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FIVE-YEAR PERMIT RENEWAL DEFICIENCIES

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File in:
CI 007, 005, Outgoing

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- Confidential
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Date _____ For additional information



State of Utah

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FIVE-YEAR PERMIT RENEWAL DEFICIENCIES

UTAH FUEL COMPANY
SKYLINE MINE
ACT/007/005
CARBON COUNTY, UTAH

February 1, 1989

UMC 700.14 Availability Of Records - JRH

The operator has indicated that maps 3.1.8-1 and 3.1.8-2 are confidential. Accordingly, these drawings need to be referenced to and relocated to Appendix Volume A-4. Please provide appropriate reference for revision to the plan.

UMC 783.22 Land Use Information - LK

UMC 784.15 Reclamation Plan: Postmining Land Use - LK

The applicant has removed land use information, maps, and plans which cover the loadout and waste rock disposal areas. Pre-disturbance photos and Map 3-17 that was submitted with the original permit illustrated that the premine land use for the loadout area was primarily unimproved grazing and wildlife habitat with a small area at the lower end being fenced and used as a livestock holding area. The Division considered this map as a graphic illustration of the approved postmining land use for the loadout area and any significant change from this would constitute a change in land use. This would require documentation from the landowner (other than the applicant) in support of the change, as well as specific plans showing the feasibility of the land use change and how it would be accomplished (see UMC 817.133(c)). From review of the resubmitted reclamation maps for the loadout area, it appears that most pads will not be regraded to A.O.C. and that the entire area may be used for a livestock holding area. This proposed plan is in conflict with the current approved postmining land use plans in that it is considered a change in land use.

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For additional information

To complete the review and approval of the land use section, the following are needed:

1. Maps and plans which discuss the premining condition and use of the loadout area and waste rock disposal area.
2. Maps and plans which discuss the proposed postmining land use of these areas. Any change in land use must meet the requirements of UMC 817.133.

UMC 783.22 Land Use Information - JRH

The operator has revised section 4.12.2 page 4-61 of the MRP to address previous comments on this section.

Within the text of the Mining and Reclamation Plan (MRP), the operator has sufficiently responded to the requirements of this section. However, details and delineation of the final reclamation of the site with regard to facilities left for post-mining land use are not clear.

Maps and plans presented in the MRP do not provide specific details as to the reclamation treatments within the permit area. The reclamation drawings should clearly delineate areas not to be revegetated, roads to be left as part of the post-mining land use, extent and description of pads or other facilities to be left in conjunction with the post-mining land use.

For example, the loadout facilities reclamation maps should clearly indicate that the approaches from the roads will remain, and provide the extent of the area not to be revegetated in anticipation of corral areas. Will the pre-mining corrals be reconstructed as part of this post mining land use? Those areas which are to be completely reclaimed should be delineated to indicate the acreage requirements for topsoil distribution and revegetation, as well as other reclamation treatments that may be required.

The maps and drawings utilized for Phase I and Phase II reclamation must sufficiently show all the aspects of reclamation including determination of quantities for bonding calculations, delineation of the areas for each specific post-mining land use, and determination of the acceptability of the proposed post-mining land use.

Items Required for approval:

1. A map clearly indicating those facilities (roads, pads, culverts, etc.) which are currently within the disturbed area boundaries and are to be left as part of the post-mining land use.

UMC 783.25 Cross-Sections, Maps and Plans - JRH

In accordance with the regulations, specific requirements for certification of drawings and design calculations are required. Recent submittals by the operator have not included these certification requirements. The operator should provide the following:

1. Certification of all drawings used to depict hydrologic structures, earthwork, and other engineered facilities.
2. Certification of all designs and calculations provided in the plan. These certifications should be provided by the individuals who accomplished the design work, or who directly supervised such design.
3. The maps and the calculations should be dated to show both when the original design work was accomplished and when revisions to these designs were accomplished. Currently, most of the design work provided in Volume 5 of the MRP does not have this information and it is difficult to determine whether or not the calculations reflect the currently approved designs or modifications proposed on the drawings.

The application must meet the certification requirements of Subchapter K. These regulations include, but are not limited to, the following:

Certification Regulations:

UMC 783.25 (1), 784.16 (a)(1)(i), 784.16 (a)(2)(i), 784.16 (a)(3)(i), 784.23 (c), 817.46 (r), 817.71 (b), (i), 817.150 (d)(1), etc.

UMC 784.13 Reclamation Plan: General Requirements - LK

In responding to the Division's concern regarding restoration of aquatic habitat and riparian revegetation, the operator has referenced a riparian revegetation plan that is not acceptable and has since been revised. Page 4-35 of the above referenced submittal makes reference to tables 4.7-G and 4.7-3 for final reclamation of the riparian zone. Table 4.7-G does not exist and is probably a typo for Table 4.7-6, which is the correct table for the handset seedlings. However, the plan identifies Table 4.7-3 as the seed mix for seeding the interspaces. Table 4.7-3 is only carried in the MRP to document the past history of riparian revegetation on site and does not meet the requirements of the regulations.

As agreed upon in the fall of 1986, current plans for revegetation of the riparian zone consist of seeding and planting the banks with the appropriate seed mix listed on Tables 4.7-4 and 4.7-5 and adding the riparian shrub supplement on table 4.7-6.

Please correct page 4-35 to identify the current agreement for riparian revegetation.

UMC 784.13 Reclamation Plan: General Requirements - JRH

Map 3.2.3-3 indicates the conveyor route permit boundary. The operator has added acreages to those areas previously indicated on the drawing. However, additional details of these areas were not provided as requested. The operator needs to provide reclamation drawings for these areas which will show the existing and the final configuration for these areas. Sections of these bench areas are in the original design for the road and conveyor route. These sections could be used to provide reclamation details for the areas.

Map 4.2-1 provides a good reference for the reclamation of the surface facilities. However, the South Fork Portals and access road should be added to the drawing. Reference to detailed reclamation drawings for each specific area shown on this drawing would also be beneficial.

Map 4.4.2-1A and B provide details of the reclamation plan for the mine surface facilities. Because these maps provide contour information for backfilling and grading, the drawing should be certified. Additionally, several problems are apparent on the drawing. No recontouring of the topsoil storage area is shown on the drawing. Consequently, the drainage through that area is not shown either. Earthwork is indicated outside of the existing disturbed permit and bonding boundary. Either the boundary must be revised or recontouring must be made within the disturbed area boundary. This problem is most pronounced at Section D-D' where the contours show a 10' cut right at the boundary line.

Cross sections shown on map 4.4.2-1B do not correspond to the contours shown on map 4.4.2-1A. As an example, Section H-H' should show the Mine #3 Access Road but it is not seen on the section. Contours in that area also indicate that the access road and pad will remain virtually unchanged, but Section H-H' indicates filling of the road. These maps should more specifically and precisely identify the recontouring to be accomplished in the area. Reclamation contours located at the temporary gob pile location on the drawing are incorrect and should be redrawn.

Map 4.7.2-1 shows the final reclamation vegetation plan for the portal area. The contours and reclamation treatments shown on this drawing represent the old proposed reclamation of the site. This map needs to be redrawn over the revised base and reclaimed contours provided on map 4.4.2-1A.

Maps 4.4.2-1C and D are reclamation plans and sections of the railroad loadout facilities. Similar to 4.4.2-1A and B, information is not clear on the drawings. Earthwork is indicated outside of the existing disturbed permit and bonding boundary. Because these maps provide contour information for backfilling and grading, the drawing should be certified.

Map 4.4.2-1E indicates the water tank site reclamation plan. The drawing is a planimetric map with insufficient spot elevations or sections to consider it adequate for reclamation design. Contour maps/cross sections must provide sufficient information for orientation and slope within the disturbed area boundary and at least 100 feet beyond.

Map 3.2.6-1A shows the North Fork Drainage Design. This drawing would be an appropriate base map to indicate topsoil volume, reclamation contours and reclaimed drainage reclamation in the reclamation plan of the MRP. This map would also be suitable for determining the topsoil volume available for mass balance calculations.

UMC 784.14 Protection of the Hydrologic Balance - RPS

(b)(3) Water Monitoring

The water monitoring plan as presented in the MRP is confusing. The applicant is requested to provide a complete water monitoring (surface and groundwater) plan in a single section. This issue is considered to be important to the Division due to the number and variety of readers for this plan. Simply, it is suggested that the applicant provide three tables and a single map to demonstrate compliance with this regulation. These tables are as follows:

- Table 1: Comprehensive list of all intended sample sites (surface, springs, wells) with intended months for sampling and reporting and intended parameter analysis list (coded to Tables 2 and 3).
- Table 2: Parameter list for abbreviated samples (high and low seasons).
- Table 3: Parameter list for complete analysis (August sample).

Map: Map 2.3.6-1 to include the well locations and surface and spring sites.

Tables 2 and 3 (currently Tables 2.3.7-1 and 2.3.7-2) should give specific sample station identifiers for the "additional additions" to Eccles Creek and Waste Rock Disposal sites.

The Division feels that the addition of nitrite to the parameter list will be done in the future if the conditions at the site persist and warrant monitoring of this parameter. The Division further requests that dissolved oxygen be added to the parameter list at this time (Table 2.3.7-2). This parameter is an important water quality variable for aquatic life and can potentially be impacted by operations at the site.

It is the Division's interpretation of the MRP and response document, that the applicant has committed to submitting the updated plots of the water quality variables, by sampling station, for each year, as part of the annual summary to be submitted within 90 days of the end of each calendar year.

Table 3.2-2 presents a data summary for NPDES-001. The table should be updated to include data reflective of the occasional excursions above the TDS limitation reported to the Division and the Department of State Health (e.g. January 26, 1989). The table and text is misleading as presented.

The application should include a description of the methodology used to collect and analyze the data (UMC 771.23 (c)(3)).

UMC 784.16 Reclamation Plan: Ponds, Impoundments, Banks, Dams and Embankments - JRH

The operator has revised the text and the drawings to indicate that the mine facilities sediment pond is to be reclaimed including backfilling the structure. This response is considered to be adequate for the text of the MRP. However, the drawings need to be revised to indicate how this will be accomplished during Phase II reclamation. These details should include the location and the size of the stockpiled fill and topsoil material to be temporarily stored during Phase I reclamation and then used to backfill the pond during Phase II reclamation.

Similarly for Pond 002 at the railroad loadout facilities, the embankment volume should be checked to determine if additional fill material will be required to supplement backfilling of the pond during Phase II activities.

UMC 784.16 Reclamation Plan: Ponds, Impoundments, Banks, Dams,
And Embankments - RPS

Current maps of the as-built configuration of the ponds must be submitted. These plans were required by Conditional Approval issued 5/5/86, Amendment no. 007/005-D (portal area pond), and the field revision issued 9/29/88, Amendment no. 007/005-88E (loadout area pond). The maps should have a contour interval of two feet and should be certified by a registered professional engineer. The stage-volume curves presented in Volume 5 should be based upon these revised maps and referenced in those sections. For clarity in the MRP, the maps should be accompanied by a cross-section which depicts the following elevations (in addition to those elevations currently depicted); design sediment volume elevation, decant device, and elevation of water surface at design flow.

At a minimum, the information should be presented in the engineering calculations of Volume 5. Additionally, the following information should be presented in Volume 5 for each pond: elevation of water elevation for 10 yr - 24 hr event, elevation of spillway riser/barrel junction, elevation of spillway outlet, length of barrel, and assumed coefficients for weir, orifice and pipe flow (as needed) calculations.

The use of weir flow equations only for the spillway design precludes the determination of spillway capacity relative to UMC 817.46 (i). Additionally, Division policy requires that the plan contain a commitment that no manual dewatering of the pond (loadout area) will occur in a period less than 24 hours following a precipitation event.

Section 7 presents information relative to the portal area sedimentation pond. A plate should be provided that depicts the drainage boundary for the sedimentation pond. This plate should be referenced in these calculations. The drainage boundary should correspond to undisturbed diversions, roads or other hydrologic controls that dictate that boundary. The calculations should reference the plate used to determine the stage-volume capacity. The plates must be current and certified by a registered professional engineer.

The stage-discharge curves presented are partially complete. The flow capacity for orifice and pipe flow conditions should be determined. Weir flow conditions only were calculated and presented. The size of the spillway riser and barrel should be

stated in this section and at best be presented on an appropriate plate. The elevation of the pond water surface at design flow should be calculated and presented on a cross-section (or in calculations text). This information is necessary to demonstrate compliance with the freeboard requirements of UMC 817.46 (j).

Map 4.7.2.-1 still depicts the riparian zone (and assumed reclaimed stream channel) passing through the sedimentation pond. This map is entitled "Final Reclamation Vegetation Plan-Portal Area." Similarly, Map 4.4.2-1A entitled "Mine Surface Facilities Reclamation Plan" depicts the sedimentation pond in place. The plan still conflicts relative to the final disposition of the pond and the final site configuration.

Section 13 presents information for the loadout area sedimentation pond. The calculations should reference the plate used to determine the stage-volume capacity. A plate should be provided that depicts the drainage boundary for the sedimentation pond. This plate should be referenced in these calculations. The plate must be current and certified by a registered professional engineer (reference previous comment). The stage-volume curve presented on Map 3.2.1-4 conflicts with Volume 5.

The stage-discharge curves (Volume 5) presented are only partially complete. Weir flow conditions only were calculated. The flow capacity for orifice and pipe flow conditions should be determined. Orifice calculations done by the Division (using estimated spillway size values) will be less than those presented. The size of the spillway riser and barrel should be stated in this section. Using a value of $L = 3.42$ (loadout pond) found in Section 13, and "back" calculating a riser diameter of 1.09 feet, it appears as though errors exist. Map 3.2.1-4A depicts a riser diameter of 36 inches. Discrepancies exist in the elevations for the pond design. The text describes the primary spillway at an elevation of 7926.0 ft. and Map 3.2.1-1 depicts the elevation at 7925.4 feet. The engineering calculations give a total pond volume of 78,600 cf and Map 3.2.1-4 gives the value as 76,212 cf. Similar problems exist with the design sediment volume and elevation and embankment elevation.

The stage-volume curve presented in Section 13 conflicts with the curve presented on Plate 3.2.1-4. The decant device elevation should be given in this section, and if possible, on an appropriate plate to demonstrate compliance with UMC 817.46 (x).

The drainage area reporting to the loadout area pond conflicts. Page 3-19 states 7.35 acres and Map 3.2.1-4 states 5.76 acres. The text in section 3.2.1 conflicts with information in Volume 5. For example, runoff volume is reported as 40,020 c.f. and 39,670 cubic feet. The spillway elevation is reported as 7926 ft. and 7925 feet.

Drawing 3.2.5-1 does not depict the mine water discharge to the sedimentation pond. Additionally, what is the fate of excess water from the ROM, crusher building and truck loadout?

Section 4.19.2 of Volume 3 discusses diversion channels used to divert undisturbed drainage from the sedimentation pond. The section states that the diversions were designed for the 100 yr. - 24 hr. precipitation event. The calculations in Volume 5 should verify this statement.

Previous submittals stated that the sedimentation ponds will be surveyed to determine the sediment cleanout elevation. The current response document states that the ponds will be surveyed as per cross-sections depicted on plates 3.2.1-4. Plate 3.2.1-4 does not depict the said cross-sections.

UMC 784.23 Operation Plan: Maps and Plans - RPS

The application has presented a map to comply with subsection (b)(6) of this regulation. The discharge lines were located on the Mine Surface Facilities Reclamation Plan, Map 4.4.2-1A. This map is not appropriate for this information as these details relate to the operational phase of the operation and are not related to the reclamation plan. The map is additionally not certified as required. A certification of the map with the drain lines listed as "approximate" will satisfy this requirement. The information should be presented on Map 3.2.1-1. The Skyline letter of November 14, 1988 states that Page 3-25 has been revised to indentify the discharge lines. That revised page has not been submitted.

UMC 800 Bond and Insurance Requirements - JRH

Cost estimate calculations for reclamation are found in Volume 5, tab 17 of the MRP.

Some information is presented in the calculations indicating the amount of earthwork involved for reclamation. This information is identical to that previously submitted in earlier proposals. Reclamation contours have been changed since the time of these calculations and the earthwork is not reflected in these calculations. See also UMC 817.101 regarding further comments on earthwork and mass balance.

The calculations provided by the operator are difficult to read and follow in consideration with the maps and plans provided for reclamation. A reclamation treatments map should be provided in conjunction with the reclamation cost estimate to clearly indicate the location of reclamation activities provided.

Items Required for Approval:

1. Revised calculations encompassing changes to the reclamation plan as proposed in the MRP. These calculations should include revisions in the disturbed area boundaries, in earthwork, and in the quantities required for treatments such as topsoil distribution, grading, seeding and mulching.
2. A map(s) indicating the location for specific reclamation treatments. Designs and drawings should have sufficient detail in order to determine the quantities provided in the cost estimate. These drawings should also clearly indicate work to be accomplished in Phase I and Phase II reclamation activities.
3. In conjunction with the five-year permit renewal, the operator will be required to complete a Reclamation Agreement with the Division. This form is provided for your review and will be required for submittal upon completion of the permit renewal.

UMC 817.42 Hydrologic Balance: Water Quality Standards and Effluent Limitations - RPS

The acreages for the small area exemptions have been added to the permit text on page 3-26. However, the proposed small area exemptions should be included on appropriate maps. Essentially, the permit should contain maps that clearly delineate the disturbed area boundary for each location (e.g. portal area, south fork, loadout, well houses, water tank, waste rock disposal area, etc.).

It is suggested that single maps of each area be provided to depict the information. However, if a series of maps are presented to depict the information, the scales should be similar for use as an overlay or the text should clearly describe the maps and intent of the proposal. All areas delineated within the disturbed area boundary must be accounted for as reporting to a sedimentation pond, a small area exemption, a sedimentation pond embankment, a diversion ditch or road installed in accordance with UMC 817.42 (a)(3),(4). The text should reference the appropriate plates. The general locations of proposed alternative treatment structures should also be depicted.

For example, the small area exemptions in the South Fork area (topsoil and portal pad) should be depicted on a map and discussed in the appropriate section (section 3.2).

UMC 817.43, 817.44, 817.46, 817.47 General Hydrologic Structures - RPS

The application presents scattered designs for reclaimed channels, diversions, and sedimentation ponds that utilize design peak flow values. All design flow values cannot be verified by the Division due to the lack of adequate watershed boundary maps. Previous reviews have requested this information. In order to clarify the Division's information needs for the verification of design flow values the following items are delineated. It is recognized that a portion of the flow values have some of the requested information, however the documentation in Volume 5 (Engineering Calculations) and the supplied maps are difficult to follow and are considered to be incomplete.

Each design flow value for each structure must be accompanied by a drainage area map (topographic). The map must clearly delineate and label the drainage area and that label should be used in the calculation sections. The map should have a symbol in the legend that is used for the drainage boundary. Current maps do not depict all the watershed boundaries. For example, watersheds for the Eccles Creek drainages are not delineated. The watersheds for the loadout area undisturbed diversions are not depicted. These watersheds should be depicted on Plate 3.2.8-3 or smaller scale maps as available.

The mine site and loadout area (Plates 3.2.1-1 and 3.2.1-1) do not clearly delineate drainage boundaries. The labeling of the diversions and associated areas is not clear. It appears as if the drainage areas that are depicted are incorrect. For example, the areas for UDA1 - 3 are not depicted on any maps.

For each diversion, culvert, swale, and spillway structure at the site, the Division requires the following information:

1. A map of the drainage area to the structure. The structure should be clearly labeled on a site map and referenced in the design calculations. The map used for the calculations must be referenced in the calculation sections of Volume 5.
2. A map of the hydraulic length for each drainage area. The map must be a topographic map to determine the flow path.

3. A map or referenced method used to determine the watershed slope. This is usually done from a topographic map in conjunction with the above items.
4. A time of concentration for each watershed/structure. The inputs for this calculation must be referenced (i.e. maps used to determine area, slope and hydraulic length).
5. The design precipitation value. This has been adequately addressed in Section 2 of Volume 5. However, the design precipitation values are inconsistent within Volume 5 (e.g. Sections 2 and 15). The application should present consistent precipitation information.
6. A map of the location of each structure with a label for each structure. That site/structure identification label should correspond to the calculation section. Several designs (e.g. swales) are presented in Volume 5 that are not clearly identified on the plates.
7. Runoff coefficients used in the Rational method and curve numbers used in the SCS methodology for peak flow calculations should be referenced to assumptions (i.e. 0.65, revegetated, low infiltration). Curve number assumptions contained in the permit generally appear adequate. The rational method flow coefficients need justification.
8. The calculated design flow value in cfs including reference section for that determination.
9. A channel design including channel cross-section, channel location on topographic map (specific extent), design flow (referenced), design slope (minimum-capacity and maximum-stability), roughness coefficient, design velocity, riprap sizing, filter blanket design, freeboard requirements.

The drainage maps of the site are not adequate. For example, at the loadout area (Map 3.2.1-3), watersheds for each structure are not depicted (UDA1-3). Culverts are not labeled. Each culvert should be depicted on a map and labeled (including pipe arch across Eccles Creek). Diversions are not clearly labeled (i.e. no DA2). Areas DA-8 and DA-9 are not labeled on the map. Drainage directions and patterns are not clear. For example, the drainage pattern at the inlet of the buried 30 inch CMP is unclear. Some watershed area boundaries appear to be drawn incorrectly (e.g., Area DA4). Basically, Plate 3.2.1-3 should be resubmitted. It should be noted that the size of the symbol tape for the diversions makes map interpretation impossible (reference UMC 771.23 (b)).

Generally, Section 10 appears to contain adequate information. However, the application must include labels and some narrative to clarify the design. For example, Section 10 should reference the map used to determine the areas, slopes and hydraulic lengths. The runoff coefficients used in this section should be referenced with assumptions (e.g. 0.65, disturbed, soil type). Generally a factor of 0.6 to 0.9 is used for industrial areas. The Division believes that a factor approaching 0.9 would be more applicable to the active portions of the loadout area. The velocities assumed to be nonerosive should be justified with references (i.e. 6 fps, reference to soil type and present table or reference). The section should describe the depth of each diversion and demonstrate a 0.3 ft. freeboard. This depth should be determined using the minimum slope for the diversion. The section should describe the assumptions for design (i.e. at x % slope, the velocity will be x fps, with diversion x having a maximum slope of x %, which is less than the design slope). Page 15 is a poor copy.

Section 11 presents designs for the Train loadout swale. The areas SW1 and SW2 should be clearly presented on a plate. The design of the swale is incorrect. The slope of the structure and the design discharge will determine the velocity of the flow. The velocity cannot be assumed as a known and used to drive the equation.

Section 12 presents designs for train loadout culverts. The calculations in this section should be identified with a culvert identification label that corresponds with the label on a plate. For example, what is the location of the culvert described as "culvert east end on train loadout?" All calculations should be identified for the structure. For example, several pages of designs for "horseshoe structural plate arch" should be identified as the Eccles Creek crossing at loadout with an identification label and referenced to a map using a specific identifier label.

Section 14 presents designs for the waste rock disposal site. The section should reference the plate used for the determination of the watershed area, slope and hydraulic length. Plate 3.2.8-3 depicts a watershed with an area of 281 acres, while the calculations use 270 acres. As with all diversion designs, the calculations should reference a map which depicts the diversion. The diversion depicted on the map should verify the uniform slope used in the calculations. If the slope varies the riprap should be designed using the maximum slope and the diversion depth should be designed using the minimum slope. The calculations did not allow for 0.3 ft. freeboard (page 2). The application does not present designs for reclamation of this channel.

Section 15 presents information for the waste rock disposal sediment pond. The calculations should reference the map used to determine the drainage areas (undisturbed and disturbed). The calculations (page 5) should reference a map that was used to determine the pond capacity. The section should propose that no spillways will be installed due to total containment of the design storm (25 yr. - 24 hr.) used in the design. The section should summarize that the disposal area will have the capacity for the 25 yr. - 24 hr. event until the year x as presented in Section 16.

The portal facilities drainage plan contains similar errors. This section should be carefully edited for clarity and consistency.

The trash rack detail presented on Map 3.2.6-1D should be referenced in the text/calculations for the culverts proposed to have said design.

The report entitled "Determination of the 100 yr. Flood Plain of Eccles and Mud Creek" in Volume A-1 contains erroneous information (e.g. references to plates that were not included in this submittal). The Appendices to this report are poor copies and are not reviewable.

Information presented on DGW. No. 1-101-C conflicts with other information presented in the plan (e.g. peak flow values).

The plate presented following the above referenced drawing (1-101-C) in Volume A-1 is unintelligible.

UMC 817.44 Hydrologic Balance: Stream Channel Diversions - RPS

It appears as if the calculations for the 100 yr. - 24 hr. events for the Eccles Creek tributaries at the mine site are included in Section 2 of Volume 5. The calculations result in lower peak flow values than those calculated by the Division. However, the calculations may be approvable if a watershed map delineated on a topographic map is included in the MRP and these calculations are distinctly labeled. Each channel design should be referenced to a specific storm return period and duration period.

The information presented for the 2 yr. return event should be used for the design of the compound channel. The information for the 2, 5, 10, 25, 50, and 100 year return period events for durations of 2 and 3 hours is not necessary to demonstrate compliance with the Division's current regulations. These should be removed from the application. Current regulations require design information for the 10 yr. - 24 hr. (operational) and 100 yr. - 24 hr. (reclamation) event.

The information relative to peak flows requested in previous reviews and presented in Volume 5 is unclear. For example, the watersheds presented in various tables in Section 2 should be identified on the above requested map. As another example, the estimated peak flow discharge on sheet 11 of 13, currently labeled simply as "estimated peak flow discharge", should be labeled as estimated peak flow discharge for 100 yr. - 24 hr. event or as intended. These same labels should be used in Section 18 (channel designs). The watershed labels should be consistent throughout the permit.

Section 18 presents information relative to the channel reclamation at the portal facilities area. The channels identified in these sections should correspond to watershed identifiers and design flows in Section 2 or the design information should be complete in this section. Again, UMC 771.23 (b).

The entire length, location and label of these channels should be specifically depicted on a map. For example, the calculation text of pages 1/6 and 1/10 of this section both simply state "reclaim channel." These should be clarified and identified on a map. The peak flows presented should be referenced to the calculations in Section 2. Several peak flow values are given in this section that are unidentified (e.g. page 5/11, $Q = 8.8$ cfs). The plan view of the channel should correspond to the longitudinal profiles requested in this review.

The application must present channel design information for the transition between the undisturbed channels and the reclaimed channels. As a suggested avenue to demonstrate compliance with the regulations, the Division requests that longitudinal profiles of the reclaimed channels be submitted. The contour information on Map 4.4.2.-1A should agree with these profiles. The contours should be included on that Map to include the entire disturbed area and 100 feet of undisturbed area. This information is particularly important in the North Fork Branch Area and is not currently depicted nor clearly presented in the MRP.

These profiles must include a minimum of 100 feet of the undisturbed channels at the transition zone with the proposed reclaimed channel designs and depict the transition at the invert of the Eccles Creek road crossing culvert at SR-264 and the outlet of that culvert to Eccles Creek. For example, the application does not address the reclamation of the channel in the North Fork of Eccles Creek. The removal of the half-round culvert at the upper bench and the reclamation of the channel to the portal pad will necessitate a steep slope channel design which has not been addressed.

The elevation difference at the lower end of the reclaimed channel and the SR-264 culvert inlet must be addressed. The profiles should be labeled with elevations where appropriate. Each profile should depict the elevations at the lower end of the undisturbed channel, elevations at each slope change in the channel, and sufficient elevations to determine the design slope of the channel. The main stream channel profile should additionally include the invert elevation of the SR-264 culvert and the elevation of the undisturbed stream channel below the culvert outlet (this should be accompanied by a design for an energy dissipation structure for the permanent design flow event). The longitudinal profiles should account for the elevational differences between the undisturbed channel elevation and the elevation at the inlet to the SR-264 culvert crossing. Cross-sections for the stream channel reclamation calculations should include a scale and reference a location on a planimetric map. All reclamation designs must comply with the certification requirements of the regulations.

In consideration of the logistical problems and costs associated with the backfilling of the culvert system upon reclamation (reference UMC 817.56 - JRH), the Division suggests that the alternative of culvert system removal be evaluated. The Division will approve the necessary removal of the sedimentation pond during the initial phase of reclamation. The Division feels that alternative sediment controls could be used to adequately control sediment during the bond period. The return of the channel to the natural stream gradient will additionally ensure a more stable design (i.e. diversion not on fill slope), reduce the problems associated with the SR-264 culvert crossing, and comply with UMC 817.44 (b)(1) and (d)(3).

The reclamation plan for the South Fork drainage has erroneous Q (discharge) values for the determination of d (depth). Again, a watershed boundary map for this design should be submitted.

The text discusses the restoration of aquatic habitats. The original MRP contained specifics on these designs (e.g. Map 3-16A and 3-17, original MRP). The Division requests that these details be logically incorporated into the new MRP and discussed in the text or similar details be submitted.

The plan should present a channel reclamation plan for the waste disposal site channel. The channel should be depicted on Map 4.16.1-1B (or similar plate) relative to extent and location.

Page 69A states that no waste will be placed within the 100 yr. flood plain in the loadout area. This flood plain should be mapped and justified with appropriate calculations (the calculations presented by the Vaughn Hansen Report have been rejected by the Division, May 5, 1988 review) and included in the final reclamation maps and designs.

Using a curve number of 65 for the undisturbed areas as presented by the applicant in Volume 5, the rainfall excess in inches was calculated by the Division to be 0.86 inches. This value disregards disturbed area drainage which would increase the value slightly. This value conflicts with the value presented in section 4.19.1 (0.031 inches).

Section 4.19.3 discusses the relocated Eccles Creek channel at the loadout area. The text should be supported with appropriate calculations in Volume 5. The text and calculations should demonstrate compliance with UMC 817.44 (including channel and floodplain size and channel stability at a 100 yr. - 24 hr. design event). For example, calculations for the determination of the 100 yr. - 24 hr. event at 190 cfs should be presented.

Section 4.19 references Volume A-3 for engineering calculations. Volume 5 of the current submittal contains the engineering calculations.

Section 4.19 states that the reclaimed channels will have slopes in steep sections between 10 and 35 percent. Volume 5, Section 18 presents designs for the reclaimed channels. The material is difficult to interpret due to indentionation problems as noted previously, however, the maximum design slope for this section is approximately 11 percent. Please provide a consistent channel reclamation plan and text.

UMC 817.52 Hydrologic Balance: Surface and Ground Water
Monitoring - DD

Ground Water

The information submitted to characterize the geology and ground water regime is not sufficient to determine the probable hydrologic consequences for the next 5-year permit term or the life of mine operation.

Some hydrologic information, such as spring locations, proposed mining areas, potential subsidence zones and ground flow patterns, indicates that there is potential for mining to disrupt

the hydrologic balance if mining continues to the west, under aquifers that supply springs and streams in Huntington Canyon. Dewatering of these aquifers and inter-basin transfer of ground water will be unacceptable.

Permit Renewal Deficiencies:

On page 2-35 of Volume 1, Section 2.3, the applicant states, "Station CS-15 will be monitored for flow only for a one year period beginning fall of 1988. This statement should be clarified to reflect a monitoring survey that will indicate the mining effects on the surrounding springs due to subsidence. The operator will be required to supply a minimum of one year's flow data prior to conducting mining operations, other than development of the breakout portals. One year of flow data should be taken to reflect the seasonal variation of the springs at site CS-15. Quarterly flow measurements should be taken during the operational period of the mine and until subsidence monitoring indicates that the major portion of vertical movement has ceased.

The monitoring plan should be revised to specifically state the frequency of flow measurement for CS-15. The application states that this is an intermittent stream and Division water monitoring guidelines suggest that monthly flow measurements be taken for this site. The stream is also depicted on Plate 13 to be a perennial stream as classified by the U.S.G.S. The plan should be revised to include the monitoring of flow from this station until it has been determined that subsidence (as approved by the Division and the U.S.F.S, Manti-LaSal Forest) in the vicinity of the South Fork of Eccles Creek drainage is complete.

The statements submitted by the applicant in Volume 1, Section 2.5 which states that, "the formation (Blackhawk Formation) seals readily due to swelling of the bentonitic shale when wet." Should be substantiated with data and empirical calculations for the minesite. Specific information for this statement to be precise (for fracture sealing) should identify the amount of fracturing that would be expected, the size of the fractures, the rate of sealing and the amount of bentonitic shale members that would contribute to the sealing mechanism.

The plan currently proposes that water level samples will be taken once a year for wells in the area. These samples should be collected quarterly in conjunction with water quality analysis. Page 2-33 states that the depth of the wells precludes the collection of water quality data. The basis for this statement must be substantiated in the permit. The Division requires that well data (field and laboratory) be collected on a quarterly basis during operation.

UMC 817.56 Hydrologic Balance: Postmining Rehabilitation Of Sedimentation Ponds, Diversions, Impoundments, And Treatment Facilities - JRH

The operator has committed to backfill and reclaim the sediment ponds in conjunction with Phase II reclamation. The reclamation designs and drawings do not determine the location and the amount of fill material that will be required for accomplishing backfilling of the sediment ponds. A rough estimate indicates that about 10,000 cubic yards of fill material will be required for the mine facilities sediment pond plus about 1,000 cubic yards of topsoil material. The operator must provide drawings, designs and calculations showing how Phase II reclamation work will be accomplished. These calculations should identify the location and type of material that will be utilized for Phase II backfilling and grading as well as topsoil materials if required.

The operator has indicated in the text of the mining and reclamation plan that the major culvert diversions located in the mine facilities area are to remain. Several problems are apparent because the culverts are large in diameter and deeply buried in most of the locations at the site. From the standpoint of reclamation ease during Phase I operations and cost, it is reasonable to consider their retention. However, due to the size of these culverts, it is not considered to be a reasonable reclamation practice.

If the culverts are to remain buried, then upon initiation of Phase II reclamation, the culverts will have to be backfilled. A rough estimate of the amount of fill material required to accomplish this is that about 2,000 cubic yards of material would have to be stowed in the culverts at the end of Phase I reclamation. The methodology, and determination of a reasonable fill and compaction factor for the culverts should be established. Designs for backfilling should allow for the potential failure of the culverts, resulting in collapsing ground, channeling of water into the culverts, piping or other erosional problems that may occur as a result of failure of the culvert or inadequate backfilling of the culverts. Additionally, the source and storage of this fill material for the culverts should also be determined.

UMC 817.101 Backfilling and Grading: General Requirements - JRH

The following information was cited in the November and December review of the five-year plan. This information has not sufficiently been addressed by the operator:

The mass balance information referred to by the operator in Volume 5, tab 17 of the MRP is the summary information included in the bonding calculations with hand calculations presented as appendices. These hand calculations provided by the operator are not clear as to the maps from which the information was derived, or the locations in which the cross sections were taken. Additionally, the cross sections provided in the plan represent contours from a previous submittal and do not show the currently proposed reclamation contours.

Map reference and indication of the locations of the cross sections used to generate the cut and fill requirements should be presented in the plan. Earthwork calculations should be revised to reflect those modifications to the reclamation plan as proposed.

The information presented is not sufficient to determine that there is a mass balance in the backfilling and grading requirements for the reclamation plan. The operator needs to provide sufficient contour detail and cross sections and volume calculations to indicate mass balance for the backfilling and grading requirements at the site. Backfilling and grading calculations need to indicate the amount of material required, or excess, for general fill material, excess spoils and mine development waste, topsoil material, and waste materials to be disposed of on site.

The operator has committed to conduct geo-technical investigation of slopes in excess of 2:1 in conjunction with the design of the site for final reclamation. Response by the operator states that such information at this time is not required and will be accomplished in conjunction with the actual reclamation of the site. The operator has further referenced engineering designs used during in the construction of the facilities. In accordance with the requirements of this section, the operator will need to provide sufficient geo-technical analysis in those areas which do not meet the criteria for stability as mentioned above. Long term stability of the site upon reclamation is an important determination in the final configuration of the site, and costs associated with reclamation.

In order to determine the reclaimability of the site and the cost estimation for reclamation, more specific details involved with reclamation will have to be provided by the operator. Revisions to the plans for reclamation could vary considerably depending on the stability of the site and affect those costs involved in reclamation.

Surface facilities established in conjunction with the mining operations are static in a sense that little change in the shape and contour of the surface will occur throughout the life of the mine. The operator should, accordingly, be able to provide detailed design specifications, drawings and plans for the reclamation of the site. Such detail will afford the Division the capability of determination of reclaimability of the site and associated costs for reclamation.

Items Required for approval:

1. Earthwork calculations which reference maps and sections from which they were derived. Calculations should be in sufficient detail to confirm the quantities obtained. Cut and fill volumes should be accumulated in the calculations and appropriate swell and compaction factors should be applied.
2. Geo-technical analysis on slopes created during reclamation operations which exceed 2h:lv.
3. Revised disturbed area boundaries which encompass all disturbances to be accomplished during reclamation activities.
4. Topsoil volume, removal and reclamation in the North Fork Drainage area.
5. Backfilling drawings and plans for sediment ponds, culverts, diversions and other work to be accomplished during Phase II reclamation. (See also UMC 817.59).

UMC 817.121-.126 Subsidence Control Plan - DD

Areas of potential subsidence shown on Map 4.17.1-1 in Volume 3, Section 4.17. conflict with the five year mine projection maps (Maps 3.3-1 and 3.3-2) in that full seam extraction (longwall mining) is indicated under the Mountain Fuel pipeline. The correct mine plan information should be submitted on a map of 1:24,000 scale to be overlaid on the standard 7 1/2 minute topographic map.

The angle of draw (22 degrees, Vol. 3, Section 4.17) chosen to establish buffer zones for protection of structures and renewable resources has decreased from the original permit submittal (30 degrees, Vol. A-8, Section 4.17).

The mine plan must contain any documentation or calculations for subsidence or for the chosen angle of draw. Also a map should be submitted which shows the U. S. Forest Service's projection for the utility corridor. Any mining should take into consideration protection of the entire corridor. Please substantiate the current angle of draw.

On page 4-78 of Volume 3, Section 4.17 the applicant states that the permittee reserves the right, after review of the results of subsidence surveys from an initial period of mining, to modify the width of the buffer zones. Any changes to the Mining and Reclamation Plan must be submitted via an amendment to the permit and approved by the Division prior to implementation.

The applicant needs to provide clearer plans for mining in the vicinity of the South Fork of Eccles Creek. Maps 3.2.11-1 and 3.1.8-1 do not give the detail for overlaying spring location on mining areas.

Again, the applicant has not submitted detailed site specific or detailed subsurface information for life of mine operations beneath or adjacent to springs, or on the Huntington Canyon side of the drainage divide.

UMC 817.126 states;

"Under ground operations shall not be conducted beneath or adjacent to any perennial stream, or impoundment having a storage volume of 20 acre-feet or more, unless the Division, on the basis of detailed subsurface information, determines that subsidence will not cause material damage which could result in environmental degradation or safety hazards to streams, water bodies and associated structures."

Before any mining is allowed on the Huntington Canyon side other than developmental as shown on maps 3.3-1 and 3.3-2, the applicant will have to provide detailed information supported by data and empirical summaries which describe expected subsidence, show that subsidence fractures and cracks are self sealing and show that an inter-basin transfer of water will not occur.

UMC 817.150-.176 Roads - JRH

In response to previous deficiencies as noted in the reclamation plan regarding roads, the operator has revised some of the drawings to incorporate roads and approaches to public roads into the disturbed and permit area boundaries. Not all of the drawings have been revised to reflect these changes.

Further, some of the approaches have not been included in the disturbed area as required. Although these facilities are within the right-of-way and under the jurisdiction of UDOT, the facilities are still considered to be under the jurisdiction of the Division, and the permit area and affected area must include them. Where an approach or access road enters such a right-of-way the permit boundary shall extend to the road to a point where the adjoining road has not been affected by the surface mining activities.

In the event that the approach is to be removed in conjunction with reclamation, costs associated with the removal of the structure and re-establishment of drainage through the area, and revegetation requirements must be incorporated into the plan. In the event that the structure is to remain, design criteria for suitability of the structure must be included in the plan, and any modifications necessary for the facility to remain as part of post-mining land use. All of this, of course, must be made in consideration with permit requirements of UDOT and the Forest Service.

Items Required for Approval:

1. Revisions of the plans and drawings to incorporate all roads, approaches and other facilities associated with surface mining activities into the permit and disturbed areas.

UMC 817.156 Roads: Class I: Restoration - RPS

Section 4.19.6 states that culvert into the loadout area will not be removed. Section 4.20.4 states that the road will be topsoiled and terraces constructed to prevent soil erosion (i.e. reclaim the road). The permit is not consistent. Unless the road is approved for retention as suitable for the postmining land use, subsection (a)(3) requires that the culvert be removed. The application should address this concern and submit channel restoration designs if the culvert is to be removed. If the road is to remain as suitable for the post-mining land use, the applicant should address the design requirements of UMC 817.133.

As per discussion with the Division staff biologist (1/27/89), the approval for post-mining retention cannot be granted at this time. Photographs in the Division files imply that a culvert was not in existence at the same location prior to disturbance by Utah Fuel Company. In addition to approval for

retention of the culvert(s) for a post-mining land use. the application must demonstrate the design capacity for a 50 yr. - 24 hr. precipitation event. The design must include energy dissipation designs for the culvert outlet and demonstration of fish passage. The designs presented in Volume 5 cannot be reviewed at this time due to insufficient information relative to the determination of design peak flow values (principally watershed boundary and characteristic maps).

UMC 817.166 Roads: Class II: Restoration - RPS

The application should address the requirements of this regulation for the access roads to the well houses and the access road to the loadout area. The plans should include culvert removal and designs for restoration of the natural drainages.

Although these facilities are within the right-of-way and under the jurisdiction of UDOT, the facilities are still considered to be under the jurisdiction of the Division and the permit area. Where such facilities are within such a right-of-way, the permit boundary and affected area boundaries shall extend into that right-of-way to a point where the road is not affected by the mining activities. Regulations pursuant to Chapter 1, Rules Pertaining to Underground Coal Mining Activities, May 1979, apply to these areas and the application must demonstrate compliance with these regulations. The applicant must present reclamation plans for the well house culvert crossings on Eccles Creek.

UMC 817.163 Roads: Class II: Drainage - RPS

The application does not address sedimentation control for the waste rock area and access road. Map 3.2.8-1 (or similar) should include culverts and drainage details.

Specific drainage control designs for the road are not presented in the MRP.

UMC 817.180 Other Transportation Facilities - JRH

No map or drawing was found within the MRP indicating the permit area for the conveyor route. Although the disturbed area has been delineated on the drawings, there is no continuous drawing showing the location and the extent of the permit area for the conveyor system. The plan and the drawings must be revised to incorporate this area into the plan.

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UMC 817.181 Support Facilities and Utility Installations - JRH

Those facilities which are located within the right-of-way of UDOT roads, and, those facilities which are within special use permit areas of the USFS, must be incorporated into the permit area and affected area. Similarly to access roads, the facilities are still considered to be under the jurisdiction of the Division, and the permit area and affected area must include them.

BT109/1-25