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United States Department of Agriculture | Forest Service | Manti-La Sal National Forest | 599 West Price River Dr. Price, Utah 84501 (801) 637-2817

File Code: 2820-4

Date: March 22, 1996

RECEIVED MAR 25 1996 DIV OF OIL GAS & MINING

Pamela Grubaugh-Littig
Department of Natural Resources
Division of Oil, Gas and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

ACT/015/009 #2
Copy Daron (all)
(Pam letter)

Dear Pamela:

Enclosed for your information is a copy of the Environmental Assessment which addresses the potential impacts of proposed mining under canyon escarpments at the Trail Mountain Mine. This document is being released to the public for a 30 day comment period prior to making respective decisions by the responsible officials of the BLM and Forest Service. You have been included on our mailing list to receive appropriate documents on the proposal because you responded to initial project scoping or specifically requested to be informed in regard to project status.

The environmental assessment evaluates three alternatives, including a "no action" alternative, that are being considered for selection by the responsible officials.

Alternative 2, presented in the environmental assessment, is the preferred alternative based on public comments and potential impacts. It would provide for maximum economic recovery of minable coal reserves and allow subsidence of the escarpment and limited rock falls along a segment of the west slope of Cottonwood Canyon.

If you would like to comment on the environmental assessment, please submit comments to Jeff DeFreest, Manti-La Sal National Forest, 599 West Price River Drive, Price, Utah 84501, telephone number 801-637-2817 by April 22, 1996.

Sincerely,

for
Janette Kaiser
Forest Supervisor

Enclosure

cc: D-2/3

ENVIRONMENTAL ASSESSMENT

for the

Underground Accessway
and
Undermining of Escarpment

Trail Mountain Mine

Emery County, Utah

USDA, Forest Service, Region 4
Manti-La Sal National Forest
Ferron/Price Ranger District

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MAR 25 1996
DIV OF OIL, GAS & MINING

Responsible Officials: Janette S. Kaiser, Forest Supervisor
USDA, Forest Service
Manti-LaSal National Forest
599 West Price River Drive
Price, Utah 84501

and

Mark Bailey, Area Manager
Price River Resource Area
125 S. 600 W
Price, Utah 84501

Cooperating Agency: Office of Surface Mining
Reclamation and Enforcement
1999 Broadway, Suite 332
Denver, Colorado 80202

For Further Information Contact: Jeff DeFreest, District Geologist
Ferron/Price Ranger District
Manti-La Sal National Forest
599 W. Price River Drive
Price, Utah 84501

Environmental Assessment
Underground Accessway
and
Undermining of Escarpment

Trail Mountain Mine

I. PURPOSE AND NEED FOR ACTION

A. Introduction

PacifiCorp has submitted a revised Resource Recovery and Protection Plan and Mine Plan Amendment to increase coal recovery at their Trail Mountain Mine on Trail Mountain, Emery County. The proposal includes extending the 4th and 5th East longwall panels to the east under the west canyon cliff or escarpment of Cottonwood Canyon, which will cause subsidence, and potentially trigger rock falls or slides. They have also applied for a Forest Service special-use permit to allow them to drive underground accessways under unleased National Forest System lands to allow increased coal recovery in longwall panels planned within the mine permit area (leased lands). Map A shows the respective locations.

B. Decision to be made

The Forest Supervisor, Manti-La Sal National Forest, must decide whether or not to consent to the Resource Recovery and Protection Plan and resulting Mine Plan amendment by the Bureau of Land Management and Utah Division of Oil, Gas and Mining under the Mineral Leasing Act of 1920, as amended; Coal Leasing Amendments Act of 1975; and Surface Mining Control and Reclamation Act of 1977. This involves the granting of an exception to a stipulation attached to the lease. Additionally, the Forest Supervisor must decide whether or not to issue a Forest Service special-use permit for the proposed underground accessways under the Federal Land Policy and Management Act of 1976.

C. Description of the Land

Cottonwood Canyon is a drainage between Trail Mountain and East Mountain. The project area is within Federal Coal Lease U-64375 on the southeast flank of Trail Mountain.

D. Coal Mining History and Relationship to Adjacent Workings

Lease U-64375 is included within the permit area for the Trail Mountain Mine. Mining at what is now known as the Trail Mountain Mine was initiated in 1898, becoming the Johnson Mines in 1909, which operated 3 mines through 1948. In 1946, 3 additional mines were opened in the vicinity, and activity at the Trail Mountain Mine continued through 1967. After a 10 year shutdown, it was reopened under the ownership of Mr. John Bell. The mine was then purchased by the Fetterolf Group in 1979, and operated until it was sold to Natomas Trail Mountain Coal Co. in 1981. The property was subsequently

purchased a operated by: Diamond Shamrock, ch Minerals Corp, Beaver Creek Coal Co, and finally purchased by PacifiCorp in 1992. It is currently owned and operated by PacifiCorp and its subsidiary company, Energy West.

Underground mining facilities within the lease include main entries for access within the Trail Mountain Mine. There are no surface facilities. All mining within the lease has been within the Hiawatha seam.

The Forest Service prepared an Environmental Analysis for the lease, U-64375, but the surface facilities are on fee (private) land.

Operations on this lease have been authorized under the approved Trail Mountain Mine Mining and Reclamation Plan (MRP). Subsidence and hydrologic monitoring are being conducted under the MRP. These documents are contained in the Forest Service project files and can be referred to for additional information.

E. Scoping

The project scoping was initiated on January 19, 1996. Scoping letters were sent to identified interested parties, a scoping package was routed through the Supervisor's Office and Ferron-Price Ranger District, and a legal notice was submitted for publication in the Sun Advocate in their January 23 issue.

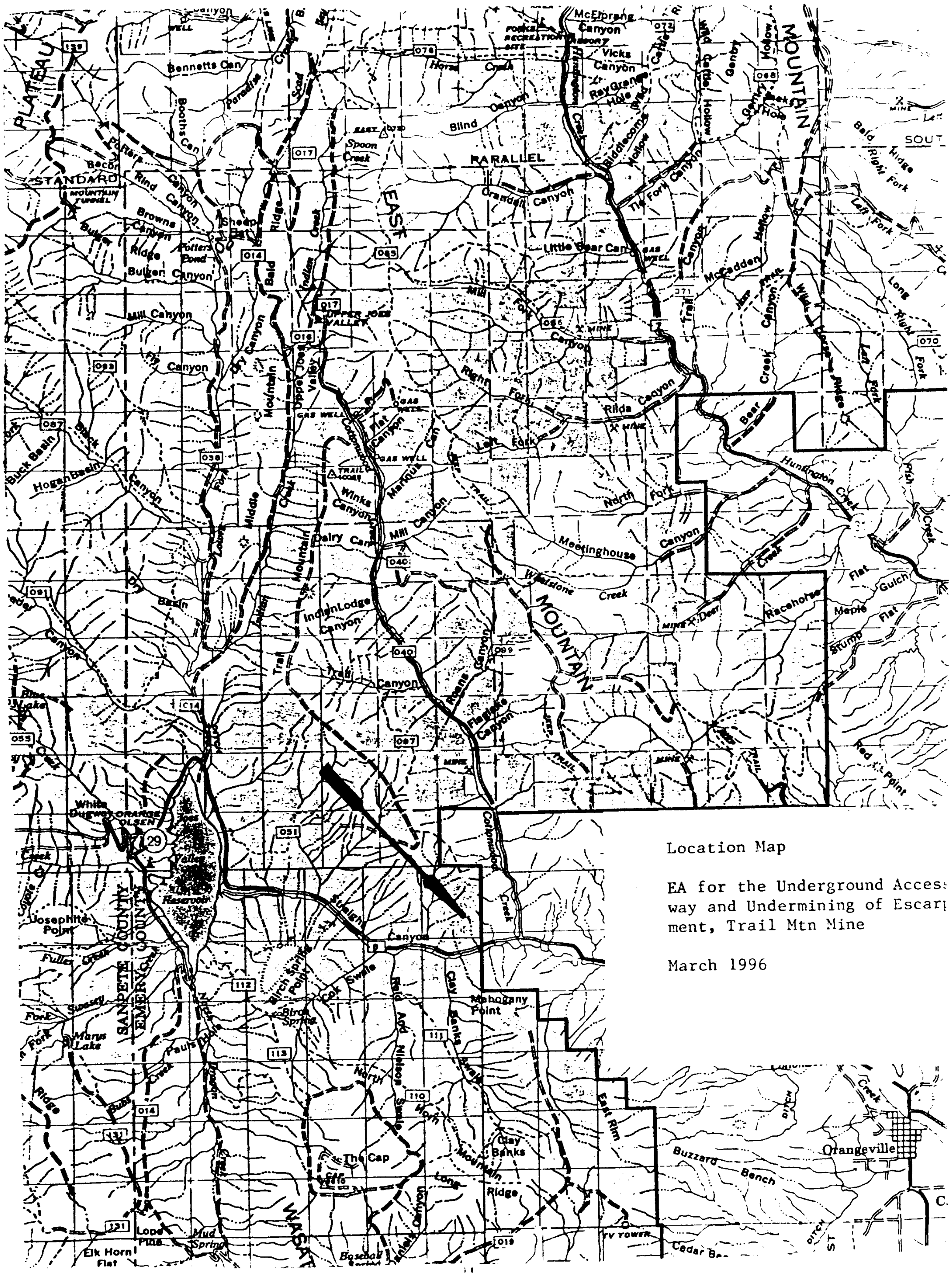
Notice of preparation of this environmental assessment was printed in the Sun Advocate newspaper. Letters were also sent to the individuals and organizations listed in the project file. These concerns have been considered during preparation of this document. Intensity of public interest was relatively low, since only seven letters were received, and of those, four were from government agencies. Copies of these letters are included in the project file.

Three people interested in or affected by the proposed action responded by contacting the Ranger with their concerns.

Mr. Kenneth May, Vice President and General Manager for Southern Utah Fuel Co, commented on his company's success in undermining escarpments with only minor impact to similar terrain at the southern end of the Wasatch Plateau on their Quitchupah tract.

Mr. Eugene Johansen, Chairman, Emery Water Conservancy District and Mr. Kent Petersen, Chairman, Emery County Board of Commissioners, shared concerns over water issues which include:

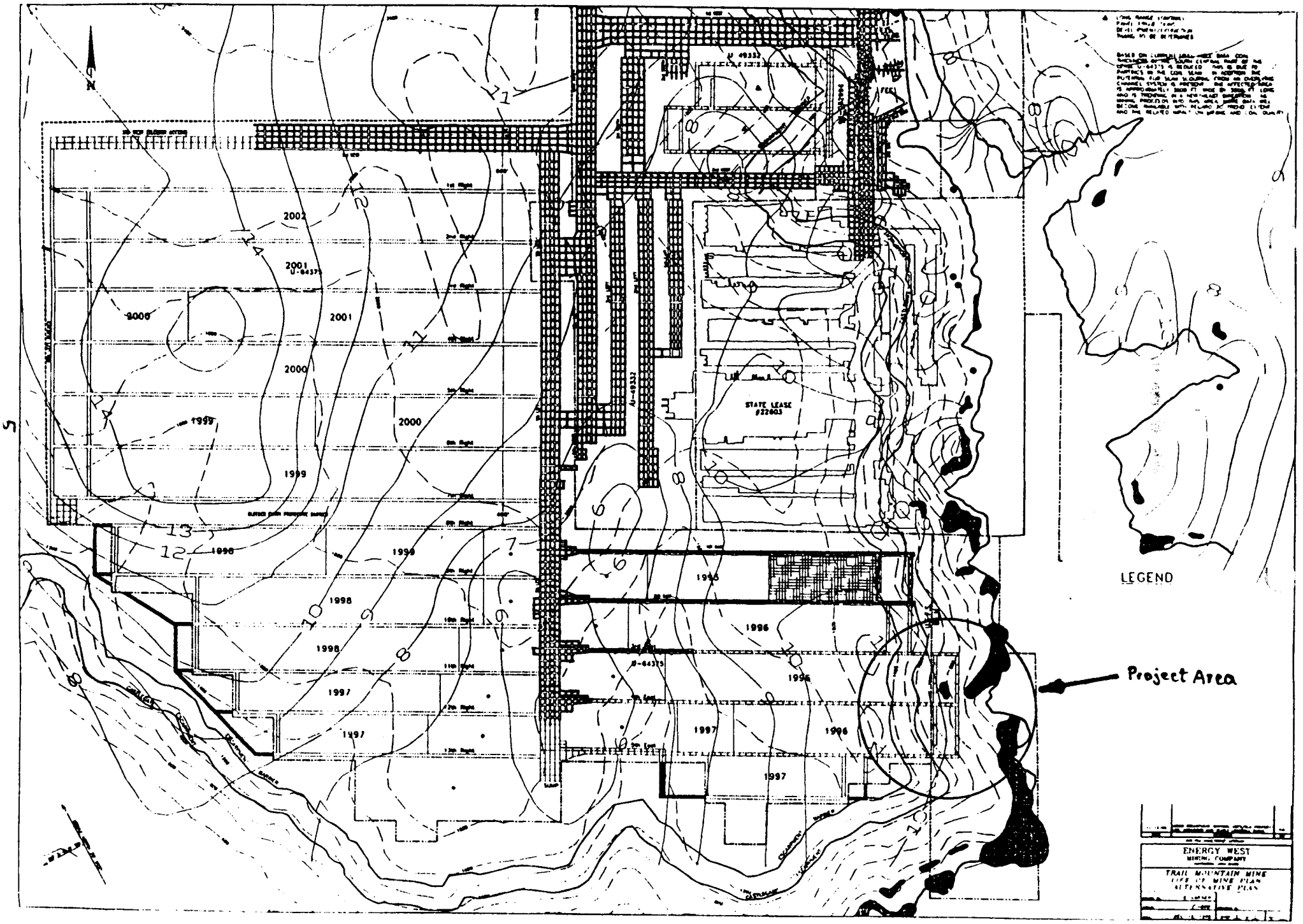
> What effect will this mining operation have on water in Joe's Valley Reservoir?
>
> Will the mine operators be held responsible for replacement of culinary, domestic, wildlife, livestock, and agricultural waters?



Location Map

EA for the Underground Access way and Undermining of Escarpment, Trail Mtn Mine

March 1996



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Project Area
ENERGY WEST
MINING COMPANY
TRAIL MOUNTAIN MINE
LIFE OF MINE PLAN
ALTERNATIVE PLAN

Four agencies interested in or affected by the proposed action responded by contacting the Ranger with issues and concerns.

The Utah Division of Wildlife Resources had comments addressing raptor nesting habitat, though no nests are recorded in the potentially affected area. They requested that if nests were encountered, that we require work to be halted until mitigation measures could be accomplished as determined by their agency in cooperation with the USFWS.

The Utah Division of Oil, Gas, and Mining commented that the proposed mining would require an amendment to the current mining and reclamation plan.

The Utah Department of Transportation expressed concern over the potential rockfall hazard to motorists on SR-29 (road to Joe's Valley Reservoir).

The Office of Surface Mining requested an opportunity to participate in the analysis as a cooperating agency, and have the opportunity to review and provide comments on preliminary NEPA documents prepared for this project.

In addition to the above concerns, the following concerns/issues were identified by the ID Team for evaluation in this environmental assessment.

Subsidence of the steep canyon escarpment could dislodge sections of the Castlegate Sandstone outcrop.

Rockfalls could destroy vegetation on the canyon slope. Sensitive plant species Hedysarum Occidentalis var. canone occurs along the canyon slope.

Rockfalls could reach the Cottonwood Canyon road presenting a potential hazard to motorists, hunters, and rock climbers in the area, and damage road facilities.

Rockfalls may alter the existing visual landscape as viewed from the Cottonwood Canyon Road, State Hwys. 29 and 10, and the town of Orangeville.

Rockfalls could destroy vegetation along the canyon slope, resulting in an increase in sediment in Cottonwood Canyon. Large rocks/boulders rolling downslope into the creek could change stream channel morphology.

Protection of escarpment integrity could cause loss of recoverable coal reserves and could affect maximum economic recovery and result in loss of royalties to the Federal government.

F. Issues

On March 1, 1996, the Forest Supervisor approved the following issues. Each issue statement includes an evaluation criteria or method to measure responsiveness (effects) to the issue. The following significant issues (40 CFR 1500.4 (g), FSH 1909.15 12.3) will be used to focus the environmental analysis, develop alternatives to the proposed action, and develop measures to mitigate and monitor anticipated environmental effects.

A. **Potential rockfall hazard to motorists on SR-29 (road to Joe's Valley Reservoir).**

Evaluation Criteria

PacifiCorp has applied the Colorado Rockfall Simulation Program. The simulation shows that a 20 foot diameter boulder dislodged from the Castlegate Sandstone could roll down to the road. Risk (probability of failure) and potential mitigation measures will be discussed with the UDOT engineer.

B. **Rockfalls may alter the existing visual landscape as viewed from the Cottonwood Canyon Road, State Hwys. 29 and 10, and the town of Orangeville.**

Evaluation Criteria

The landscape architect evaluated the area potentially subject to failure relative to forest plan visual quality objectives (VQO). The predicted area of the potential failure lies primarily in an area designated as modification. BLM has a similar visual constraint called VRM Class III. An edge of the potential failure at the south end of the proposed project area on Forest Service lands may lie within an area designated as retention. Given the anticipated small magnitude of this scar, and its position relative to highway 29, it will not be noticeable from this sensitive corridor. Distant views from Orangeville and Highway 10 will remain natural in appearance.

The potential failure area will be analyzed considering impacts to the visual elements: form, color, texture, and line.

C. **Protection of escarpment integrity could cause loss of recoverable coal reserves and could affect Maximum Economic Recovery and result in loss of royalties to the Federal government.**

Evaluation Criteria

The BLM is preparing a an analysis of the coal that would be bypassed and the associated value of lost royalties.

D. **Threatened, Endangered, or Sensitive wildlife and plant species (FSM 2670)**

Rockf& ɜ destroy vegetation on the can ı slope. Sensitive plant species Hedysarum Occidentalis var. canone occurs along the canyon slope.

Evaluation Criteria
Individuals and habitat effected.

ISSUES RAISED BUT NOT ANALYZED IN FURTHER DETAIL

These issues were either resolved through minimal analysis, mitigation, or found to be outside of the scope of this analysis.

E. Heritage resources (FSM 2360)

The proposed action may impact existing or eligible National Historic Register sites. (project file)

Evaluation Criteria
The area has been surveyed, and no known sites have been identified.

F. Subsidence of the steep canyon escarpment could dislodge sections of the Castlegate Ss. outcrop.

Evaluation Criteria
Rockfall in itself was decided not to be an issue, but effects related to rockfall were analyzed in other issue statements (A, B, G, H).

G. Rockfalls could reach the Cottonwood Canyon road presenting a potential hazard to motorists, hunters, and rock climbers in the area and damage road facilities.

Evaluation Criteria
The Colorado Rockfall Simulation Program (CRSP) was applied to determine if rocks of a given size would roll on the existing slope to the road. The model was calibrated to a rock slide associated with mining in similar geology to establish its validity and to establish the rock size to run the model.

Data provided to the Forest Service by PacifiCorp (Trail Mtn. Mine) suggests that rocks dislodged from the Castlegate Escarpment would not roll as far as the Cottonwood Canyon road, primarily because they would be funnelled into local topography, and then not have enough kinetic energy remaining to continue down the main slope.

Lastly there is some potential for rockfalls reaching areas traditionally used by rock climbers, hunters, and other recreationalists, at the base of the escarpment on the Cottonwood Canyon side.

H. **Rockfalls could destroy vegetation along the canyon slope, increa: sediment in Cottonwood Canyon ε large rocks/boulders could change stream channel morphology in Cottonwood Creek.**

Evaluation Criteria

The CRSP predicts few rocks would roll that far given the terrain. Since the BLM is the land management agency for the potentially impacted area, their hydrologist was consulted, the sediment was expected to increase only slightly, and a mitigation measure was suggested for the large boulder concern. If any rocks do roll as far as the creek, that may cause a diversion or change in channel morphology, the mining company will be required to remove it.

The ID team has determined that the approval of the proposed action will not cause significant adverse impacts on: wetlands, floodplains, and alluvial valley floors.

I. **Mr. Kenneth May, Vice President and General Manager for Southern Utah Fuel Co, commented on his company's success in undermining escarpments with only minor impact to similar terrain at the southern end of the Wasatch Plateau, at their Quitchupah tract.**

Evaluation Criteria

These comments were considered in conjunction with Forest Service observations made in the Quitchupah area. The evaluation of the minor effects is a valid but subjective in nature.

J. **Mr. Eugene Johansen, Chairman, Emery Water Conservancy District and Mr. Kent Petersen, Chairman, Emery County Board of Commissioners, shared concerns over water issues. What effect will this mining operation have on water in Joe's Valley Reservoir? Will the mine operators be held responsible for replacement of culinary, domestic, wildlife, livestock, and agricultural waters?**

Evaluation Criteria

A phone contact was made with Jay Humphrey of the Emery Water Conservancy District on Friday February 23, 1996 to discuss their concerns. He indicated that Mr Johansen did not address the proposals specifically suggested in the scoping letter. Mr. Humphrey acknowledged that their issues relative to the proposal at hand were addressed in the EA for the lease tract originally done in 1990. Mr. Humphrey did however express concern over the Lease By Application also proposed by PacifiCorp, for Trail Mtn Mine, and its potential effects on Joe's Valley Reservoir and local water sources. He wished to be informed of any action taken on the LBA.

K. **The Utah Division of Wildlife Resources had comments addressing raptor nesting habitat, though no nests are recorded in the potentially affected area. They requested that if nests were**

encountered that we require work to be halt . until mitigation measures could be accomplished as determined by their agency in cooperation with the USFWS.

Evaluation Criteria

The mine conducts helicopter surveys for raptors and nests annually, as committed to in their Mining and Reclamation Plan.

L. The Utah Division of Oil, Gas, and Mining commented that the proposed mining would require an amendment to the current mining and reclamation plan (MRP).

Evaluation Criteria

This is a question of process and not an environmental issue requiring disclosure. All applicable State and Federal law and regulation must be met prior to implementation. The operator will be required to apply for amendments to their currently approved MRP.

M. The Office of Surface Mining requested an opportunity to review and provide comments on preliminary NEPA documents prepared for this project.

Evaluation Criteria

This is a question of process and not an environmental issue requiring disclosure. The OSM is a cooperative agency.

N. Prime farmland, rangeland, and timberland could be impacted (USDA land use policy DR 9500-3 and FSH 1909.15, section 65.2).

Evaluation Criteria

The project area does not contain prime farmland, rangeland, or timberland as defined by Section 65.2 (Forest Plan, page II-57).

G. Federal Permits, Licenses, etc.

Leasing and development are under the authority of the following authorizing actions: The Mineral Leasing Act of February 25, 1920, as amended; the Federal Land Policy and Management Act (FLPMA) of 1976; the Surface Mining Control and Reclamation Act (SMCRA) of 1977; the Multiple Minerals Development Act of August 4, 1977; the Federal Coal Leasing Amendments Act of 1976, as amended; regulations: Title 43 CFR Group 3400, and Title 30 CFR Group 700; and the Manti-La Sal National Forest Land and Resource Management Plan (FLRMP) and Final Environmental Impact Statement (FEIS), 1986.

The Trail Mountain Mine has been permitted under the Surface Mining Control and Reclamation Act of 1977 by the Office of Surface Mining, Reclamation and Enforcement and the Utah Division of Oil, Gas and Mining. Other required permits have been secured by PacifiCorp under their approved Mining and Reclamation Plan.

If either alternative 2 or 3 are approved, the Forest Service would issue a Special Use Permit for the underground accessway, and DOGM would need to approve the amendment to the Mining and Reclamation Plan.

II. DESCRIPTION OF ALTERNATIVES

Based on internal and public input the Line Officer approved the following alternatives. Each alternative addresses aspects of the issues to sharply define issues and potential effects and provide a full range of alternatives. Alternatives include mitigation and monitoring to address the issues and anticipated environmental effects.

ALTERNATIVES CONSIDERED IN DETAIL

Alternative 1

Forest Service would deny consent and remain consistent with the existing lease stipulations and the approved MRP. Alternative 1 addresses the need to provide a "No Action" alternative (40 CFR 1502.14). The operator would not be permitted to mine under the escarpment, nor would the special use permit for the underground accessway be granted.

No mitigation measures or monitoring would be required as part of this alternative, beyond what is already in the mining and reclamation plan.

Alternative 2 (Preferred Alternative)

Forest Service consent to subsidence of the escarpment as proposed by PacifiCorp with an exception to the lease stipulation, and Forest Service approval of the special use permit for the underground accessway subject to conditions of approval to mitigate impacts. The Bureau of Land Management and Utah Department of Oil, Gas, and Mining would approve PacifiCorp's amended R2P2 and mining plan respectively, with Forest Service stipulations.

Mitigation

Issues A, B, D, G, H, and K are highlighted in Alternative 2. Mitigation measures designed to address these issues and lessen potential adverse environmental effects are described below.

A. **The Utah Department of Transportation expressed concern over the potential rockfall hazard to motorists on SR-29 (road to Joe's Valley Reservoir).**

PacifiCorp will be required to post signs approved by the Utah Dept of Transportation and the Forest Service warning of rockfall hazard and that stopping or parking in the identified portion of Highway 29 is prohibited.

PacifiCorp will be required to install prisms to establish survey points on the escarpment above Highway 29 to be monitored for possible rotation or movement as mining occurs in the 5th east

panel. The ent is to establish if any mov nt is occurring, and whether a hazard actually exists.

PacifiCorp must conduct modelling (3-dimensional finite element or equivellent) as recommended by PacifiCorp and Dr. W.G. Pariseau (Letter to Forest Service from PacifiCorp, dated February 6, 1991; Re: South Lease Escarpment Study Geotechnical Update) to develop a workable predictive model of the potential for mining induced subsidence to cause escarpment failures. The model for the specific area of proposed subsidence must be run with sufficient detail to project a potential level of escarpment failure and must be adjusted following actual mining to best emulate the actual level of escarpment failure that occurred. A final report must then be submitted to BLM and the Forest Service that describes the prediction made, failure observed, how well the prediction conformed to actual failures, and how the model was adjusted to best conform to actual conditions on the ground and the level of failure observed. An independent/qualified scientist acceptable to the BLM and Forest Service must oversee model development.

B. **Rockfalls may alter the existing visual landscape as viewed from the Cottonwood Canyon Road, State Hwys. 29 and 10, and the town of Orangeville.**

PacifiCorp will be responsible to perform oblique photo monitoring before, during and after mining activities.

D. **Threatened, Endangered, or Sensitive wildlife and plant species (FSM 2670)**

Known populations of Hedysarum occidentale var. canon are to be monitored as mining occurs. If they are being effected the authorized officer(s) are to be notified.

G. **Rockfalls could reach the Cottonwood Canyon road presenting a potential hazard to motorists, hunters, and rock climbers in the area and damage road facilities.**

The area beneath the escarpment in Cottonwood Canyon is to be signed, alerting recreationalists of the rockfall hazard. Design of the sign will be presented to the Forest Service for approval before being deployed. Sign density will be determined by the authorized officer(s).

H. Rockfalls could destroy vegetation along the canyon slope, increase sediment in Cottonwood Canyon and large rocks/boulders could change stream channel morphology in Cottonwood Creek.

Any large rocks that may roll into Cottonwood Creek will be reported to the Forest Service and BLM hydrologists. If channel morphology is being threatened, PacifiCorp will be responsible to remove the rock(s) and reestablish the original morphology.

K. The Utah Division of Wildlife Resources had comments addressing raptor nesting habitat, though no nests are recorded in the potentially affected area. They requested that if nests were encountered, that we require work to be halted until mitigation measures could be accomplished as determined by their agency in cooperation with the USFWS.

The area is to be surveyed for raptor nests prior to mining commencing under the escarpment. If nests are encountered, work that could cause further subsidence, leading to escarpment failure, is to be halted until mitigation measures can be accomplished as determined by the Utah DWR and the USFWS.

Monitoring

Implementation effectiveness monitoring will be performed to determine if the mitigation measures are effective and assure the desired results are achieved.

Alternative 3

Forest Service approves only the special use permit for the underground accessway, with conditions of approval. PacifiCorp would apply for a mine plan amendment and DOGM will likely approve the amendment. This alternative would provide access to otherwise lost coal reserves.

The two longwall panels proposed to extend underneath the escarpment will need to be shortened, and there would be a loss of recoverable coal. Subsidence of the escarpment would not be permitted, and therefore the issues relating to escarpment failure: A, B, D, E, F, G, H, and K would not apply.

No special mitigation measures or monitoring would be required as part of this alternative, beyond what is already in the mining and reclamation plan.

ALTERNATIVES CONSIDERED BUT NOT GIVEN DETAILED STUDY

Alternative 4

Forest Service consent to subsidence of the escarpment as proposed by PacifiCorp, and Forest Service approval of the special use permit for the underground accessway. The Bureau of Land Management would likely approve modification of the resource recovery and protection plan (R2P2) and the Utah Department of Oil, Gas, and Mining would approve PacifiCorp's amended mining plan to achieve maximum economic recovery, and the escarpment would be undermined with a potential for localized failures.

No requirements, constraints, or mitigations would be added to those already committed to in the proposal. No additional monitoring beyond that already committed to in the approved mining and reclamation plan would be required as part of this alternative.

Alternative 5

Forest Service approves only the undermining of the escarpment, allowing for the potential failure of the escarpment. This would permit the added length on the 2 longwall panels proposed, providing for coal recovery. The special use permit for the underground right of way would be denied in this alternative, leaving some coal reserves inaccessible.

This alternative was not considered in detail because it provides no advantage over the preferred alternative.

COMPARISON OF ALTERNATIVES

The following chart has been generated to display a comparison of alternatives relative to the identified issues and concerns. The issues and concerns are listed as elements. The rating system uses high, moderate, or low to display the level of risk to public safety; tons of coal and associated roylaties for socio-economics; and whether or not it meets the forest plan and BLM visual standards. Each element is discussed in greater detail in Section III, Description of Affected Environment and Section IV, Environmental Consequences (relative to each alternative).

Resource Element	Issue Reference	Alternatives 1	2	3
Public Safety Risk	A	Low	Moderate	Low
Meets VQO	B	Yes	Yes	Yes
Socio-Economics	C			
Additional Recoverable Coal (million tons)		0	1.9	1.5
Additional Royalties (million dollars)		0	3.0	2.4
Meets Maximum Economic Recovery		No	Yes	No
Effect on TE&S Plants		None	None	None
Effect on TE&S Wildlife		None	May	None

III. DESCRIPTION OF THE AFFECTED ENVIRONMENT

Affected Environment Relative to Issues

Public Safety

Rockfalls are a frequent natural occurence in the vicinity of the Castlegate Sandstone escarpment. Occasionally rocks fall and roll onto and across the Cottonwood Canyon Road and the Straight Canyon Road (State Highway 29). These natural rockfalls are commonly triggered by natural processes such as freeze-thaw cycles, run-off, and earthquakes. Mining induced subsidence of the escarpment or land immediately adjacent to it could also contribute to rockfalls.

Visual Resources

The characteristic landform of this area is steep narrow canyons of major escarpments. Flowing parallel to FDR 040 is Cottonwood Creek

which has e enched this particular canyon. his perennial stream is bordered by a narrow riparian corridor interspersed with cottonwoods. Thin rocky soils and a relatively arid climate have resulted in an open pinyon-juniper community established primarily on the less steep slopes to the east above the creek. These coarsely textured/vegetated slopes end abruptly at the base of the dominating Castlegate Sandstone outcrop. Soil colors are light brown to tan, consistant with this eroding parent sandstone material above.

The Manti-La Sal National Forest Land and Resource Management Plan (LRMP) has assigned a Visual Quality Objective to each area of the Forest reflecting the desired management emphasis of the specific area. The BLM has assigned similar objectives, known as Visual Resource Management Classes, to the lands they manage. Some of those objectives assigned by the LRMP allow a noticeable degree of change from the existing condition as determined during the visual assessment conducted in 1986 for subsequent use in Forest management activities and planning. This flexibility was incorporated into the Forest Plan to facilitate Forest management goals.

The term Visual Quality Objective refers to the degree of acceptable visual alteration of the Landscape and may be defined as follows: A desired level of scenic excellence based on physical and sociological characteristics of an area. Typically, more stringent VQO's are incorporated to protect the most highly visible and most frequently seen areas that have the greatest amount of variety in vegetation and other features which occur naturally.

After comparing the specific limits of the project area with the Forest Plan visual quality map, it was determined that any area of potential visual impact has been designated as Modification, on Forest Service lands, and VRM Class III on the BLM lands.

Under the less stringent VQO of Modification (or VRM Class III), management activities may visually dominate the original characteristic landscape. However, activities of vegetative and landform alteration must borrow from naturally established form, line, color, or texture so completely and at such a scale that its visual characteristics are those of natural occurrences within the surrounding area or character type. Additional parts of these activities such as structures and roads must remain visually subordinate to the proposed composition. Reduction in form, line, color, and texture should generally be accomplished in the first year.

In summary; this broad objective allows for most forms of management activity including those which are visually obtrusive, however the activity (especially associated roads and structures) must be designed to fit the context of the natural surroundings.

It should be noted that scenery is an important natural resource and recreational element in parts of the forest immediately adjacent to this area. It is primarily through their visual sense that most visitors perceive the Forest and its interrelated components. The project area -- although designated in the Forest Plan as Modification

-- still has hi[illegible] scenic value. Part of the publ[illegible] appeal of the landscape found in this area stems from the viewing opportunities associated with these Castlegate Sandstone escarpments. This escarpment is readily viewed from FDR 040, which travels up Cottonwood Canyon and serves as a gateway to the forest for many recreationists.

Socio-Economics

The Trail Mountain Mine is currently operating in the project area and produces 3.5 - 4 million tons per year. Employment is a total of 275 people; 215 of which are miners and 60 individuals in management.

The BLM has determined that the current Resource Recovery and Protection Plan (R2P2) does not provide for maximum economic recovery.

TE&S Plants

No listed threatened or endangered plant species are known to occur on the areas subject to escarpment failure. However, Hedysarum occidentale var. canon, a proposed threatened plant species, does have limited habitat in Cottonwood Canyon. (project file)

I. TE&S Wildlife

Several non-game mammals, birds, and reptile species inhabit the lease. These species have apparently somewhat adapted to mining activities. There is also raptor habitat in the escarpment, though there are no known nests on the portion likely to be failed. There are no threatened or endangered or sensitive wildlife species occupying the project area. (project file)

IV. ENVIRONMENTAL CONSEQUENCES

The effects of the mining operation were assessed in the Environmental Assessment for Beaver Creek Coal Co. Coal Lease Application UTU-64375 Trail Mountain Tract (4/90). This document discusses the existing and potential effects from surface facilities and mining induced subsidence. This analysis was done assuming conventional, room and pillar mining operations however. No subsidence of the escarpment was to be permitted, as stipulated in the lease. Mining operations were permitted and are regulated under the Surface Mining Control and Reclamation Act of 1977 and associated Federal and State regulations and programs. Facilities have been designed and constructed in accordance with required standards. Monitoring has shown that the effects of mining, to date, are consistent with those predicted in the referenced environmental documents.

Below, each alternative is analyzed relative to the elements developed from the issues for this environmental assessment.

A. Alternative 1 - No Action Alternative, Forest Service denies consent.

1. Direct and Indirect Effects

a. Public Safety

Mining induced subsidence would not be permitted and therefore there would be no mining induced failure.

b. Visual Resources

Mining induced subsidence would not be permitted and therefore there would be no mining induced failure. Natural rockslides would continue to occur.

c. Socio-Economics

Coal reserves would be bypassed. This alternative will sterilize approximately 1.9 million tons of coal with a resulting loss of 3 million dollars in royalties. Additionally, the life of the Trail Mountain Mine will be shortened by approximately 6 months.

d. TE&S Plants

Mining induced subsidence would not be permitted and therefore potential for escarpment failure would be no greater than already predicted in the EA for the lease, resulting in no change to the effect on Threatened, Endangered, and Sensitive Plants. (project file)

e. TE&S Wildlife

Mining induced subsidence would not be permitted and therefore potential for escarpment failure would be no greater than already predicted in the EA for the lease, resulting in no change to the effect on Threatened, Endangered, and Sensitive Wildlife. (project file)

2. Cumulative Effects

Historically man's activities in the lease area have included livestock grazing, recreational use, and coal production, which have resulted in changes in the topography, vegetation, and erosion. Cumulative effects resulting from mining coal could include the effects from subsidence and the human activity from continued operations as it exists on this lease and adjacent leases. PacifiCorp is monitoring the impacts of mining on the permit area as part of the Mining and Reclamation Plan. To date, the results of monitoring in the permit area indicate that no significant impacts to surface resources have occurred from mining. There would be no change in the existing condition.

B. Alternative 2 - Forest Service consent to subsidence of the escarpment and approval of the special use permit for the underdround accessway.

1. Direct and Indirect Effects

a. Public Safety

Mining induced subsidence would be permitted and therefore potential for escarpment failure would exist. The Colorado Rockfall Simulation Program (CRSP) and the support data provided by PacifiCorp does not show any rockfall reaching the Cottonwood Canyon Road (FDR 040), however, there is a remote chance of material disturbed by mining activity being dislodged and threatening the Straight Canyon Road (Hwy 29).

The CRSP was calibrated in PacifiCorp's analysis to a failure in similar geology and terrain in nearby Newberry Canyon, associated with their Cottonwood-Wilberg Mine complex. As part of their analysis, they observed the material of the Castlegate Sandstone that had failed and then modeled it to see what size material might be expected to fail in the subject mine plan amendment area.

All of the CRSP applications run for the Cottonwood Canyon side of the escarpment indicated any rock of the expected size would be funnelled in and trapped by local topography.

The escarpment on the Straight Canyon side, above State Hwy 29, is outside of the angle-of-draw by 125 feet. An initial run of the CRSP was done however to determine if any part of the escarpment subject to the strain of subsidence within the angle of draw might cause a rockfall. The CRSP model suggested that a spherical rock of 20' diameter could make it to the highway. Additional CRSP applications were requested and PacifiCorp analyzed their model calibration again. They analyzed the failure at Newberry Canyon, and found that at surveyed subsidence points, failure only occurred at points as mining occurred directly beneath the escarpment. The determination was made that the potential for any material to break loose was extremely remote. Mitigation measures will be reqired.

b. Visual Resources

Escarpment failure could visually affect lands on or near the east wall of Cottonwood Canyon. This potential visual effect is predicted to be consistent with other common naturally occuring failures viewed throughout this and all other similarly formed canyons. Accordingly, noticeable visual effect to the casual Forest visitor -- if any -- will fall well within the parameters outlined for the VQO of Modification.

Due to natural consistancy in form, line, color and texture; and considering other aesthetic variables, i.e., distance from the viewer, angle and duration of view, and scale of the potential failure. It is also predicted with a reasonable level of confidence that failure associated views

from other federal, state, private and municipal lands, and transportation corridors will remain non-objectionable.

However, regardless of the small potential for obtrusive effect due to escarpment failure, the public's aesthetic expectations concerning this and other project related activity need to be taken into account. Fencing, barriers, berms, etc. -- although not planned for use within the Forest boundary -- will be in conflicting juxtaposition to the strong visual elements which define this landscape. This is particularly true for Straight Canyon. This primary travel corridor is highly scenic (Retention within the Forest boundary) and insensitively placed safety improvements can conspicuously advertize human-caused change. Although safety is of paramount concern, care should be taken to screen and later remove these obtrusive structures to the best visual advantage. The visual effect of escarpment failure is anticipated to be negligible when compared to that associated with these structures.

c. Socio-Economics

Recoverable coal reserves would be mined, and be consistemt with the BLM's maximum economic recovery mandate. This alternative would provide approximately 1.9 million tons of coal with a resulting 3 million dollars in royalties. Additionally, the life of the Trail Mountain Mine will be extended by approximately 6 months, providing jobs for the employees of the mine as well as the people in the support industries.

d. TE&S Plants

Mining induced subsidence would be permitted and therefore potential for escarpment failure would exist. There is potential for destruction of habitat for *Hedysarum occidentale var. canon*. Known populations are protected from direct impact by topography. (project file)

e. TE&S Wildlife

Mining induced subsidence would be permitted and therefore potential for escarpment failure would exist. Potential nesting habitat could be lost for raptors. No known nests exist, and PacifiCorp performs a helicopter raptor survey with the Utah Division of Wildlife Resources.

2. Cumulative Effects

Similar to the effects in Alternative 1, except that the magnitude of impacts could be increased. There will be an increase in erosion of the Castlegate Sandstone escarpment, primarily accelerated by the stresses placed on the rock by subsidence.

C. Alternative 3 - Forest Service approval of the special use permit for the underground accessway only

The direct, indirect, and cummulative effects of alternative 3 would be essentially the same as in the No Action alternative (Alternative 1) for the public safety, visual resources, and TE&S species issues.

1. Direct and Indirect Effects

c. Socio-Economics

Coal reserves of 400,000 tons would be bypassed, with an associated loss in royalties of $640,000. This alternative does not meet maximum economic recovery, but will isolate less coal than alternative 1, but not provide as much coal as alternative 2. Mine life will be shortened slightly.

V. INTERDISCIPLINARY TEAM

The joint Bureau of Land Management and Forest Service Interdisciplinary Team consisted of the following personnel:

Jeff DeFreest	Geologist (I.D. Team Leader)
George Tetrault	Mining Engineer
Wayne Ludington	Wildlife Biologist
Bob Thompson	Botonist
Kerry Flood	Hydrologist
Blaine Miller	Archeologist
Kevin Draper	Landscape Architect