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United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Utah State Office
P.O. Box 45155
Salt Lake City, UT 84145-0155
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DIV. OF OIL, GAS & MINING

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IN REPLY REFER TO:
3480
UTU-76195
(UT-923)

Incoming
8/04/03

Mary Ann Wright
Utah Division of Oil, Gas and Mining
P.O. Box 145801
Salt Lake City, Utah 84114-5801

Re: East Fork of Box Canyon undermining modification to the approved Resource Recovery and Protection Plan (R2P2) for Federal Coal Lease UTU-76195

Dear ~~Ms. Wright~~ Mary Ann:

The Bureau of Land Management (BLM) has approved a modification (Encl 1) to the SUFCO mine R2P2 for undermining the East Fork of Box Canyon in longwall panel 3 & 4 in Federal Coal Lease UTU-76313. In making this determination, BLM has consulted with the US Forest Service regarding their concerns with the proposed impacts on the environment. BLM also consulted informally with the US Fish and Wildlife Service (FWS) on the potential habitat for the Mexican Spotted Owl. The FWS indicated that the undermining would be allowable as long as the two year survey being conducted by the US Forest Service (FS) be completed. BLM believes that the MOU on the Cultural issues between DOGM, FS, Utah State Historical Preservation Officer and Canyon Fuel for the protection of Cultural resources should meet the lease requirements for the protection of this resource.

In approving this modification, BLM has written a Determination of NEPA Adequacy (DNA) (Encl 2) in order to determine whether the environmental impact of the proposal have been addressed by previous documents. This analysis identifies some mitigation measures that could be put into place to minimize the environmental impacts of the proposal.

The analysis documented in the DNA references the need for mitigation to minimize the environmental impacts of the proposal. We suggest that the terms and conditions of the permit amendment include mitigation measures to address the following issues:

Stream data. A plan to gather information on the perennial stream in the East Fork of Box Canyon over the modification area prior to, during and after mining. This should include but not be limited to, flow being measured on the surface between the longwall panels. The flow shall be measured at least monthly which flow is present and conditions permit access to the site. Daily weather measurements (temperature and rain fall) shall be taken to compare with the stream flow (or use of the Palmer drought index).

Riparian vegetation: Surveys before and after mining.

Mitigation: Proposed measure to be taken to mitigate and change or alteration in the surface water flow in the East Fork of Box Canyon. The plan shall include but not be limited to; types of materials to be utilized versus sizes of cracks, transportation and access, timing, notification, availability of materials and estimated quantities.

Final Report: Following completion of mining under the East Fork of Box Canyon, a report shall be submitted that contain the data gathered while subsiding the East Fork of Box Canyon. This report should document any impacts to the stream, distribution and extent of subsidence cracks (if any) that develop in the stream channel, and the effectiveness of any steps taken to mitigate impacts to the stream.

If you have any comments or questions, please feel free to contact Mr. Stan Perkes, 801-539-4036.

Sincerely,

James F. Kohler
Chief, Solid Minerals Branch

Enclosures
1. R2P2 Approval
2. DNA

cc: PFO

United States Department of the Interior

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IN REPLY PLEASE REFER TO:
3482
UTU-76195
(UT-070)

JUL 31 2003

Certified Mail--Return Receipt Requested
Certificate No.

Ken May
General Manager
Canyon Fuel Company, LLC
SUFCO Mine
397 South 800 West
Salina, Utah 84654

Re: Approval of Mining Underneath Box Canyon in the 3rd and 4th Left Panels, Minor Modification to the Resource Recovery and Protection Plan (R2P2), Federal Coal Lease UTU-76195

Dear Mr. May:

On February 20, 2003, the Bureau of Land Management (BLM) received a written request from Canyon Fuel Company (CFC) to modify the approved R2P2 for the SUFCO Mine. The modification requested approval to shorten the Left Pines East longwall panels due to encountering a sandstone channel and mine the complete shortened panels including subsiding the stream channel in the East Fork of Box Canyon. The affected reserves are located in the Upper Hiawatha seam in Federal coal lease UTU-76195. The minor modification request lies within the lease boundary (UTU-76195) and inside the currently approved permit area.

Background:

SUFCO discovered a major sand channel in the 3LPE located at cross cut 92 in entry 1. Based on longhole drilling, the sand channel severely scoured zone is approximately 320 feet in width. The channel extents were verified by BLM inspector George Tetrault on April 14, 2003 as follows:

Headgate Entries

- in entry 1 of the head gate, full face of rock,
- in entry 2, between cross cut 93 and 94 there was 1 foot of coal and the remaining (7+ feet) was rock, and
- in entry 3 there were 7.7 feet of coal and the remainder was rock at outby cross cut 94.

Tailgate Entries

- in entry 1 there was full face of rock, and
- in entry 2 and 3 there was about 4 feet for rock.

BLM requested that the company submit economic data for mining though the rock and recovering the block of coal north of (or inby) the sand channel. The information submitted by the company (see attached map and summary financial table) indicates that the coal cannot be economically recovered as part of 3LPE or 4LPE as the channel clearly crosses into that longwall panel as well. BLM considered whether a royalty rate reduction could make the block of coal economic to recover. However, there is insufficient information to enable consideration of the risk factors including the unknown width and location of the sand channel(s) and whether this block of coal could be accessed from another location such as 5LPE.

Based on the information submitted by the company and the confirmed geologic conditions, we conclude that the coal north of (or inby) the sand channel is uneconomic from 3LPE panel or 4LPE (due in large part to timing requirements for 4LPE). Approval of the proposed R2P2 modification for 5LPE is withheld pending further exploration and mine planning for the coal north of or inby the sand channel.

It could be economically possible to recover the coal inby the sand channel either with longwall mining or continuous miners. This is yet to be determined.

Approval:

As provided in 43 CFR 3482.2(c)(2), BLM approves the requested R2P2 modification dated February 20, 2003, with respect to the 3LPE and 4LPE panels. BLM approves the shortening of the 3LPE panel with a setup room outby the sand channel, setup rooms at cross-cuts 89-91 of 3LPE (approved verbally on April 14, 2003) and full extraction mining under the East Fork of Box Canyon. Before approval can be given for the proposed 5LPE panel and future longwall panels, your R2P2 submittal must be expanded to address potential recovery of the coal north or inby of the sand channel. This approval is in accordance with Stipulation 9 of coal lease UTU-76195 that allows for approval of mining under perennial streams. No changes in the length of the 5LPE, 6LPE, and 7LPE longwall panels are authorized until further justification is provided that the coal inby the

panels is not recoverable. The environmental effects of the modification were analyzed in a Determination of NEPA Adequacy (DNA) document dated July 31, 2003.

Reserves:

There is a change in reserves of approximately 180,600 tons due to geologic factors offset by mining underneath the East Fork of Box Canyon for this modification:

R2P2 effect on coal reserves with changes to 3LPE and 4LPE panels

	3 LPE	South Block	3 LPE Stream Block	4 LPE	4 LPE Stream Block	Muddy Creek Break out	Total
Original Plan	8,629,800	0	-876,400	6,163,000	0	70,400	13,986,800
New Plan	5,960,900	665,399	939,900	6,163,000	438,000	0	14,167,199
Difference							180,600

Conditions of Approval:

1. Full extraction under the perennial stream in the East Fork of Box Canyon is not authorized until a permit revision is approved by the Utah Division of Oil, Gas, and Mining as provided in 30 CFR 944.3 Article VI D. In order to be consistent with the terms and conditions of federal coal lease UTU-76195, this approval must incorporate appropriate monitoring requirements and implementation of a mitigation plan to minimize impacts to the perennial stream in the East Fork of Box Canyon in accordance with the provisions of SMCRA.

2. Before initiating longwall mining under the perennial stream in the East Fork of Box Canyon, the company must submit to BLM and receive approval for a plan outlining the steps to be taken and timing to ensure that the longwall mines the area under the stream with minimal interruptions in longwall face advance.

3. Following completion of mining under the East Fork of Box Canyon, the company must provide BLM copies of monitoring and mitigation reports required under the provisions of SMCRA.

4. Within 90 days after approval of the modification, the company must submit a modification request to address mining the block(s) of coal north of or inby the sand channel or provide justification why it cannot be economically mined.

MER and Mineral Lease Act Analysis:

Based on our analysis of the North (or inby) Block being uneconomic to mine from 3LPE or 4LPE longwall panels, and with the conditions of approval as stated, we determine that this modification achieves Maximum Economic Recovery and meets the regulations at 43 CFR 3480 and the Mineral Leasing Act of 1920 as amended, and is consistent with the terms of federal coal lease UTU-76195.

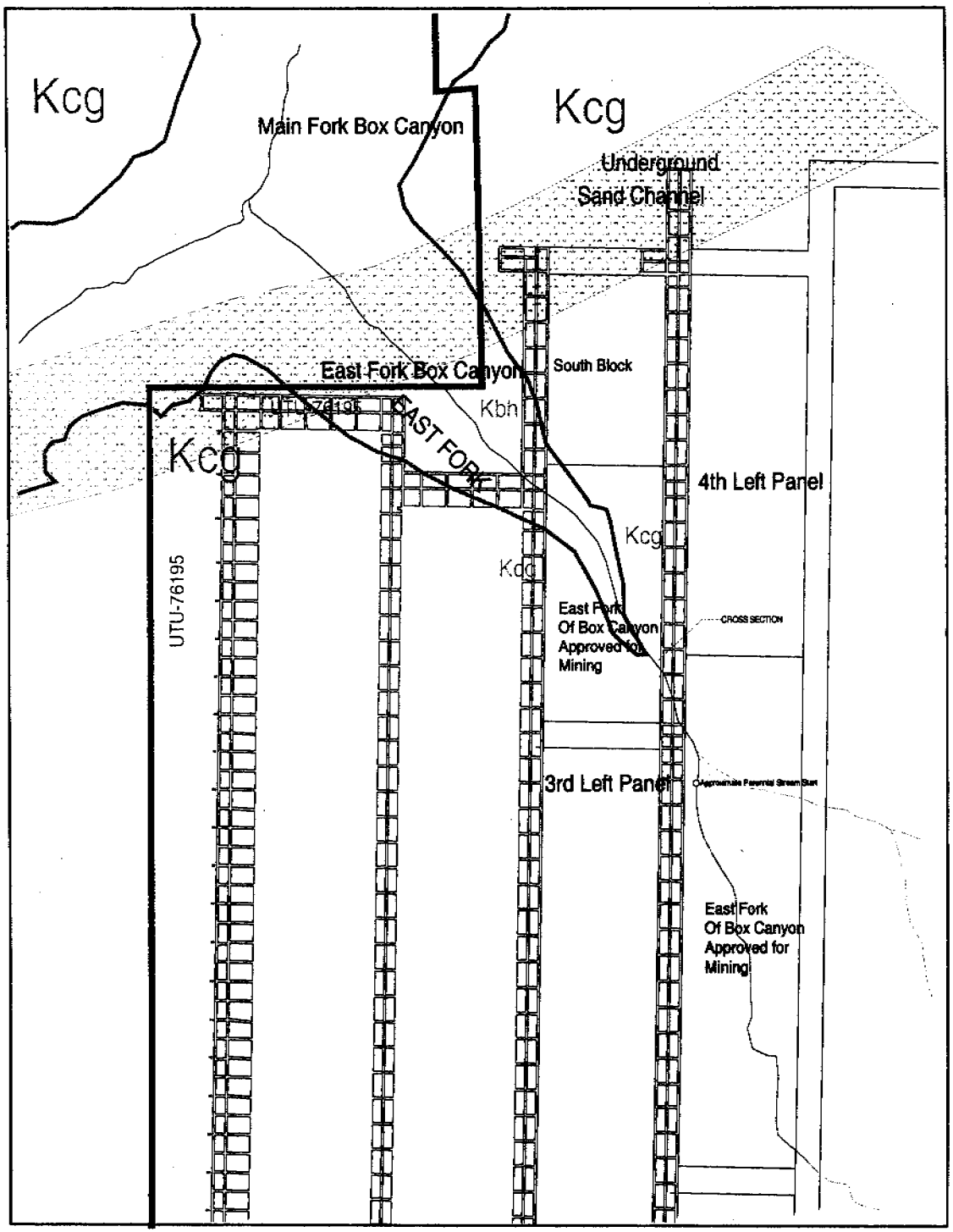
For further information, please contact George Tetrault (435) 636-3604 or Stan Perkes at (801) 539-4036.

Sincerely,

James F. Kohler
Chief, Solids Minerals Branch

Enclosures
1-Map 1 (1pg)

bcc: UT-070,
Gtetreault:sa: 05/13/03
SUFCO/Pinestract\LinkCanyon



SUFCO MINE

Approval

Under mining of
East Fork of Box Canyon
3rd and 4th Left
Longwall Panels

KEY

Sand Channel

Lease Boundary

Bottom of Castle Gate

Perennial Stream

Worksheet
Documentation of Land Use Plan Conformance and NEPA Adequacy (DNA)

U.S. Department of the Interior
Bureau of Land Management (BLM)

Note: This worksheet is to be completed consistent with the policies stated in the Instruction Memorandum entitled "Documentation of Land Use Plan Conformance and National Environmental Policy Act (NEPA) Adequacy" transmitting this worksheet and the "Guidelines for Using the DNA Worksheet" located at the end of the worksheet. (Note: The signed CONCLUSION at the end of this worksheet is part of an interim step in the BLM's internal analysis process and does not constitute an appealable decision.)

A. **BLM Office:** USO, Solids Minerals Group
B. **Lease/Serial/Case File No.** Federal Coal Lease UTU-76195

Proposed Action Title/Type: Minor Modification to an approved Resource Recovery and Protection Plan to fully extract coal underneath a 143.25 acre portion of the East Fork of Box Canyon Creek Drainage.

Location of Proposed Action: East Fork of Box Canyon, Sevier County Utah

Description of the Proposed Action: Canyon Fuel LLC, and Southern Utah Fuel Company (SUFCO) have submitted a minor modification to the Resource and Recovery and Protection Plan (R2P2) that includes a proposal to fully extract coal in three mine panels from one seam underneath a 143.25 acre portion of the East Fork of Box Canyon Creek Drainage in Sevier County Utah. The East Fork of Box Canyon contains a stream that is perennial across the first panel and partially into the second panel. The second panel would also subside a portion of the East Fork of Box Canyon that does not contain a perennial stream. The Forest Service has identified this area as a "perennially functioning" drainage and have indicated their desire to protect it from potential impacts of full extraction mining. The third panel would subside two stock ponds known as the Joes Mills ponds. Because of changes in the mining plan, the proposal would increase coal recovery by approximately 3-4 Million tons of federal coal.

Such a change is normally considered as a minor modification to an existing mining plan and categorically excluded under BLM's NEPA policy (BLM Categorical Exclusions, 516 DM Chapter 6, Appendix 5.4 F.(8)).

In the original R2P2, the company did not plan on full-extraction mining under the drainage in the East Fork of Box Canyon. However, due to unanticipated geologic conditions, they have requested approval to subside these areas. In the record of decision consenting to leasing the lands in question, the Forest Supervisor of the Manti-La Sal National Forest provided the following:

I consent to the BLM leasing the Pines Coal Lease Tract. My consent is conditioned on inclusion of stipulations derived in part from the Forest Plan, as detailed in Appendix D of the FEIS, and upon ensuring that subsequent mining will meet the performance standards of the applicable mining regulations. Specific terms and conditions of my consent are given in items 1 and 2 below.

1. *For the perennial streams in Box Canyon and The East Fork of Box Canyon, Alternative C is the selected alternative. Stipulation 9 from the Forest Plan will be implemented, thus these streams will be protected from mining that would cause subsidence.*

Lease Stipulation 9, that was forwarded by the Forest Service in their consent to the lease included language that allows the stream to be undermined under certain conditions.

> Stipulation 9. Except at specifically approved locations, underground mining operations shall be conducted in such a manner so as to prevent surface subsidence that would: (1) cause the creation of hazardous conditions such as potential escarpment failure and landslides, (2) cause damage to existing surface structures, or (3) damage or alter the flow of perennial streams. The Lessee shall provide specific measures for the protection of escarpments, and determine corrective measures to assure that hazardous conditions are not created.

This stipulation requires specific approval before any subsidence could occur that would damage or alter the flow of perennial streams. However, no further approval would be required if the mining would not damage or alter the flow of the stream. This DNA is being prepared to determine whether any impacts mining may cause due to the full extraction of the coal resource in this small area have been adequately analyzed in the existing NEPA documents.

The proposed action does not present environmental concerns that have not been addressed previously, in the leasing EIS.

Applicant (if any): Canyon Fuel Company, Skyline Mine

B. Conformance with the Land Use Plan (LUP) and Consistency with Related Subordinate Implementation Plans

LUP Name Land and Resource Management Plan, Manti-La Sal National Forest , (1986) (Forest Plan).
Date Approved November 1986
Other document

*List applicable LUPs (e.g., Resource Management Plans or applicable amendments).
Forest Plan, Page III-72 "Avoid and mitigate detrimental disturbance to riparian area by mineral activities. Initiate timely and effective rehabilitation of disturbed sites."

Forest Plan Forest-wide Management Direction for Riparian, Flood Plain & Wetlands Management
Page III-31,02 "Give preferential consideration to riparian area dependent resources in cases of

irresolvable resource conflicts"
Page III-22, 08 "Manage waters capable of supporting self-sustaining fish populations to provide for those populations".
Page III-36,01,d,(5) "Coal leases may be denied or limited by special stipulations where operations would result in unacceptable or immitigable impact on wildlife or fisheries" and "Proposed management activities which may cause unfavorable conditions in existing fisheries will include mitigation measures."
Forest Plan Forest-wide Management Direction for Minerals Management Leasables
Page III-35,01 "negative recommendations, denials, or consent for leasing, permitting, or licensing will be based on site-specific environmental assessments using appropriate standards and guidelines. Stipulations for these actions should minimize and/or mitigate effects or conflicts with other resource uses and should return disturbed lands to conditions compatible with the emphasis of the management unit or adjacent management unit.

The Forest Plan Maps indicate that the management emphasis for the area in question is range and timber.

**List applicable activity, project, management, water quality restoration, or program plans.

☐ The proposed action is in conformance with the applicable LUPs because it is specifically provided for in the following LUP decisions:

Riparian Area Direction: Minerals – Avoid and mitigate detrimental disturbance to the riparian area by mineral activities. Initiate timely and effective rehabilitation of disturbed sites. Where possible, locate mineral activities outside the riparian unit.

Range Direction: Minerals – Provide appropriate mitigation measures to assure continued livestock access and use.

Timber Direction: Minerals – No specific direction is given.

General Big Game Winter Range: Minerals – Modify, delay, or deny mineral leasing, exploration, and/or surface occupancy, where applicable, if they cause unacceptable stress on big game or unmitigated damage to their habitat.

C. Identify the applicable NEPA document(s) and other related documents that cover the proposed action.

List by name and date all applicable NEPA documents that cover the proposed action.

The Pines Tract Project Final Environmental Impact Statement (FEIS), US Forest Service and BLM, January 1999.

Record of Decision, Pines Tract Project, US Forest Service, January 1999

Record of Decision, Pines Tract Project, Bureau of Land Management, February 1999

Fluid Flow Characterization of the Castle Gate Sandstone, Southern Wasatch Plateau, Utah; Interpretation of Reservoir Partitioning Through Permeability and Porosity Analysis, Brian J. Black, Masters Thesis, Brigham Young University, December 2000

Probable Hydrologic Consequences of Longwall Mining of the 3 Left Panel Modification Area at the SUFCO Mine, Petersen Hydrologic, Erik C. Petersen P.G., and Kelly L. Payne P.G., April, 2003

3 Left Pines East Stream Buffer Subsidence Proposal, Canyon Fuel Company L.L.C., April 2003

Site Visit to the East Fork of Box Canyon, Letter, Erik C. Petersen, May 2003

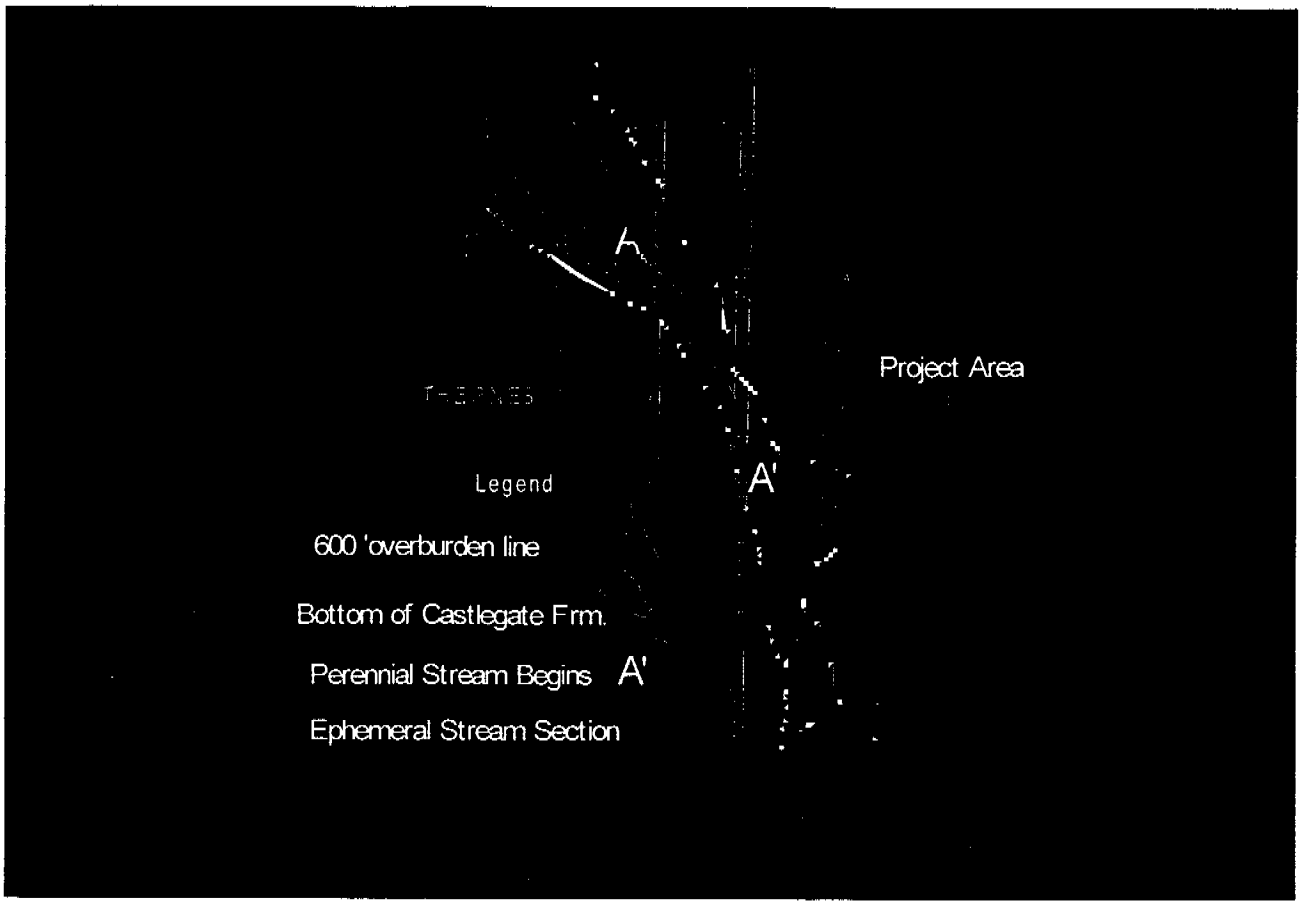
National Register of Historic Places MOU Agreement No. 00-MU-11041000-017, dated May 2000

D. NEPA Adequacy Criteria

1. Is the current proposed action substantially the same action (or is a part of that action) as previously analyzed?

Documentation of answer and explanation: YES

The proposed action of mining under the East Fork of Box Canyon was analyzed in the Final Environmental Impact Statement for the Pines Tract Project. The issue is undermining and subsiding the perennial and "perennially functioning" (ephemeral) portions of the East Fork of Box Canyon. The issue is subsidence of the East Fork of Box Canyon creek. In the first longwall panel (3rd Left) the stream is mainly in the Blackhawk formation and is perennial for the entire length of the panel. In the second panel the stream is in the Castle Gate formation and is



Map 1 Project Area Geology

only perennial for a small portion of the drainage length. In the third longwall panel only has two small stock ponds in the area. When an area is subsided, two types of surface cracks can occur. Transient cracks that form parallel to the longwall face and cracks that form perpendicular to the longwall face over the gateroads. Both types of cracks are relatively shallow surface features and have been observed in the field to extend to depths of generally less than 30 feet. The limited cracks that occur in the bottom of drainages appear to close relatively quickly and fill up with sediment and other debris. Cracks that occur in the bottom of the streams could temporarily interrupt streamflow, but flow would resume once the cracks have filled with water or organic material. If this natural mitigation does not occur in a timely fashion, then the the stream flow could be restored sooner by placing material in the stream channel. The FEIS discussed this issue at great length and addressed potential impacts and mitigation as follows:

> "However, clays in the Blackhawk Formation shales and mudstones swell when wetted and anneal mining-induced fractures. Thus , the downward migration of ground waters is naturally mitigated. This occurrence is suggested by the fact that the discharge from mined-out longwall areas in the SUFCO Mine and other Wasatch Plateau mines consistently decrease with time. (FEIS page 3-45).
>
> Mayo and Associates (1997b) conclude that if tension fractures occur in the Castlegate Sandstone in the bottom of the canyons, streamflow and water from colluvial groundwater systems may be temporarily diverted into the bedrock underlying the canyon. Once fractures fill with sediments and water, movement of water in the fracture will be essentially static and streamflow and colluvial ground water systems would no longer be directly affected. It is not expected that tension cracks will extend downward into the

Blackhawk formation (FEIS, Page 3-48).

Tension cracks are possible in the upper Blackhawk Formation. Because the formation consists of interbedded shale, mudstone, and sandstone layers, tension cracking should be less severe in the Blackhawk Formation than in the Castlegate Sandstone. If tension cracks form, they will most likely form in the sandstone horizons of the formation. Shale layers have the ability to translate stress laterally and should not experience tension cracks, and may help, to some degree, mitigate tension crack formation in the sandstones. The consequence of tension cracks in the Blackhawk Formation is the possible diversion of streamflow into sandstone horizons. Because the East Fork of Box Canyon is a natural ground water discharge location, it is possible that the sandstone horizons that are exposed in East Fork Box Canyon area saturated and would not accommodate significant quantities of surface water. The thickness of sandstone channels in the upper Blackhawk Formation is about 50 feet (Marley et al., 1979) What this means is that the maximum vertical distance that water could travel is 50 feet. Any intercepted water would then likely be translated horizontally down gradient, which in East Box Canyon is also down stream so the discharge would occur where the bottom the of sandstone channel outcrops in the stream channel (FEIS page 3-55). This environmental analysis has shown that direct impacts to groundwater resources resulting from underground coal mining in the Project Area would be negligible. However, Under Alternative B and Alternative D, there is a potential for diversion of some surface water from perennial streams into bedrock. This impact is expected to be of short temporal duration, perhaps less than a year, but could last up to 2 years (FEIS, Page 3-48).

Therefore, depending upon the location, season, duration and extent, both temporary and permanent tension cracking within the upper reaches of East Fork could affect its flows. The exact magnitude and duration of the effects depends upon various factors, at least some of which are not predictable or quantifiable (Mayo and Associates 1997b). However, given the assumptions cited above on crack width and healing rate, these effects would be estimated to generally and typically limited to less than a six-month period for the temporary, transient wave type of cracks. Given the typical tension crack widths and time for initiation projected by Agapito (1997) and a typical average healing rate cited by Dimick (1991), even flow disruptions caused by the more permanent cracking would have the potential to cease within 1 year after undermining, but may take up to 2 years.
Although experience indicates that the cracks are likely to either self-close or be filled over time with sediments/debris, a low potential exists for permanent cracking that either does not infill, or takes much longer to do so than has been observed elsewhere. This potential may be low given; the narrowness of the predicted crack widths (intuitively, the smaller the crack width, the more easily it can be filled with available material and the less likely it is to extend for great depths); the noted availability of sediments and organic matter (which may increase after subsidence as canyon slopes experience instability); and the hydrogeologic characteristics of the channel substrate. If the channel cracks during periods of low flow, there is a higher probability that all flow could be intercepted as the baseflows are less than 20 gpm, and would thus remove the sediment transport source. Additionally, at low or base flow periods, the creek carries minimal sediment that would be available for fracture filling. Cracks may also form in series, where numerous cracks develop over an area. This also presents a higher risk to intercepting stream flow. (FEIS page 3-70).

The loss of hydrologic function of hydric soils (18.6 acres) due to alteration of the surface and shallow groundwater flows by subsidence-induced fractures would be short termed. Most of the fractures would be filled by natural sedimentation and/or swelling for the clays in the rock stratas, thus restoring the natural hydrologic function. The short-term loss would be quickly restored naturally and should not irreversibly affect riparian or wetland vegetation communities (FEIS page 3-89).

The floor of East Fork Box Canyon is built up from colluvium that has accumulated against the face of the escarpment. The groundwater that seeps throughout the sedimentary rocks maintains a most soil condition in these colluvial deposits well above the level attributed to the creek flow. This zone, often as much as 20 feet above the creek level, supports riparian species. Therefore, the diversion of the surface flow of the perennial waters in East Fork Box Canyon would not impact these "perched" riparian zone that are

recharged from groundwater seeping into the canyon above the creek level (FEIS page 3-101)

Monitoring of the surface flows over the life of mine would provide detection of surface water diversion of ephemeral or perennial drainages and of springs or seeps. Tension cracks that do occur in these areas which result in diversion of surface flow could be sealed with bentonite. Restoring the flow in this manner would maintain the vegetation communities associated with these water sources. Monitoring of ponds to assess mining induced damage and the repair necessary should also be implemented (FEIS page 3-190).

This issue is also addressed in the Probable Hydrologic Consequences (PHC) analysis that is part of the mine permit. The PHC states, "Based on empirical observations and rock mechanic analysis (Goodrich and Agapito, 1997), it is confidently anticipated that fractures that form in the stream substrate would have small apertures (usually less than ½ inch) because of lateral confining pressure present in the interior of the canyon (i.e. although the rock fractures, there is little space created.)
All of these findings support the idea that the stream channels could be undermined with a low probability of affecting the stream. If impacted, the impacts would be short term in nature and would mitigate naturally. If natural mitigation will not produce the desired condition in a timely manner, other mitigation measures are available as stated in many place in the FEIS.

2. Is the range of alternatives analyzed in the existing NEPA document(s) appropriate with respect to the current proposed action, given current environmental concerns, interests, resource values, and circumstances?

Documentation of answer and explanation: YES

The range of alternatives analyzed in the NEPA document for the Flat Canyon FEIS include: A) No Action or No mining; B) Lease the proposed areas with Standard BLM Least Terms and Conditions (No special lease stipulations would be attached to the lease); C) Lease the proposed areas with Standard BLM Least Terms and Conditions, and Special Coals Lease Stipulations for Protection of Non-Coal Resources (which would not allow subsidence of escarpments and perennial drainages in the analysis area). D) Lease the proposed area with Standard BLM lease Terms and Conditions and Special Coal Lease Stipulations for Protection of Non-Coal Resources, allowing subsidence of perennial drainages and escarpments in the analysis area. (Pine Tract Project FEIS, USFS and BLM, Jan 1999).

A combination of alternatives C and D were selected by the Forest Service in consenting to the issuance of the coal lease and the lease was issued with the stipulations they identified. The range of alternatives that included an analysis of the effects of subsiding the streams adequately covered the proposed action.

3. Is the existing analysis adequate and are the conclusions adequate in light of any new information or circumstances (including, for example, riparian proper functioning condition [PFC] reports; rangeland health standards assessments; Unified Watershed Assessment categorizations; inventory and monitoring data; most recent Fish and Wildlife Service lists of threatened, endangered, proposed, and candidate species; most recent BLM lists of sensitive species)? Can you reasonably conclude that all new information and all new circumstances are insignificant with regard to analysis of the proposed action?

Documentation of answer and explanation: YES

The publication of the Pines Tract Project FEIS is current, (January 1999). Observations made during subsidence of the Main Fork of Box Canyon which is adjacent to the East Fork of Box Canyon substantiate the analysis in the FEIS with regards to subsidence cracks. The FEIS is further supplemented by Probable Hydrologic Consequences (PHC) report that is part of the mine permit.

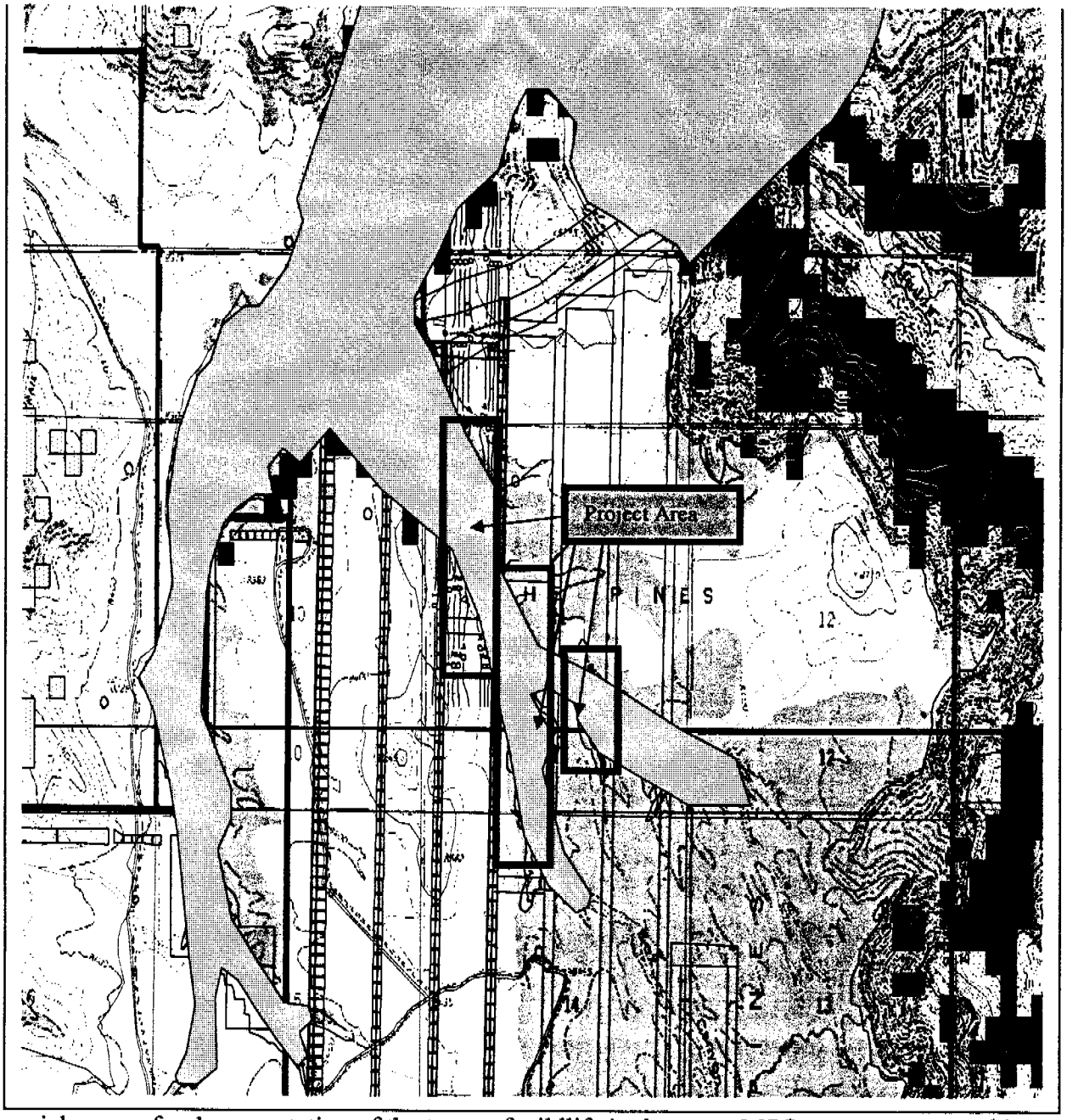
> Observations from the subsided areas above the SUFCO mine (Mayo and Associates 1997a, 1997b) suggest that the small-aperture cracks that do form in the channel substrate will be "dead-end" fractures that will likely fill in with sediment rapidly (within a few weeks). Observations also suggest that these tension cracks do no extend below the surface more that a few tens of feet. Field observations in East Fork indicate that the stream in the 3 Left panel modification area visibly transports sandy and silty sediment that would readily fill any tension cracks that would form. Additionally, the presence of swelling clays in the Blackhawk Formation would readily seal tension fracture to heal to prevent water transmittal from the surface to deeper horizons (PHC, p. 17-18).

Subsequent to the FEIS, part of the project area, including portions of the East Fork of Box Canyon, were identified as possible habitat for the Mexican spotted owl

Historically, the Mexican spotted owl (MSO) ranged from southern Mexico to the Colorado Plateau in southern Utah. Very few owls are found in the canyonlands area as compared to forested sites in Arizona and New Mexico. The project area is not in the Critical Habitat area as designated by the United State Fish and Wildlife Service (FWS). DeGraaf, [and others], 1991, indicated that," In the Southwest, spotted owls are commonly found in forested mountain tablelands and canyons from 5,500 to 9,000 feet(1,676-2,743 m)". The project area ranges from 8000 to 8400 feet and is therefore in the upper elevations of the species range.

Impacts to raptors including Bald Eagle, Northern Goshawk, Peregrine Falcon, and the Flammulated Owl were analyzed in the FEIS for the Pines Tract Project. The FEIS determined that an impact to the surface hydrology which might reduce the riparian area, could, reduce foraging habitat for these species. Escarpment issues were discussed in the FEIS. The Recovery plan for the MSO states that "owls occur primarily in steep-walled, rocky canyons". The FEIS (p 3-17) states," These combined factors [convex-shaped, shallower canyon and exposure] suggest that cliffs in Box Canyon and the East Fork of Box Canyon [interior cliffs] should be less susceptible to mining-induced instability compared with the observations made during test mining in Quitchupah Canyon [exterior cliffs]". Underground mining has occurred under the ephemeral portion of the Main Fork of Box Canyon. There were approximately 3 escarpment failures in the entire area covering approximately 6000 linear feet of escarpment. This equates to approximately 3% of the linear cliff face that was affected. Therefore the statements in the FEIS are substantiated because of the small amount of cliff failure that would be encountered. Even if owls are present, the probability of an owl nest being affected by subsidence would be minimal.

Surveys are being conducted in the project area and in potential habitat areas that are in a 2 mile radius of the "Muddy" coal tract. To date no owls have been found. MSO generally utilize the same territory year after year. Mining is proposed take place between mid September and the end of December. The nesting season for the MSO is from March through August. The mining period for the first panel to be undermined would be outside of the nesting period and would not interfere with nesting. The surface over the remaining panels will have been fully surveyed by the time mining is initiated. The FEIS relied upon historical records and a 1997



aerial survey for documentation of the types of wildlife in the area. MSO were not reported in the survey.

MSO surveys have been conducted in and around the project area according to the Fish and Wildlife Service protocol, under contract from the Manti LaSal National forest. Four surveys were conducted in 2002 and one survey has been conducted in 2003. So far no owls have been found. Three remaining surveys will be completed by late Aug 2003.

Figure 1 MSO 2002 and 2003 Survey Area

Because the impacts have already been analyzed for raptors and disclosed to the public, and the MSO were not found in the 1997 or subsequent surveys, no additional NEPA analysis or public notification is necessary because the impacts listed in the FEIS would be the same for the MSO as other raptors. BLM informally consulted with Fish and Wildlife Service on June 30, 2003. The FWS does not oppose having the project go forward based on the information gathered to-date on the MSO. The FWS requests that the remaining MSO surveys take place. If

MSO are located, then the normal Section 7 consultation would be initiated for protection of the species. (If a proposed Federal action may affect a listed species or designated critical habitat, formal consultation is required (except when the Services concur, in writing, that a proposed action "is not likely to adversely affect" listed species or designated critical habitat). [50 CFR §402.02, 50 CFR §402.13]).

The National Register of Historic Places requirements has been complied with under Memorandum of Agreement between the USDA-Manti-LaSal National Forest, The Utah State Historic Preservation Officer, Canyon Fuel Company L.L.C., and the Utah Division of Oil, Gas and Mining regarding the SUFCO mine (Agreement No. 00-MU-11041000-017 and finally signed May 30, 2000).

4. Do the methodology and analytical approach used in the existing NEPA document(s) continue to be appropriate for the current proposed action?

Documentation of answer and explanation: YES

The methodology and analytical approach used in the Pines Tract Project FEIS and the other studies are the current scientific methodologies that are available for predicting impacts due to subsidence. Actual information was gathered from the mine on subsidence. The company has been using longwall techniques for over 10 years. There is no current technical analysis that could be made that would be superior or negate the findings of the FEIS or the technical studies. Both Government and private industry have reviewed the analysis techniques and all involved have accepted them. The bottom line is that the surface impacts from the action are not different than what was analyzed in the Pines Tract Project FEIS NEPA document.

5. Are the direct and indirect impacts of the current proposed action substantially unchanged from those identified in the existing NEPA document(s)? Does the existing NEPA document sufficiently analyze site-specific impacts related to the current proposed action?

Documentation of answer and explanation: YES

The FEIS stated that the cracks in the stream should seal within one to two years. By sealing the cracks the creek should return to its original flow. The Probable Hydrologic Consequence (PHC) Report dated April 10, 2003 states " It should be noted that whether the 3 Left panel modification area is mined or not, tension fractures in the vicinity of the 3 Left panel will likely form. As currently permitted, the longwall panel will terminated adjacent to the East Fork Creek, which will create a permanent tension zone. Open fracture will likely form at that location as well as at the location where mining of the panel is later resumed on the other side of the creek. If a continuous progression of the 3 Left panel occurs, subsidence effects are more uniform and many of the anticipated open tension cracks in the vicinity of the 3 Left panel modification area will likely not form".
"Where differential subsidence of the land surface occurs in stream drainages, there is the potential for the temporary increase of sediment yield in these drainages. This potential impact is primarily the result of subsidence induced gradient changes along areas of differential subsidence. However, this effect is generally expected to be short lived. . . . "

6. Can you conclude without additional analysis or information that the cumulative impacts that would result from implementation of the current proposed action are substantially unchanged from those analyzed in the existing NEPA document(s)?

Documentation of answer and explanation: YES

All impacts have been addressed in the Pines Tract Project FEIS including cumulative impacts. The estimated impacts if the creek was intercepted by cracks would be short term and it was estimated that it could last up to 2 years (mitigation could dramatically shorten that time period). If not all cracks healed, this would mean that the vegetation would be stressed as if it were a drought year in the place where water was intercepted. Cracks would heal and fill up with material and water as material become available. The cracks are of limited length and depth. At the mining depth that the company is looking at the cracks will not intercept the mine workings and the water will not drain into the mine. Because the rock where the cracks may form do not accept water very readily, the water will sit in the cracks until flow resumes or it will be available for plant use, or it will reappear down stream.

Ground Water (FEIS p. 3-55- 3-56) Cumulative Impacts, ". . . there is a potential for diversion of some surface water from perennial streams into bedrock. This impact is expected to be of short temporal duration, perhaps less than a year, but could last up to 2 years". Residual Adverse Impacts, "No residual adverse impacts to groundwater resources overlying the mine workings are anticipated. Although under Alternative B and Alternative D there is a potential for diversion of some surface water resources into bedrock, this impact is expected to be of short term duration, perhaps less than a year, but could last up to 2 years". ".. Irreversible/Irretrievable Commitment of Resources (p-3-56) ". . . No irreversible or irretrievable commitment of groundwater resources that occur near-surface in active groundwater systems that supply base flow to perennial creeks is anticipated. . . ".

Surface Water (FEIS p. 3-80- 3-81) ". . . Cumulative Impacts, Under Alternative B and D, changes to the flow regimes in the Main and East Fork of Box Canyon could occur if subsidence-caused tension cracks intercept flow . . . Residual Impacts, "Under alternatives B and D, the risk of continued effects of flow depletion in localized stretches of perennial streams should the predicted healing of tension cracks not occur, or bentonite repair be impossible or ineffective". Irreversible/Irretrievable Commitment of Resources (p. 3-81) "No surface water would directly be committed for use in this project

Soils (FEIS p 3-89) Hydrologic function of hydric soil (18.6 acres) due to alteration of the surface and shallow groundwater flows by subsidence-induce fractures would be short-termed. Most of the fracture would be filled by natural sedimentation and/or swelling of the clays in the rock stratus, thus, restoring the natural hydrologic function. The short-term loss would be quickly restored naturally and should not irreversibly affect riparian or wetland vegetation communities". (P. 3-91) Cumulative Effects ". . . The cumulative effect upon soil resources would be 140.5 acres of short-term disturbance that would be fully reclaimed, . . . Short Term Uses vs. Long Term Productivity "the mining of coal would not significantly reduce the productivity of the soils in the Project Area. . . "

Vegetation (FEIS p. 3-101) ". . . Approximately 18.9 acres of wetlands/riparian areas could be affected. Impacts would be temporary, until cracks area either naturally or artificially sealed. Depending upon the season, potential impacts are expected to be short-term, likely occurring for one growing season, but up to 2 years in some cases". . . Residual Adverse Impacts (p. 106) "No residual adverse impacts to the vegetation resource are anticipated from any of the alternative analyzed above. . . ".". Short Term Uses vs. Long Term Productity, (p 3-106) ". . . in addition,

a maximum of 24 acres of riparian vegetation could be impacted as a result of mining –induced ground movements. These impacts would be short-term (less than 2 years at a given disturbance site) and temporally distributed over the life of the mine. The sites would be reclaimed, or in the case of ground movement effects, revegated by natural means. The long-term productivity of the area as vegetation habitat would not be reduced".

Wildlife (P. 3-120) The impacts to amphibians. . . Therefore, the magnitude of impacts to amphibians has potential to be grater under this alternative". Residual Adverse Impacts, (P.3-122) ". . . No residual adverse impacts to the wildlife resources are anticipated from any of the selectable alternatives analyzed above. . . . ".Short Term Uses vs. Long Term Productivity (p 3-123) ". . . in addition, a maximum of 24 acres of riparian vegetation could be impacted as a result of mining –induced ground movements. These impacts would be short-term (less than 2 years at a given disturbance site) and temporally distributed over the life of the mine. The sites would be reclaimed, or in the case of ground movement effects, revegated by natural means. The long-term productivity of the area as wildlife habitat would not be reduced".

Special Species Status (p. 3-150) Based on hydrologic and subsidence studies, [subsidence of perennial streams] is not expected to impact species status species". Short Term Uses vs. Long Term Productivity, (p. 3-151) "Unless water resources are affected by subsidence, productivity of most habitats should not be affected . . ."

Range Cumulative Effects, (P-3-191) the cumulative effect to the range resources within the Emery C&H Allotment consist of the residual effects from past actions, current effects from present actions, and anticipated effects from reasonably foreseeable future actions. Residual Adverse Impacts, (p 3-192) No residual adverse impacts to the range resource are anticipated from any of the selected alternatives analyzed above".

7. Are the public involvement and interagency review associated with existing NEPA document(s) adequately for the current proposed action?

Documentation of answer and explanation: YES

The NEPA documents addressed in this analysis had adequate public participation. It was as follows:
January 29, 1998, NOI was published in the *Federal Register* requesting comments.
April 14, 1998, Amended NOI was published in the *Federal Register* requesting comments.
September 25, 1998, Draft EIS was submitted for review and Public comment.
January 25, 1999, Manti-LaSal National Forest Record of Decision
February 22, 1999, Utah State Office, BLM Record of Decision
March 3, 1999, Fair Market Value and Environmental Documentation Public Hearing

The Forest Service was requested to comment on this modification on February 27, 2003. They responded to BLM on May 8, 2003 with the following comments.
The FS decision on the leasing of the tract included a statement by the FS that, "This decision does not approve mining that would cause subsidence or surface disturbance". However, the Forest Service did consent to the modification of the lease with the stipulations that existed on the lease.

1) The Forest Service stated; "The proposed modification does demonstrate that a portion of the west longwall panel would subside a stream channel segment in the Blackhawk Formation where the potential effects could be less than concluded in the ROD."

Comment: It appears that this may be correct and most of the first panel has the creek located in the Blackhawk formation.

2) The Forest Service stated; "However, a substantial portion of the stream in the Castlegate Sandstone would also be subsided in both proposed longwall panels. These segments could experience cracks perpendicular to the stream channel from transient strain related to advancement of the longwall unit through the panel as well as larger longitudinal cracks such as were experienced in the Main Fork of Box Canyon."

Bedrock Geology and Stream Characteristicsin the East Fork of Box Canyon Proposed for Mining

	3RHG	3R Panel	3R TG	4R Panel	4R TG	5R Panel
Black Hawk Formation Length	250	1430	0	0	0	0
Castle Gate Formation Length	0	270	510	3485	278	600
Perennial Stream Length	250	1700	510	435	0	0
Ephemeral Stream Length	0	0	0	3050	278	600

Comment: The information in the above chart shows that 4th Right and 5th Right Panels contain a "substantial" portion of Castlegate formation on the surface. The 3rd Right panel does not contain a "substantial" portion of Castlegate formation but it contains a substantial portion of Blackhawk formation. Most of the Castlegate formation is in the area where the stream is not perennial but ephemeral.

It is documented in the FEIS that the cracks may form in the stream channel perpendicular to the stream channel. All things considered, the impacts are expected to be small.

The Main Fork of Box Canyon experienced longitudinal cracks to the longwall panel on the rim of the canyon. This was due to the interaction of the rim of the canyon. The canyon rim is unconfined and therefore the crack opened up and the rim wants to fall down into the canyon. This is why the cracks are relatively large and take longer to heal.

3) The Forest Service stated; " In addition, observation of cracks in the Main Fork indicated that sealing of the cracks has not occurred through the total length of subsided channel within the 1-2 years predicted in the FEIS."

Comment: BLM contacted the Manti-LaSal National Forest in an e-mail on 6/20/2003. They verbally contacted BLM and stated that they saw dead trees and were concerned about that. BLM conducted an on-site investigation on July 9, 2003. We saw cracks in the slick-rock portion but they had healed in the Main Fork of Box Canyon area that had been mined in mid 1999. There were no cracks in canyon where there was any significant amount of sediment. There were no cracks in the canyon where the set-up room started. There were cracks on the rim of the canyon. It also appeared that cracks in the walls of the canyon propagated down until they hit a bedding plane or they just stopped.

4) The FS stated that, "we [Manti-LaSal National Forest] have concluded that there would be a substantial risk to water flow and the related riparian and aquatic ecosystems in the canyon for portions of the stream channel. The value of these resources is especially prominent considering the current drought."

Comment: Riparian Habitat: The riparian habitat has two sources of water. First from the water that comes down the canyon along the rocks and flows through the colluvium and second,

the water in the stream. Most of the zone is supported by water running down the rocks through the colluvium. This is evidenced by the fact that riparian zone is as much as 20 feet above the stream and in the case of an ephemeral stream water does not exist year around to support the vegetation. This was discussed in the FEIS as follows: Page 3-101 "The floor of East Fork Box Canyon is built up from colluvium that has accumulated against the face of the escarpment. The groundwater that seeps throughout the sedimentary rocks maintains a most soil condition in these colluvial deposits well above the level attributed to the creek flow. This zone, often as much as 20 feet above the creek level, supports riparian species. Therefore, the diversion of the surface flow of the perennial waters in East Fork Box Canyon would not impact these "perched" riparian zones that are recharged from groundwater seeping into the canyon above the creek level".

Aquatic Ecosystems: The aquatic ecosystems include many things such as macro invertebrates, wildlife, fish, and riparian vegetation. The riparian vegetation has been discussed above. There are no fish in the East Fork of Box Canyon creek. It is stated in the FEIS there would be "No residual adverse impacts to the wildlife resources are anticipated from any of the selectable alternatives analyzed.". (FEIS p. 3-122). The largest impact will be to amphibians. The East Fork of Box Canyon surface flow contributes very little the Muddy Creek Water shed (FEIS p 3-73) and that tension fractures that occur will fill with sediments, water, movement of water in the fractures will be static and steamflow and colluvial ground water systems would no longer be directly effected. (FEIS p. 3-48). If the water is diverted, it will stay in the drainage and most likely express it self at some other location until the cracks fill, seal or heal. Petersen acknowledged in April 2003 "We observed that the East Fork of Box Canyon Creek is actively transporting sediment. Both sand and finer-grained sediment was visible moving down the stream channel. I have observed the transport of sediment in the creek on many occasions during previous visits to the site. During the site visit, a layer of sandy sediment was observed on top of the ice of the frozen creek, indicating that significant sediment transport has occurred since the creek froze-over this past fall. The fact that the stream is actively transporting relatively large quantities of sediment suggests that if tension cracks do form as a result of mining, these cracks will rapidly be filled-in.". This is in the areas where water was flowing.

Therefore the effects to the aquatic ecosystem are estimated to be temporary and short-term.

In a letter dated July 29, 2003 to the Utah State Office, the Regional Forester acknowledges "... that there are differing professional opinions as to the probable duration and significance of these(stream) impacts", and recognizes that BLM could approve the requested R2P2 modification. Although the Forest Service has expressed their concerns with approval of the proposed modification, they have provided no documented information that would contradict statements in the FEIS nor other information that has not been considered as part of the process in the FEIS.

E. Interdisciplinary Analysis: Identify those team members conducting or participating in the preparation of this worksheet.

Name	Title	Resource Represented
Worksheet Preparation		
Stan Perkes	Mining Engineer	Mining
Ron Bolander /Steve Madsen	Biologist	Wildlife
Gregg Hudson	Geologist	Geology
Greg Thayn	NEPA Coordinator	NEPA

F. Mitigation Measures: List any applicable mitigation measures that were identified, analyzed, and approved in relevant LUPs and existing NEPA document(s). List the specific mitigation measures or identify an attachment that includes those specific mitigation measures. Document that these applicable mitigation measures must be incorporated and implemented.

1. Monitor the stream, vegetation and determine effects based on base line information (FIES p. 3-55, FEIS p. 3-105)..
2. The tension cracks should mitigate naturally in perennial drainages (FEIS p.3-55).
3. The repair of visible cracks with bentonite or some other material will heal the cracks faster. Continued attempts may be necessary. (FEIS p. 3-79, p. 3-90, p.3-190, p. 3-105)
4. Monitor and repair ponds. (FEIS p. 3-190) This requires sufficient amount of bentonite material and the drainage needs to be checked in order to determine that the slope is still directed to the pond.
5. Use other repair measures.(FIES p. 3-79)
6. Replace the water (FEIS p.3-10)
7. Formal consultation if necessary on Endangered Species

CONCLUSION

☐ Based on the review documented above, I conclude that this proposal conforms to the applicable land use plan and that the existing NEPA documentation fully covers the proposed action and constitutes BLM's compliance with the requirements of NEPA.

Note: If one or more of the criteria are not met, a conclusion of conformance and/or NEPA adequacy cannot be made and this box cannot be checked

Signature of the Responsible Official

7-31-03

Date