous costs include all monitoring and maintenance related costs for successful reclamation establishment (Permit application, vol. 1, p. 3-76).

16.3 Conditions

None.

XVII. CULTURAL RESOURCES

17.1 Applicant's Proposal

Mining in the Trail Mountain mine area has occurred for over 40 years. In that time, surface disturbance (other than subsidence) has taken place. In 1979, Archaeological-Environmental Research Corporation (AERC) conducted a cultural resource inventory of Cottonwood Canyon, a portion of which overlaps the eastern boundary of the Trail Mountain mine. Five sites and four isolated occurrences were located in the canyon, all of which are outside the present mine plan boundary.

Most of the surface overlying the proposed mine working is unsurveyed for cultural remains. Subsidence projections by the company, based on type of mining (room and pillar - one seam), competence of and depth of overburden and historic subsidence studies in the area indicate that subsidence will be minimal in nature.

17.2 Evaluation of Compliance

30 CFR 779.12 General Environmental Resources Information

(b) No additional surface disturbance is proposed for the current permit term. No known prehistoric or historic sites, that are eligible for nomination to the National Register of Historic Places, are located in the permit area. Areas potentially impacted by subsidence will be monitored and surveyed for cultural resources if warranted by information on subsidence. No impacts to cultural resources are anticipated.

If monitoring and field investigations indicate that additional cultural resources studies are necessary, the applicant will be directed by the regulatory authority to proceed with the required studies.

17.3 Conditions

At such time that the Office of Surface Mining, in consultation with the Division of Oil, Gas and Mining and the State Historic Preservation Officer, determines that subsidence within the permit area may adversely affect known or unrecorded cultural sites, additional cultural resources studies may be required. This determination will be based on new subsidence or cultural resource information and clear justification will be presented to the applicant.

XVII. REFERENCES

1. Davis, F. D. and H. H. Doehling, 1977, "Coal Drilling at Trail Mountain, North Horn Mountain and John Peak Areas, Wasatch Plateau, Utah," Utah Geological and Mineral Survey, Bull. 112, 90 pp.
2. Lines, G. C., 1984, "Groundwater System and Possible Effects of Underground Coal Mining in the Trail Mountain Area," U.S. Geological Survey Open-File Report 84-067.
3. Price, D. and Waddell, 1973, "Selected Hydrologic Data in the Upper Colorado River Basin, Hydrologic Investigations Atlas HA-477," U.S. Geological Survey in cooperation with Arizona, Colorado, New Mexico, Utah, and Wyoming.
4. USLE (Universal Soil Loss Equation), 1957, From Smith D. D. and W. H. Wischmeier, "Factors Affecting Sheet and Rill Erosion," Trans. Am. Geophysical Union 38, 889-896.
5. U.S. Soil Conservation Service, 1972, "Engineering Manual for Conservation Practices; Chapter 2, Estimating Runoff," U.S. Department of Agriculture, SCS, Washington, D. C.
6. Utah State University, 1968, "Hydrologic Atlas of Utah," Office of Water Resources Research Project No. B-001-UTAH, November, 1968.

ATTACHMENT A
CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT
SUMMARY

ATTACHMENT A
Cumulative Hydrologic Impact Assessment Summary
Trail Mountain Mine

Surface Water Hydrology

The Trail Mountain Mine is located on the North Fork of Cottonwood Creek approximately 2.5 miles upstream of the confluence of Cottonwood Creek (North Fork) with the Straight Canyon tributary. Cottonwood Creek is a perennial stream entering the San Rafael River approximately 18 miles southeast of the mine. A spring, approximately two miles upstream from the mine surface facilities provides baseflow to the North Fork of Cottonwood Creek and creates perennial conditions in the reach adjacent to the mine permit boundary. Unnamed ephemeral drainages exist within the permit boundary.

Approximately 65 percent of the streamflow of Cottonwood Creek occurs during the April-June snowmelt runoff period. Average annual precipitation ranges from 17 inches at the Trail Mountain mine to over 30 inches per year at the plateau headwaters. The water is a calcium-bicarbonate type and reflects the influence of the carbonate rocks which cap the ridges and peaks in the basin. Total dissolved solids (TDS) concentrations range from 200 to 400 mg/L (milligrams per liter). Downstream of the cumulative impact area (CIA), water quality is degraded by natural runoff and irrigation return-flows which pass over Mancos Shale-derived soils. The gypsiferous Mancos Shale contributes substantial concentrations of calcium, sodium, magnesium, and sulfate to the surface water system. TDS concentrations in the San Rafael River, 30 miles southeast of the Trail Mountain mine, typically average from 2,000 to 4,000 mg/L. Mine discharge water within the general area is estimated to contain approximately 550 mg/L TDS, based on four years of data at the adjacent Wilberg Mine. The Trail Mountain mine discharges little water to Cottonwood Creek. The sediment pond at Trail Mountain has discharged to Cottonwood Creek only once in three years of record. Data indicates that this discharge was in response to a thunderstorm event.

Geologic Setting

The lower most stratum of importance in the area is the Masuk Shale Member of the Mancos Shale Formation, which outcrops downstream of the Trail Mountain mine. Above the Masuk Shale are: the Star Point Sandstone, the coal-bearing Blackhawk Formation, the Castlegate Sandstone, the Price River Formation, the North Horn Formation, and the Flagstaff Limestone. All but the Masuk Shale and the Flagstaff Limestone outcrop within the permit area boundary. No faults or igneous intrusions are known to exist within the permit boundary.

Ground-Water Hydrology

Ground water in the general area of the Trail Mountain mine occurs in the Blackhawk/Star Point aquifer system and in alluvial aquifer systems, as perched water. Although no springs have been identified within or immediately adjacent to the proposed permit area, many springs within the general area originate in the North Horn Formation of Tertiary age.

At present, ground water enters the Trail Mountain mine at flow rates of eight to ten gpm. The potential exists for more water to be encountered intermittently as mining operations continue and intercept fracture zones and saturated paleo-sandstone channels. The upper limit of potential future mine discharges (ground-water inflow less internal mine consumption) has been estimated to be approximately 125 gpm (gallons per minute). This value assumes that the unit area inflows occurring at the Wilberg mine, where the mine workings intercept numerous paleo-sandstone channels and faults, represent the worst-case mine inflows at the Trail Mountain mine. Given the geologic conditions in the area and the historical mine water inflow at Trail Mountain, such a value is considered a worst-case situation.

Ground water quality of springs can be characterized as a calcium-magnesium-bicarbonate type, and is similar to that of surface waters in the area. TDS concentrations range from 254 to 695 mg/L and consistently average 372 mg/L. Such values are similar to concentrations observed in the surface waters.

Mining operations have been in existence in the Cottonwood Creek CIA since the 1890's. All anticipated mining within the Cottonwood Creek CIA include: the Trail Mountain mine, the Wilberg mine and the Des-Bee-Dove mine.

Delineation of the Cumulative Impact Area

Surface Water

Below the confluence of Grimes Wash and Cottonwood Creek, stream discharges are of sufficient magnitude that it is unlikely that mining-related impacts can be detected. Therefore, the CIA for the assessment of material damage has been defined as the drainage area contributing to Cottonwood Creek above this location. All present and anticipated mining in this basin is located in the lower one-third of the basin.

Ground water

The lack of piezometric data in the various water-bearing units within the Cottonwood Creek basin does not allow precise determination of ground-water divides in the area. However, the assumption that the ground-water basin coincides with the surface-water basin is well within the limitations and accuracy of the data and assumptions inherent to this analysis. The Pleasant Valley, Joe's Valley, and Trail Canyon faults may act as conduits for interbasin movement of ground water into or out of Cottonwood Creek basin; however, there is little evidence to support this concept. The outcropping of the Masuk Shale within the downstream limits of the CIA, effectively limits the amount of ground water which could leave the basin as underflow. This is the single most important hydrogeologic control and allows delineation of the ground-water CIA.

Summary of Cumulative Hydrologic Impacts

The hydrologic impacts of present and future coal mining activity within Cottonwood Creek basin have been addressed both quantitatively and qualitatively. Quantitative assessments presented in this report focus primarily on surface water impacts which result from the discharge of intercepted ground water. This analysis utilizes average monthly water quality and discharge records from Cottonwood Creek and the Wilberg Mine in combination with anticipated future mine inflows to predict future quality and quantity impacts.

In the CHIA report, the Wilberg mine was used as the main basis of the analysis due to an extensive data base, the large volume of mine water inflow relative to the other general area mines and its greater area of disturbance.

Qualitative analysis of the effect of mine dewatering and subsidence on the ground-water system put particular emphasis on the potential for diminution of spring flows. However, CHIA primarily addressed the Wilberg mine. Since the Trail Mountain mine has no springs on or immediately adjacent to the proposed permit area, this impact was not relevant to the Trail Mountain mine.

Impacts to surface water quality of Cottonwood Creek are expected to gradually increase over the next 20 years as underground mining operations advance further beneath East Mountain and Trail Mountain. The primary impact is associated with the discharge of intercepted ground water which is expected to reach a maximum between the years 2000 and 2005. Impacts are quantified by flow-weighting the estimated TDS concentrations of the mine discharge water with that of the average monthly water quality and discharge of Cottonwood Creek. The maximum predicted impacts for this period indicates that the highest concentration of TDS is predicted to occur in the month of March, reaching 375 mg/L. This represents an increase of 53 mg/L over the background TDS concentration, or approximately 16.5 percent. This contrasts with the increase of over 1,500 mg/L TDS, resulting from irrigation return flows in the reach of Cottonwood Creek immediately downstream of the CIA.

The Utah Division of Health specifies a maximum recommended TDS concentration of 1,200 mg/L for agricultural use (irrigation and stock watering). TDS limitations for other uses are adjusted on a case-by-case basis. The U.S. Public Health Service provides guidelines for drinking water standards which recommend a maximum TDS concentration of 500 mg/L for primary standards and 1,000 mg/L for secondary standards. Additionally, the U.S. Environmental Protection Agency (EPA) has published recommended limits for various irrigation hazards and industrial uses.

As a result of all anticipated mining, a maximum increase of 53 mg/L in TDS in Cottonwood Creek (yielding a TDS value of 375 mg/L) will not degrade or preclude anticipated uses below the CIA. This is in contrast to the marked degradation which presently occurs downstream of the mined area due to irrigation activity on Mancos Shale soils. This activity increases TDS concentrations to levels which exceed the recommended limits for almost every use.

The maximum increase in the discharge of Cottonwood Creek can be estimated by assuming that all of the ground water which is intercepted by mining activities is "new" water to the basin (i.e., that which would not be present normally). This assumption is overly conservative but serves to define an upper limit on the magnitude of the potential increase.

Similarly, the maximum decrease in streamflow during the hydrogeologic resaturation period following the cessation of mining can be estimated. By assuming that the diminution of natural streamflow during this period is equal to the peak rate of mine dewatering (ground-water recharge and storage components), the upper limit of potential streamflow reduction can be estimated.

The greatest percent change occurs during the non-irrigation season, November through April. Changes to the average monthly flow of Cottonwood Creek during the growing season are less than five percent. Thus, even if changes to the ground-water system were as great as these conservative estimates indicate, the timing of the impacts within the yearly cycle is such that minimal impacts occur during the period of greatest demand, May through October. This is due to a combination of effects, including the natural hydrologic cycle, regulation of Joe's Valley Reservoir, and the anticipated amounts of future mine dewatering based on present inflow rates, basin characteristics, and seasonal effects.

After mining is completed, strata dewatered during the mining process will become resaturated. This will result in the loss of water discharged to the surface-water system during mining (approximately 4 cfs). This represents four percent of the mean daily flow rate of Cottonwood Creek. Seasonally, the largest percent depletion of discharge during mining will occur during the non-irrigation period, November through April, where average monthly flows may experience depletions of 20 to 30 percent. Since the Trail Mountain mine will intercept little ground water, insignificant base flow diminution will be attributable to the Trail Mountain mine.

Impacts Associated with Subsidence

No subsidence cracking or mass movement has been evident in the proposed permit area. In adjacent areas (the Deer Creek mine which drains to Huntington Canyon), subsidence effects have been limited to topographic modification in the form of a broad, swale-like trough. There are two factors which limit cracking and mass movement. First is the presence of the massive Castlegate Sandstone, which is resistant to caving and separates the mine workings from the major spring-bearing formations. Second is the presence of substantial thicknesses of clay shales in the overburden which tend to swell and seal internal tension cracks.

Where the Castlegate Sandstone outcrops or is absent, a greater potential exists for subsidence effects to alter the hydrologic balance of the area. Tension cracks have a greater opportunity to extend to the surface, thus rerouting surface and sub-surface flow into the mine workings. Topographic modification of surface features may result locally in increased erosion rates, areas of closed drainage or other undesirable surface effects. Risk of damage to the hydrologic system decreases in the direction of increasing overburden thickness.

Since there are no springs within or immediately adjacent to the proposed permit area, subsidence effects are not considered a potentially significant impact.

Finding

The Trail Mountain permit application, the Cottonwood Creek CHIA report, and the Trail Mountain technical analysis discussing the impacts of all anticipated mining on the hydrologic balance, with respect to the Trail Mountain mine, has shown that the proposed coal-mining operation, and all other anticipated mining, has been designed to prevent material damage to the hydrologic balance outside the permit area, over the entire projected life of the proposed mining operation.

U.S. DEPARTMENT OF THE INTERIOR
OFFICE OF SURFACE MINING
RECLAMATION AND ENFORCEMENT
NOTICE OF A DECISION AND AVAILABILITY
OF BOTH A TECHNICAL ANALYSIS AND AN
ENVIRONMENTAL ASSESSMENT FOR
TRAIL MOUNTAIN COAL COMPANY
PERMANENT PROGRAM PERMIT
TRAIL MOUNTAIN MINE
EMERY COUNTY, UTAH

The United States Department of the Interior, Office of Surface Mining Reclamation and Enforcement (OSM), has approved, with conditions, a 5-year permit for Trail Mountain Coal Company to mine coal at its Trail Mountain mine.

The Trail Mountain underground coal mine is located in Emery County, Utah, approximately 11 miles northwest of Orangeville, Utah. Coal has been mined on a small scale since 1946. Trail Mountain Coal Company was formed on September 1, 1983 as the result of a merger between Natomas Corporation and the Diamond Shamrock Corporation, and was known as Natomas Trail Mountain Coal Company before the merger. Natomas Trail Mountain Coal Company purchased the coal lands described previously from the Fetterolf Group of Somerset, Pennsylvania, on March 2, 1981. The proposed permit area will cover approximately 773 acres. Surface disturbance at the site is limited to 8.8 acres. Maximum mine production is at a rate of 400,000 tons of coal per year over five years.

Any person with an interest which is or may be adversely affected by this Federal permit approval action may request an adjudicatory hearing on the final decision within 30 days after publication of this notice, in accordance with Section 514(c) of the Surface Mining Control and Reclamation Act (SMCRA). Any hearing will be governed by provisions of 5 U.S.C. Section 554. A petition for review of the OSM decision should be submitted to:

Hearings Division
Office of Hearings and Appeals
U.S. Department of the Interior
4015 Wilson Boulevard
Arlington, Virginia 22203

Pursuant to 40 C.F.R. Sections 1501.4(c) and 1506.6, notice is hereby given that the Office of Surface Mining, in cooperation with the Utah Division of Oil, Gas and Mining has completed a technical analysis (TA) for the application package for the Trail Mountain mine, Orangeville, Utah. OSM has also prepared an environmental assessment (EA). OSM's recommendation to approve Trail Mountain Coal Company mining plan and the permit application with conditions is in accordance with Sections 510 and 523 of SMCRA. OSM's analysis is that no significant environmental impacts would result from such approval. For information or clarification concerning the approval of the Trail Mountain mine plan, please contact Walter Swain or Stephen Manger at (303) 844-3806, Office of Surface Mining, Denver, Colorado.

Both the TA and the EA are available for public review at the following locations:

Office of Surface Mining Reclamation and Enforcement
Western Technical Center
1020 15th Street
Denver, CO 80202

Office of Surface Mining Reclamation and Enforcement
Albuquerque Field Office
219 Central Avenue, N.W., Rm. 216
Albuquerque, New Mexico 87102

Utah Division of Oil, Gas and Mining
4241 State Office Building
Salt Lake City, Utah 84114



State Office Building • Salt Lake City, UT 84114 • 801-533-5771

(THIS LETTER WAS SENT TO ALL ON ATTACHED LIST.)

January 27, 1984

(Name, Title)
(Company Name)
(Address)
(City, State Zip Code)

RE: Determination of Completeness
Diamond Shamrock Coal Unit
Trail Mountain Mine
ACT/015/009, Folder No. 2
Emery County, Utah

Dear (Name):

The Office of Surface Mining (OSM) and the Utah Division of Oil, Gas and Mining (Division) have completed a review of the Mining and Reclamation Plan (MRP) and amendments submitted by Diamond Shamrock Coal Unit for the Trail Mountain Mine. These regulatory authorities have determined the plan to be apparently complete. In compliance with Section UMC 786.11(b) and (c) of the Utah Coal Mining Reclamation Act (UMC, Section 40-10-1 et seq.), notice is hereby given to all appropriate agencies having jurisdiction over or an interest in the area of the operations that a complete plan is available for public review for this operation.

The Trail Mountain Mine is located in Cottonwood Canyon. The following are the legal descriptions of the permit area:

Township 17 South, Range 6 East, SLB&M

Section 25: begin at point of SW Corner of NW1/4 SE1/4, thence North 160 Rods, thence East 44 Rods to center Cottonwood Creek, Southward along creek to a point 76 Rods east of the beginning, thence west 76 Rods to the point of beginning.

Section 25: SW1/4 of SE1/4

Section 25: E1/4 of SW1/4

Section 36: All

The permit area is located on the Mahogany Point Quadrangle, U. S. Geological Survey 7.5 minute map.

Federal Coal Lease is U-082996.

ACT/015/009
January 27, 1984
Page Two

The Division and the OSM will now prepare a Technical Analysis to determine whether the plan meets all the criteria of the Permanent Program Performance Standards according to the requirements of UCA, Section 40-10-1 et seq.

Upon completion of the TA for said plan, a decision will be made as to approval or disapproval of the permit application. No decision will be taken by the Director for a minimum period of 30 days after submission of this Notice of Availability to the appropriate agencies. This plan is available for public review at: Division of Oil, Gas and Mining, 4241 State Office Building, Salt Lake City, Utah 84114.

Comments on the proposed MRP may be addressed to the Director of this office: Dr. Dianne Nielson, Director, Division of Oil, Gas and Mining, 4241 State Office Building, Salt Lake City, Utah 84114. Attention: Mr. James W. Smith, Jr.

For further information, please contact: Mr. James W. Smith, Jr., Coordinator of Mined Land Development; or, Ms. Mary Boucek, Reclamation Biologist at the above address.

Sincerely,

James W. Smith, Jr.
Coordinator of Mined
Land Development

JWS/PGL:btb

cc: Allen Klein, OSM, Denver
Lou Hamm, OSM, Denver
M. Boucek, DOGM
P. Grubaugh-Littig, DOGM



United States Department of the Interior

OFFICE OF SURFACE MINING

Reclamation and Enforcement

BROOKS TOWERS

1020 15TH STREET

DENVER, COLORADO 80202

JAN 17 1984

Mr. Allen Childs
Trail Mountain Coal Company
P. O. Box 551
Orangeville, Utah 84537

Dear Mr. Childs:

The Office of Surface Mining has determined that the Trail Mountain mine permit application is apparently complete. Accordingly you are requested to place a notice in a local newspaper once a week for four consecutive weeks (in accordance with UMC 786.11(a)), stating that you have filed a complete application with the Office of Surface Mining and the Utah Division of Oil, Gas and Mining. This notice should include all the information required under UMC 786.11(a), and should direct public comments to me at this address.

Please provide copies of all four newspaper notices to this office and to the Division. Note also the requirement for filing a copy for public review under UMC 786.11(d).

There are certain technical questions identified during our completeness review which remain unanswered. The Office of Surface Mining is completing a list of preliminary technical deficiencies to be mailed to you by January 20, 1984. It is essential that we receive your answers to these questions by February 1, 1984 in order to maintain work on the technical analysis now in progress. If you require clarification of any of the remaining questions, please contact Louis Hamm or Walter Swain at (303) 837-3806.

Sincerely,

Allen D. Klein
Administrator
Western Technical Center

cc: Dianne Nielson, DOGM
Jim Smith, DOGM
Pam Grubaugh - Littig, DOGM
Robert Hagen, OSM

Mr. Gene Nodine
District Manager
Bureau of Land Management
P. O. Box 970
Moab, Utah 84531 Mr. Nodine_

Mr. Douglas F. Day, Director
Division of Wildlife Resources
1596 West North Temple
Salt Lake City, Utah 84116 Mr. Day_

Mr. Kenneth Alkema
Department of Health
Division of Environmental Health
P. O. Box 2500
Salt Lake City, Utah 84116 Mr. Alkema_

Mr. Melvin T. Smith
State Historic Preservation Officer
Division of State History
307 West 200 South, Suite 100
Salt Lake City, Utah 84101 Mr. Smith_

Mr. Dee C. Hansen
State Engineer
Division of Water Rights
1636 West North Temple
Salt Lake City, Utah 84116 Mr. Hansen_

Mr. Ralph Miles, Director
Division of State Lands & Forestry
3100 State Office Building
Salt Lake City, Utah 84114 Mr. Miles_

Mr. Temple A. Reynolds, Executive Director
Department of Natural Resources
1636 West North Temple
Salt Lake City, Utah 84116 Mr. Reynolds_

Mr. Allen Klein, Administrator
Western Technical Center
Office of Surface Mining
Brooks Towers
1020 Fifteenth Street
Denver, Colorado 80202 Mr. Klein_

Mr. Robert Hagen
Office of Surface Mining
219 Central Avenue, NW
Albuquerque, New Mexico 87102 Mr. Hagen_

Mr. John Welles
Regional Administrator
U. S. Environmental Protection Agency
Region VIII, 1860 Lincoln Street
Denver, Colorado 80295 Mr. Welles_

Mr. Jim Paraskeva
Southeastern Utah Association
of Local Governments
P. O. Box A-I
Price, Utah 84501 Mr. Paraskeva_

Mr. Walter T. Axelgard, Chairman
Commissioner for Safety
Industrial Commission of Utah
560 South 300 East
Salt Lake City, Utah 84111 Mr. Axelgard_

Ms. Carolyn Wright
State Clearinghouse
Resource Development & Coordinating Committee
State Planning Coordinator Office
Room 116, State Capitol
Salt Lake City, Utah 84114 Ms. Wright_

Mr. Jackson Moffitt
Office of the Mining Supervisor
Bureau of Land Management
2040 Administration Building
1745 West 1700 South
Salt Lake City, Utah 84104 Mr. Moffitt_

Mr. Leon Berggren, Area Manager
Bureau of Land Management
Price River Resource Area
P. O. Box AB
Price, Utah 84501 Mr. Berggren_

Mr. Robert Jacobsen
Field Supervisor
U. S. Fish & Wildlife Service
1426 Federal Building
125 South State Street
Salt Lake City, Utah 84138

Attention: Mr. Clark Johnson Mr. Jacobsen_

Mr. Verl "Buzz" Hunt, Director
Division of Community Development
6233 State Office Building
Salt Lake City, Utah 84114 Mr. Hunt_

Mr. J. Kent Taylor
U. S. Forest Service
Fishlake National Forest
P. O. Box 628
Richfield, Utah 84701 Mr. Taylor_

Mr. Ira Hatch
U. S. Forest Service
Price Ranger District
10 North Carbon Avenue
Price, Utah 84501 Mr. Hatch_

Mr. Reed C. Christensen
Forest Supervisor
U. S. Forest Service
Manti-LaSal National Forest
599 West Price River Drive
Price, Utah 84501 Mr. Christensen_

Mr. Ben Grimes
North Emery Water Users Association
P. O. Box 418
Elmo, Utah 84521 Mr. Grimes_

Mr. Don Almond
Emery County Zoning Administrator
P. O. Box 817
Castle Dale, Utah 84513 Mr. Almond_